

What is development?	
Development is an improvement in living standards through better use of resources.	
Economic	This is progress in economic growth through levels of industrialisation and use of technology.
Social	This is an improvement in people's standard of living. For example, clean water and electricity.
Environmental	This is advances in the management and protection of the environment.

Measuring development	
There are used to compare and understand a country's level of development.	
Economic indicators examples	
Employment type	The proportion of the population working in primary, secondary, tertiary and quaternary industries.
Gross Domestic Product (GDP) per capita	This is the total value of goods and services produced in a country per person, per year.
Gross National Income (GNI) per capita	An average of gross national income per person, per year in US dollars.
Social indicators examples	
Infant mortality	The number of children who die before reaching 1, per 1000 babies born.
Literacy rate	The percentage of population over the age of 15 who can read and write.
Life expectancy	The average lifespan of someone born in that country.
Mixed indicators	
Human Development Index (HDI)	A number that uses life expectancy, education level and income per person.

Five stages of economic development.	1. Traditional society	2. Preconditions for take-off	3. Take-off	4. Drive to maturity	5. Mass Consumptions
Rostow's model predicts how a country's level of economic development changes over time. The model also shows how people's standard of living improves.	Subsistence based. i.e. farming, fishing and little trade.	Manufacturing starts to develop with better infrastructure.	Rapid growth with large-scale industrialisation.	Economy grows so people get wealthier & have higher standards of living	Lots of trade with a high level of consumption.

Variations in the level of development	
LIDCs	Poorest countries in the world. GNI per capita is low and most citizens have a low standard of living.
EDCs	These countries are getting richer as their economy is progressing from the primary industry to the secondary industry. Greater exports leads to better wages.
ACs	These countries are wealthy with a high GNI per capita and standards of living. These countries can spend money on services.



Uneven development
Development is globally uneven with most ACs located in Europe, North America and Oceania. Most EDCs are in Asia and South America, whilst most LIDCs are in Africa. Remember, development can also vary within countries too.

Topic 6

Dynamic Development

Physical factors affecting development	
Natural Resources	Natural Hazards
- Fuel sources such as oil. - Minerals and metals for fuel. - Availability for timber. - Access to safe water.	- Risk of tectonic hazards. - Benefits from volcanic material and floodwater. - Frequent hazards undermines redevelopment.
Climate	Location/Terrain
- Reliability of rainfall to benefit farming. - Extreme climates limit industry and affects health. - Climate can attract tourists.	- Landlocked countries may find trade difficult. - Mountainous terrain makes farming difficult. - Attractive scenery attracts tourists.

Human factors affecting development	
Politics	Trade
- Aid can help some countries develop key services and infrastructure faster. - Aid can improve projects such as schools, hospitals and roads. - Too much reliance on aid might stop other trade links becoming established.	- Countries that export more than they import have a trade surplus. This can improve the national economy. - Having good trade relationships. - Trading goods and services is more profitable than raw materials.
Education	Health
- Education creates a skilled workforce meaning more goods and services are produced. - Educated people earn more money, meaning they also pay more taxes. This money can help develop the country in the future.	- Lack of clean water and poor healthcare means a large number of people suffer from diseases. - People who are ill cannot work so there is little contribution to the economy. - More money on healthcare means less spent on development.
Aid	History
- Corruption in local and national governments. - The stability of the government can effects the country's ability to trade. - Ability of the country to invest into services and infrastructure.	- Colonialism has helped Europe develop, but slowed down development in many other countries. - Countries that went through industrialisation a while ago, have now develop further.

Consequences of Uneven Development	
Levels of development are different in different countries. This uneven development has consequences for countries, especially in wealth, health and education.	
Wealth	People in more developed countries have higher incomes than less developed countries.
Health	Better healthcare means that people in more developed countries live longer than those in less developed countries.
Education	More developed countries have better standards of education available than those in less developed countries.

Barriers to ending Poverty	
Debt 	Many LIDCs have huge national debts from borrowing from wealthy countries and organisations. With high interest rates, these debts are difficult to wipe out and can lead to a spiral of decline. This situation makes it difficult for these countries to invest in services and infrastructure.
Trade 	Countries with a negative balance of trade, import more than they export make development difficult. Also ACs have TNCs that operate in LIDCs. These companies take profits away from LIDCs to ACs where their headquarters are.
Political unrest 	Widespread dissatisfaction with the government can be caused by political unrest, corruption and a lack of investment and attention into services (i.e. education and healthcare).

Breaking out of Poverty

Countries can try various ways to reduce poverty and increase development. These often involve different types of aid that can either be short term or long term strategies.

Top Down	These are large scaled, government led and expensive schemes involving money borrowed from wealthier countries. Their is little community involvement but instead large scale projects.
Bottom Up	These are small scaled, local led and less expensive schemes. They involve communities and charities developing local businesses and housing.
Short term	This aid is sent to help countries cope with emergencies such as natural disasters.
Long term	This is aid given over a long period to help countries develop through investing in projects such as education and healthcare.
Trade	Fair trade can allow for fair wages. Also grouping with other countries in the form of trading blocs can increase links and increase the economy.
Debt Relief	Wealthier countries can cut or partly cut debt to countries that have borrowed money. This allows for money to be reinvested in development.

Positives and Negatives of Aid

Positives 	Negatives 
Allows for immediate or long-term investment into projects that can develop a countries prospects.	Local people might not always get a say. Some aid can be tied under condition from donor country.

Are LIDCs likely to stay poor? Case Study: Ethiopia

Location & Background

Ethiopia is a LIDC in the horn of Africa. A **landlocked** country surrounded by five countries. The **10th largest in Africa**, it has the second largest population with **94 million**. The capital is **Addis Ababa** with a population of 3.5 million.



Current level of development

- GNI per capita is **\$505** compared to a world average of **\$10,858**
- Level of wealth per person is **significantly less** than other LIDCs across the world.
- High birth rate & slower death rate equals growing population.
- A long history of **disease, poverty** and **political unrest**.
- HDI of **0.435** with **low life expectancy** at **63 years**.
- Country is **reliant on agriculture** with **89%** of all exports.
- Country receives **more imports** than exports.

Influences upon Ethiopia's development

Political 	Social 	Physical 	Economic 
- Ethiopia has suffered from various civil and military unrest. - Derg government (1974-1987) killed thousands and terrorised people to cause many to migrate as refugee. - Government is now stable since being a republic in 1991.	1984-85 famine killed a million people in just 1 year due to drought and high food prices. - Growing population is causing a food deficient. - People have a growing trust of the government but free speech is still limited.	- Rainfall in the country is unpredictable. This makes agriculture difficult. - Inaccessibility, water shortages and infestations make valuable land difficult to farm. - Drought affected areas has caused over-farming and desertification.	- Agriculture makes up most of the country's economy. - Reliance on agriculture is vulnerable to climate change. - Economy is now growing meaning fewer are in poverty. - Income in the secondary & tertiary sectors are growing (particularly in tourism).

Ethiopia & Rostow's Model

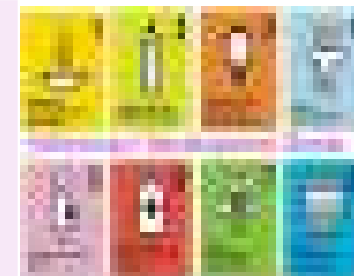
- Despite the large primary industry, Ethiopia has improved education and healthcare due to investments from TNCs. As a result, Ethiopia is at stage 2.
- Better technologies & quality of life is allowing for pre Take off to emerge.



Millennium Development Goals

Set by the UN to set targets to reduce poverty.

+ Ethiopia is on track with **primary education, reducing child mortality and healthcare**.
 - **Malnutrition, gender equality, disease, global partnership and environmental sustainability is still a problem**



Investment from TNC	Aid & Debt relief	Development strategy for Ethiopia	
A range of TNCs such as Siemens and Afriflora are now operating in Ethiopia at a primary, secondary and tertiary level. + Investment in infrastructure is increasing tourism. + Increase employment levels and people receive fair wages. -Some TNC pay low salaries and working conditions are poor. -TNCs sometimes take advantage of the unstrict regulations in place.	5 million people receive food aid from charities such as Oxfam and Farm Africa. - Oxfam's Goat Aid is sustainable for young women. 'The Girl Effect' encourages equality & reduces birth rates. - Wealthier countries encouraged the decline of the country's massive debt. - Less debt repayments has meant more reinvestment. 	Bottom-up	Top-down strategies
		This is led by local people and are known as 'grassroot' project. + Mission Aviation and Farm Africa have helped locals create sanitation, water systems, educate farmers and breed a livestock. - Bottom-up approaches can be localized and depend on volunteers.	This is large scale investment at a national level. + \$3.6 billion has been spent converting rural mud roads into asphalt roads. Investment in HEP dams has produced a reliable source of energy. - Local farmers have been evicted from HEP dam areas and water has become polluted.



What is Resource Reliance?

Reasons for NOT Meeting Modern Resource Demands.

Environment and Water: Reservoirs and Water Transfer



Resources are things that humans require for life or to make our lives easier. Humans are becoming increasingly dependent on exploiting these resources, and as a result they are in high demand.

Resource Required

Resources such as food, energy and water are what is needed for basic human development.

FOOD



Without enough nutritious food, people can become **malnourished**. This can make them ill. This can prevent people working or receiving education.

WATER



People need a supply of **clean and safe water** for drinking, cooking and washing. Water is also needed for food, clothes and other products.

ENERGY



A good supply of energy is needed for a basic standard of living. People need **light and heat** for cooking or to stay warm. It is also needed for industry.

Demand outstripping supply

The demand for resources like food, water and energy is rising so quickly that supply cannot always keep up. Importantly, access to these resources vary dramatically in different locations

1. Population Growth



- Currently the global population is **7.3 billion**.
- Global population has risen **exponentially** this century.
- Global population is expected to reach **9 billion by 2050**.
- With more people, the **demand** for food, water, energy, jobs and space **will increase**.

2. Economic Development



- As **LDCs** and **EDCs** develop further, they require **more energy** for industry.
- LDCs** and **EDCs** want similar lifestyles to **ACs**, therefore they will need to **consume more resources**.
- Development means **more water is required** for food production as diets improve.

Resource Reliance Graph

Consumption – The act of using up resources or purchasing goods and produce.
Carry Capacity – A maximum number of species that can be supported.

Resource consumption exceeds Earth's ability to provide!



3. Changing Technology and Employment

- The demand for resources has driven **the need for new technology** to reach or gain more resources.
- More people in the **secondary and tertiary industry** has increased the **demand for resources** required for electronics and robotics.

Climate

- Global warming** effects cycles and seasons and therefore farming.
- Rainfall patterns** are changing and are becoming unpredictable. This is a problem for farming.

Geology

- Not all countries have **access to fossil fuels** or suitable landscape for renewables.
- Many **minerals are finite** and therefore once used will reduce the resources available.
- Rock types** might limit the availability to store water.

Conflict

- War** can disrupt transport of resources by damaging roads and water pipes.

Poverty

- LDCs** are unable to **afford technology** to effectively exploit the natural resources available.

Natural Hazards

- Increase in hazard events** due to climate change.
- Prime agricultural regions in Asia and Africa and are also in **hazard zones**.
- Has the ability to **destroy infrastructure** needed to transport resources.

Topic 8

Resource Reliance



Environment and Food: Fishing and Farming

	Methods	Environmental and Ecosystems
Fishing	Bigger nets and fishing boats have allowed for greater catches. GPS and sonar has also find the fish easily.	Overfishing of certain fish has caused their decline. Dredging can damage seafloor habitats. - Decline of one species has a knock on effect on other marine species.
Farming	Tractors, computer programming and GPS technology is producing food more effectively and at a larger scale.	- Field sizes have caused hedgerows to decline in biodiversity. Fertilisers and pesticides enter water courses and harm or kill organisms. - Heavy machinery can cause soil erosion.



Environment and Energy: Deforestation and Mining

	Methods	Environmental and Ecosystems
Deforestation	Logging using modern machinery and transportation has made deforestation more productive & convenient.	2 billion people depend on wood for fuel, which therefore creates high CO2 emissions - Forests provide for important habitats. - Clearing of forests leads to soil erosion. - Tree intercepts rain and prevents flooding.
Mining	Large machines and drill technology can remove and reach through material effectively.	- Mining waste can pollute soil and contaminate water supplies. Habitats are destroyed in mining zones. - Fossil fuels burnt release greenhouse gases

Methods

Environmental and Ecosystems

Reservoirs	Increasing storage to hold more water and constructing more dams to control river flow can provide a reliable source of water.	- Can flood a large area of land and damage habitats and natural landscapes. - Dams can be a barrier for certain species to migrate upstream. - Natural flow of sediment is disrupted, which then reduces fertility of land further down.
Water Transfer	Constructing pipes and canals to divert water surplus to areas in need of a water supply.	- Large-scale engineering works can damage ecosystems along the route. Lots of energy is required to pump water over long distances.



Food Security

'**Food Security**' is when people at all times need to have physical & economic access to food to meet their dietary needs for an active & healthy life. This is the opposite to '**Food Insecurity**' which is when someone is unsure when they might next eat.

Human



- Poverty** prevents people affording food and farmers buying modern equipment.
- Poor infrastructure** makes food difficult to transport fresh food.
- Conflict** disrupts farming and prevents supplies.
- Food waste** due to poor transport and storage.
- Climate Change** is affecting rainfall patterns making food production difficult.

Physical



- Temperature** needs to be ideal for certain crops to grow.
- The **quality of soil** is important to ensure crops have the necessary nutrients.
- Water supply** needs to be reliable to allow food to grow.
- Pest, diseases and parasites** can destroy vast amounts of crops that are necessary to feed large populations.
- Extreme weather** events can damage crops (i.e. floods).

Malthus and Boserup's Theories about Food Supply

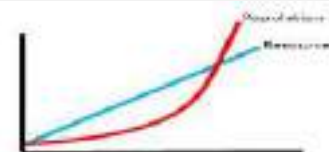
With the population growing very quickly, there are different ideas about whether or not this will lead to a food crisis.

Malthus Theory

- Believed that **population would increase faster than food supply**.
- This would lead to a lack of food being available.
- Malthus believed this would cause **large scale famine, illness and war**
- This would occur until population returned to level that can be supported.

Boserup Theory

- Believed that however big the population grew, **people would find ways to manage**.
- If food supplies became limited, **people would find new ways** to increase production.
- These solutions would often involve **creating new technologies**.



Measuring Food Security

Food security varies around the world. Some people and places are more food secure than others. This can often depend on how much a country can grow and is able to afford.

The Global Hunger Index



Daily Calorie Intake



- This shows how many people are suffering from **hunger or illness** caused by lack of food.
- The index gives a value for each country from **0** (no hunger) to **100** (extreme hunger).

- This shows how many **calories per person** that are consumed on average for each country.
- This can indicate the global distribution of **available food** and **food inequality**,

Case Study: Tanzania Food Security

Tanzania's population is around 51 **million** and has a **low level of food security**. The country **produces some of its own food** and this is steadily increasing.

- Tanzania **has to import** the rest.

Food production in Tanzania has increased by **intensifying agriculture**. Many people in Tanzania live in poverty and cannot afford enough food.

Food consumption in Tanzania

Average daily calorie intake in the area **decreased** in the 1990's due to drought, but has increased again to 2137 calories. Reasons for this decrease include:

- Droughts and poor food distribution
- There is a greater % of people undernourished in Tanzania than Africa in general.

Success in securing local food security

Goat Aid

Millions of people receive food aid from charities such as Oxfam and Farm Africa.

Oxfam's Goat Aid is sustainable for young women. **'The Girl Effect'** encourages equality & reduces birth rates.

- These **are small projects** where groups work together to breed goats and **promote better diets and longer life expectancy from income earned**.
- Benefits can involve fertilising household gardens from goat manure which helps improve diets.
- Income can be invested in breeding and selling more goats and helps parents pay for education.

Effectiveness of past attempts at food security – Canada Wheat program.

Intensification of farming from the late **1960s** to the **1990s** attempted to increase production by;

- Higher yields of wheat crops
- Monoculture by growing one crop in a large area.
- Chemicals with improved fertilisers and pesticides.
- Mechanisation for sowing and harvesting.

It provided 60% of the countries wheat by the 90's. In the 1992 drought, Tanzania was the only southern African country not to rely on food aid. Most Tanzanian's do not eat wheat – they eat maize. Nomadic tribes like the Barabaig have lost access to water for their animals.

Effectiveness of present attempts at food security – Southern Agricultural Growth Corridor

Recently Tanzania has been promoting sustainable farming using **new technology and ideas** such as the **Hub and out-grower model**. Small farmers (out-growers) working on their own land nearby will also be able to use these. They will also be helped by expertise and training from the commercial farms.

The idea is that improvements due to investment in infrastructure will attract big commercial farms to six cluster areas.

Each farm will act as a hub and improve things like irrigation, seeds, fertiliser, local transport and storage facilities. As well as increasing the amount of crop grown, farmers have also been able to get a better price by having improved access to markets. Some small landowner have lost their land to make way for big plantations.

Attempts to Achieve Food Security

There are various measures to maintain or even improve our food security. These measures are often taken to be **socially**, **economically**, **environmentally** viable for the longer term.

Social

Economic

Environmental



Ethical Consumerism

This involves buying products that have a positive social, economic and environmental impact today, without compromising future generations.

Fairtrade

- This is a global movement to give farmers a **fairer price for their products**.
- The profits benefit the community **with schools and medical facilities**.
- Involves using farming methods that **protects rather than destroys environments**.

Food Waste

- One-third of all food gets lost or wasted.
- Aim to **eat locally sourced food** to reduce waste through transport.
- Eating 'ugly' food despite it not being 'ideal' can prevent waste and **save money**.
- Prevents wasted energy for producing food and therefore **reduces CO2 emissions**.

Food Production



This involves producing as much food as possible in as small a space as possible. They often involve using **machines and chemicals** to gain as much produce as they can.

Intensive Farming

- Makes the most of the land and allows for higher yields. This can make growing food more **productive and therefore cheaper** to produce.
- Chemical fertilisers, pesticides and herbicides can **pollute the environment** and **harm people**, animals and insects.

Organic Methods

- This involves the banned use of chemicals and **ensuring animals are raised naturally**.
- This can lead to **lower yields of 20%** and products being **more expensive**.



Technological Developments

Through better understanding of science and improved technology, it is now possible to change the food we grow and protect and harvest the crops more effectively.

Genetically modified (GM)

- Involves changing the DNA of foods to enhance their productivity and properties.
- Crops can be **better protected from disease and drought**, but also made larger or include more **health benefits**.

Hydroponics

- This is a method of growing plants without soil. Instead they use nutrient solution.
- Less water is needed and a **reduced need for pesticides** to be used.
- However, this method is **very expensive** so only used for high value crops.



Small Scale 'Bottom Up' Approaches

This involves a small scale production of food and relies on individuals and communities, rather than government or large organisations.

Allotments

- This is an area of land that is divided into plots and rented to **individuals to grow their own fruit and vegetables**.
- Allows people in urban areas to produce their **own cheap** & **healthily food** close to home.

Permaculture

- This involves **people growing their own food** and **changing their eating habits**.
- This can create **more natural ecosystems** and fewer resources are required.

The Archers

Component 1: Exploring the Media

Focus areas: Media Industries Audiences Media Contexts

BACKGROUND CONTEXT

- *The Archers* is aired on Radio Four, has over 5 million listeners and is considered a significant part of British popular culture. Running for 65 years, with six episodes a week and an omnibus on a Sunday, it is the world's longest running radio soap opera.
- *The Archers* follows the residents of the fictional farming community of Ambridge, in the fictional county of Dorsetshire, in the English Midlands. Its tagline is, "contemporary drama in a rural setting".

PART 1: STARTING POINTS – Media Industries

Historical Context:

- *The Archers* was originally established in 1951 to **educate** farmers which, it was hoped, would increase food production after the second world war. It was thought that the show could be used as a way for the Ministry of Agriculture to communicate important **information** to farmers.

Social and Cultural Context

- Wherever possible, *The Archers* happens in **real time** i.e. it portrays **events** taking place on the date of broadcast, allowing a variety of **topical subjects** to be included. If a real-life event can be predicted, it is often written into the script. Even unforeseen events have been weaved into the script with scenes being re-written and re-recorded at short notice such as the 9/11 attacks, the death of Princess Margaret and the 2001 foot and mouth crisis.

Consider the importance of different funding models and production processes:

- Like TV, radio broadcasting falls into two categories: **public service** and **commercial** broadcasting. Commercial broadcasting is funded

by the sale of advertising slots and public service broadcasting is funded by public money either directly from the government or a licence fee. In the UK, **BBC radio is funded by a licence fee**.

- *The Archers* is aired on **Radio Four**, the BBC's main spoken-word channel, and so is funded by the licence fee. The BBC has a **public service remit** (to educate, inform and entertain) and *The Archers* was originally established to **educate** farmers. The show soon became a major source of **entertainment** for people from all walks of life, not just the rural community. However, the show still prides itself on the quality of its research and its ability to portray real rural life.
- **Producing** a radio series like *The Archers* requires tight **schedules** and long term **planning**.
 - » The production team meet biannually to plan the following months, and sometimes even years' worth of storylines.
 - » Monthly script meetings then take place where four writers have to produce a week's worth of scripts each.
 - » Recording takes place every four weeks and actors only receive their scripts a few days before. Actors are employed for six days in which they record 24 episodes. There is very little room for error as each 13 minute episode is only allocated two hours of studio time.
 - » Episodes are then broadcast 3-6 weeks after recording.
- Due to these recording schedules, actors are not held on retainers and are not employed full time on a show and often have careers in film, theatre, television and other radio shows.

Consider regulation of the media:

- Radio broadcasting is regulated by **Ofcom**, the government-approved regulatory authority for broadcasting. Ofcom sets **standards** for programmes and one of its duties is to examine specific **complaints** by listeners about programmes broadcast on channels that it has licenced.

Consider the impact of technologies and convergence:

- In order to keep up with the different

ways people prefer to **consume** their media, there are a variety of **ways for fans to engage** with the show:

- » Aside from the **regular radio slot**, listeners can catch up with the **omnibus** on a Sunday, hear recent episodes repeated on **BBC Radio Four Extra**, download the **podcast**, or listen 'on demand' through **BBC iPlayer Radio**.
- » Alternatively, they can check out *The Archers*' page on the **BBC website**, follow the show on **social media** by following it on **Twitter** or liking their **Facebook** page.
- » All of these **platforms** are provided to help audiences increase their enjoyment of the show and make it as accessible as possible for them to keep up to date with it.

The Brand

- *The Archers* is big business for the BBC as it's the most listened to BBC programme online. In today's society, **market share and brand identity** are massively important and *The Archers* succeeds on both of these. If the BBC was ever to lose its **licence fee**, there are certain shows that it is guaranteed people would pay to subscribe to – *The Archers* is one of these. Therefore, it's important that the producers keep the show fresh. One way of doing this is by introducing new characters or pushing the boundaries on plotlines.

PART 2: STARTING POINTS – Audiences

Social Context

Not one to shy away from controversy, the BBC has opened the gates to less talked about topics and issues in recent years. The **domestic abuse storyline** of Rob and Helen has been building for some time. The **listeners' privileged position** of being able to eavesdrop in on characters' private conversation has added a very real touch to the storyline. Audiences have witnessed first-hand Rob's controlling nature, his coercive behaviour and insidious ways (e.g. constantly undermining Helen's looks and clothing), and listened whilst he has progressively isolated her from friends and family. The **realistic portrayal** of this storyline has even prompted audiences to raise over £100,000 in charitable donations, proving the **importance** of such a show – and the strong relationship it has forged with its **audience**.

Consider the ways in which media organisations target audiences:

- Historically, radio soap operas have always

focused primarily on women's lives, particularly family relationships, domesticity and marriage. Therefore the target audience was traditionally **females** who looked after the home.

- Listeners from different walks of life could engage with the show in different ways due to its multi-stranded **narratives**. As a listener you might be rooting for one particular character whilst your friend might be interested in another character relationship entirely.
- *The Archers* is perceived as a high quality soap opera and distinguishes itself from TV soaps by providing soap for the educated middle-classes. Radio Four has a **high cultural status** and so the audience for *The Archers* consists mainly of well-educated middle-class professionals, most of whom are middle aged and above, white women.

Consider how audiences may respond to and interpret media products, and the social, cultural and political significance of media products:

- For many of these listeners, *The Archers* was a **familiar friend** which provided a comforting background and, until fairly recently, there was an unwritten rule that nothing too terrible would ever happen.
- However, in recent years some listeners have complained that *The Archers* is beginning to mimic the excesses of TV soaps such as *EastEnders*. The most notable example of this is the 2016/17 storyline of Rob's abusive relationship with his wife. For some listeners, the show they once considered to be light, mellow drama, has now morphed into actual **melodrama**.
- That being said, such a move has attracted **new listeners** which are welcomed by the broadcasters, and there is an argument that such shows should reflect the **society** in which they are aired. This move has also given the BBC the opportunity to open a conversation about **topics** like domestic violence.
- Because the BBC can be accessed from around the world, it's important to understand that some of the online audience is **global**, including British people living abroad. Listening to *The Archers* is a crucial way for them to keep in touch with **British life**. In fact, even within the UK, some listeners from urban areas have stated how they like the sense of rural life that is evident in the show. Perhaps, like many, they dream of getting away from the city and moving to the country and *The Archers*

helps them imagine this for a short time.

- If we consider Blumler and Katz's **Uses and Gratifications theory**, we could argue that audience members listen for all of those given reasons:
 - » simply for **entertainment**/diversion from their everyday lives
 - » to be **informed or educated** about rural life or topical issues that the

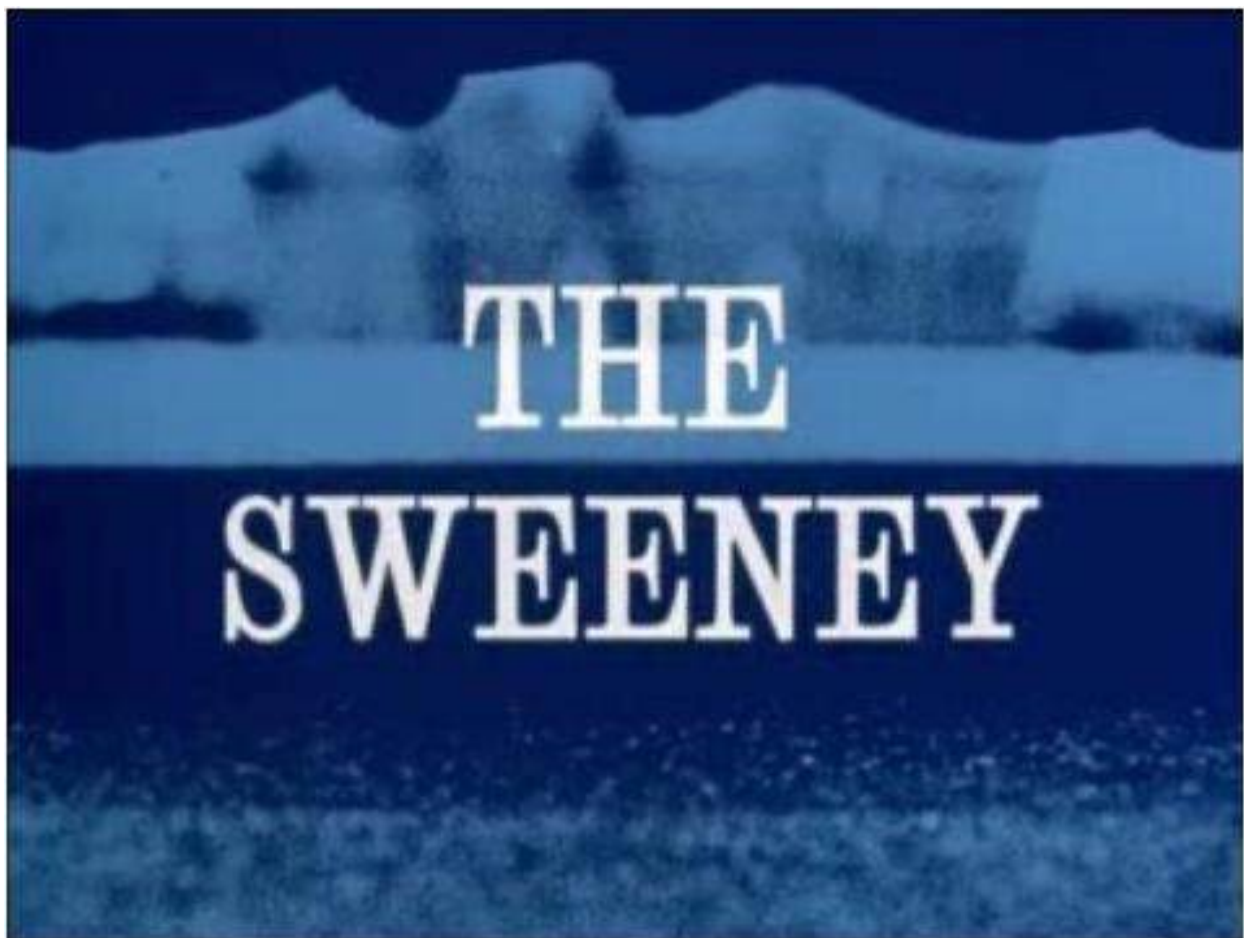
storyline may be dealing with

- » for **social interaction** to discuss with family/friends or by continuing the conversation on Twitter or Facebook
- » for **personal identity**, to compare their life experiences with those of the characters.

The Sweeney

(Series 1 Episode 1, 1975)

Factsheet 1 - Media Language & Representation



Acknowledgements

All quotes from dialogue: *The Sweeney* Series 1, Episode 1 (1975), ITV.

Images	Acknowledgement
All images	Freemantle Media / ITV

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The Sweeney

(Series 1 Episode 1, 1975)

Component 2: Understanding Forms and Products

Focus Areas:

Media Language

Representation

Media Industries

Audiences

Media contexts

PRODUCT CONTEXT

- The set historical product is a ten-minute extract from Series 1, Episode 1 (1975) of *The Sweeney*: 'Ringer'. It was first broadcast on ITV on January 2nd 1975 at 9pm.
- *The Sweeney* is a crime drama that blends action with police procedural.
- It was created by Ian Kennedy Martin and was a spin-off from a 1974 Armchair Theatre television drama called *Regan*. This pulled in over 7 million viewers and the decision was made to develop the idea into a series.
- The programme focuses on two members of The Flying Squad, a branch of the Metropolitan Police. The programme's name is derived from the Cockney rhyming slang for 'Flying Squad' – 'Sweeney Todd'. John Thaw played Jack Regan and Dennis Waterman played George Carter. The programme ran until 1978 and had two feature film spin-offs in 1977 and 2012.



PART 1: STARTING POINTS – Media Language

The various forms of media language used to create and communicate meanings.

Semiotics can be used to analyse aspects of media language. Consider:

Settings and locations: The urban setting of London immediately connotes realism with a focus on the underbelly of urban society and gangland activity. The programme offers an unglamourised view of the capital. The pre-title sequence is filmed on a piece of waste land highlighting the use of real locations in the programme which would have been innovative at the time and part of the programme's appeal.

Visual codes

Codes of clothing: The connotations of characters' clothing and appearance create meanings. In *The Sweeney*, clothing is used to establish a hierarchy: Haskins wears city wear of the time including a formal suit and black overcoat, Regan and Carter as detectives are not in uniform but are less formal. The 'villains' are also clearly demarcated through clothing.

The relationship between technology and media products:

Technical Codes: The shots and editing suggest an attempt to create realism and distance the programme from earlier examples of the genre mainly filmed on sets. The technical codes also suggest the time in which it was made as they are more simplistic; the editing mainly relies on continuity editing and in some scenes there is clearly only one camera, for example in Jenny's

bedroom and sitting room in the opening scene. However, the film stock used and the location filming reinforce the more realistic feel of the programme, these techniques would have been different and refreshing for audiences of the time, involving them in the action.

Audio codes: There is limited use of music with the main audio codes being non-diegetic sound, dialogue and silence. The use of silence was innovative at the time and was used to create realism, for example when Regan is taking surveillance photographs of different members of the gang. Music then cuts in suggesting the narrative is moving forward. The non-diegetic soundtrack of the title sequence became iconic and synonymous with the programme's brand. Accents are used to connote hierarchy; the villains speak with a pronounced Cockney accent whilst DCI Haskins speaks with an RP accent. Dialogue also suggests rank, for example in one of the early scenes Haskins refers to the Beckett play *Waiting for Godot* which is not understood by the other officers, Carter states when asked who Godot is '*he plays full-back for QPR*'.

Genre:

Although crime dramas have evolved over time, they have a recognisable set of conventions. *The Sweeney*, as an earlier example of the genre, clearly establishes a repertoire of elements that continue to be used in contemporary examples of the genre. These include:

- A **narrative** based on a crime that needs to be investigated and solved. This may conform to Todorov's theory where the structure is linear from the initial disruption through to a resolution, or non-linear where time and space is manipulated. *The Sweeney* has a linear structure and each episode had a different title and deals with a new crime. The narrative arc comes from the relationships between the characters.
- Binary oppositions that function as a narrative element. In *The Sweeney* this includes good vs evil, hero vs villain, police vs criminals and detectives vs police authority.

- A set of recognisable **character types** including a hierarchy with a boss (Haskins), a detective (Regan) and sidekick (Carter) and other characters, for example the criminals and Kemble, the gangland boss. In *The Sweeney* there is also a hierarchy within the criminal group with Frank Kemble as the boss, Dave Brooker as his sidekick with Billy and Stupid Hawes subordinate to both. The choice of name here is indicative of the time in which the programme is made and what constituted as appropriate.
- **Settings and locations** to establish realism including the police station, Jenny's house and a range of outside locations in London.
- **Iconography** related to the genre or to the character. For example, Kemble's house with elements of luxury and his framing in the leather chair behind a desk suggests his power over the others and the class divide between him and the gang members. This is further reinforced by the fact that he smokes a pipe, not cigarettes, and has a more refined accent. The guns reflect the narrative focus of several of the episodes on armed robbery or raids. The cars belonging to the 'Flying Squad' became iconic with connotations of chases and action.



Theoretical perspective on narrative: Applying Propp.

This is a character-driven narrative theory which suggests that characters influence a narrative and communicate meanings through cause and effect, the narrative progresses as a result of their

actions. All characters have motives, these are revealed during the story arc and the narrative, according to Propp, is driven by the need to achieve their goals. Propp suggested there were a range of narrative roles, some of which can be applied to characters in *The Sweeney*:

Regan and Carter are **heroes** in that they solve crimes, arrest dangerous criminals and protect the community, but Regan, in particular is also an **anti-hero** as he is flawed - he drinks, smokes, challenges authority and does not always follow the rules. He is seen by his superiors to be a bad influence on Carter, referred to by Haskins as '*undisciplined and irresponsible*'. However, although he and Carter may use tactics to elicit information, it is clear that they are not corrupt and are ultimately 'good guys', one of the villains comments: '*This is The Sweeney, you don't buy them*'.

The **villains** are clearly established from the opening sequence. They are violent, hardened criminals who are used to getting what they want through violence and intimidation as seen in the unpleasant scene where Jenny is threatened with the iron.

There are a range of **sidekicks** in *The Sweeney*. Carter is Regan's partner; Kemble has a sidekick in Brooker and Billy has Stupid Hawes. They all have a clear role and advance the narrative in some way, for example Stupid Hawes reveals to Regan the connection between Billy and Kemble, and Regan realises his surveillance operation has been discovered. Carter covers for Regan and shows loyalty to him rather than Haskins. Jenny is the **princess/damsel in distress**, she is barely seen in the opening scene and is threatened by the gangsters.

Theoretical perspectives on genre, including principles of repetition and variation; the dynamic nature of genre; hybridity and intertextuality. Consider:

- Television crime dramas are historically one of the most popular television genres. They are recognisable to audiences, fulfilling their

expectations and are useful in the marketing of the product.

- However, although crime dramas rely on repetition of common conventions, they also vary and introduce different elements (Neale). *The Sweeney*, whilst repeating the typical codes of earlier crime dramas, for example *Z Cars* and *Softly, Softly*, also introduced grittier elements including violence and action to appeal to the audience.
- Genres are dynamic, developing over time to reflect social and cultural change, for example the way in which *The Sweeney* addresses the changing perception of the police. *The Sweeney* also borrowed conventions from the popular American crime drama imports and paved the way for programmes like *Starsky and Hutch*.

PART 2: STARTING POINTS – Representation

How representations reflect the social, historical and cultural contexts in which they were produced.

Consider how media language is used to construct representations:

The Sweeney clearly reflects the values and beliefs of 1970s society in terms of the representations constructed. The police are white heterosexual men reflecting the police force at the time, as are the criminals. Those in positions of authority wielding power and influence are also white men. Very little screen time is given to women in the programme.

Representations of masculinity:

Regan is the main character, we are introduced to him in the scene after the titles where, interestingly, he is dressed in Jenny's flowered dressing gown, looking at himself in the mirror. His attire suggests that he does not live with Jenny and had not planned to spend the night there, suggesting more relaxed morals. His usual clothing suggests his rank, but also is a little shabby, connoting his lack of care about his appearance, a stereotype of men of the time. He is tough and powerful and unafraid to use

violence when needed. This persona is reinforced by his dialogue: *'We're The Sweeney son and we haven't had any dinner, you've kept us waiting. So unless you want a kicking, you tell us where those photographs are'* which preempts the chase scene. He is not afraid to stand up to authority and frequently bends the rules whilst not being actually corrupt. As Haskins says of him: *'Everything seems to mould itself around Jack Regan's convenience'*.

Carter is Regan's side kick/partner establishing a 'buddy' scenario whereby he covers for Regan. Regan relies on Carter and his local knowledge to solve crimes. He also often lightens the mood with humour and is generally represented as a more stable character. He does however engage in violence and, along with Regan, always solves the crime and catches the criminal.

The members of the gang and their leader

Kemble demonstrate stereotypical characteristics of villains recognisable across examples of this genre in film and television. This representation is constructed through visual codes including their clothing, language and iconography, for example

their access to weapons and their involvement in organised crime.

Representations of women:

This reflects the time in which the programme was made when women did not hold high ranks in the police force which was very male dominated. The only time a female police officer is seen is in a caring role when she arrives to protect Jenny after she has been threatened.

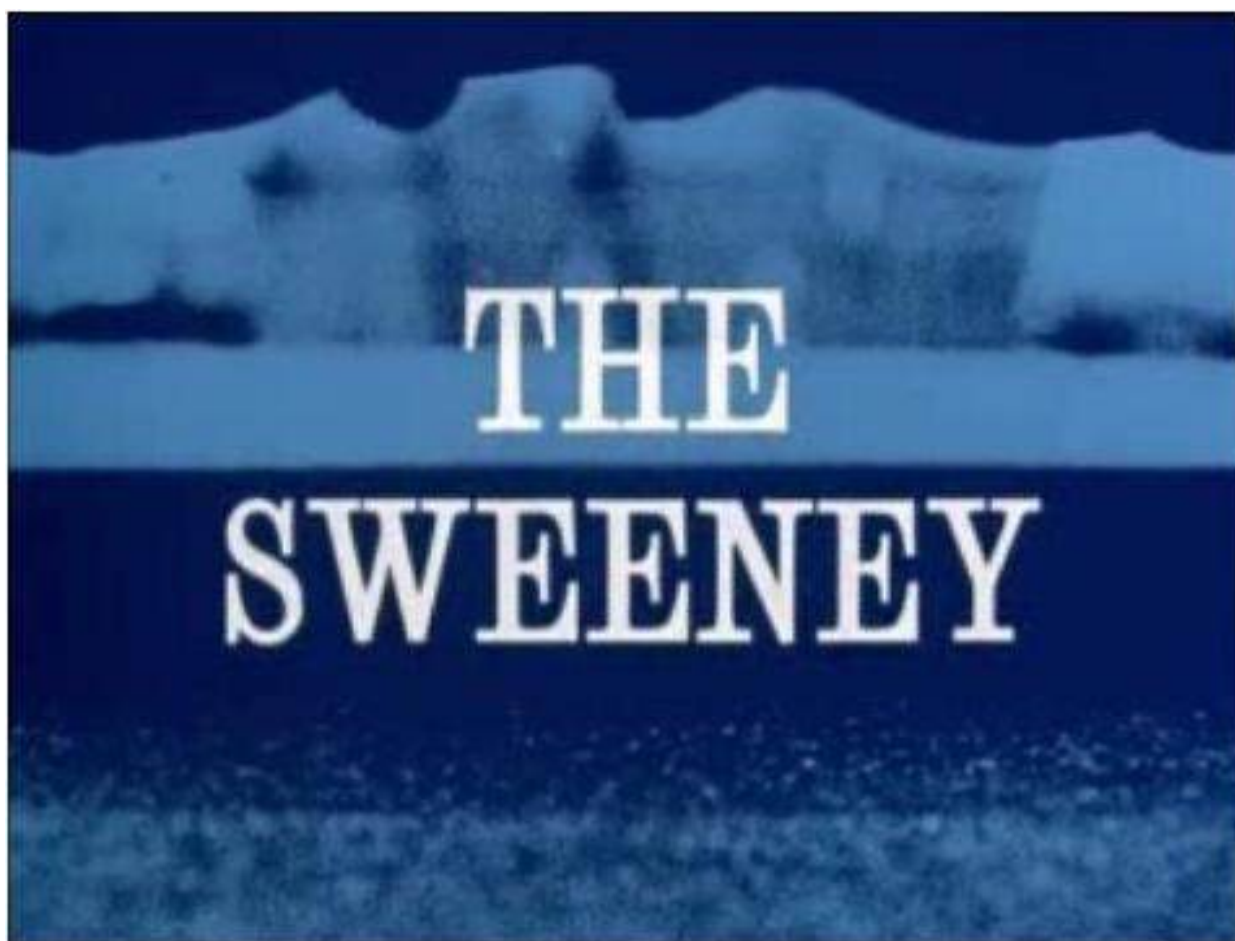
Jenny is represented very much as the victim. In the early scene we hear rather than see her as she is under a duvet. She is threatened by members of the gang and needs the protection of Regan although her relationship with him is unclear and does not warrant time in the narrative. In the final scene she is subservient to Regan as she is on the floor and he is on the chair in a protective role.

Edi is the only other women with dialogue in this episode and while she is feistier than Jenny and more street wise, she is still portrayed as long-suffering. She does not know where her husband is or that he has returned to a life of crime. She appears to have a grudging respect for Regan.

The Sweeney

(Series 1 Episode 1, 1975)

Factsheet 2 - Media Industries, Audiences & Media Contexts



Acknowledgements

All quotes from dialogue: *The Sweeney* Series 1, Episode 1 (1975), ITV.

Images	Acknowledgement
All images	Freemantle Media / ITV

'Fair dealing' of third party materials is used for criticism and review purposes however if there are omissions or inaccuracies please inform us so that any necessary corrections can be made resources@eduqas.co.uk

The Sweeney

(Series 1 Episode 1, 1975)

Component 2: Understanding Forms and Products

Focus Areas:

Media Language

Representation

Media Industries

Audiences

Media contexts

PART 1: STARTING POINTS – Media Industries

The nature of media production, including by large organisations:

- The programme was produced by Talkback Thames using the Film Production Unit Euston Films with a focus on high production values. Each episode cost in excess of £250,000 to make and was filmed on a strict ten day shooting schedule.
- *The Sweeney* was the most popular product made by Euston Films.
- Thames Television was one of the regional franchise holders of the ITV network broadcasting in the London area from 1968-1992.
- *The Sweeney*, produced by ITV, a commercial broadcaster, presents a different production and distribution model to *Luther*, a BBC production.

The importance of different funding models:

The Sweeney was broadcast on ITV, which in 1974 was the UK's only Independent Television Channel that relied on advertisements to fund the production of television programmes. The viewing figures for each episode would have guaranteed ITV valuable income from advertisers who wanted to place commercials in the breaks. The success of *The Sweeney* was therefore

important to Thames Television and the ITV in terms of raising revenue.

The functions and types of regulation in the media:

The Sweeney was broadcast by ITV in the post-watershed 9pm slot. The characters were part of the Metropolitan Police's 'Flying Squad' suggesting that the narrative would contain mature themes regarding violence and theft. There is mild swearing and some references to sexual activity, but this was restrained even given the later scheduling time, reflecting the social and cultural context of the 1970s. The DVDs were given a 15 rating.

PART 2: STARTING POINTS – Audiences

- The initial appeal of the programme was the fact that it offered a different, more realistic representation of the police force, one that more accurately mirrored the stories that were appearing in the press at the time. The programme also had the added appeal of the humour created through the relationship between Regan and Carter.
- The filming style and action scenes would have appealed to fans of the crime genre who were ready for something different and more contemporary.
- Some of the takes are much longer than in contemporary examples of the genre, this was similar to more serious dramas of the time where audience concentration is expected.
- As the series developed over the years the audience became involved with the two main characters which contributed to the continued success of the programme.

- At the height of its success it was pulling in 19 million viewers per episode.
- The ongoing popularity of the programme is evidenced in the two film spin-offs produced, one in 1977 and one as recently as 2012

Theoretical perspectives on audience: Blumler and Katz's Uses and Gratifications theory:

There are several theories that have been written to explore the relationship between audiences and media products. The Uses and Gratifications theory was one of the first to suggest that audiences can be active consumers of the media and seek out and use different media products in order to satisfy a need and to experience different pleasures including:

- **Entertainment/diversion:** audiences watch some media products including crime dramas to escape from everyday life into a fictional world that absorbs their interest. *The Sweeney* was entertaining and was a refreshing change from some of the other crime dramas broadcast at the time as it challenged the reassuring image of the police. It also had the added excitement of action including car chases and shoot outs which would have usually only been seen in film.
- **Information/education:** crime dramas can give audiences an insight into another area of society with which they may not be familiar, in *The Sweeney* this was police procedures. The insight into London gangland would have reinforced pre-conceived ideas audiences may have from real life stories of gangsters, for example The Krays.

PART 3: STARTING POINTS – Media Contexts

The specification requires learners to develop their understanding of relevant contexts of media and their influence on the product.

Historical Context

The Sweeney demonstrates how genres develop over time. The programme introduced a more gritty, realistic representation of the police force informed by cultural influences including press stories and American crime drama imports. This

view challenged the more reassuring image of the police evident in other examples of the genre such as *Dixon of Dock Green* and *Z Cars*.

The programme also looked different to previous crime dramas, it was shot on 16mm film to achieve a washed out, grainy feel to the images, creating a more gritty realism.

The Sweeney reflected the time in which it was made as in the 1970s the actual Flying Squad were in the news after reports of bribery, corruption and consorting with gangland criminals.

The programme was produced before the 1984 Police and Criminal Evidence Act was passed which provided a code of practice for the exercise of police powers. Before that, there were few restrictions on the methods that could be used by the police to secure a conviction. For example, when Regan exhorts information from Billy through violence and suggesting that they can frame him.

Social and cultural contexts

How *The Sweeney* reflects the society and culture of the time in which it was made through its representations, themes, values, and messages. Consider:

- *The Sweeney* tells us a lot about the society of the time in terms of social hierarchy, power, gender roles and how authority was regarded.
- The men in the programme were macho, sexist and in positions of power. Their lives were seen to be exciting, appealing to the male audience of the time. They often broke the rules and engaged in violence.
- Although Regan and Carter are depicted as good at heart, their often dubious ways of getting information potentially reflected the culture of the Metropolitan Police of the time. In 1972 a new Commissioner for the Met, Sir Robert Mark was appointed to investigate corruption in the London force. He described the CID as 'the most routinely corrupt organisation in London'

(<https://www.thehistorypress.co.uk/articles/the->

[sweeney-the-dirty-squads-police-corruption-and-sleaze-70-s-style/](#)). During his investigation 50 officers were prosecuted and 478 took early retirement.

- The programme reflected the inequality between men and women in society. The majority of police officers seen are men and the roles for women in the programme were frequently that of the victim or sexual temptress.
- The programme changed the way in which crime dramas would be made in the future and audience expectations. It was said to be

influential in the creation of *Life on Mars* and *Ashes to Ashes*.

- It became culturally iconic with quotes from the series passing into popular usage. It was also mentioned in the songs *Wow!* By Kate Bush and *Cool for Cats* by Squeeze illustrating its place in popular culture.
- The programme referred to the Kray twins, actual East End gangsters to establish credibility and make cultural links. Carter says about Kemble: '*He's hard. He's one of the few that The Twins left alone.*'

This Girl Can advert (2016)



© Sport England www.thisgirlcan.co.uk/

This Girl Can advert

(2016)

Component 1: Exploring the Media

Focus areas:
Media Language
Representation
Media Contexts

BACKGROUND CONTEXT

- *This Girl Can* is a national campaign developed by Sport England and in conjunction with a wide range of partnership organisations.
- The purpose of the campaign is to break down the primary barrier holding women back from participating in sport – the fear of judgement. The campaign seeks to target and celebrate ‘active women who are doing their thing, whatever that may be, no matter how well they do it, no matter how they look or even how red their face gets’.
- The campaign is currently funded by the National Lottery and backed by a government body, Sport England; there is no commercial aspect to it at all.

PART 1: STARTING POINTS – Media language

Social and Cultural Contexts:

- **Sport England** carried out a lot of research to figure out why there was such a big gender gap in **sports participation**. They discovered that two million fewer 14-40 year old women than men partake in sport regularly and they wanted to understand why.
- They discovered that:
 - » 13 million women said they would like to participate more in sport and physical activity.
 - » Just over 6 million of these are not currently active at all.
 - » Fear of being judged was the number one barrier for most women who felt they were unable to participate in physical activity.
- **As a result of the campaign, 1.6m women have started exercising** and the number of women playing sport and being active is increasing faster than the number of men.
- Soon after the launch of the “This Girl Can” campaign, **Nike** released a more motivational campaign called “**Better for it**” which also portrayed a more ‘real’ side to fitness.

Consider the codes and conventions of media language and how media language influences meaning:

- A **central, striking, image** that encourages the reader to become intrigued to find out more about the **advert**:
 - » **A mid-shot of a woman in her thirties, exercising.** Unlike many advertising campaigns, this female is **not a celebrity**. By purposefully avoiding using a sporting legend or an athletic goddess, the campaign is able to **target ordinary women of all ages**, encouraging them to take part in sport and showing them that they can achieve.
 - » The lack of celebrity means that the woman in the advert feels **familiar**. The female in the image has her hair scraped up into a ponytail, she is sweating a lot and her clothes are not what society would consider fashionable. For all these reasons, there is a sense that you know someone like her or, in fact, you are her.
- The **dominance of this image** suggests she is the **protagonist of this narrative**, the ‘hero’ according to Vladimir Propp’s character theory. She is heroic because she is embracing sport; she doesn’t appear to care what anyone thinks and has shed any inhibitions. She is an inspiration to other women as it is obvious from her facial expression that she is really enjoying herself and is completely lost in the moment.
- Across the image is what the **campaign** itself calls a **mantra**, “Sweating like a pig, feeling like a fox.” The campaign has taken a derogatory comment, “sweating like a pig” and turned it into something more positive.
 - » **Historically** it was considered un-ladylike to break into a sweat and, for many women, it is still the case. They don’t want to be seen sweating as it makes them red in the face, ruins their make-up and makes them feel unattractive. However, this mantra turns

this on its head and perhaps suggests that by working out, you are becoming healthier and therefore will become more attractive, “like a fox” – a fox being a young, beautiful lady.

- Towards the bottom but still central is the name of the **campaign, or brand logo**, “**This Girl Can**”. This is a very positive statement with **connotations** of determination. It is used to reinforce the idea that all women should exercise and also to convince them that if they try they can succeed in sport.
- If you were unaware of this campaign, the limited text and unusual image would act like an **enigma code** (Roland Barthes) for the audience, as we want to find out who this character is and what the advert means by, “This Girl Can”.
- In the top left hand corner of the advert, there is the **hashtag** “**#thisgirlcan**” connecting readers to the campaign’s social media pages, should they wish to follow it or find out more, and there are logos for the **producers** of the campaign – Sport England and the Lottery. These are much smaller and tucked away so as not to detract from the visuals. Use of the hashtag will hopefully connect women with like-minded others and bring a sense of **social cohesion**. It also allows the print campaign to take readers to the complete YouTube advert, allowing them to understand the campaign and see more positive representations of women enjoying sport.

PART 2: STARTING POINTS – Representation

Consider the social and cultural significance of representations of femininity:

- The campaign’s agenda is to encourage women to participate in physical activities by **challenging the dominant ideology**. In order to do this, the campaign portrays women extremely positively.
- **Stereotypically**, women have often been thought of as the weaker sex and often less successful, particularly where sport is concerned. However, this advertising campaign is seeking to **challenge these stereotypes** and convince women of their potential. The female in this image is portrayed from a positive viewpoint: she is represented as independent, confident and happy. There is a clear focus on her face, showing an expression of enjoyment and fun. By **selecting** such an image, the **producers are seeking to challenge the sexism** and male dominance in sport.
- The **processes of selection and production** have been carefully managed. This advert,

like the others in this campaign, has a certain ‘rawness’ to it, focusing on ‘**real**’ women. There is no glossy finish and it doesn’t resemble any of the high-end adverts produced by commercial sporting brands.

- » The females are supposed to be seen as heroic - **aspirational role models** for the readers. Audience members should see something of themselves in these women, bringing their own fear of judgement to the forefront and considering whether it is actually an appropriate fear to have when they see the amount of fun and enjoyment these women seem to be experiencing.
- In addition, the **brand name**, “This Girl Can” uses the noun “**girl**” as an all-encompassing term. It is used to represent (and target) **the whole of the female population** and make them feel **included**, a force to be reckoned with, a team, a united front.
- When used in the context of sport, “**girl**” can be thought of as having some negative connotations – “throw like a girl” is a common simile used to mock someone who cannot throw. It plays on the **stereotype that girls can’t do sport**. Perhaps then this statement is in response to that idea, “This Girl Can”.
- Interestingly though, considering that the campaign is targeting females of all ages, the word “girl” has been used rather than “woman”. “Girl” is usually associated with younger females and there is an argument to say that women over a certain age may feel disconnected from this campaign.

Topic 5: Urban Futures Case Studies



City in an LIDC or EDC, including one initiative to make it more sustainable – Istanbul, Turkey (EDC) Sustainable Transport



Location

- Istanbul is a coastal city in Turkey which is on 2 continents. Asia & Europe.
- The city is separated by the Bosphorous Strait – a 30km long strait which links the Black Sea in the North and the Sea of Marmara in the South
- Inland are steep forested hills with reservoirs leaving little space for expansion
- Over the centuries Istanbul has had three names and been at the heart of three empires due to its strategic location.



Population

- Istanbul is one of the fastest growing cities in the world. In 1950 there were approx. 1 million, by 2015 there were 15 million and by 2025 it is expected to rise to 20 million.
- Istanbul has grown due to **national migration** where people from other parts of Turkey move to the city in search of employment and better living conditions. Most jobs are in the **informal sector** (not monitored by the government or tax paying). These include jobs such as porters or waste recyclers.
- 28% of Istanbul's population were actually born in the city; showing high levels of diversity, however there are not high levels on international migration.

Istanbul's importance to Turkey

- Istanbul is home to 20% of Turkey's population, yet generates almost half of the country's wealth.
- The city is surrounded by agricultural areas producing cotton, fruit, olive oil and tobacco and it also plays a vital role in the manufacturing of textiles and food processing. However, today the fastest growing sectors are finance and tourism.
- Things tourists come to see:
 - Topkapi Palace – overlooks the golden horn and was home to the Ottoman kings
 - Golden Horn – small channel of water which is connected to the strait and separates old and new parts of Istanbul
 - Galata Bridge – cross the Golden Horn with a new tram link. Fisherman line the top of the bridge supplying fish to the restaurants
 - Faith – oldest district in Istanbul and is now the market centre. At its heart is the Grand Bazaar where you can buy a range of things

Residents

- 1960s – most of Turkey's population lived in the countryside and 20% in cities. Today it is around 70% that live in cities. Changes in the rural environmental causes rural to urban migration bringing workers to Istanbul.
- **Impacts of rural to urban migration in Istanbul** – they build squatter settlements or transformed old buildings as there were not enough houses. Squatter settlements are known as gecekondu in Turkey and they were built on the outskirts or any available land. They lacked basic services such as water, sanitation and electricity. Over time they have improved. Two examples are included below:
 - **Beyoglu** – fell into disrepair in the 1990s as most of the people here were poor and property prices were low. Now young professionals have moved in and transformed the area and increased property prices. As a result the poor people have had to move out as they can't afford it. This process of upgrading an area is known as gentrification.
 - **Esenler** – This was a village until 1980s when Istanbul grew into it. Most newcomers were poor and built squatter settlements made out of low quality concrete. They were high rise and densely populated. It is now being redeveloped with the gecekondu's demolished and replaced with high rise apartments.
- As the city has grown, its population has moved from living in the city centre (core) to living in the suburbs. This is known as **suburbanisation**.
- Jobs, services and shopping have also moved out of the city centre making way for high rise commercial centres to appear in the centre for finance industries.

Transport Issues & Solutions to make it more Sustainable

- Istanbul is one of the most congested cities in the world. Most commuters spend more than 2 hours a day in traffic. One of the biggest obstacles to transport is the Bosphorus Strait.
- There are 3 bridges linking both sides and 420 000 vehicles that cross them each day.
- **Some solutions include reducing car demand and improving the following:**
 - **Taxis/Minibus/Dolmus** – dolmus are taxis for 8 people. They have fixed routes but can stop anywhere.
 - **Company or School Bus** – many companies provide buses for their workers/students. This is a popular way of getting around Istanbul but buses only operate on fixed routes and times.
 - **Rail** – underground is a small network compared to other cities
 - **Ferries**- don't always link up with other forms of transport but are quick to get across the strait
 - **Bicycles** – it is often too dangerous in Istanbul and are seen as a poor person's transport
- **Marmaray Rail Project (revise this as a mini example)**– this aims to link both sides of Istanbul on the southern coast. When complete the line is expected to increase rail travel from 5% to 30% of passengers. It should also help take a lot of cars off the road and reduce air pollution.



City in an AC, including one initiative to make it more sustainable –Birmingham, UK (AC)
Birmingham Library



Location & Global Connections

- UK's second largest city with a population over 1.1 million
- Part of the West Midlands region
- It is a young and multi cultural city with 12 000 international students, a Jewellery Quarter (largest in Europe), and Jaguar Land Rover has 2 factories close to the city.
- It has its own airport and the HS2 is likely to stop here



Why Birmingham Grew?

- In 1700 Birmingham was a small market town of 10 000 people and grew during the Industrial Revolution as people moved to the city to work in metalworking and engineering industries. Having a railway to Manchester in 1837 and a canal in 1769 also helped the engineering industry
- By 1950 the population reached a peak of 1 112 000 but then fell as manufacturing decline and people moved away to find other forms of work
- Today – Birmingham's population is back on the up as a result of international migration and natural increase (where the birth rate is higher than the death rate)

Diversity & Urban Inequality

- During the 1950s and 60s migrants from south Asia and the West Indies came to Birmingham for work reasons.
- Since 2000 Eastern Europeans have migrated to Birmingham for the same reason
- In 2011 53% of Birmingham's population was white British
- On average Birmingham is higher than average people aged 39 years and younger and lower than average 40 years plus.
- Most of the ethnic minorities in Birmingham live in the central parts and these areas also have high levels of unemployment and inequality (see maps below). This can lead to poor educational achievement, child poverty and low household income.





Bullring & City Centre Regeneration

- At the heart of the city is Birmingham's Bullring shopping centre which was regenerated in 2003. Before this it was a run down area choked by traffic that made it dangerous for shoppers.
- As a result of the regeneration Birmingham is ranked 3rd highest as a retail destination in the UK (it was previously 12th) It has had improved transport links so people are encouraged to travel by rail and road and they have pedestrianised the streets to make it safer. Selfridges acts as an anchor store to attract more investment into the shopping centre.
- **As a result more places in Birmingham have been regenerated**
 - **Brindleyplace** – area around the old canals including the NIA and NEC
 - **Gateway Plus** – redesigned train station with a shopping centre
 - **Library of Birmingham** – opened in 2013 as the largest library in the UK
 - **High Speed 2 (HS2)** – A new high speed railway linking London to Birmingham – planned to open by 2026 bring more investment from London.

Sustainable Initiatives & The Library

- **Why be sustainable?** Cities consume 75% of the world's energy and produce 80% of greenhouse gases. This is not sustainable for future generations and as a result cities need to change.
- **What does Birmingham plan to do?** Birmingham wants to be a leading green city by reducing the amount of resources it consumes and the amount of carbon emissions it produces. However this also brings opportunities: the city could develop new, greener technology, it could become a smart city using fewer resources and its population could become fitter and healthier. All these things would make it sustainable.
- **Part of Birmingham's plan:**
 - **Birmingham Energy Savers** – plans to fit older houses with better insulation, double glazing and new boilers to make them more energy efficient
 - **Midland Metro** – light tram/rail network has been extended into the city centre, improving transport across the city centre and creating new jobs
 - **District energy schemes** – city centre is supplied with energy combined from a heat and power plant that saves money and reduces carbon dioxide emissions. Another scheme plans to burn waste to generate electricity for 40 000 homes.
 - **High Speed 2 (HS2)** – this is a railway to connect Birmingham to London by 2026 providing a quicker alternative to road journeys and helping to regenerate the city centre.

The Library of Birmingham – A sustainable initiative

- Opened in 2013 and is the largest public library in the UK (and sustainable!)
- Things which make it sustainable:
 - Built on brownfield land (it was a multi storey car park before)
 - Its function as a library is to develop a more educated workforce for a new knowledge based economy
 - 95% of waste material was recycled during construction
 - 250 people employed
 - Minimises carbon emission by using energy efficient systems
 - Makes use of natural daylight and ventilation
 - Uses less water by harvesting rainwater and recycling water
 - Has a roof garden to attract wildlife and improve biodiversity
 - Attracts 2.5 million visitors a year

Projects and timelines

Coursework- 2 Projects make up 60% of your final grade-

Food project- September- Christmas

Animal Project- January- October

Externally set project- Jan 1st- April
1 Project set by the exam board.
You will choose a topic from 6 titles to explore.

You will produce a sketchbook of preparation work and complete a **final piece under exam conditions**.
This is marked in exactly the same way as your coursework projects



Assessment criteria (AO's)

Your work is marked using four headings:

AO1 Develop ideas linked with artists

AO2 Refine ideas and experiment with resources, media, materials.

AO3 Record ideas and observations

AO4 Make a personal and meaning response

Each Assessment Objective is marked out of 24 giving you a total maximum mark of 96



Thumbnail sketch - A small idea sketch

Mark making – Using marks to create different textures.

Mixed Media – Artwork using more than one material.

Visual research – Pictures collected about a theme.

Visual analysis - When you copy a picture you are visually analysing it.

Research – Information visual or written about a theme.

Artist research page – Research presented in the sketchbook investigating the artists' style.

Refine – Carefully and thoughtfully improve.

Tone – Light and dark shading.

Tonal range – The shade in-between light and dark.

Texture – The way a surface looks to feel.

Linear – Using lines.

Contours – The imaginary lines that make the shape of an object.

Line - How will you draw?

Try out different ways of drawing.

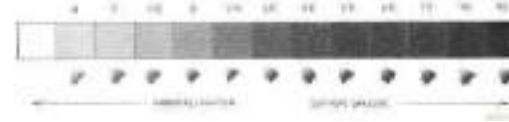


Drawing Ideas



Tone-

Adding tone makes your drawing look 3D. You need a wide variety of tones. Some must be really dark, others really light.



Ways of adding tone-

- Shade with graded pencils
- Use charcoal or pastel and smudge.
- Rub away tone to add highlights.
- Use a damp brush with pen to "bleed" tone.
- Use biro to add marks which build up to create tone.



Form

Form is the shape of something and how you make it look 3D



Making sure that you use **perspective** so that things disappear away from you.

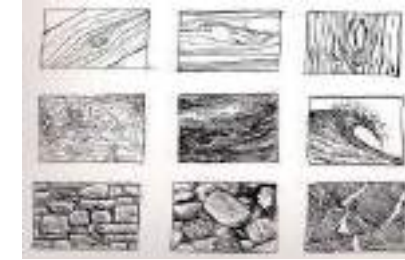


Use tone and shading to make objects appear 3D when they are actually flat



Using colour as tone-

Lighter colours make areas appear nearer, whereas darker colours make the shapes seem further away or sunken.



Use of marks and tone when drawing creates texture In your work. Experiment with different ways of making marks.



When painting you could either use brush marks and colour to show the texture, or try texture paste (gesso) which is like Polyfilla. You paint this on first, then paint over it.

You could also experiment with cling film, foil, scratching into paint, applying paint with a palette knife or glue spreader?

A03

Recording ideas, observations and insights



- Mind maps show your ideas.
- Make them visual and packed with thoughts.
- Add ideas even if you know you don't like them. You will still get marks.
- Make ideas personal to you.
- Ideas can be recorded in words, images, photos, drawings, video

Initial ideas and research/ moodboard

- What do you find when you Google your topic?
- Do you have photos on the theme?
- What have other artists done?

Put together one or more pages which will give you inspiration for your project. When you research you are looking for a range of ideas which you might want to pursue further.



A03- Record ideas and observations

Write down thoughts and ideas

Collect images

Draw from real life (observation)

Draw from images online or in photos

Take Photos /video

Look from different viewpoints

Try different designs

Annotate your recordings

Make mind maps or mood boards

Make maquettes or models

Work from personal experience where possible.

Give your thoughts and opinions.

Explain how your ideas change and develop and say why.

Artist research and inspiration AO1

All artists are inspired by other's work.

-

You will be looking at lots of different artists from different times and places to give you ideas.



Key words to help describe and analyse

Flowing, Delicate, Simple, Bold, Thick, Subtle Contrasting, Muted, Dramatic, Rough, Fine, Smooth, Coarse, Uneven, Organic, Curvaceous, Geometric, Angular, Elongated, Swirling, Flowing, Dramatic, Subtle, Strong, Bold, Vibrant, Pale, Earthy, Naturalistic. Dab, daub, dry brush, energy, layer, scratch, Natural, clear, compatible, distinctive, lively, stimulating, subtle, sympathetic, artificial, clashing, depressing, discordant, garish, gaudy, jarring, unfriendly, violent, bright, brilliant, deep, earthy, harmonious, intense, rich, saturated, strong, vibrant, vivid, dull, flat, insipid, pale, mellow, muted, subdued, quiet, weak, cool, cold, warm, hot, light, dark, blended, broken, mixed, muddled, muddied, pure, complementary, contrasting, harmonious, flat, polished, smooth, raised, cut, incised, pitted, scratched, uneven, hairy, soft, hard, shiny, glossy, reflective, satin, silk, frosted, matte, bold, timid, heavy, light, edgy, washes, stippling, hatching, splatters, flat, precise, refined, regular, straight, sketchy, uneven, irregular, vigorous, regular, patterned

Writing about artist's work

Content

What is in the picture?

How is it laid out?

Where is your eye drawn to? Why?

Is there any background? How much? Why?

Mood

What is the mood of the picture? Why?

What colours and marks have been used? Why?

How does it make you feel?

Process

How has the picture been drawn/ painted?

How was the medium applied?

What are the marks like?

How was it done?

Use lots of descriptive language to describe in detail how the artist has drawn/ painted/ created

Your project

How has the image/ artist inspired you?

What ideas/ styles will you take forward?

How has looking at this artist helped you?

What will you do next?

Developing ideas AO1



Developing is all about taking ideas and exploring them, using different artist styles and developing your own

To do this you could-

- Try painting/ drawing from your own photos using an artist style- What have you learnt about the artist/ style by doing this? How has it helped/ inspired you?
- Try different layouts or compositions for a picture. Which is the most visually pleasing? Which has the most impact? Why. Think about unusual angles/ shapes/ lighting.
- Experiment with materials and techniques-
- Could you combine materials?
- Could you apply your paint in a different way? Could you mix artist's styles to create your own?
- Try to make the project personal to you. - Use your own pet as a subject. Study food that you enjoy eating. Make a cake and photograph it? Go to a fast food restaurant? Take lots of your own photos!

The examiner wants to see that you are **testing, experimenting, developing, reviewing and refining (improving)** your ideas.



Show a Personal response AO4

You need to show a personal response by-

- Showing that you can analyse other's art. Give your thoughts and opinions.
- Show that you have lots of ideas for the project by taking photos, doing research, finding your own artist and ideas.
- Trying something different. Look at drawing painting from unusual viewpoints or angles. Include your beliefs or personality. Get passionate about your topic!



AO2- Refine ideas and experiment with resources, media and materials

- Try different techniques, paint, pens, pencil
- Take one of your ideas and explore different materials. You could paint, draw, use pen, change the kind of marks you use,
- Try applying paint in different ways, mix medias.
- Try different artist's styles and then develop your own. Use texture?
- Show samples of your testing.
- Evaluate your ideas.

Remember. REFINE means that you are gradually trying to improve and make your idea better



UK Physical Characteristics

- Most mountains are located in the **north** and **west**, such as Wales and Scotland.
- These areas have **few roads** and **settlements** but beautiful scenery. – Sparsely populated.
- South** and **east** of the UK is **flat** with a few hilly areas.
- These areas are suited for **settlements, roads** and **railways** – Densely populated.
- Rivers flow from mountainous areas down to the sea.



UK Rainfall Patterns

- Highest rainfall is in the north and west** where average rainfall is **2500mm**.
- Lowest rainfall** is in the **south and east** with average rainfall of **500 – 625mm**.



UK Relief Rainfall

Most UK rainfall is caused by **prevailing wind** blowing from the southwest.

When air carrying moisture reaches upland areas, it is **forced up** to produce **relief rainfall**.

The other side of the upland area has **little moisture**, this is called the **rain shadow**.



Water stress in the UK

Water stress is when areas have limited water supply.

Problems

- Most rainfall occurs in **North & West** but least rainfall in **South & East**.
- South & East UK therefore have **High demands**.
- Demands involve domestic, industrial & agricultural uses.

Solutions

- Water can be **transferred** from the wetter west to drier east by **pipelines** or rivers.
- Construct **new reservoirs** in the east to capture/store more water.
- Greater **water conservation**.

Land use in the UK

Land use varies throughout the UK. However our land is always changing. Nonetheless, the vast majority of the UK is farmland.

UK mountain areas (Scotland) have rough pastures and moorlands. The climate is harsh and soil is poor for crops

Grasslands are found in the west. It is ideal for cattle and sheep because of the mild and wet climate.



Grasses
Arable 52%
Urban 20%
Forest 14%
Water 12%
Other 1%

Arable farmland dominates because of the warm, sunny and dry climate. Crops such as cereals and vegetables are found in the South and East.

Coniferous woodland are found in northern England, Wales and Scotland. There areas have poor soils and are remote.

Urban areas are growing. This outward growth or sprawling urban developments is caused by population growth.

Topic 7

UK in the 21st Century

Population in the UK

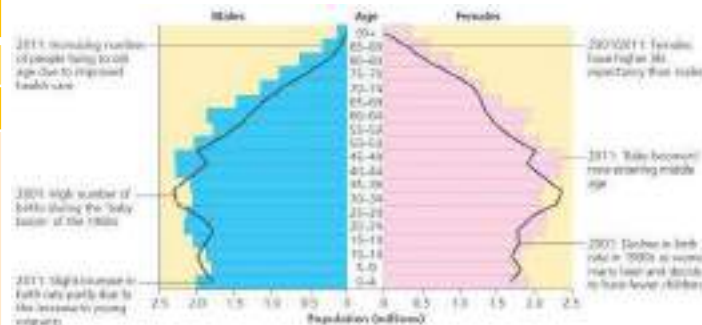
The UK population is 65 million and still rising. It is predicted to reach 70 million by 2030.

Reasons for growth

Natural increase – the difference between deaths and births.
Net migration – the difference between immigration to the UK and emigration from the UK.
Life expectancy – the average age someone will live up to.

Future of growth

The UK's **population pyramid** shows that the country's birth rate is fairly low and death rate is also low meaning there are more elderly people.
Population pyramids are useful to help plan for the future.



UK Population Distribution

Low

Much of Northern Scotland is **sparse** due to a **mountainous landscape** and **difficult climate**.

High

Rest of the UK because of the **gentle hills, moderate climate** and **good transport routes**.

Very High

Population is **concentrated** around the South East of England, in cities such as London, due to attractions of **employment, shops** and **entertainment**.



Factors affecting population density

Moderate climate.

Remote and poor communications.

Opportunities for work

A presence of raw materials.

Steep and mountainous.

Fertile and suitable for farming.

Poor quality of soil.

Plentiful supplies of water.

Flat land for farming.

UK Housing Shortage

Problem and Reasons

- The UK **population** is **rising** and therefore **more houses are needed**.
- UK needs to build **240,000 homes a year**, but only half that are built.
- As a result, **house prices are rising** and becoming too expensive.

- Planning permission for new houses leads to **local opposition**.
- Green belt areas** prevents urban areas becoming bigger.
- The **price of lands keeps rising** due to demand.



Demographic Transition Model (DTM)

As countries experience economic development they also go through **stages** of population transition. The DTM describes this change and shows the UK in stage 4.

- Birth rates high and death rates fluctuates.
- Birth rate high but death rate is falling rapidly. Natural change increases.
- Birth rate and death rate falling rapidly. Natural change is rapid.
- Birth rate and death rate is low and fluctuating. Little Natural changes.
- Birth rate is falling and death rate is rising slightly. Natural change falls.



Ethnic Diversity in the UK		UK Employment Sector		The UK's Role in the World	
13% of the population in the UK were born in another country. - In Birmingham, this value is about 47%. This has increased between 2001 and the present day. - The change was driven by an increase in white non-British, Black African and Asian people. (Indian and Pakistani.		Key changes since 2001 - The quaternary industry has increased, whilst secondary has decreased. - Number of people employed in primary and tertiary industry has stayed the steady. - Big increase in professional and technical jobs. - Employment in manufacturing has decreased the most due to cheap labour abroad.		The UK may be a small island state, but it does play a significant role in the wider world. It is also part of several key international organisations.	
UK Ageing Population		UK Working Hours		NATO	
Distribution of Ageing Population		UK's Core Economic Hubs		UN	
Causes		Aberdeen		G7	
Effects		Salford		A group of 28 countries who work militarily and politically to resolve conflict as a last resort.	
Response		Bristol		Is made up of 193 member states with the aim of maintaining peace and resolving issues . UK is part of the Security Council .	
UK's Changing Economy		Case Study: UK Economic Hub - London		Involves seven of the wealthiest western countries to discuss relevant issues and come to economic agreements .	
Political Changes		Change Over Time		Case Study: The UK in Resolving Conflict in Ukraine	
		Significance to the UK		Basic Background	
				UK Involvement	
				UK Media Exports	
				UK's Media's influences	
				Multicultural UK	
				Fashion	
				Media	
				Food	

Explorations in Creative Reading (GCSE English Language Paper 1 Section A – AQA)

Q	What is the Q asking?	Subject terminology		Excellence criteria	Sentence starters
Read	5-10 mins to read the source				
1: facts	Read lines... to ... List 4 things you learn about ... 1. Re-read the specified lines. 2. Copy 4 facts: do not infer. 4 marks – 5 minutes			o Focus on facts, not inference or analysis o You can quote the text	
2: analyse language	Read lines ... to How does the writer use language to present ...? 1. Re-read the specified lines. 2. Highlight or underline 3 quotations relevant to the question. You can quickly annotate. 3. Write 3 PEEA paragraphs responding to the question. 8 marks – 10 minutes	1. Adjective: describes a noun 2. Adverb: describes a verb 3. Alliteration: words start with same sound 4. Allusion: reference to another text or event 5. Colloquial language: informal language 6. Euphemism: replacing an offensive phrase with milder words 7. Hyperbole: over-exaggeration 8. Imagery: visual language 9. Imperative verb: command 10. Juxtaposition: contrasting ideas 11. Metaphor: comparison	12. Modal verb: shows possibility e.g. could, might 13. Onomatopoeia: words which sound like what they describe e.g. boom 14. Oxymoron: combines contradictory terms e.g. a minor crisis 15. Pathetic fallacy: using the weather to set the emotion or mood 16. Personification: giving an object human characteristics 17. Semantic field: group of words with similar connotations 18. Sibilance: repetition of “s” sound 19. Simile: comparison using “like” or “as” 20. Symbolism: image represents an idea 21. Triple: list of three 22. Verb: action word	Point o Respond directly to the Q using precise vocabulary o Use “in order to” to address key concepts Evidence o Select precise evidence o Embed fluently in a sentence Explain / analyse o What do the words suggest, imply or symbolise? o Explore more than one word, idea or interpretation o Use subject terminology	The writer portrays ... as ... in order to suggest that... This is clear when we read “...” Evidence of this is “...” This means that... We learn that... The writer communicates that... The word / language device suggests / conveys... This indicates that... In addition, the word / language device is used because... This reinforces the idea that...
3: analyse structure	Use the whole source. How does the writer structure the text to interest you as a reader? 1. Identify 3 or more structural devices, choosing one from the beginning, one from the middle, and one from the end of the text. 2. Write 3 PEEAs responding to the question, thinking beginning, middle, end. 8 marks – 10 minutes	Beginning: Narrative perspective A. 1 st person: told from the character’s perspective (I) B. 2 nd person: directed to the reader (you) C. 3 rd person: external narrator (he, she, it) D. Limited narrator: doesn’t have full knowledge of the situation E. Omniscient narrator: full knowledge and understanding F. Unreliable narrator: we question the narrator’s credibility Beginning: Introducing Ideas G. Establishing setting H. Introducing character(s) I. Establishing an atmosphere	Middle: shifts in... J. Focus K. Place L. Time (flashforward / flashback) M. Narrative perspective N. Atmosphere / mood Ending: O. Circular structure: the narrative ends where it begins P. Cliff-hanger: the narrative ends suddenly Q. Resolved ending: loose ends are tied up R. Unresolved ending: loose ends are not tied up Overall structure: S. Linear: events are told in the order that they happen, chronologically T. Non-linear: events are not in order U. Motif: a pattern of ideas, images or words repeated throughout the text	Point o Respond directly to the question using precise vocabulary o Use “in order to” to address key concepts Evidence o Select precise evidence o Embed fluently in a sentence Explain / analyse o Explore the effect of the structural device o Use subject terminology	The writer structures the text by... in order to... The writer introduces the idea of... The writer focuses on... The writer develops the idea of... The writer draws the extract to a close by... This is evident in the line “...” The structural device is used because... This suggests that... This introduces / develops... This focusses our attention on... The writer zooms in on... because...
4: present a point of view	Read lines ... to ... Having read this section of the text, a student said “.....” To what extent do you agree? 1. Re-read the specified lines. 2. Agree/disagree table. 3. Write 4 PEEA paragraphs. 20 marks – 20 minutes	All language and structural devices Use XXOX to structure your argument: X: strongest agree point X: next agree point O: other side of the argument – if relevant X: final agree point		See Question 2	See Question 2

Analytical verbs:

- o **presents:** portrays, conveys
- o **shows:** demonstrates, illustrates
- o **suggests:** hints, implies, indicates
- o **reveals** that...: exposes, clarifies
- o **emphasises:** confirms, highlights
- o **creates** debate about...: initiates, generates, provokes
- o **explores** the idea that...: considers, prompts, questions

- o **challenges** the idea that...: confirms
- o **confirms** the idea that...: supports, justifies, develops
- o **believes**...: perceives, trusts, learns, observes
- o **considers**...: appreciates, clarifies, examines
- o **sympathises**...: emphasises, senses, pities, understands
- o **discovers**...: realises, understands, decides, concludes
- o **develops** the idea that...: builds, changes

Explorations in Creative Writing (GCSE English Language Paper 1 Section B – AQA)

Example question:

Write a description for a magazine inspired by this image:

OR

Write the opening of a story about isolation.

24 marks for content and organisation, 16 marks for technical accuracy



Developing your character:

Before the exam, you need to create a fully developed character and know everything about them. When you go into the exam, you can “drop” your character into the image to give you a starting point.

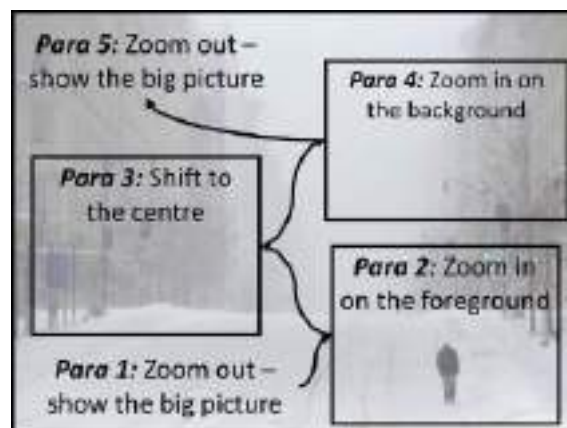
Make sure you know your character’s...

- o Family and education background
- o Experience of work and employment
- o Experience of historical events e.g. World War Two
- o Personality and characteristics
- o Likes and dislikes (food, clothes....)

For each of these, ask yourself **why**. E.g. Why does my character become angry easily? Why did my character leave school at 16?

Excellence criteria for self-assessment

Structuring your writing 1: take a journey through the image



Structuring your writing 2: circular structure



Using descriptive language: show, don't tell

We use a range of language devices to show rather than tell the reader what the character is doing. E.g. She was sad. → Her body drooped. Slowly, she wrapped her arms around herself, hoping to stop herself shattering into a million pieces. As her lip began to quiver, a single tear fell.

Use all the language devices listed on the other side of this Knowledge Organiser (see Question 2) to describe:

o Facial expression	o Reactions to other people	o Changing weather
o Body language and movement	o Tone of voice	o How an object moves
o Clothing and appearance		o How an event makes the character feel

Using a range of sentence structures – start with...

1. Two –ing verbs	Raising a hand...
2. Two or three adjectives	Humid and clammy, the air...
3. Two –ly adverbs	Rapidly, quickly, the bird...
4. A preposition (over, under, in)	Under the moon, the river...
5. A simile	Like a...
6. A connective:	First, we..
7. The noun – adjective, adjective – sentence:	The tree – bony, twisted – grew...
8. More, more, more sentence:	The more he cried, the more he felt...
9. The so, so sentence:	It was so small, so tiny...
10. It was one of those days...	It was one of those days when...

Using a range of punctuation

.	End a sentence
,	Separate clauses in a sentence (where you take a breath)
-	Add additional information in an informal way
;	Add additional information – full sentence before and after the ;
:	Introduce a list OR a shocking idea e.g. Morning arrived: disaster!
()	Include additional information that isn't essential to the sentence
?	Pose a question
!	Show shock or surprise (use sparingly)
...	Build tension or leave a gap
'	Indicate possession (Amy's work) or omission (I can't do it)

Content and organisation: 24 marks

Target

Communication is convincing – it reads like a novel / short story

Communication is compelling – it is a short story I would be interested in reading

Tone, style and register are matched to audience – you have written in the style of a novelist

Extensive and ambitious use of vocabulary

Sustained crafting of linguistic devices – you have used a range of language devices throughout

Use of structural features – e.g. circular structure

Inclusion of a range of complex ideas – e.g. you explore different moods, emotions, aspects of character

Paragraphs are linked

Technical accuracy: 16 marks

Sentence demarcation is accurate – full stops, commas etc are in the correct place

Wide range of punctuation used accurately

Uses the full range of sentence forms for effect

Secure control of complex grammatical structures

High level of accuracy in spelling

Extensive and ambitious use of vocabulary

KNOWLEDGE ORGANISER: LANGUAGE PAPER 2

OVERALL TIMINGS

	Time	Extra Time (25%)
Exam	1 hr 45 mins	2 hrs 10 mins
Section A: Reading	1 hr	1 hr 15 mins
Section B: Writing	45 mins	55 mins

INITIAL PREPARATION STEPS

On the **insert** read & underline the **context/background** information- this is on the front page and on the **top boxes above each source**. *Understanding this will help you with the rest of the questions* (1 min)

Go straight to **question 1**- only read the relevant source and line numbers. Then answer the question. (4 mins)

Move onto **question 2**. Read the question. Now you can read both sources fully and follow the steps below.

Work your way through the **rest of the exam**.

QUESTION 1 (4 MARKS)

This tests your ability to: understand explicit (obvious) and implicit (less obvious) ideas (facts, words, implied meanings) in the source text.

Time: 4 mins

Extra Time: 7 mins

Preparation Steps:

Read the **question** carefully and **underline** key words

Read the **relevant source** and **line numbers** carefully- don't rush

Writing Steps:

Shade in **four** circles

If you make a mistake put a cross through the whole box.

QUESTION 2—SUMMARISE DIFFERENCES OR SIMILARITIES (8 MARKS)

This tests your ability to: make **inferences** (to interpret implied meanings) and **compare** texts.

Time:

Reading both sources: 10 mins

Writing your answer: 10 mins

Extra Time:

12.5 mins

12.5 mins

Preparing to write:

Read the question carefully and **underline** the **question focus** (you may be asked to compare similarities OR differences)

Read the two sources, underline around **2 key quotations per source** linked to the question focus. Pick quotations which allow you to **infer** (dig under the surface for hidden meaning)

Writing Steps:

Paragraph 1: Source A

Provide 1-2 quotations and make perceptive inferences about them

In source A the is/are described as... + quotation 1

This implies.....+ inference

Furthermore+ quotation 2... this suggests.....+ inference.

Paragraph 2: Source B

Make a comparison with source A, then provide 1-2 quotations and make perceptive inferences about them

However, in source B the is/are described as... + quotation

This implies.....+ inference

Furthermore+ quotation 2 This suggests..... + inference

Make a final link back to source A. *This contrasts to source A...*

Further tips:

Some students prefer to weave more between source A and B which is absolutely fine (A-B-A-B)

Aiming High?

Integrate your evidence into your sentences

Develop inferences further— be perceptive!

Examiner's tips:

You'll get more marks for making developed inferences on just a couple of quotations than making lots of underdeveloped inferences.

QUESTION 3—ANALYSING LANGUAGE (12 MARKS)

This tests your ability to: analyse the effects of the language choices of the writer

Time: 15 mins

Extra Time: 20 mins

Preparation Steps:

Read the question carefully and **underline** key words

Draw a box around the relevant line numbers from the given source

Think: what is the **overall impression** you're getting of whatever it is the question has asked you to focus on?

Briefly highlight and annotate the extract, looking for key words and phrases that help create that effect. Consider the **connotations** of words/phrases/images

Remember- an examiner is always wanting you to explain **how a specific method/quotation achieves a particular effect**.

Look for **language patterns/motifs** throughout the extract

Avoid:

Choosing quotations which are difficult to analyse or you don't understand

Being vague in your analysis. Never write *this creates an image in the reader's mind!* Or *this creates a positive/negative tone*.

Vague comments about colour imagery eg. *"white represents purity"* - unless it's actually useful to your answer!

Writing Steps:

Start with a big idea about the question focus eg. *The writer presents the waves as completely unstoppable...* Give some evidence (QUOTE) and analyse your evidence in detail—ZOOM IN.

The writer presents... This is first shown when "....." The writer here uses (technique) to imply... Furthermore the word "....." could suggest...This idea is further exemplified in the quote "....."

Write your answer using **short embedded quotations** using phrases like *this: suggests/implies/indicates/emphasises/ highlights* etc

You may wish to use **alternative interpretations** of quotations. *Alternatively this could imply...*

Language methods include:

Semantic field, extended metaphor, verbs, adverbs, nouns, adjectives, imagery, metaphors, similes, personification, contrast, juxtaposition, oxymoron, repetition, alliteration, lists, onomatopoeia, symbolism etc

Turn over for questions 4 and 5!

Aiming High?

Group your quotations together into groups and look for overall effect

Write about how language in the extract links to the 'big abstract ideas' in the source eg. Man vs nature etc.

Short integrated quotations

Detailed and perceptive exploration of effects.

Examiner's tips:

Choose the richest bits of language you can really pull apart. Don't get hung up on writing about a particular line just because it's a simile! Find something you can really comment on the effect of.

QUESTION 4: COMPARE WRITER’S PERSPECTIVES (16 MARKS)

This tests your ability to: Identify writers’ perspectives, compare these perspectives and analyse the methods used to show these perspectives.

Time: 20 mins **Extra Time:** 25 mins

Preparation Steps:

Read the **question** carefully and **underline key words**

Skim-read both texts. Establish and make a note of the perspective/feelings/opinions of each writer in relation to whatever the question has asked you.

Now go through each source and underline key **quotations** and **methods** which reveal the writers’ perspectives/ feelings/views

Structure is a useful **method** to look out for- especially if the **tone** changes through the progression of the text, eg an optimistic tone changing to a despondent tone.

Look to find opportunities to compare **‘like with like’** (ie make comparisons which deal with similar things in both texts)

Writing Steps:

Intro: Write a short introductory paragraph in which you clearly explain **WHAT** both writers’ perspectives are.

In source A the writer is + perspective..... Whereas in source B the writer is + perspective....

Main Body: Now move onto **HOW** these perspectives are presented.

Source A: Write about a key method and quotation the writer uses to convey their perspective.

The writer in source A believes/feels/views etc + perspective + quotation and method + analysis/zoom in/further evidence/zoom in

Move over to Source B by making a comparison.

*In contrast OR similarly the writer is source B + perspective + quotation and method + analysis/zoom in. Try and make a comparison back to Source A *This is different to Source A....**

Move back to Source A and look at another perspective - later in the text for example. Perspective+ quotation and method + analysis

Now move back to Source B, making a comparison with Source A. Perspective + quotation and method + analysis

Learn useful perspectives/feelings words eg:

bitter, angry, resentful, calm, respectful, fearful, suspicious, regretful, vulnerable, nostalgic, over-awed etc-add your own.

Aiming High?

You need to show a detailed, nuanced understanding of the perspectives: not just the obvious.

Look at how perspectives shift or develop throughout the sources; explore the writer’s tone as a method.

Be selective with your quotations (remember ‘judicious’) and integrate evidence into your paragraphs.

Keep making links back and forth between sources

Examiner’s tip:

A **‘perspective’** can be defined as how the writer is **‘positioned’** in relation to what they are writing about. For example are they part of the action OR an outsider/observer, experienced OR new to this, at the start looking ahead OR at the end looking back etc. The **context boxes** at the top of each source are helpful here.

Aiming High?

Think about clever structural techniques you can use eg. Extended metaphor

Use sophisticated vocabulary and develop your arguments thoughtfully

Check your accuracy:

Sentence variety- some longer and some shorter for impact, including single word sentences. *And these people think they’re right. Wrong!*

Accurate basic punctuation: Full stops, commas, capital letters

Accurate advanced punctuation: apostrophes, colons, semi-colons, dashes, brackets, exclamation/question marks

Accurately used ambitious vocabulary—avoid words you don’t understand!

QUESTION 5—WRITING TO ARGUE/PERSUADE (40 MARKS—24 CONTENT; 16 ACCURACY)

This tests your ability to: clearly argue a point of view in relation to a given statement, structure writing for effect, develop arguments fully, write with accuracy, use impressive vocabulary.

Time: 45 mins **Extra Time:** 55 mins

5- plan, 35-write, 5- check 10- plan, 40-write, 5- check

Preparation Steps:

TAP the question: **Text type** (what eg letter, article, speech) **Audience** (who eg parents, editor, headteacher, Yr 11), **Purpose** (why) and underline the **question focus in the statement**

Consider your **viewpoint** in relation to the statement. What are you going to argue? You must have a strong viewpoint—**do not sit on the fence!**

Plan and sequence (number) your ideas (steps 1-3= 5-10 mins)

Write- in a **formal style**, 2-3 sides of A4 is fine (30-35 mins)

Check for clarity of argument and technical accuracy (5 mins)

Writing Steps/suggested plan:

Suggested plan:

- Intro-make this punchy, clearly express your point of view. It helps to give a scenario. Picture this.../Imagine the scene... + statement which gives your point of view**
- Argument 1 To begin with/firstly/etc...**
- Argument 2 But that’s not all...**
- Argument 3 Finally...**
- Conclusion-make this punchy and thoughtful .**
Link your conclusion back to your introduction paragraph in some way.

You can use **some** persuasive devices **carefully** such as personal pronouns (we/you/I), emotive language, direct address, rule of 3, rhetorical question, repetition. These should be used sparingly and are not a substitute for the quality and detail of your arguments.

More sophisticated persuasive features/approaches you should use include:

Cyclical structure- so your conclusion refers back to the scenario in your argument

Humour/sarcasm/irony- this helps give you a lively, engaging voice.

Comparisons (metaphors and similes) and **contrasts**. Extended metaphor that runs throughout your whole piece.

Hyperbolic (over-exaggerated) language-often to ridicule an idea eg: *It is ridiculous/outrageous that today’s students..., This glaring inconsistency highlights the need for... If this is considered ‘civilised behaviour’ then...The current state of affairs is ludicrous...*

Discussion of ‘big ideas’- morality, political issues, gender, class

Integrated discourse markers ie connectives/phrases which develop your argument eg: *Let me ask you a question..., What is often forgotten..., Of course..., You could be forgiven for thinking..., You may wonder how/why... In my experience...It is undeniable that...Whilst I agree that... it is nevertheless... It is generally agreed that... You only have to look at...Take for example...*

Try this!

A clever structural technique is dystopia to utopia.

Paragraph 1: set out the worst case scenario in colourful expressive language.

Body paragraphs: give your arguments as to how this could be changed for the better.

Conclusion: present the ‘utopia’ (ideal scenario) in colourful expressive language: how you see the future if your argument is taken into consideration!

Examiner’s tips:

You are being assessed on your argument and how it is structured. Remember to **develop** your points by giving **examples** or **ideas** from your own life/experience, or borrow from the source material!

Examiner’s tips:

Think carefully about how you link your paragraphs:

But that’s not all/ closer to home..../this isn’t the only reason that.../and while we’re on the subject,

Analysis - example

Looking at the data I collected I could analyse information about the environment, residents ideas about each area, my own observations and the crime risk results.

The environmental survey showed that Sibson Road is the best area with these observations and the worst area was Woodgate. The best score was 9.6 on average for Sibson Road and the worst Woodgate with a negative score. An average result was worked out to avoid a biased opinion about that one area, this shows that area 1 (Sibson Road) is the best and the worst was area 3 (Woodgate). My graphs showed the quality of life and environmental quality in each area and they clearly show that area one is the best (Sibson Road). Then Beaumont Leys Lane and lastly Woodgate.

My questionnaire table showed what people thought about the area. In some cases it was hard to find people so we used other people's results to help us with our findings. I used some of my classmates data to compare results as this gives us a wider range of information to look at, the best things about Sibson Road according to the public were that there is a variety of shops, lots of public transport, lots of space,, it has good public services and safe road crossings. The best things about Woodgate were that there are plenty of shops, access to green space, good public services, transport public services e.g. bus stations and nearby primary schools. The results showed both areas had good aspects.

However there were bad things to do with these two areas. In Sibson Road the public said there is not enough parking, it's too noisy by the road, a lot of charity shops surrounding the street, not enough CCTV and inappropriate language is heard throughout the area. The public said the worst things about Woodgate was that traffic is really bad in the area, its noisy around the roads which can affect people's health, the crime rate is high, poor housing, poor parking, high levels of vandalism and cramped housing. When asked about the quality of life and crime fear I found that Woodgate gets worse scores in the opinions about each area where the questionnaire could be used.

The crime table showed opinions about the level of crime in each area. I used average data results which showed the lower the overall score the less risk of crime that happens in that area. I would therefore say the area with the lowest crime risk is Sibson Road with an average score of 31.4 in the area, on the other hand I would say Woodgate is the least safe area to live in with a score coming in at 42.4 in the area. These finding are backed up with a GIS website, the website that I used was www.police.uk which showed the level of crimes in one month, [this data is a secondary source as I got it from a website so I didn't collect the data myself. I can see that levels are highest towards the centre of Leicester and the numbers drop as you move further away from the centre of Leicester. This is possibly because it's less busy towards the outskirts of Leicester so it's rarer for crimes to be committed.](#)

The worst crimes such as anti-social behaviour and criminal damage will have an impact on people's quality of life in each area as it may affect them directly and can also effect the amount of people that actually visit that area. This can affect their annual income as not many people want to live and work in areas with high crime. Woodgate gets far more of these crimes than the other areas.

Conclusions - 'You find less deprivation as you move away from Leicester city centre'. – example

Levels of deprivation change as you move away from the city by looking at all the data collected you can see that there is an increase in deprivation as you move closer to the city centre.

Looking at the environmental survey I can see clearly that Sibson Road is the best area in terms of building quality, crime rates and the infrastructure of the area. This is calculated by using other pupil's data to come up with an average score of the area. Looking at Woodgate you can see that the area is deprived as crime rates are extremely high and that the environment isn't good to live in. You can also see that Beaumont Leys Lane is much the same but has improved by the means of a lower crime rate. The environmental survey shows that the areas which are the most deprived are Woodgate and Beaumont Leys Lane.

My secondary crime data showed a lot about each area as it indicated the levels and types of crime which can also help you decide which area is the most deprived. Firstly Sibson Road the least amount of crimes with an average number of 105 crimes in June, with vehicle crime being the most common crime. Secondly Beaumont Leys Lane has an average number of 368 crimes in the area and robbery and sexual offences are the most common. Lastly in Woodgate the number of crimes were very high possibly often due to the lack of policing and security cameras in the area with 1180 crimes on average in the area with sexual offences being the most common. All of this information seems to support the Burgess model as you can see that when you move further away from the city centre, quality of life and levels of deprivation improve because the environment quality increases and crime rates decrease. Looking at all the data you can see that the worst area with the most deprivation is Woodgate which is close to the centre. This reflects what Burgess said about cities with the poorest, oldest most run down areas being closer to the city centre and more modern, better housing areas growing on the edge of cities in suburbs.

Evaluation – example remember you can talk about each part of the fieldwork enquiry here..

The methods that I used were easy to understand and therefore, it was easy to gain my results E.g. **The bi polar technique used for environment quality and risk of crime was good for showing data as it allowed me to -**

- Judge a range of environmental characteristics or crime risk quickly.
- The scoring system used was easy to work with and clearly showed differences between areas.
- It allowed me to easily analyse the patterns found in each area and compare them.
- Knowing that these were based on my opinion I was able to sample a number of other people's data and average out the results to find the mean results. This helped to reduce the bias.
- When drawn up it is easy to compare the 3 sites against one another. It gives a clear visual idea about how and where the areas are different and similar for both the environment and crime risk.

Collecting Data for Deprivation

Crime- example

A crime risk survey uses an observer's judgements to assess crime risk against a range of indicators. Often they work on a sliding scale of quality (like 1 to 5) to represent less good to good. We used this for the crime risk survey we did. As it is based on personal judgements the data collected using crime risk surveys is *subjective just like the environmental bi-polar survey*. Sharing the scoring results between different people helped improve on this single opinion and reduced the issue of bias.

We also used another GIS website to investigate crime levels in each area.



This allowed us to collect trustworthy secondary data. Using area postcodes allowed us to look at the number of crimes in a 1km² area around each postcode in each month of the same year. We were also able to look at and compare the types of crimes committed.

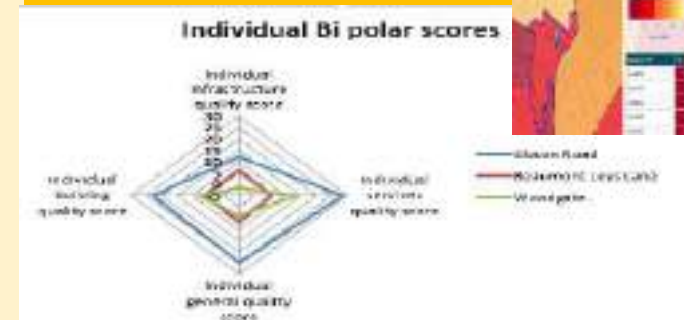
Data presentation

A range of techniques were used to show the information collected. Bi polar charts were used to show the contrasting differences in each area. They were visually easy to compare and see differences in the 3 areas straight away. The scores could be added up for each area and then other peoples scores were taken and an average score for each area could be worked out. Sharing the scoring results between different people helped improve on this single opinion and reduced the issue of bias.

A range of bar charts were used to show the overall results and compare these across the 3 areas. Use of titles and axis labels allowed clear and accurate comparisons of the data to be shown. Maps were also used. Secondary data from the IMD site uses a choropleth mapping technique with the score for each area shown with colours that can be interpreted from a key. We also used a radar graph to show clear differences in the averaged scores and make decisions about which area showed more or less deprivation issues.



Radar graph - example



Fieldwork 2

Introduction

You started with a 'hypothesis'.

'You find less deprivation as you move away from Leicester city centre'.

- You had 3 sub hypotheses or aims to help you answer the main hypothesis..
- You investigated if the environment, building quality, services or infrastructure improved as you moved further from the centre?
- You investigated if people thought quality of life was better further from the city centre?
- You investigated if the risk of crime falls as you move further from the centre?

Investigating deprivation in Leicester.



Deprivation is the lack of services/ facilities considered to be basic necessities in a society.

Deprivation expectations

You expected to see deprivation levels change because you had studied the idea as part of your GCSE geography course and looked at secondary evidence about deprivation for this area. The evidence you used is called **the Index of Multiple deprivation (IMD)** which is produced by the UK government. The index looks at a range of information such as the ideas shown to the right.

Planning the fieldtrip - Risk Assessment

It is important to complete a risk assessment so that you are aware of the potential dangers of the investigation you are going to carry out and so that you can be prepared in the event of an accident.

Locating the study area – Using a range of maps. Different scales helped to show the UK and more local settings – Leicester - Sibson Road, Beaumont Leys Lane, Woodgate in Leicester. You used a GIS website to help show IMD maps of the local area and compare these to satellite images – the GIS allowed you to compare different areas showing the deprivation levels for the three sites along the A6 road.

The Burgess Model and Hoyt Model

We did this investigation to see the differences in the quality of life and level of deprivation in the areas we visited (Sibson Road, Beaumont Leys Lane, Woodgate in Leicester). You followed a line of study moving out of the city – a transect. This followed the A6 road. You had to see if you could use either the Hoyt or Burgess models to get an idea of what to expect in different areas of the city. One of the most famous of these is the Burgess or concentric zone model. This model is based on the idea that land values are highest in the centre of a town or city. The most deprived areas are expected to be just outside the centre according to the Burgess Model.

Method

Photos are very important. They give the reader a clear idea of what the area is like. You can show key features like the environmental quality services available and the infrastructure evidence.



Photos can show how and where measurements are made.

You can show what a point on a map looks like with a photo – linking photos to GIS maps gives a good general idea of each locations environment.

Primary techniques. These involve first hand data collection. All the data needed to compare deprivation – environmental quality and crime risk.

Secondary techniques. Information collected from the internet or books in school. Deprivation levels were found from the IMD site so it's a good example of secondary data.

We used **opportunistic sampling** to ask the questionnaires – 1 questionnaire per person in each area and shared the results to reduce biased opinions.

An opportunistic sample was used as the number of people we met during a school day was quite small.

7 domains of deprivation Included in the Index:			
Income 12.5%	Employment 12.9%	Education 13.5%	Health 12.9%
Access to housing & services 8.1%	Crime 1.8%	Living environment 8.1%	
Risk	Who do and how severe	How likely	What we can do about it
Being involved directly in a vehicle	All group members. Could be very severe as could result in serious injury and/or death.	Fairly likely	Act sensibly around roads, especially main roads. Use pedestrian crossings where possible.
Getting lost	All group members. Not very severe.	Fairly likely	Stay together and be sensible. Use the emergency phone number if needed.
Risk of crash	All group members could be very serious as could result in serious injury or death.	Fairly likely	Everyone remain in their seat with seat belts on to prevent the crash.

Collecting Data for Deprivation

Environment, services and infrastructure example.

An environmental quality survey uses an observer's judgements to assess environmental quality against a range of indicators. Often they work on a sliding scale of quality (like 1 to 5) to represent less good to good. Alternatively you can use a Bi-polar scale (like -2 to +2) to indicate a negative assessment through to a positive assessment, with 0 representing neither good or bad. We used this for the bipolar we did and used the sliding scale for our crime survey.

We used a range of indicators for environment e.g. Good roads

and pavements – clean and healthy. For services, e.g. Frequent, accessible public transport, High-quality shops and services and for infrastructure ideas like good public transport provision and absence of air pollution and noise from traffic.

As it is based on personal judgements the data collected using environmental quality surveys is *subjective*. Sharing the scoring results between different people helped improve on this single opinion and the issue of bias.

Questionnaire - example

You used a **questionnaire** to ask people for their perceptions of the neighbourhood by giving them the chance to suggest one word to describe what was worst and best about the area they lived in. They were also asked to give a rating from 1 to 5 (1 being a poor score and 5 the best). This was to find out what they thought about the quality of life in each area and how much they thought crime was a problem. We tried to ask a range of different age groups and males and females.

Sharing the results between different people helped improve on this single opinion and the issue of bias could be tackled. We did find problems in some areas of their not being many people to ask. We also found that the time of day also affected the age range of people we could question. Many people struggled to describe what they thought the quality of life was like using just one word.

Crime- example

Lowest risk	1	2	3	4	5	Highest risk
Many during the day						Deer not during the day
Many at night						Deer not at night
Many CCTV cameras						See CCTV cameras
See shops						Lots of shops
See houses						Lots of houses
Good security						Good security
Well maintained roads/streets						Well looked after roads
Vehicle not parked						No evidence of parking
Many well lit streets						Many streetlights and no lighting
Many footpaths						Many footpaths and no lighting

LUTHER

(Series 1 Episode 1, 2010)

Factsheet 1 - Media Language & Representation



Acknowledgements

All quotes from dialogue: *Luther* Series 1, Episode 1 (2010), BBC.

Images	Acknowledgement
All images	BBC

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LUTHER

(Series 1 Episode 1, 2010)

Component 2: Understanding Forms and Products

Focus Areas:

Media Language

Representation

Media Industries

Audiences

Media contexts

PRODUCT CONTEXT

- The set product is the first episode of Series 1, broadcast in May 2010.
- *Luther* is a police procedural crime drama and an example of an inverted detective story. It is produced by BBC Drama, distributed by BBC Studios, and broadcast on BBC1. It is also available on iPlayer and Amazon Prime.
- The series was created and is written by Neil Cross who drew his inspiration for the protagonist Luther from Sherlock Holmes and the American detective Columbo.
- It has had 5 series, the most recent being in 2019.

PART 1: STARTING POINTS – Media Language

How the various forms of media language create and communicate meanings.

Semiotics can be used to analyse aspects of media language. Consider:

Settings and location: the urban setting of *Luther* immediately connotes realism with intertextual references to other gritty crime dramas.

Audiences therefore have expectations of the narrative and themes. Settings also relate to characters, for example:

Zoe's office is large and modern but lined with books suggesting her important role and her

intelligence. Luther's workplace is darker and more claustrophobic with a lack of natural light connoting his troubled persona. These binary opposing locations also serve to illustrate the differences between Zoe and Luther and the problems in their relationship.

Alice's initial rural, comfortable setting misleads us to accept her as the victim. Her flat later in the narrative establishes her power within the narrative with its view across London suggesting she is in control and omniscient.

Visual codes

Codes of clothing: The connotations of characters' clothing and appearance create meanings. For example, Alice has long red hair, she wears red lipstick and dresses in suits or tightfitting clothing connoting intertextual links with the femme fatale character, a stock character in early 20th century films – a mysterious, beautiful but villainous woman with dubious morals, who sets out to ensnare a man for her own ends. Luther's clothing suggests his rank within the police, but he is often dishevelled, connoting that he does not always conform to expectations and may be more of a maverick.



Codes of gesture and expression: Luther's gesture and expression often connotes his inability to control his emotions, he can be violent and behave unpredictably. Examples include when he goes to visit Zoe at her home and punches the door and his reaction to the call from Zoe telling him about her encounter with Alice when he proceeds to wreck his office. Here his facial expressions and physical gestures convey aspects of this personality and this contributes to tension within the narrative. Alice's gestures reinforce her need to control and her psychopathic tendencies. Examples include her arm around Zoe's neck, the initial use and recurrence of the hat pin and her hand reaching out to touch Luther's face in her flat.

Technical codes:

Camera shots, movement and angles work together to communicate messages and 'show' the narrative. *Luther* has high production values and a cinematic style which is used to convey information without the use of dialogue. Close-ups advance the relationships between characters and establish tension and a dynamic. The interview with Alice after the crime uses close-ups and shot-reverse-shot to communicate the change in Alice and the realisation in Luther that she is the perpetrator.

The camera also establishes enigmas, for example the repeated shots of the murdered dog which initially seems unimportant, but whose role in the narrative is eventually revealed.

Genre: Crime dramas have a recognisable set of conventions. These will evolve over time and may be specific to a sub-genre, for example a psychological crime drama. However, they all share similarities including:

- A **narrative** based on a crime that needs to be investigated and solved. This may conform to Todorov's theory where the structure is linear from the initial disruption through to a resolution, or non-linear where time and space is manipulated.
- Binary oppositions that function as a narrative element including good vs evil and hero vs villain.

- A set of recognisable **character types** including a hierarchy with a boss, a detective and sidekick and other characters, for example a victim, a range of suspects, the perpetrator of the crime and experts/witnesses who help in the solving of the crime.
- **Settings and locations** to establish realism including the police station, the crime scene and in *Luther*, urban locations. Some contemporary crime dramas feature the home of the detective in order to develop their character. Luther's home serves to reinforce his issues and instability, it is sparse and seems temporary as he thinks he can repair his relationship with Zoe, even though this seems increasingly unlikely. The setting of the pre-title sequence establishes the dark mood of the drama.
- **Iconography** related to the genre or to the character. For example, Luther's overcoat becomes synonymous with his character. Other iconography in this episode includes crime scene tape, a weapon and uniforms denoting rank.
- **Audio codes** including non-diegetic mood music to evoke tension, dialogue incorporating lexis specific to the genre and sound effects to advance the narrative.

Narrative

The set episode of *Luther* has a pre-title sequence which explores events that have occurred earlier. This sequence establishes tension from the start and the exposition sheds light on Luther's character, it also places the audience in a privileged spectator position. The audience then have expectations of how the protagonist may behave subsequently.

The episode then follows the conventional narrative of a police procedural crime drama adopting a linear structure with key moments where the narrative is advanced. For example, when Luther starts to suspect Alice, when he visits Alice to tell her will find the weapon and the confrontation on the bridge between Alice and Luther, leaving a cliff hanger before the next episode.

Action codes are typical to this genre and in *Luther* they set in motion elements of the narrative, for example Alice finding the whereabouts of Zoe and threatening her causes Luther to react and embark on a particular journey.

Theoretical perspective on narrative: Applying Propp.

This is a character-driven narrative theory which suggests that characters influence a narrative and communicate meanings through cause and effect, the narrative progresses as a result of their actions. All characters have motives, these are revealed during the story arc and the narrative, according to Propp, is driven by the need to achieve their goals. Propp suggested there were a range of narrative roles, some of which can be applied to characters in *Luther*.

Luther demonstrates attributes of the **hero** figure which is established through the cinematography, framing, the narrative, and his interactions with colleagues. However, he also demonstrates traits of the **anti-hero** in that he is flawed and does not conform to expectations. This is established from the beginning when he lets Henry Madsen fall. Both Alice and Henry Madsen perform as **villains**. Madsen, although he only appears at the beginning of this episode, is a constant reminder to us that Luther is not a typical police detective, as in the opening scene the lines between villain and hero are blurred. Alice, whilst initially appearing to be the damsel in distress is revealed as the villain with an astute mind and an ability to manipulate and control people and situations.



Zoe both conforms to and subverts the role of **princess**. She is married to the hero; she is threatened by the villain and needs the protection of a male character (Mark). However, she also has her own power base, she is a successful lawyer and has made the decision to leave Luther and is determined in the decision to take her life in another direction. DC Ripley assumes the role of the **helper/sidekick**.

How choice of elements of media language influences meaning. Consider:

The way in which the audience is introduced to the main characters through media language including cinematography, framing, and shot composition. The first shot of Zoe is a bird's eye view of her office where she is several floors up and surrounded by windows, a typical motif connoting power and prestige. Luther in the initial chase sequence is in darkness and is indistinguishable from the villain, Henry Madsen. Alice's first shot portrays her as vulnerable and afraid as she cowers, blood-stained in her home.



The paradigmatic choices that have been made regarding the characters and their settings and what this conveys about their role and power within the narrative.

How the choices of technical codes influence meaning in the interactions between characters and how this advances the narrative. For example, when Luther interviews Alice at the police station. The choices of elements of media language including gesture codes, expression and technical codes show the audience the change in Alice from one of a vulnerable victim, to a potential villain who can manipulate the

situation. Consider the importance of close-up shots and the yawn in this scene and how this rapidly advances the narrative and displays Luther's skill as a detective.

Theoretical perspectives on genre, including principles of repetition and variation; the dynamic nature of genre; hybridity and intertextuality. Consider:

Television crime dramas, like other popular genres, have a repertoire of elements that places them within the genre. These are recognisable to audiences fulfilling their expectations and are useful in the marketing of the product. However, although crime dramas rely on repetition of common conventions, they also vary and introduce different elements (Neale).

Genres are dynamic, developing over time to reflect social and cultural change, for example the way in which *Luther* addresses the changing roles of women and cultural diversity. It has become less easy to categorise certain programmes as they borrow from other genres and hybridise (Neale).

Genres also use intertextuality to engage with audiences. *Luther* incorporates elements of American police procedural and film noir through cinematography and the character of Alice as the femme fatale.

PART 2: STARTING POINTS – Representation

The ways in which the media re-present (rather than simply present) the world, and construct representations of reality. Consider:

The fact that all representations are constructed and are not windows on the world. Producers of media products construct representations through the use of:

- **Technical codes.** Camera shots, angles, movements and editing combine to construct representations. Consider the first time we are introduced to characters in *Luther* and how the camera constructs the representation. This is used to position the audience in relation to the characters, this may change through the programme. In the interview scene in *Luther*, the shots and

editing gradually reveal a different aspect to Alice's character and change the audiences' position in relation to her.

- **Audio codes:** diegetic and non-diegetic sound including a soundtrack, mood music and dialogue contribute to the construction of representations. For example, the ways in which other characters refer to or describe Luther and Alice contribute to their representations. In Luther's discussion with his colleagues mid-way through his interview with her after the murders he says of Alice, '*It's the way of her saying to us, look at me*' and '*She's proud of this, why give anyone else the credit*', this dialogue contributes to the representation of Alice as clever and manipulative.
- **Iconography:** clothing in particular contributes to the construction of representations and will have been a key consideration of the producers in creating the characters and their roles.

The social and cultural significance of particular representations in terms of the themes and issues that they address. Consider:

Representations of ethnicity:

Luther as a black detective in a British crime drama challenges stereotypical representations of black men in the genre. The assumptions of the audience are challenged in the opening scene when Luther is chasing Henry Madsen, as stereotypically Luther would be the villain. Both the villains in the series are white.

This challenging of pre-conceived ideas around ethnicity reflects changes in society with regard to diversity and the construction of reality. Zoe is a mixed-race woman who is a human rights lawyer, again reflecting social change.

Representations of masculinity:

Several of the men in the police force are in positions of power, even Teller has to answer to her male boss and justify her decisions regarding Luther.

Luther demonstrates stereotypical masculine traits including his size, power, and aggression. Whilst loving Zoe and wanting to save their marriage, he also scares her. However, he is also emotionally controlled by both Alice and Zoe, demonstrating a more complex representation of masculinity. He also readily shows his emotions challenging the trope of the tough, male detective.

Mark is a binary opposite to Luther as a more metrosexual representation of masculinity which Luther finds hard to accept. Alice alludes to the power struggle within the relationship between Luther and Zoe when she taunts him by saying: *'Why did your wife turn her face from you? Is it because you shine so bright?'*

Representations of women:

Consider feminist perspectives evident in the way in which the female characters in *Luther* are represented:

Alice both supports and challenges typical representations of femininity. At the start she is represented as vulnerable, she is shaking, crying, and presenting as scared. However, she rapidly transforms into a powerful and manipulative antagonist. In her conversation with Luther in her flat she alternates between the femme fatale

seductress and a threat to Luther. In answer to his threat *'I'm coming for you'*, she replies *'Not if I come for you first'*, setting herself up as intellectually superior to him and capable of controlling the situation.



Zoe's representation is more ambiguous. Whilst she is a successful lawyer with a good job, she is also vulnerable, at risk and in need of protection from men. She is also defined by romance, love and relationships and does not progress the narrative other than what happens to her, not by her.

Teller is in a strong position and reflects changes in women's roles in the police force. She is instrumental in driving the narrative forward. However, many of her traits are more masculine.

LUTHER

(Series 1 Episode 1, 2010)

Factsheet 2 - Media Industries, Audiences & Media Contexts



Acknowledgements

Images	Acknowledgement
All images	BBC

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LUTHER

(Series 1 Episode 1, 2010)

Component 2: Understanding Forms and Products

Focus Areas:

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PART 1: STARTING POINTS - Media Industries

The nature of media production, including by large organisations, who own the products they produce and by individuals and groups:

There have been significant changes to the television industry in recent years due to the impact of digital technology on the way in which programmes are produced and distributed and how audiences consume them. Audiences have become more fragmented and traditional broadcasters like the BBC must evolve in the ways in which they produce, distribute and market their products.

Luther is a mainstream programme from a popular genre, produced and distributed by the BBC. It has become one of the organisation's flagship programmes, ensuring a loyal audience. The set episode had 6.35 million viewers when it aired in 2010. It was ranked 6 out of 10 programmes for that week, the top four slots being taken by episodes of *EastEnders* and the fifth slot by *Doctor Who*, a successful start for a new programme and testament to the marketing campaign.

The success of *Luther* over the five series is also an example of how the BBC as a mainstream broadcaster, whilst engaging in risk and producing new, innovative programmes, also relies on the repetition of successful formats to secure audiences in an increasingly competitive media landscape.

The programme has relatively high production values for a television series, evident in the choice of locations, the cinematography and the well-established actors including Idris Elba, Saskia Reeves and Indira Varma.

Luther has a wide global distribution: it was previously available on Netflix, is currently (March 2021) available on Amazon Prime and is broadcast on BBC America as well as in over 200 other territories. As part of its global promotional campaign BBC Worldwide released a video to market the series to international buyers featuring a scene from the programme dubbed into different languages (<https://www.youtube.com/watch/BudHdXEyBqM>).

The impact of the increasingly convergent nature of media industries across different platforms:

Whilst *Luther* is broadcast at 9pm each week during a series run, audiences also have the opportunity to access the programme across different platforms and devices. Digital technology also allows audiences to binge-watch the series. The series is also available on DVD.

Before the last series of *Luther*, all the previous series were available to watch on iPlayer encouraging audiences to engage with the brand.

There is also a BBC website dedicated to the programme, and social media platforms.

The importance of different funding models, including government funded, not-for-profit and commercial models:

Television companies operate either a public service or commercial broadcasting model. The BBC is a public service broadcaster, funded by the licence fee, with a remit to inform, educate and entertain, and this influences what is produced. The funding arrangement allows the BBC some aspect of freedom as they are less driven by ratings and profit. Its relative autonomy enables it to offer a diverse range of programming content and crime dramas are an important element of its content and schedule.

The BBC does have an element of governmental control and there is an ongoing discussion centred around the continuation of the licence fee, which is set by the government, with some members unhappy about the BBC's funding model. However, there is considerable support from the public, the arts and entertainment industry and sections of the government for what is seen as the essential role played by the public service broadcaster.

The function and types of regulation in the media:

Television companies and specific channels operate self-regulation through scheduling decisions, the watershed, and announcements at the beginning of programmes giving information about possible areas of offence.

The BBC Board is responsible for ensuring that the BBC fulfils its mission as detailed in the Royal Charter which sets out the BBC's object, mission, and public purposes. It is reviewed and renewed regularly, the current charter began in January 2017 and ends in December 2027.

The BBC is externally regulated by Ofcom which is accountable to Parliament and publishes standards which must be adhered to by

broadcasters. DVD releases of the programme are classified by the BBFC. One of the duties of Ofcom is to examine specific complaints made by listeners about programmes broadcast on channels that it has licenced.

PART 2: STARTING POINTS – Audiences

Luther is produced by the BBC, a public service broadcaster. Audiences will be familiar with BBC content and have an expectation of a quality drama with high production values. The trailer for the programme uses the slogan 'Original British Drama' to appeal to the audience suggesting the BBC's investment in homegrown drama.

Crime drama is a popular genre with audiences and the BBC is known for producing successful programmes in this genre.

Luther aims to reach a wide audience and appeals to both men and women due to its diverse range of characters. The 9pm scheduling time is a popular slot for the BBC's highest rated shows and placing it after the watershed highlights the adult content.

Whilst the BBC target audience for the programme is 25-40, the fact that it also appeared on Netflix suggests a younger, 16-25 year-old, target audience who are more likely to binge watch the series.

The ways in which media organisations target audiences:

- The use of teaser and longer trailers introduced the character of Luther to audiences and established an enigma around his character.
- The high production values obvious from the marketing material including the use of recognisable stars and the expectations related to the BBC branding.
- The introduction of enigmatic characters to intrigue audiences including Luther, but also Alice who became very popular. The BBC website for the programme included

'Postcards from Alice' encouraging audiences to engage with the character's story world.

- The creation of other interactive and online features which extend the world of the programme including 'Ripley's Video Diary' which involves the audience by creating a backstory around Luther. The blog from the writer Neil Cross gives an insight into the process of creating the programme and the BBC Writer's room allows audiences to read programme scripts.



The role of media technologies in reaching and identifying audiences, and in audience consumption and usage:

- Changes and developments in technology have had an impact upon the way in which audiences access, consume and respond to media products. Audiences now have a range of content to choose from on a range of different platforms to suit their needs and lifestyle.
- *Luther*, as well as being available to watch on BBC, BBC iPlayer and Amazon Prime, also has a website where audiences can access extra information and videos related to the programme.
- The programme can also reach audiences through social media sites including Twitter and Facebook which also allows the BBC to review audience reactions to characters and storylines.

Theoretical perspectives on audience: Blumler and Katz's Uses and Gratifications theory:

There are several theories that have been written to explore the relationship between audiences and media products. The Uses and Gratifications theory was one of the first to suggest that audiences can be active consumers of the media and seek out and use different media products in order to satisfy a need and to experience different pleasures including:

- **Entertainment/diversion:** audiences watch some media products including crime dramas to escape from everyday life into a fictional world that absorbs their interest. *Luther* is an inverted detective story and audiences may also gain pleasure from picking up clues and trying to solve the crime along with the detective. Audiences may recognise the conventions of the genre in the programme and will predict certain outcomes, experiencing pleasure when they are correct in their assumptions. *Luther* involves the audience from the beginning by placing them in a privileged spectator position regarding the outcome of the chase and Henry Madsen at the start and the relationship between Luther and Alice. Audiences may also be attracted to the actors who are popular, for example Idris Elba, Ruth Wilson and Saskia Reeves. Luther is an enigmatic character who does not display the typical characteristics of his role and this may add to his appeal 'When I type the end of any series I immediately start to miss him' (Neil Cross, writer of *Luther* www.bbc.co.uk).



- **Information/education:** crime dramas can give audiences an insight into another area of society with which they may not be familiar, in *Luther* this is the police procedures.
- **Social interaction:** this pleasure has been enhanced by developments in technology. Audiences watch episodes of *Luther* and at the same time interact with friends and family on social media. As there are long gaps between series of *Luther* the first and following series become examples of water-cooler television and as such are discussed by audiences in anticipation of their broadcast and during the series run.
- **Personal identity:** the programme may appeal to the audience because they relate to a character or a particular situation.

PART 3: STARTING POINTS – Media Contexts

The specification requires learners to develop their understanding of relevant contexts of media and their influence on the product.

Social and Cultural contexts

How *Luther* reflects the society and culture of the time in which it was made through its

representations, themes, values, and messages. Consider:

- How the representations of women in *Luther* challenge typical representations in crime drama illustrating how the genre has developed over time and been informed by cultural influences.
- How theme of the representation of evil and the role of the villain offers a more contemporary view of society.
- How Luther's character reflects the time in which the programme was made. Consider the similarities he has with Regan and Carter in *The Sweeney* and the ways in which is he different.
- How the programme addresses the under representation and misrepresentation of ethnic diversity in television crime dramas.
- How *Luther* be said to have cultural links to the film noir genre and American procedural crime dramas. Consider the codes of clothing, the cinematography in key scenes and the role of the femme fatale.
- The similarities and differences in the way in which London is represented in *The Sweeney* and *Luther* and how settings and locations have a social and cultural significance.

Plot (Acts)		Character		Context (Written 1606)
1	The three Weird Sisters meet in a storm: ‘fair is foul’. A war is taking place between Scotland and Norway and Scotland is victorious due to the valiant efforts of Macbeth. The traitorous Thane of Cawdor is captured and executed and King Duncan decides to reward Macbeth with the title of Thane of Cawdor. Before he is given the title, the three Weird Sisters tell Macbeth that he will become Thane of Cawdor and eventually king, and that Banquo’s children will become kings. Macbeth learns of his new title which fulfils part of the prophecy and sends a letter to his wife. Lady Macbeth receives the news that King Duncan will be staying the night at their castle and immediately plots his death so her husband will be king. Macbeth doubts that this is the right thing to do, but Lady Macbeth manipulates him into following her plans by challenging his manhood and he reluctantly agrees to murder Duncan. By the end of Act 1, Macbeth is determined to follow through with the plan: ‘I am settled’.	Macbeth	<i>The protagonist and tragic hero. Ambition is his tragic flaw that leads to his downfall. He transforms from loyal warrior to paranoid, tyrannical king. Ambitious, ruthless, valiant, tormented, deceitful.</i>	Macbeth. The plot is partly based on fact. Macbeth was a real 11 th Century king who ruled Scotland from 1040-1057. Shakespeare’s version of the story originates from the Chronicles of Holinshed (a well known historian). The play was most likely written in 1606 – the year after the Gunpowder Plot of 1605 – and reflects the insecurities of Jacobean politics.
		Lady Macbeth	<i>A strong, ambitious and manipulative woman, associates herself with evil spirits. Persuasive, ruthless, ambitious, deceitful, controlling.</i>	
		The Weird Sisters	<i>Supernatural and manipulative beings who seem able to predict the future. Give Macbeth the prophecies that drive the plot. Unearthly and omniscient.</i>	
		Banquo	<i>Macbeth’s close friend, prophesied to be father of kings. Macbeth sees him as a threat. Virtuous, insightful and loyal.</i>	
		Duncan	<i>King of Scotland; a strong, honourable, respected leader.</i>	
		Macduff	<i>A noble soldier loyal to Duncan and suspicious of Macbeth. Represents the good against Macbeth’s evil. Noble, wise, judicious. His wife resents feminine goodness and innocence in the play.</i>	
2	His evil state of mind is shown when Macbeth hallucinates before he commits the murder. His immediate guilt means that he cannot say ‘Amen’ or return to the scene, so Lady Macbeth wipes blood on the drunk guards. The next morning, Macduff and Lennox arrive and Macduff discovers the dead body of King Duncan. The guards are immediately suspects and Macbeth kills them. Malcolm and Donalbain, the King’s sons, flee the castle because they are afraid that they will be blamed for the murder of their father.	Malcolm	<i>Duncan’s son and next in line to the throne. Dignified.</i>	King James I of England (and VI of Scotland) came to the throne in 1603 following the death of Queen Elizabeth I. The play pays homage to the king’s Scottish lineage. The witches’ prophecy that Banquo will found a line of kings is a clear reference to James’ family’s claim to have descended from the historical Banquo. While King of Scotland, James VI became convinced about the reality of witchcraft, and its great danger to him, leading to trials that began in 1591.
		Themes		
3	Banquo suspects Macbeth of the murder of King Duncan; Macbeth worries that Banquo will reveal this so sends men to murder Banquo and his son, Fleance, but Fleance escapes. Macbeth, Lady Macbeth, Lennox, Ross and other lords attend a banquet. The ghost of Banquo appears to Macbeth three times and he loses control. Lady Macbeth tries to cover up the situation by saying that Macbeth is prone to fits. Macduff has not attended the banquet as he has gone to England looking for help because he is suspicious of Macbeth. Macbeth states his intention to visit the weird sisters again.	Ambition	The witches prophecies spur both Macbeth and Lady Macbeth to act on their own to fulfil their deepest desires and ambitions. Both Macbeth and Lady Macbeth want to be great and powerful, and sacrifice their morals to achieve that goal.	Only a century before <i>Macbeth</i> was written, England had suffered under the massive disorder of the Wars of the Roses . Civil disorder was now seen as the ultimate disaster and also an ungodly state.
		Order and Disorder	The play subverts the natural order of the world and depicts an anarchy: Macbeth inverts the order of royal succession; his wife inverts the patriarchal hierarchy; the unnatural world disrupts the natural. The disruption underpins the conflict both external and internal.	
		Masculinity, femininity and identity	The idea of manhood is questioned throughout the play: does a true man take what he wants no matter what it is? Or does a real man have the strength to restrain his desires? Lady Macbeth challenges Macbeth’s when he decides not to kill Duncan, Lady Macduff questions Macduff’s decision to go to England and Macbeth uses it to incite Banquo’s murderers. Lady Macbeth subverts the expectation of what it is to be a woman; she rejects her womanhood and bargains with darkness.	
4	Macbeth confronts the three Weird Sisters and they show him three visions that lead him to believe he cannot be killed by any man, which gives him a false sense of security. Told by the witches to ‘Beware Macduff’, he sends murderers to the castle of Macduff to kill his family. Meanwhile, Macduff is in England begging Malcolm to return to Scotland to seize the throne from Macbeth who has become a tyrant. Malcolm tests Macduff’s loyalty to Scotland and himself; once satisfied with Macduff’s responses he agrees to wage war against Macbeth. Malcolm’s uncle, Siward, will also help in the attack.	Kingship and tyranny	Duncan is always referred to as a ‘king’ while Macbeth soon becomes known as the ‘tyrant’. In Act 4, scene 3 Malcolm pretends that he would make an even worse king than Macbeth. He tells Macduff of his reproachable qualities—among them a thirst for personal power and a violent temperament. Malcolm says, ‘The king-becoming graces / [are] justice, verity, temp’rance, stableness, / Bounty, perseverance, mercy, [and] lowliness” (4.3.92–93)-embodiment of order and justice, but showing comfort and affection. Under him, subjects are rewarded according to their merits, as when Duncan makes Macbeth Thane of Cawdor after Macbeth’s victory over the invaders. The king must be loyal to Scotland above his own interests. Macbeth, by contrast, brings only chaos to Scotland—symbolized in the bad weather and bizarre supernatural events—and offers no real justice, murdering those he sees as a threat. As the embodiment of tyranny, he must be overcome by Malcolm so that Scotland can have a true king once more.	The Great Chain of Being was a strict religious hierarchical structure of all matter and life which was believed to have been decreed by God and this dominated Jacobean beliefs. The chain starts from God and progresses downward to angels,, saints, kings, princes, nobles, commoners and animals from the highest lion to the worm and then rocks and minerals. If this order was disturbed it was believed that the state would erupt into chaos.
		Appearance and reality	Appearances are deceptive in the play. Shakespeare repeats the words ‘seem’, ‘false’, ‘face’ and ‘hide’ to highlight the deception of appearance. Duncan trusts the wrong men with disastrous consequences, Macbeth trusts the witches and Lady Macbeth emphasises the need for ‘false face.’ This fine line between appearance and reality represents the line between good and evil.	
5	Lady Macbeth has gone mad with guilt over the murders. The once strong and ruthless woman becomes an hysterical sleepwalker and doctors are unable to help her. Some of the Scottish lords discuss Macbeth’s state of mind and come to the conclusion that they will help Malcolm and Macduff fight against Macbeth. Macbeth isn’t really concerned because he believes the prophecy ensures that he cannot be killed by any man born of woman. When he’s confronted by Macduff at Dunsinane Macbeth learns that Macduff was ripped from his mother and not born naturally and realises that he has been tricked by the witches. Macduff kills Macbeth in a fight and Malcolm is proclaimed the new King of Scotland.			The Divine Right of Kings says a monarch is not subject to earthly authority and that they have the right to rule directly from the will of God. It implies that only God can judge an unjust king and that any attempt to depose one runs against the will of God and is a sacrilegious act. The action of killing a king, regicide, was the ultimate sin.
				Shakespearean Tragedy. Macbeth is one of Shakespeare’s tragedies and follows specific conventions. The climax must end in a tremendous catastrophe involving the death of the main character; the character’s death is caused by their own flaw(s) (hamartia) yet the character has something the audience can identify with.

Plot (Acts)		Character		Context (Written 1606)
1		Macbeth		Macbeth.
		Lady Macbeth		
		The Weird Sisters		
		Banquo		King James I of England (and VI of Scotland)
		Duncan		
2		Macduff		Wars of the Roses.
		Malcolm		
		Themes		
		Ambition		
3		Order and Disorder		The Great Chain of Being
		Masculinity, femininity and identity		
		4		Kingship and tyranny
5				Appearance and reality

Know your Macbeth! 1

You must write all your answer in full sentences in your books.

1. What was the story of 'Macbeth' based upon?
2. What was the name of Banquo's son?
3. How many times does the ghost of Banquo appear to Macbeth?
4. Give two adjectives that could describe the weird sisters.
5. How does Lady Macbeth learn about the weird sisters' prophecies?
6. Who was King of England when Macbeth was written?
7. Give two examples of when trust is misplaced in the play.
8. What is Macbeth's tragic flaw?
9. What can Macbeth not say after murdering Duncan?
10. Who escapes from their murderers?

Know your Macbeth! 2

You must write all your answer in full sentences in your books.

1. What is the weather at the start of the play?
2. What was the Divine right of kings?
3. Who were Duncan's sons?
4. What did Lady Macbeth do to complete her murder plan?
5. What adjective would you use to describe Macbeth as King?
6. What is an anarchy?
7. Is 'Macbeth' a romance, comedy, tragedy or history?
8. How does Lady Macbeth try to cover up for Macbeth's losing control at the sight of Banquo's ghost?
9. What does the line between appearance and reality represent?
10. Why did Macduff go to England?

Know your Macbeth! 3

You must write all your answer in full sentences in your books.

1. Why did Malcolm and Donaldbain leave Macbeth's castle?
2. Which two countries were at war at the start of the play?
3. Who was the traitor to Duncan in the war?
4. How does Lady Macbeth manipulate Macbeth into committing murder?
5. What riddle do the weird sisters chant at the end of the first scene?
6. What does Macbeth recognise is his only reason for murdering King Duncan?
7. What, at the time this was written, was considered to be the ultimate sin?
8. Why did Macduff not attend the banquet at Macbeth's castle?
9. Name three attributes that Malcolm says a king should have.
10. What action does Lady Macbeth repeat whilst sleepwalking?

Know your Macbeth! 4

You must write all your answer in full sentences in your books.

1. How does Lady Macbeth subvert the expectations of womanhood?
2. Why does Macbeth see Banquo as a threat?
3. Name three reasons that Macbeth gives as reasons why he should not kill King Duncan.
4. How does Shakespeare show he recognises the line of kings that James 1 descends from?
5. Why did Macbeth not fear Macduff?
6. When Macduff hears his family have been slaughtered he says 'But I must also feel it as a man.' How does this contrast with Macbeth?
7. Why does Malcolm suggest to Macduff that he will be a bad king?
8. What must a king put before his own interests?
9. Which three adjectives would best describe Lady Macbeth at the start of the play?
10. Which two adjectives would best describe Lady Macbeth at the end of the play?

Know your Macbeth! 5

You must write all your answer in full sentences in your books.

1. What is hamartia?
2. What are the three apparitions that the weird sisters show to Macbeth?
3. What happens that makes Macbeth realise he's been tricked by the weird sisters?
4. How must a Shakespearean tragedy end?
5. Who is crowned King of Scotland after Macbeth?
6. Who is immediately suspected of killing Duncan?
7. Why is Lady Macduff angry with her husband?
8. How does Lady Macduff contrast with Lady Macbeth?
9. Give two adjectives that could describe the weird sisters.

Know your Macbeth! 6

You must write all your answer in full sentences in your books.

1. At which castle does Macduff fight Macbeth?
2. What did the weird sisters prophecy for Banquo?
3. What title does King Duncan reward Macbeth with?
4. When Macbeth is hallucinating, what does he see?
5. Why is Lady Macbeth's constant rubbing her hands ironic?
6. What did James 1 believe was a danger to him?
7. How does Macbeth persuade the murderers to kill Banquo?
8. What did the Jacobean believe would result from Macbeth killing a king?
9. Why did they believe this would happen?
10. Who did the weird sisters tell Macbeth to beware of?

The Man with The Golden Gun film poster

(December 1974)



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The Man with The Golden Gun film poster

(December 1974)

Component 1: Exploring the Media

Focus areas:
Media language
Representation
Media contexts

PRODUCT CONTEXT

- *The Man with the Golden Gun* is a James Bond film released on 19 December 1974, starring Roger Moore as 007. This was only Moore's second appearance as the fictional MI6 agent.
- Based on a book of the same name, written by Ian Fleming, the film was produced by the British company Eon (Everything or Nothing) Productions and distributed by United Artists. The film was created with an estimated \$7 million budget and grossed over \$97 million at the world wide box office.
- To reflect the popularity of the Martial Arts film genre, with the rise of stars such as Bruce Lee and Jackie Chan, there were several Kung Fu scenes and the film was filmed predominantly in Asia, having being shot in Hong Kong, Thailand and Macau.
- The artwork for poster itself was produced by artist and illustrator Robert McGinnis.

PART 1: STARTING POINTS – Media language

Historical Context:

Prior to the 1990s, illustrations were much more commonly used on film posters due to the limited **technology** that was available.

The film was set in the middle of the 1973 energy crisis, when the oil producing Arab nations proclaimed an oil embargo causing an oil crisis which had both short and long-term effects across on **politics and the economy** across the globe. This is hinted at through the poster's

iconography of the power plant in the lower left corner and the energy beam directed at Bond.

Consider the codes and conventions of media language and how elements of media language influence meaning:

- Typically, film posters are very **visual** and rely on **images** and limited text to promote the film. The images need to give the audience an idea of the film **genre** and hint at the **narrative** – here, rather than just one dominant image, there is so much going on that the reader is expected to work through the images to understand the film's plot.
- The **central image** is a **mid-shot** of James Bond, smartly dressed holding a gun across his body. The dominance of his image suggests he is the film's **protagonist** and so probably a 'good guy'. According to Vladimir **Propp's** theory, he would be considered the '**hero**'.
- Bond's **attire** connotes business and professionalism and the gun, an iconic part of Bond's 'uniform', **signifies** danger and action.
- Bond is **looking directly at the audience**, seemingly making eye contact. The intensity of his stare and the lack of a smile could **connote** how seriously he expects to be taken and that he appears calm despite the chaos surrounding him. This informs the audience of one of his great strengths, his ability to keep his composure in any situation.
- A common convention for film posters is to have the **actor's name(s)** placed prominently as another way to entice the **audience**. Roger Moore had become a household name after starring in the well-known TV series *The Saint* and playing Bond in the previous film, *Live and Let Die*, so his name is placed directly above Bond's image to reinforce the link.
- The **title** of the film appears with the name of the author who wrote the books (on which the films are based) at the bottom of the poster. The

credit block, detailing **industry information** such as other star's names, directors and producers, is much smaller and tucked away so as not to divert the audience away from the main image or the rest of the poster.

Consider narrative:

- At the bottom of the frame, in the foreground, is an extreme close up of a golden gun. It is pointed right at Bond and someone is loading it with a bullet engraved with his name so the reader can interpret this as an attempted assassination on the protagonist.
 - » The **colour** of the gun **connotes** wealth and status and the fact we can only see the hand of the shooter creates intrigue and what Roland Barthes would term an **enigma** code for the audience, as we want to find out who is trying to kill Bond.
 - » Also, continuing **Propp's** character theory, we would consider this person to be the '**villain**'.
- Surrounding Bond are even more enemies and people trying to kill him. These images, combined with the images of destruction and explosions, are **codes that signify** to the audience this is from the action/thriller **genre**.
- As is **typical** of Bond films, the protagonist is flanked by **females** wearing very few clothes:
 - » Two of these women are highly **sexualised**: bikini-clad, slim with perfect hour glass figure and long flowing hair.
 - » **Body language**: one appears to be looking at the golden gun assassin whilst pointing at Bond whilst the other seems to be putting her arm out in front of him, seemingly protecting him. Barthes might argue that this is another enigma code, suggesting to the audience that Bond has female allies and enemies, yet all look the same making it hard for him to distinguish between them.

PART 2: STARTING POINTS – Representation

Social and Cultural Contexts:

At the start of the 20th century, many film depictions of minority ethnic groups supported the dominant **stereotypes** of the time: to be pitied, to be laughed at, the exotic and/or dangerous. While society was progressing towards racial equality by the 1970s, some of these stereotypes were still in evidence in mainstream films. In addition, it is interesting to consider this poster in the context of the move towards gender equality and

increased women's rights in the 1960s and 70s.

Consider the representation of gender and ethnicity:

- At this time, Bond was already **iconic**. He was the nation's favourite secret agent; charming, suave, good looking and, most importantly, always caught the 'bad guys'. This **representation of masculinity** told audiences that this was what a man had to be at the time – intelligent, strong and prepared to put yourself in dangerous situations. If you were all of those things, you would be successful, gain respect and women would want you. The assumption then is that men should also be heterosexual.
- Two of the three **females** on the poster are wearing bikinis which show off their slim bodies. Both are heavily made up and wear earrings and bracelets as accessories to the 'outfit'. The two women also have long flowing hair.
 - » A feminist theoretical perspective would argue that this **sexualised representation** of women suggests that they are little more than bodies to be looked at.
- Another female, however, is dressed in a karate uniform and is shown in a martial arts pose, and appears to go against this **stereotype**. She too has flowing hair but this time it is much darker and her skin tone suggests she is from a different ethnic group to the other females. This goes some way to explaining why she seems not to support the dominant sexualised stereotype portrayed by the other females; she is seen as exotic, different, the 'other'.

Consider the representation of issues and events:

- Interestingly, one of the main themes in this Bond film was an actual world event – the 1973 **global energy crisis**. With the embargo on oil, countries were considering alternative power sources and this is portrayed through the **iconography** of the power plant and the related explosions. By including this theme, the producers are encouraging audiences to consider what might happen if oil really did run out and predict what the outcomes would be for society.

Possible areas for further investigation:

- Consider ideas about **encoding** and **decoding** texts (could reference theorists e.g. Stuart Hall). The producers have encoded certain ideas into this text but it depends on the viewer's own social and cultural context how this image is decoded:
 - » **For example**, the depiction of a female

doing martial arts could be seen to support the idea that she is dangerous and to be feared or could be seen as a progressive way of looking at females, those who are strong, confident and fearless.

- **Feminist theoretical perspectives** - Laura Mulvey (in her 1975 essay 'Visual Pleasure and Narrative Cinema') coined the term the '**male gaze**' which discussed how the audience is put into the perspective of a heterosexual man. In this poster, the audience is forced to

focus on the curves of the women's bodies, putting them in the eyes of a male.

- » Mulvey goes on to argue then that this denies the women human identity and relegates them to the status of **objects** to be admired for physical appearance. This could be further argued as the producer of the artwork was a male, Robert McGinnis.

What is development?

Development is an improvement in living standards and quality of life.

Economic	This is progress in economic growth through levels of industrialisation and use of technology.
Social	This is an improvement in people's standard of living. For example, clean water and electricity.
Environmental	This is advances in the management and protection of the environment.

Measuring development

These are used to compare and understand a country's level of development.

Economic indicator examples

Employment type	The proportion of the population working in primary, secondary, tertiary and quaternary industries.
Gross National Income (GNI) per capita	An average of gross (total) national income per person, per year in US dollars.

Social indicators examples

Infant mortality rate	The number of children who die before reaching 1, per 1000 babies born.
Literacy rate	The percentage of population over the age of 15 who can read and write.
Life expectancy	The average number of years someone born in that country can expect to live.

Mixed indicators

Human Development Index (HDI)	A number that uses life expectancy, literacy rate and income per person. Goes from 0 to 1. 1 is the highest level.

Variations in the level of development

LIDCs	Poorest countries in the world. GNI per capita is low and most citizens have a low standard of living.
EDCs	These countries are getting richer as their economy is progressing from the primary industry to the secondary industry. Greater exports lead to higher income.
ACs	These countries are wealthy with a high GNI per capita and standard of living. These countries can spend money on services.



Uneven development

Development is globally uneven with most ACs located in Europe, North America and Oceania. Most EDCs are in Asia and South America, whilst most LIDCs are in Africa. Remember, development can also vary within countries too.

Dynamic Development

Physical factors affecting development:

Natural Resources - Fuel sources such as oil. - Minerals and metals. - Availability of timber. - Access to safe water.	Natural Hazards - Risk of tectonic hazards. - Benefits from volcanic material and floodwater. - Frequent hazards undermines redevelopment.
Climate - Reliability of rainfall to benefit farming. - Extreme climates limit industry and affects health. - Climate can attract tourists.	Location/Terrain - Landlocked countries may find trade difficult. - Mountainous terrain makes farming difficult. - Attractive scenery attracts tourists.

Human factors affecting development:

Aid - Aid can help some countries develop key services and infrastructure faster. - Aid can improve projects such as schools, hospitals and roads. - Too much reliance on aid might stop other trade links becoming established.	Trade - Countries that export more than they import have a trade surplus. This can improve the national economy. - Having good trade relationships boosts income. - Trading goods and services is more profitable than raw materials.
Education - Education creates a skilled workforce meaning more goods and services are produced. - Educated people earn more money, meaning they also pay more taxes. This money can help develop the country in the future.	Health - Lack of clean water and poor healthcare means a large number of people suffer from diseases. - People who are ill cannot work so there is little contribution to the economy. - More money on healthcare means less spent on development.
Politics - Corruption in local and national governments. - The stability of the government can affect the country's ability to trade. - Ability of the country to invest into services and infrastructure.	History - Colonialism has helped Europe develop, but negatively affected development in many other countries. - Countries that went through industrialisation a while ago, have now developed further.

Consequences of Uneven Development

Levels of development are different in different countries. This uneven development has consequences for countries, especially in wealth, health and education.

Wealth	People in more developed countries have higher incomes than less developed countries.
Health	Better healthcare means that people in more developed countries live longer than those in less developed countries.
Education	More developed countries have better standards of education available than those in less developed countries.

Five stages of economic development.

Rostow's model predicts how a country's level of economic development changes over time. The model also shows how people's standard of living improves.

1. Traditional society

Subsistence based. i.e. farming, fishing and little trade. Current low LIDC.

2. Preconditions for take-off

Manufacturing starts to develop with better infrastructure. Current LIDC.

3. Take-off

Rapid growth with large-scale industrialisation. High LIDC/EDC.

4. Drive to maturity

Economy grows so people get wealthier & have higher standards of living. EDC.

5. Mass Consumptions

Lots of trade with a high level of consumption. Current AC.

Barriers to ending poverty	
Debt 	Many LIDCs have huge national debts from borrowing from wealthy countries and organisations. With high interest rates, these debts are difficult to wipe out and can lead to a spiral of decline. This situation makes it difficult for these countries to invest in services and infrastructure.
Trade 	Countries with a negative balance of trade import more than they export. This makes development difficult. Also, ACs have TNCs that operate in LIDCs. These companies take profits away from LIDCs to ACs where their headquarters are.
Political unrest 	Widespread dissatisfaction with the government can be caused by political unrest, corruption and a lack of investment into services (i.e. education and healthcare).

Breaking out of poverty

Countries can try various ways to reduce poverty and increase development. These often involve different types of aid that can either be short term or long term strategies.

Top Down	These are large scaled, government led and expensive schemes involving money borrowed from wealthier countries. There is little community involvement but are instead large scale projects.
Bottom Up	These are small scale, local led and less expensive schemes. They involve communities and charities developing local businesses and housing.
Short term	This aid is sent to help countries cope with emergencies such as natural disasters.
Long term	This is aid given over a long period to help countries develop through investing in projects such as education and healthcare.
Trade	Fair trade can allow for fair wages. Also grouping with other countries in the form of trading blocs can increase links and increase the economy.
Debt Relief	Wealthier countries can cut or partly cut debt to countries that have borrowed money. This allows for money to be reinvested in development.

Positives and Negatives of Aid

Positives 	Negatives 
Allows for immediate or long-term investment into projects that can develop a country's prospects.	Local people might not always get a say. Some aid can be tied under conditions from the donor country.

Are LIDCs likely to stay poor? Case Study: Zambia



Location & Background

Zambia is a LIDC in Central Southern Africa. It was colonised by Britain but became independent in 1964. It is a landlocked country with 8 bordering countries. The population is 17 million and the capital city is Lusaka. 60% of people live in poverty.



Current level of development

- GNI per capita is **\$4100** compared to a world average of **\$17,500**. This is 155th lowest out of 193 world countries.
- High birth rate & reducing death rate equals growing population.
- HDI of **0.59** with **low life expectancy at 63 years**.
- Country is **reliant on copper** which is 64% of all exports.
- Country spends slightly more on imports than it makes from exports each year.

Influences upon Zambia's development

Political 	Social 	Physical 	Economic 
- Generally a very stable government with a long history of democratic elections. - Good trade links with their 8 bordering countries. - Member of the World Trade Organisation and has a special trade deal with the EU (no duty tax.)	- Very safe country. Low levels of crime. - Lots of investment in infrastructure so they have good quality roads etc. - More investment in healthcare and education is raising living standards for the population.	- Huge deposits of natural resources especially copper. - Lots of National Parks and wildlife – popular for tourism. - Being landlocked has reduced trade opportunities. - Kariba dam – production of renewable hydroelectric energy.	- Reliance on copper is vulnerable to global price changes. - Economy is now growing meaning fewer are in poverty. - Income in the secondary & tertiary sectors are growing (particularly in tourism.)

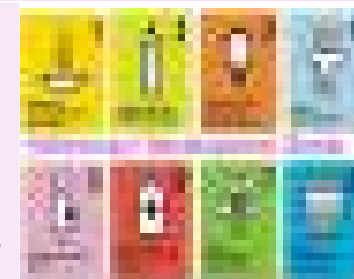
Zambia & Rostow's Model

- Despite the large primary industry, Zambia has improved education and healthcare due to investments from TNCs. As a result, Zambia is at stage 2 and is now moving towards stage 3.
- Better technologies & quality of life is allowing for pre Take off to happen.



Millennium Development Goals

Set by the UN to set targets to reduce poverty.
+ Zambia has met targets 2 and 6.
100% of children now attend primary school as it was made free. HIV rates have decreased to below 15% of the population due to better healthcare and testing.
- Did not meet the other targets although progress was made e.g Target 4: child mortality has only decreased by 30%.



Investment from TNC

TNCs such as ABF are investing in Zambia through sugar cane plantations.
+ Employs 6,500 Zambians.
Workers get free healthcare and education for their children. Built community centres and churches.
-ABF doesn't pay tax to the Zambian government. They move money to foreign accounts. They have avoided paying \$27 million to Zambia per year.

Aid & Debt relief

Zambia was classified as a HIPC – Highly Indebted Poor Country. This meant that their debt was cancelled as long as they used the money saved on health and education. This meant they could make primary education free for all citizens. They also spend more on vaccinations, medication and medical equipment.



Development strategies for Zambia

Bottom-up: Room to Read	Top-down: Kariba Dam
Works to improve literacy and girls' education. Started working there in 2007. Work in Lusaka and the Eastern and Southern Provinces. + Students at their schools learn 2.5 times quicker than other schools. Have helped over 2,000 girls in Zambia. Libraries increase literacy rates. - Small scale so less impact.	Built on the Zambezi river and provides hydroelectric power to nearby copper mines. + Produces a lot of electricity. Renewable energy. - It is in poor condition. Little electricity goes to local towns. Copper mine TNCs don't pay for the power.

GQ

(August 2019)



Image from Hunter & Gatti for British GQ / Fair Use

GCSE Component 1: Exploring the Media

Focus areas:

- **Media language**
- **Representation**
- **Media contexts**

THE PRODUCT

- Launched in 1931, *GQ* began its life as a quarterly publication called Gentleman's Quarterly, aimed specifically at fashion industry insiders. Its popularity with customers caused its rebranding in 1967 to *GQ*.
- Produced by Condé Nast, today *GQ* is a multi-platform brand. Each issue is published in print and digitally; it has its own acclaimed website and apps.
- Published monthly, British *GQ* sells itself as *"The greatest magazine around. The men's magazine with an IQ. Whether it's fashion, sport, health, humour, politics or music, GQ covers it all with intelligence and imagination."*
- *GQ* is aimed at ABC1 men aged between 20 and 44, has a 212,000 monthly print readership, with online boasting over 2 million monthly unique users, and more than 2 million social media followers.
- Funded by magazine sales and advertising, *GQ* says that 88% of its audience have bought or plan to buy products they've seen in *GQ* and 93% of *GQ*'s audience own designer fashion.
- The limited colour palette of black, white, gold and orange create a sense of cohesion to the design, whilst also reinforcing the magazines messages of luxury, sophistication and masculinity.
- There is a long shot of footballer and celebrity Raheem Sterling, ensuring the magazine has star appeal for the audience.
- The cover price further reinforces this is a print magazine aimed at an ABC1 audience with disposable income.
- Consider the selection process that took place when creating this magazine cover – there was clearly a conscious decision to aim it at men who are interested in fashion, celebrity, politics, music and sport.
- Sterling is looking directly at the audience, seemingly making eye contact. This is a common convention of magazines and helps to add to the more personal approach of this format. His cool, relaxed gaze and slight smile looks down at the reader, suggesting he should be admired, looked up to.
- Sterling's leather combat trousers and boots are more high fashion than practical and connote luxury and masculinity, whilst also indicating to readers that *GQ* is a lifestyle magazine.
- Sterling's professional role as a footballer is anchored in the main cover line *"Guardian Angel. How Raheem Sterling saved football from itself"*. *GQ* calls Sterling a *"Guardian Angel"*, which has multiple connotations, including a sense of guidance and protection, suggesting he is looking after players and the values of the game by rooting out racism. The idea that he is doing morally good work is reinforced through his black angel wings and cross tattoo. This also frames him as a Proppian Hero, which is conventional for magazine cover stars.
- The top cover lines *"How to wear a broken suit"* and *"Why it's finally OK to own a belt bag"* should be considered when thinking about the magazine's target audience. In today's competitive society, which focuses heavily on aesthetics and where having the 'right' look is apparently very important, the reader begins to

PART 1: STARTING POINTS – Media language

How media language creates and communicates meaning

The typical codes and conventions of print magazines are used here to construct the *GQ* front cover:

- The branded masthead is conventionally placed in the top left-hand corner (Z-rule) and stands out with the choice of gold font, connoting luxury and exclusivity – traits that the brand associates with.

think of this magazine as a casual ‘how to’ guide when it comes to being a fashionable man.

- At the top right of the page, there is another cover line advertising a picture special from ‘GQ Heroes’. “*All the sizzle*” implies gossip and celebrity intrigue, while the term “exclusive” suggests the reader won’t be able to find it anywhere else and they need to purchase the magazine to be in on the secrets.
- On the right-hand side of the page the reader is offered some politics, “*Westminster has become a living nightmare. Andy Burnham’s Manchester masterplan.*” This hyperbolic language is a reference to the elected Mayor of Manchester, Andy Burnham, who is calling for more devolved power to be given to cities rather than held by the government in London. By including some serious journalism, as well as entertainment and fashion advice, the magazine is broadening its offering for its audience members.

Possible areas for further investigation:

- **Genre:** codes and conventions of magazine covers – layout, house style, by-lines. Genre conventions of magazines, their ever-changing nature and hybridity.
- **Narrative:** cover lines on the front cover tease people to want to read certain stories within the magazine (could be linked to Roland Barthes’ enigma codes), for example “*Speak no evil. Inside the most brutal dictatorship you’ve never heard of.*”

PART 2: STARTING POINTS – Representation and contexts

Social, cultural and historical contexts:

- Historically, British black men have been under-represented on magazine front covers due to systemic racism within the industry. In a 2018 study, completed by The Guardian, into glossy magazines, it was revealed that of 214 covers published by the 19 bestselling glossies in 2017, only 20 featured a person of colour. That’s 9.3%, whereas 13.7% of the UK are BAME. Of all the mainstream media outlets there has arguably been the smallest shift in magazine front covers representing a diverse range of people. However, sister magazine at Conde Nast, Vogue appointed editor Edward Enninful in 2017. He has turned one of the nation’s most respected fashion magazines into a celebration of all beauty – not excluding blackness but championing it. This, alongside the 2020 global anti-racism protests, has meant that recently there has been a wider range of ethnicities and races on the front of British GQ.
- In 1994, Mark Simpson – an author and journalist – coined the word ‘Metrosexual’. He is famously quoted as saying “*I had seen the future of masculinity and it was moisturised.*” In the early 2000s it became more socially acceptable for men to openly care about their looks, clothing and skincare regime. Men’s magazines embraced this through their content and advertising and according to the magazine, 80% of its readers buy at least one male grooming product per month. In 2014, Simpson then introduced the term ‘spornosexuals’, men who are extremely body focused. The selection of the GQ cover shot, with Sterling’s six-pack and muscles on show, even though he is a footballer, supports this concept.
- In December 2018, Raheem Sterling took to social media to highlight racism in the British press. Sterling screen-grabbed two MailOnline articles, which juxtaposed how his Manchester City teammates (Phil Foden and Tosin Adarabioyo) had been treated for buying their mums a house. Sterling used his platform to highlight this racial inequality in response to personally receiving racist abuse on the pitch from fans. That same week in 2018 saw a Tottenham Hotspur supporter arrested for throwing a banana skin at Pierre-Emerick Aubameyang and Motherwell’s Christian Mbulu received racial abuse. Since the social media post, Sterling has become a sought-after spokesperson for charities, activists and other social causes. Gary Lineker has called him “*perhaps the most influential player in the game*” off-field. The full GQ article by Alistair Campbell can be read on GQ.co.uk for free.
- GQ Heroes is an event aimed at “*luxury business and creative minds*”. Held annually in Oxfordshire, it has a programme of speakers

“who are shaping society and culture around us”.

Representations of ethnicity and gender:

- Using a hugely successful black cover star (Raheem Sterling is British Jamaican) as their dominant image, GQ is presenting a role model for its readers, someone to aspire to be like. Although Sterling's sporting success might be outside of most reader's possibilities, his work ethic, principles and desire to want to better himself is not.
- The choice to represent Sterling topless with his tattoos on show reinforces the stereotype of men as having to be hyper masculine, strong and muscular. The tattoos themselves represent different aspects of his identity – the cross on his chest illustrates his Christian faith, while the baby on his arm represents him as a father. The black wings represent him as a supernatural figure suggesting his extraordinary skills on the pitch. The wings, combined with the main cover line *“Guardian Angel”* and the low angle shot construct him as a protective figure, fighting for justice. His wide stance and the choice of costume represent him as a dominant, confident figure. Meanwhile the thick silver jewellery and watch represent his wealth and modern masculinity.
- The main cover line reads, *“How Raheem Sterling saved football from itself”*. The reader understands this to mean that he is a success on a much grander scale than just the pitch; he is an influencer. His thick silver jewellery reinforces the capitalist ideology that for a man to be thought of as successful you must be wealthy and make a lot of money.
- All the men named on the cover are represented as successful in their own field, which conforms to the genre conventions of glossy magazines. Andy Burnham (white British) is framed as having a *“masterplan”* for Manchester representing men as clever, powerful and forward-thinking. This is juxtaposed with the representation of Machine Gun Kelly (white American), whose life is described as *“insane, wild and totally nuts”*, however this extreme lifestyle is more what the reader would expect

from a rapper than a politician, so the cover lines serve to reinforce our preconceived ideas of these roles. The Machine Gun Kelly cover line is not judgemental, but celebratory, inviting readers in to see what his apparently crazy life is like.

- For modern men, there is a societal expectation that they must ‘have it all’ – health, wealth and strength – and the image of Sterling supports this as he epitomizes all three. Also, just like their female counterparts, the very essence of men's lifestyle magazines is consumerism and so the images and cover lines will always seek to support this, informing men of what they supposedly need, *“How to wear a broken suit”* and also showing them what to covet, *“Why it's finally ok to wear a belt bag”*. This is like the female lifestyle magazines that tell their readers how to be beautiful, get fit and dress well. The importance of body image and consumerism doesn't change just because of gender.

Areas for further investigation:

- The choice of the two women – Gwendoline Christie and Adwoa Aboah – represented on the front cover.
- The changing perception of tattoos in media representations.

Vogue

(July 2021)

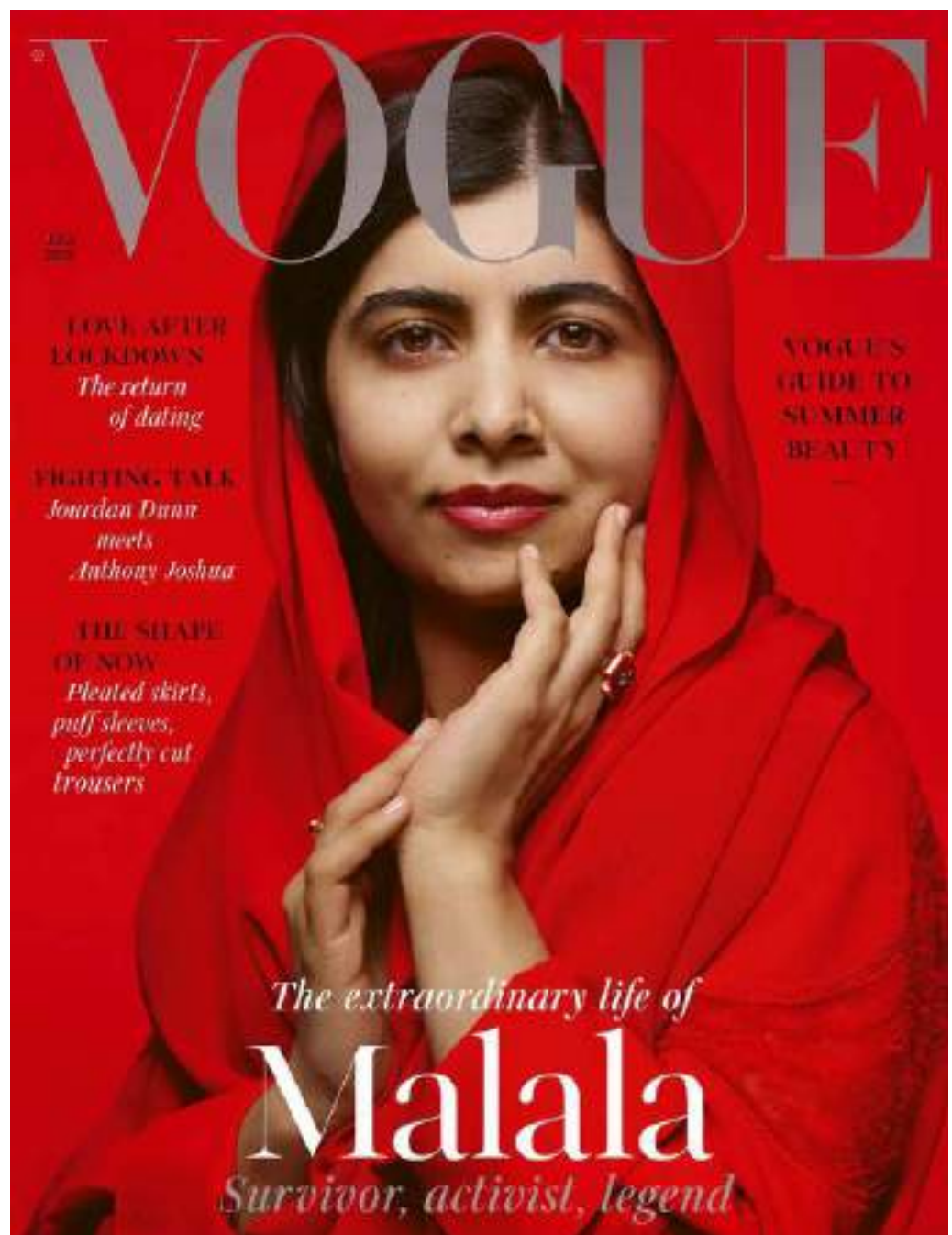
Malala Yousafzai Front Cover

GCSE Component 1: Exploring the Media

Focus areas:

- **Media language**
- **Representation**
- **Media contexts**

Image by Nick Knight /
Vogue.co.uk / Fair Use



Product context

- Vogue was first issued in New York in 1892 as a high society diary before it was bought by American publisher Conde Nast in 1905. Conde Nast made it into a women's fashion magazine, though still aimed at the upper classes. They also created different overseas versions: British Vogue was launched in 1916.
- Vogue is still produced by Conde Nast and continues to be successful in the UK, despite dwindling print sales in the magazine marketplace. Edward Enninful was appointed editor in December 2017. A former model, he brought with him a strong social media following. He has made some important changes to the content and representations featured in the magazine, which have not only increased digital subscriptions and stabilised print sales of the magazine but have also influenced significant changes in the wider magazine marketplace. In 2021, British Vogue had an average circulation figure of 191,000 issues of the print magazine each month. Vogue claims to have 5.3 million digital subscriptions and a social media following of 14.3 million.
- Vogue is classed as a glossy, monthly, women's lifestyle consumer magazine. *"British Vogue is the authority on fashion, beauty and lifestyle, and is a destination for women to learn, be challenged, inspired and empowered. Under Edward Enninful's unmatched global editorial status, British Vogue has become the undisputed Fashion Bible in the United Kingdom and is leading the cultural zeitgeist worldwide, powered by purpose."*
(SOURCE: MEDIA PACK https://cnda.condenast.co.uk/static/mediapack/vg_media_pack_latest.pdf)
- Vogue is aimed at ABC1 fashion and style conscious women who are educated, sophisticated and wealthy. Whilst it traditionally targeted an older female audience of 30–45-year-olds, you could say that this audience has now broadened to appeal to, inspire and empower younger readers too, as well as a much more culturally diverse audience, under the influence of the new editor.

- Vogue is still hugely dependent on advertising revenue. Most of its pages are adverts for high-end consumer brands. To appeal to advertisers, Vogue emphasises the wealth and status of its ABC1 readership who spend an average of £8k a year on fashion and over a thousand pounds a year on cosmetics.

Media language

How media language creates and communicates meaning:

Vogue is a mainstream magazine, so it uses the typical codes and conventions of print to construct the front cover. Over a long period of time, Vogue has also acquired its own unique house style so that its brand identity is instantly recognisable.

- The same classic Didot font has been used for the VOGUE masthead since the 1950s; perhaps it is now better known as the Vogue font. The all-uppercase serif font gives it a classic, architectural look, an aesthetic that commands respect. Tall, slim and sculpted, the letters proclaim their own statuesque style. The word *vogue* means something that is trendy or popular.
- The VOGUE masthead is always capitalised and centrally placed, like a banner across the top of the magazine. In this edition, the masthead is laid over the forehead of the cover model, Malala Yousafzai. Perhaps she is an unlikely cover model for a fashion magazine, but this effect immediately anchors her as a Vogue star, in combination with her caption: 'Survivor, Activist, Legend'. The use of the same silver-grey colour for this caption and the Vogue masthead links and reinforces that message: Malala is a Vogue role model.
- On the cover you can see the limited colour palette of red, silver-grey, black and white, which suggests the confidence of a sophisticated design that is associated with a high-end magazine. The use of the dominant colour red in this context suggests celebration, joy, luxury, power and strength, a call to action to identify with Malala, the survivor/activist/legend. The understated silver-grey and gentle glint of gold from her jewellery give a sense of elegance and glamour.

- The main coverline, the caption of Malala's own name, is the brightest text on the page. The white clearly contrasts with the red background celebrating her name and her status. Malala's name and her importance is highlighted and framed by the italicised text: "The extraordinary life of" in white and "Survivor, activist, legend" in silver. This offers a measured sense of symmetry with the masthead at the top.

The composition of the front cover follows the principles of traditional design. Applying the rule of thirds, the masthead at the top and the centred Malala captions at the bottom frame the main image of Malala symmetrically, enhancing her status. While the focus on the eyes seems slightly high for the rule of thirds, the graceful hand gesture leads the viewer back to look Malala in the eye, making her centre of attention. This format, together with the flow of text at the top and bottom, follows the traditional Z-rule.

Malala is shown in a medium close-up shot that draws attention to both her facial expression as well as her body language and attire. The headscarf she wears indicates her culture and her religion and is an essential part of her identity: Malala is a survivor because she was shot in the face by the Taliban for being a 15-year-old Muslim girl who was seeking an education. (She has since graduated from Oxford.) She engages the reader with direct eye contact and a slight smile – a mode of address that is personal and welcoming but confident and self-assured. She is at a level angle with us: we are invited to get closer to her, to identify with her, but also admire her and look up to her as a role model, a legend even.

On the cover, you can see how the captions used to anchor the cover model elevate her status and importance. "Survivor" suggests she has overcome being a victim and is now a powerful "activist", taking a political stance to drive her own "extraordinary" narrative forwards. At the age of just 23, she has achieved the accolade of a "legend" in less than 10 years.

The coverlines on the left-hand side all follow the same chic minimalist design, a black uppercase headline with an italicised subheading in white to draw the reader into what is more familiar territory for women's lifestyle magazines: fashion, romance, celebrities.

Vogue asserts its authority here to show you how to get back into the dating game, with 'LOVE AFTER LOCKDOWN', and to tell you what is in fashion in 'THE SHAPE OF NOW: how to keep up, what to do and what to buy'. The use of alliterative language (with Ls) is a rhetorical device that tells us that Vogue is an authority on the subject.

The important coverline on the right-hand side, 'Vogue's Guide to Summer Beauty', affirms Vogue's authority as the fashion bible. Sitting on a red background, just above Malala's shoulder, it doesn't need to say any more. It balances the layout with the design of the left-hand side coverlines.

The coverline 'FIGHTING TALK' broadens the reader's appeal from fashion fans of the model Jourdan Dunn to sporting fans of the champion boxer Anthony Joshua. This is another unlikely feature for the magazine but shows how Vogue is widening the scope of its more traditional readers, whilst possibly appealing to new readers who wouldn't expect a heavyweight boxing champion in the pages of Vogue. It demonstrates how Enninfu is taking his readers by surprise and leading the way.

Possible areas for further investigation:

- High production values are part of Vogue's branding, and using Nick Knight as star photographer emphasises this. You could research his other work as a photographer and the recognition and accolades he has achieved.
- Explore the selection of Jourdan Dunn and Anthony Joshua. What do they represent? Why have they been paired together in an interview? Who do you think this article would appeal to?

Representation and contexts

Social, cultural and historical contexts:

- To show a Muslim woman wearing a headscarf on the cover is highly unusual, even today. Historically, the editors of mainstream women's magazines claimed that featuring models of colour on their front covers badly affected sales of the magazine. Black and Asian models were underrepresented to such an extent that there was little evidence to support their claim: it was simply accepted as fact. Naomi Campbell has famously challenged the industry for

this systemic racism throughout her career, advocating wider diversity for all, from the 1990s through to the 21st century. She was the first Black cover model on Vogue in many of its international editions, and she first featured on the cover of British Vogue in December 1987. Black models on the covers of Vogue UK were few and far between. According to The Guardian newspaper, between the August 2002 edition of British Vogue (with Naomi Campbell as the cover star) and 2014, a period of 12 years, “146 covers have been shot, edited and distributed to newsstands and not one has featured an individual black model.”

<https://www.theguardian.com/sustainable-business/black-model-british-vogue-naomi-campbell-racism>

Conde Nast would have deliberately addressed this when they appointed Edward Enninful as editor in 2017, not only the first man to edit the magazine but also the first Black person. Since then, Vogue covers have celebrated diversity not just through race and ethnicity but also age, gender and size. Naomi Campbell has joined Ed Enninful’s board of directors at Vogue.

- In April 2018, British Vogue’s cover featured a group of models of all colours, ages and sizes, and included the first model to wear a hijab as a symbol of her religion. It got everyone talking about it, prompting wider cultural awareness of issues of representation. “You might not care about fashion but having women of colour represented on the UK cover of the fashion bible is a big deal. This is how true diversity happens” wrote Chitra Ramaswamy.

<https://www.theguardian.com/lifeandstyle/2018/apr/03/halima-aden-why-a-model-wearing-a-hijab-on-the-cover-of-vogue-matters>

- In terms of its political historical context, this issue was published at a time when British and American troops were preparing to leave Afghanistan for good, in August 2021, after a twenty-year battle to combat al-Qaeda and extremist terrorist following the attacks of 11 September 2001. The Taliban were taking control of the country and there were concerns for the safety of people left behind. Malala was making her voice heard on an international stage, calling for world leaders to protect humanitarian

rights and work for peace and democracy in Afghanistan and its neighbouring countries. In a Newsnight interview (August 2021), she expressed her concerns for the physical safety of women and girls in Afghanistan, their access to education and their freedom to work. Although there is no direct reference to this on the cover, Malala is recognised as an education activist opposed to the Taliban, and the news media were full of stories discussing concerns about the plight of ordinary Afghan people following the evacuation at this time. The activist caption on the cover anchors this.

Listen to this interview with Malala on her fears for the rights of Afghan women and girls:

<https://www.bbc.co.uk/sounds/play/p09sfp7d>.

Representations of ethnicity and gender:

- As a female education activist of Pakistani origin, Malala seems like an unlikely cover model for the fashion bible. The editor explains their choice: she is an inspirational figure who has achieved so much, against all odds, at such a young age. In the introduction to the issue, Enninful writes “*When it comes to people I admire, Malala Yousafzai is right at the top. At 23, the world’s most famous university graduate has already lived so many lives. Activist, author, tireless campaigner for girls’ education, daughter, sister, student and survivor. It’s hard to believe it was only a decade ago that she was a young teenager with a passion for learning, living in Pakistan’s Taliban-controlled Swat Valley, blogging about her experience for the BBC and giving a voice to girls denied the right to learn. A near-fatal attempt on her life in 2012 – or what she calls “the incident” – brought her to Britain for specialist surgery. But she didn’t stop there.*”

(SOURCE: Editor’s letter, Vogue issue July 2021 <https://www.vogue.co.uk/news/article/malala-vogue-cover>)

- The construction of Malala’s representation includes the choice of the colour red for her outfit, headscarf and lipstick all merging with the warm red background. You could explore various cultural codes for what the colour red symbolises. In this context, the red is joyous, strong and powerful. One important connotation

for Malala’s religion and culture is that red is a colour of celebration, often the colour used for marriage.

- The headscarf Malala wears, a dupatta rather than a hijab, is an important part of her cultural identity. In the interview inside the magazine, she explains that the headscarf is a “cultural symbol for us Pashtuns” and represents her roots as a Sunni Muslim of Pashtun ethnicity. She continues, “And Muslim girls or Pashtun girls or Pakistani girls, when we follow our traditional dress, we’re considered to be oppressed, or voiceless, or living under patriarchy. I want to tell everyone that you can have your voice within your culture, and you can have equality in your culture.” The way the soft fabric is gently folded over her neck and shoulders creates a classic elegant look that is iconic and even gives it a mythic status, which links with the caption “legend”. In contrast, her lipstick, nail polish and gold jewellery suggest that she is also at home in her new culture, living as a confident young woman in Britain today.

(SOURCE <https://www.vogue.co.uk/news/article/malala-vogue-interview>)

- The graceful positioning of her hands, following the flow of the fabric of the scarf, could be seen as an expression of femininity and as a gesture of both thoughtfulness and modesty. It could also suggest the importance of hand gestures in traditional Indian dance.
- The light catching her eyes as she looks out towards the reader to meet our gaze suggests a personal, direct and honest connection: that she is a figure to be trusted. This encourages us to aspire to be like her, an extraordinary and iconic young woman.

Areas for further investigation:

- Look at the awards Edward Enninful has received since becoming a trailblazing editor at Vogue.
- Compare how British magazine covers have celebrated cultural diversity on their covers in response to Ed Enninful’s lead.
- Research Malala’s achievements since “the incident”.
- You could research how different audiences responded to this Malala Vogue cover. Once again, Ed Enninful got everyone talking about it, but not everyone liked it.

Outdoor Adventurous Activities			
Provision for different types of OAA in the UK	Equipment, clothing and safety aspects of participating in OAA	Plan for and be able to participate in an OAA	Evaluate participation in an OAA
Identify: National Governing Body (NGB) for additional information on the approved activity areas Outdoor activity organisations	Identify: Types of equipment: Safety Specialist Types of clothing: Safety Specialist General Types of technology: GPS and signalling devices Light weight equipment and clothing Waterproof technology The role of technology: Access and transportation Comfort Safety Communication Information Types of terrain/man made environments: Lakes Rivers Sea Canals Forests Moorlands Mountainous areas National Parks Quarries Crags Trails – walking, cycling, orienteering Snowdomes Dry ski slopes High ropes courses Gorges	Identify: Key considerations when planning an outdoor activity in a specified location Outdoor activity risk assessment Emergency procedures plan Demonstrate appropriate skills in outdoor activities	Identify: Evaluate participation of outdoor activity Evaluate the value of participating in outdoor activities How would you improve wider participation of your activity: Promotion Provision Access
Describe: NGB - each outdoor approved activity area will have an NGB with a website, and these should be used as points of reference. In some cases individual activities, within a category area may have their own NGB	Describe: Types of equipment: Safety - Taking part in outdoor activities can involve an element of risk but appropriate behaviour, suitable clothing and using the equipment correctly will minimise the risk.	Describe: Key considerations when planning an outdoor activity in a specified location: Health and Safety Personnel Licensing	Describe: Evaluate participation of outdoor activity: What aspects went well? In what ways was the activity successful?

Outdoor activity organisations: - National Sports Centres – provide world class training and competition facilities to a wide range of NGBs and community users - Voluntary Organisations – operate as non-profit making organisations and run on a voluntary basis. Majority hire facilities usually provided by the public sector - Local providers - includes local and commercial sports centre providers	Specialist: Many outdoor activities make use of specialist equipment that is specific to that activity. Types of clothing: Safety - specialist footwear as required for the activity to meet safety requirements Specialist - specialist clothing needed for that particular activity General - that the participant could provide themselves Types of technology: GPS and signalling devices - GPS technology is preferred to traditional maps, compasses and landmarks as a way of navigating new terrain and the vast outdoors. Light weight equipment and clothing – may be needed for carrying, transportation or injuries Waterproof technology – to keep you dry or equipment dry The role of technology: Access and transportation - Modern technology has made it easier to move around. Transportation to hard to reach areas has made outdoor activities in those locations possible. Comfort - reduced weight of equipment and properties of clothing which minimises the risks of exhaustion Safety - to include information on how technology can keep participants safe, this can include rescue scenarios and contacting emergency services Communication - Participants have a range of devices that can be used to maintain contact with emergency services or base camp. Information - Information such as weather forecasts and map locations with excellent accuracy has all made outdoor activities a more attractive proposition. Types of terrain/man made environments: Environment: The surroundings or conditions in which a sport operates. Terrain: A stretch of land, especially with regard to its physical features.	Supplies Location Timing of activity Shelter Contingency plan Outdoor activity risk assessment: Personnel Unstable terrain Inappropriate equipment Inappropriate clothing Unforeseen weather Poor organisation Getting lost Animals Insects Emergency procedures plan: First aid Rescue Demonstrate appropriate skills in outdoor activities: Safe practice Communication skills Decision-making skills/problem solving skills Identifying and clarifying any issues Team-working skills	Think about preparation and your participation? E.g. arrived on time – how was that useful? What aspects could be improved? What aspects did not go so well? What aspects were disappointing? What would you do differently next time? E.g. did not arrive on time – how did this affect you? Evaluate the value of participating in outdoor activities: Physical benefits - include health and fitness such as fitness components, outdoors, fresh air, sunlight Social benefits - include communication, team working, problem solving, making friends, sense of belonging, reducing loneliness Mental (emotional) benefits - include self-confidence, enjoyment, motivation, problem solving, challenging How would you improve wider participation of your activity: Promotion: role models, initiatives, campaigns, advertisement, influencers, social media, different forms of media coverage Provision: Facilities, clubs, school lessons Access: Different user groups such as disabled, teenagers, children (how do they access the sport/how difficult it is to access it)

<u>Give a practical example:</u> NGB – examples of NGBs for a couple of activities?? ☐ Water sports – British Canoe Union ☐ Trekking – Mountain Training ☐ Climbing – British Mountaineering Council ☐ Caving – British Caving Association ☐ Cycling – British Cycling Outdoor activity organisations: • National Sports Centres - examples include Holme Pierrepont, Tollymore, and Plas y Brenin • Voluntary Organisations - for example Scouts, Guides, Cadet and Duke of Edinburgh • Local providers - includes local and commercial sports centre providers, such as (e.g. Go Ape)	<u>Give a practical example:</u> Types of equipment: Safety – helmet for caving Specialist – belay device for rock climbing Types of clothing: Safety – walking boots for rock climbing Specialist – ski boots for skiing General – thermal clothing Types of technology: GPS and signalling devices – personal beacons Light weight equipment and clothing – sleeping bags, quad bikes Waterproof technology – waterproof jacket, smart watches The role of technology: Access and transportation – snow mobile Comfort – lycra clothing Safety – electronic mapping Communication – walkie talkies Information – weather forecasts and map locations Types of terrain/man made environments: Terrain – rivers, forests, mountainous areas Man made environment – dry ski slopes, high ropes courses	<u>Give a practical example:</u> Key considerations when planning an outdoor activity in a specified location: ➤ Health and Safety – activity that is suitable for the participants; requirement for a first aider ➤ Personnel – ratio of leaders, qualifications of leader ➤ Licensing – the licencing requirements of the activity centre/location ➤ Supplies – appropriate nutrition for duration of the activity, including ideal foods/fluids to take with you ➤ Location – terrain suitable for the experience of the participants and the activity ➤ Timing of activity – duration; time of day ➤ Shelter – overnight accommodation requirements; requirement for shelter from adverse weather ➤ Contingency plan – consideration of alternative route(s) Outdoor activity risk assessment: ➤ Unstable terrain - awareness of potential terrain that could cause injury, or change due to environmental or climate changes ➤ Inappropriate equipment - checking equipment for damage ➤ Inappropriate clothing - considering the activity being completed, such as not wearing jeans when skiing ➤ Animals - be mindful of wildlife in activity area location ➤ Insects - hazards of bites and stings Emergency procedures plan: Plans should include action to be taken in the event of: ➤ First aid - an injury/illness	<u>Give a practical example:</u> Evaluate participation of outdoor activity: • Correct clothing and footwear • Correct food/water • Correct kit/change of clothes • Appropriate for weather • Correct safety equipment Evaluate the value of participating in outdoor activities (Physical, Social and mental): Canoeing example: Physical – speed – having a race and using speed to row quickly to win Social – team work - completing a canoe challenge Mental – self confidence – I completed the challenge and that improved my self belief and confidence How would you improve wider participation of your activity: Promotion: advertisement and posters of high ropes courses Provision: More canoeing clubs available Access: Ramps and access for people with disabilities, subsidised costs for children

		➤ Rescue - including how communication/contact will be made and maintained Demonstrate appropriate skills in outdoor activities: ➤ Safe practice - following instructions, awareness of emergency procedures, ensuring correct clothing/equipment ➤ Communication Skills - verbal, non-verbal, specific activity terminology ➤ Decision-making skills/problem solving skills ➤ Identifying - clarifying any issues, gathering facts and the cause of any issues, generating possible solutions, comparing pros and cons of options, selecting best option to resolve any issues ➤ Team-working skills - reliability, active listening, active participation, collaborative working, treating others with respect	

POWER & CONFLICT POETRY			Poem & Poet	About	Subject terminology	Themes	
Poem & Poet	Content (Context in bold)						
Ozymandias Percy Shelley 1817	Narrator meets a traveller who tells him about a statue in the middle of the desert. The statue is of an ancient & cruel ruler from a past civilization – Pharaoh Ramesses II . The poem is about the temporary nature of power. Ultimately, power will fade, art cannot immortalise power & nature will be long-lasting.		Tissue Imtiaz Dharker 2006	The poem uses tissue as an extended metaphor for life. She describes how life, like tissue is fragile. However, she also discusses some of the literal uses of paper that are intertwined with our lives, such as recording names in the Koran- She then goes onto to discuss how we are made from tissue (living tissue which is our skin) emphasising that life is fragile. Dharker has Pakistani origins & was raised in Glasgow. Many of her poems looks at issues of identity.	Alliteration Assonance Autobiographical Authentic Blank verse Caesura (plural caesurae) Colloquial language Dramatic monologue Emotive Enjambment Euphemism -“all smiles stopped” First person Form Free verse Half rhymes Iambic pentameter Imagery In medias res Internal rhyme “tears between the bath and pre-lunch beers” Irony Juxtaposition Language Layout Metaphor Monologue Mood Narrative Onomatopoeia Anaphora Oxymoron Personification Sonnet Phonetic spellings Plosive Rhetoric Rhetorical question Rhyming scheme Rhyming couplet Rhythm Sibilance Simile Stanza Verse Structure Symbolism Voice Third person Tone Volta Epic poem Cliché Hyperbole Semantic field Personification	Power of Nature: Ozymandias, The Prelude, Exposure, Storm on the Island, Tissue & Kamikaze.	
London William Blake 1794	Narrator describes a walk around London & comments on the despair & misery that he sees. Blake was influenced by the French Revolution & wanted social & political equality. He wanted the people to rise up against the powerful (church, monarchy) & in turn emancipate (liberate/free) themselves.		The Emigrée	The speaker speaks about a city that she left as a child. The speaker has a purely positive view of the city. The city she recalls has since changed, perhaps it was scene of conflict, however, she still protects the memory of her city. The city may not be a real place but represent a time, emotion - perhaps the speaker’s childhood. According to Ben Wilkinson (critic), Rumens has a ‘fascination with elsewhere.’		Power of humans: Ozymandias, London, My Last Duchess, Tissue, Checking Out Me History.	
The Prelude: Stealing the boat William Wordsworth 1850	This is only an extract of the poem & it is autobiographical . It is about an over confident narrator who finds a boat & takes it out on the lake. Although confident to begin with & enjoying the scenery, the narrator sees the mountain appear on the horizon & is overwhelmed with its size & power. It causes the narrator to retreat & change his view of nature, he now realises its power. Wordsworth was a romantic poet (Romantics challenged people about they way they thought. They also saw the power of nature over mankind.)		Carol Rumens 1993			Effects of conflict: The Charge of the Light Brigade, Exposure, Bayonet Charge, Remains, Poppies, War Photographer, Kamikaze.	
My Last Duchess Robert Browning 1842	A Duke is showing a visitor a portrait of his Duchess (former wife) who is now dead. Whilst observing the painting he tells the visitor that the Duchess was flirtatious & displeased him. As he speaks we realise that the Duke is insanely jealous & probably had the Duchess killed. We learn at the end of the poem that the visitor has come to arrange the Duke’s next marriage & is representing the woman he is set to marry. Poem based loosely on the real Duke of Ferrara.		Kamikaze Beatrice Garland 2013	Kamikaze is the unofficial name given to Japanese pilots who were send on a suicide mission. The mission was considered one of honour but this poem is about a pilot who aborted the mission. Hi daughter imagines that her father was reminded of his childhood & the beauty of nature & life whilst on the mission. When he returned home he was shunned.		Reality & brutality of conflict: The Charge of the Light Brigade, Exposure, Bayonet Charge, Remains, War Photographer.	
The Charge of the Light Brigade Alfred Tennyson 1854	A tribute to the British cavalry (soldiers on horseback) who died during the Crimean War. Basically, the men were given an incorrect order to charge into battle & with swords, & meet the Russian enemy, who were armed with guns. The cavalry were defenceless- yet still fought bravely.		Checking Out Me History John Agard 2007	The narrator discusses his identity & emphasises how identity is closely linked to history & understanding your own history. In school he was taught British history & not about his Caribbean roots to which he feels resentful. He mocks some of the pointless things he was taught & contrasts the nonsense topics with admirable black figures.		Loss & Absence: London, Exposure, Poppies, The Emigree, Kamikaze.	
Exposure Wilfred Owen 1917-1978	An authentic poem based on Owens’ own experience on the front line. It was a horrendous winter & the men are subject not to enemy attacks but to the brutality of nature. Nature is personified as the main enemy & the men can only wait to die. It is an anti-war poem & stresses the insignificance of man compared to nature. During the Somme, over 60,000 British soldiers died in one night.		The Exam		Assessment Objectives		
Storm on the Island Seamus Heaney 1966	The narrator describes how a community are waiting to be hit by a storm. It is obvious that they have been hit before because of the landscape of the island (houses squat). The narrator starts off confident but as the storm hits the power of the storm creates feelings fear & trepidation.. Heaney grew up in a farming community in Ireland; much of his poetry uses agricultural/natural images.		Example question: Compare the ways poets present ideas about nature in ‘Exposure’ & in one other poem from the Power & Conflict cluster.		A01- Demonstrate an understanding of the question & poems, use quotations to evidence understanding. Ensure comparisons are made between poems & made throughout your response. <u>12 marks available</u>		
Bayonet Charge Ted Hughes 1957	The poem focuses on a single solder’s experience of a charge towards enemy lines. It describes his thoughts & actions as he tries to stay alive. It is clear that the solder is not ready for the charge & could have been sleeping. The soldier fears for his life & the patriotic ideals that encouraged him to fight have gone. Hughes was a former RAF serviceman & often look at man’s impact on nature.		INFO ☐45 minutes ☐1 task only- no choice of question ☐1 poem printed		A02- Carefully analyse the language used by the poet & comment on the intended effect on the reader. Ensure that you include subject terminology in your response. Comment where you can on structure/form <u>12 marks available</u>		
Remains Simon Armitage 2008	Based on the account of a British soldier who served in Iraq, first published in a series of interviews by Channel 4 called ‘The Not Dead’. . A group of soldiers shoot a man who’s running away from a bank raid. His death is described in graphic detail & the soldier who is telling the story can’t get the death of the man out of his head. He didn’t know if the man was armed or not & the reader gets the impression that it was not an isolated incident.		Actions: Step 1: Read & highlight the key words of question Step 2: Decide on one poem to compare to Step 3: Write quotes you want to use from your chosen poem & connect them to quotes from the printed poem. Step 4: Write the essay: intro/PEE on one poem – connective- PEE on next poem/ Repeat Step 6: Conclusion		A03- Show understanding of the relationships between poems & acknowledge the contexts (time) in which they were written & think about how this aids your understanding <u>6 marks available.</u>		
Poppies Jane Weir 2009	A mother describes her son leaving home, seemingly to join the army. The poem is about the mother’s emotional reaction losing her son to the war. She fears for his safety & after he leaves her she goes to a familiar place that reminds her of him. Weir is a textile artist as well as poet & textiles feature heavily here.						
War Photographer Carol Ann Duffy 1985	A war photographer is in his darkroom, developing pictures that he has taken in different warzones. As the pictures develop he recalls the death of one man & remembers the cries of his wife. The photographer contrasts his experiences to rural England & focuses on people who do not seem to care about war torn places. Duffy was inspired to write this poem by her friendship with a photojournalist.						
Comparing Connectives		Contrasting connectives		Stretch yourself			
Likewise In the same way Similarly Equally Likewise As with		However Whereas On the other hand Conversely Alternatively Although		Be original, develop your own interpretations; Be critical, give your own justified opinions; Develop your ideas on context- what effect does have on the poem & your understanding?			

Quality Street print advert

(1956)



**CHOCOLATE
SPRINKLES** CAP
Strawberry jam and cream
encased in milk chocolate.

HARROGATE TOFFEE
The delicious, smooth toffee
with a hint of Harrogate's famous
mineral water.

CHOCOLATE TOFFEE FINGER
Delicious toffee covered
with plain chocolate.

What a delicious dilemma!

18 delightfully different
toffees and chocolates in

**Mackintosh's
'Quality Street'**

© Mackintosh's Quality Street Ltd. 1956

Neil Baylis / Alamy Stock Photo

Quality Street print advert (1956)

Component 1: Exploring the Media

Focus areas:
Media language
Representation
Media contexts

PRODUCT CONTEXT

- *Quality Street* sweet tin made by Mackintosh.
- Originally created in 1936, inspired by the name of a play by J.M Barrie.
- In the 1930s, only the wealthy could afford chocolate boxes but the creator Harold Mackintosh aimed to sell them at a more reasonable cost to appeal to working families. By the 1950s, when this campaign started, society was in a post-rationing period where luxuries were once again becoming an acceptable part of grocery shopping.

PART 1: STARTING POINTS – Media language

Historical context

The icons of the *Quality Street* brand were two characters from the Regency era of British history. In the Regency era, Britain went through a period of elegance with regard to Fine Art and Architecture. The Regency era could also be compared to the 1950s for its significant social and cultural development. Between 1811 and 1837 the country was under the rule of Prince Regent and developments in technology (e.g. the steam-powered printing press), fashion and architecture were mirrored by a population boom. These similarities can be compared to England in the 1950s.

Social and cultural context

The 1950s saw a change in “high culture”, a time where fine art, decadence and theatre that had previously only been accessed by the upper classes

and those with money were now going to be made more affordable to the mass audience.

The Conservative Party’s 1951 election campaign was spearheaded by the slogan “Set the People Free”, and this supported drastic change as entertainment and arts became more accessible and affordable.

Consider how media language creates and communicates meaning:

- **Structure and design of the advert:**
 - » anchorage of the gold frame – connotations of a halo effect around the man and the product
 - » typical triangular geometric **composition** of the poster to help secondary anchorage of the product
 - » product takes central **framing**.
- **Typography** is strong, forming the bottom third of the poster, and the strong purple colour stands out to draw the consumers’ eyes to the name.
- Hand-drawn, artistic nature of the design, with a rich **colour palette** of primary and secondary colours, links to the post-war consumerist culture.
- **Persuasive language techniques** such as alliteration, emotive language and superlatives are all indicative of a well-read educated audience; further enhanced by the bold, serif font styles connoting richness.

Consider how media language creates narratives:

- **Connotations** of the female characters being dressed similarly to the sweets that are shown close-up on the bottom third of the poster.
- Inference of a **dilemma** can be investigated at two levels:
 - » male ‘hero’ choosing between two ‘damsels in distress’ (Propp’s theory)
 - » females choosing the chocolate (see Representation section for discussion on female stereotyping).
- **Costume** and dress of male character indicating

the formal nature of his dilemma; connotations of a higher class and richer society.

- **Patriarchal** narrative, which is part of a range of similar adverts of this time.

Consider intertextuality:

- The characters in the gold frame, Miss Sweetly and Major Quality, are part of the **brand Identity** of the product since 1936.
- The characters are symbolic of the Regency era of British history referenced by the dress codes of the characters in the gold-framed picture at the back of the advert.

Possible areas for further investigation:

- The advert is part of a **campaign** from this time that uses a similar design. The brand identity of Major Quality and Miss Sweetly goes back to the origin of the product in the 1930s, so it is interesting to look at how their advertising has developed with these characters:
http://www.nestle.com/media/newsandfeatures/quality_street_75

PART 2: STARTING POINTS – Representation

1956



1956



Social and cultural context

Gender roles in the 1950s were remarkably different to the present day and it is important to consider the advertisement in this context.

The product itself was designed and planned for working families and the imagery is very aspirational of a higher class which links to the post-war era in Britain. Much of the branding indicates that the product was symbolic of elegance and

aspiration. The two female characters appear to be of a lower class than the man in the suit, and the man in the suit is of a lower class than the two characters in the gold frame. The item that brings all these classes together is the product in the centre of the image.

Consider the representation of gender:

- The image suggests a **male dominated society** with regards to 'choice' – he is in control of the product and is centrally framed. This links to Mulvey's male gaze in relation to the framing (**feminist theoretical perspective**). The male character anchors the audience's eyes to the product which has significant phallic symbolism.
- The dress code relates to the modern working businessman who may be the 'provider' of the brand.
- The women have two **stereotypes** being relied upon in the advert: firstly, that of their need for chocolate, a common and very traditional stereotype that still exists today, and secondly their subservient body language to the dominant man. The implication is that to be successful you will need to be romantically led by a man.
- There is also a secondary and **deeper analysis** here – a sense of manipulation with the women distracting the man through romance to access the 'prize' that is the product in the gentleman's lap. This advert could be seen to be representative of the way in which society was moving at this time.
- The **historical** representations of the Regency characters show typical strong feminine colours, and the showing of flesh for Miss Sweetly, and the formal uniform dress of Major Quality signify importance and power in their own relationship.

Consider the representation of age:

- To discuss the representation of age, it would be important to make a comparison to a similar advert in this campaign with a much older couple in two chairs (see above).
- This advert is purposely for the young to middle aged adults (25–40), and the **target audience** could see themselves in the characters in the main section of the advert.

Possible areas for further investigation:

- Consider the **role of women** in advertising which is key to this discussion.
- Use some **examples of advertising from the early 1950s** to help understand the role of the housewife and how they would provide

for the man of the house. The images below show subservient women with their eyes not providing an address to the audience.

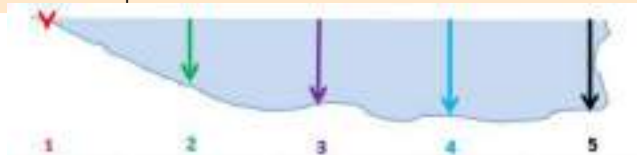


Acknowledgements:

1. Image Courtesy of The Advertising Archives
2. Neil Baylis / Alamy Stock Photo
3. Image Courtesy of The Advertising Archives
4. Image Courtesy of The Advertising Archives
5. Image Courtesy of The Advertising Archives

Analysis

- To show the collected data CROSS SECTIONS were drawn to show the data collected on depth and width across each river section.
- These all can then be plotted to create a scale diagram of the cross-section, or used to find and compare the cross-sectional area of the river.
- This is needed to allow the calculation of the discharge which was then compared for each river section.



We constructed a range of graphs to show all our data for each stream section we measured – cross sections allowed us to easily see and compare changes and differences between each river section. Width and depth were all graphed using this technique. A scatter graph was used to show how discharge changed downstream. It clearly shows if Bradshaw's prediction was true along the river. We were able to put in a line of best fit to show the relationship between distance down the river and discharge.

We described what each figure – graph, table, photo etc. showed. We compared across groups of figures e.g. CSA, velocity discharge etc. We quoted data to back up what we were saying.

We identified the most important bits of information – any patterns, biggest, smallest, odd.

Working out the mean, median, mode and range of some data was possible. E.g. the changes in particle (stone) size. Scatter graphs were used to show trends in data – lines of best fit were plotted to show trends – positive / negative or no connection.

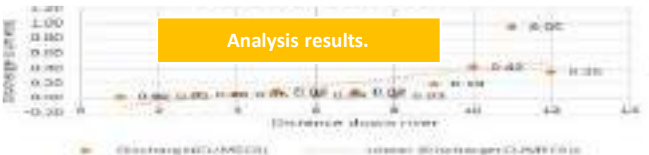
River discharge is measured in m^3/s (that is, cubic metres per second)

To measure this, we need to measure velocity (m/s) and cross-sectional area (m^2).	Velocity = speed measured over a 10m distance. 10 divided by time taken = velocity (m/s)	Cross-sectional area = width x depth. So width across the stream and the average depth and to be worked out.

Working out the discharge

It was necessary to calculate the discharge for each stream section. We also looked at the discharge results from other groups working on the day. Averaging out results from different groups who worked in the same area helped us avoid bias (unfairness) and inaccuracy in our data and is therefore more reliable.

Analysis results.

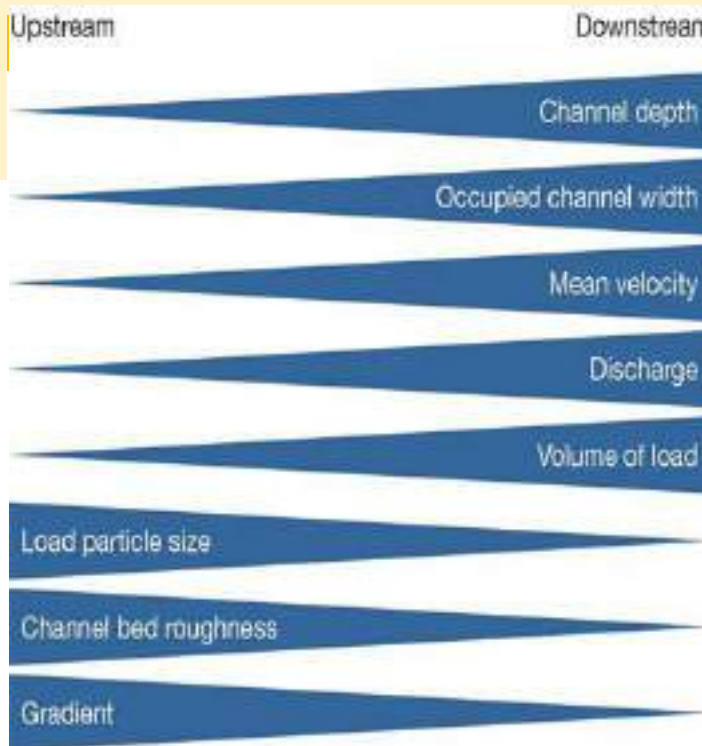


Conclusions - "How valid is the Bradshaw model in describing how river discharge changes along the course of Golden Clough/Grindsbrook/River Noe in Edale?"

The Bradshaw model is valid in describing how river discharge changes along the course of the rivers in Edale. It shows that the discharge should increase the further downstream the rivers, **which is supported by my data. Discharge increased from 62 cumecs to 139.**

Some data did not agree with the model on some sections or was clearly an anomaly and considered to be inaccurate. **Depth for example does not always increase as we go downstream in all sections.** This pattern may be because the length of river looked at was too short compared to the rivers that Bradshaw studied. The final section was heavily influenced by human activity – a riverside road. Anomalies could have been down to inaccurate measurements made by some groups.

Width, velocity and discharge all followed the patterns suggested by Bradshaw. We also looked at bedload data. The average results for this show an average long axis which goes from 8cm to 11 cm. working from nearest to the source to furthest from it. **This also agrees with the patterns predicted by the Bradshaw model.**



Data for Discharge

Speed to get velocity - example

I used a 10m measured section. This was set out with a tape measure. We chose a 10 m section of the river. Bonios (dog biscuits) were used to act as a float that we could time over this river section. The Bonios were easily visible and also biodegradable so they would not harm wildlife. I stood at the start of my ten metre stretch of river, and dropped one dog biscuit into the water. I then timed how long it takes for the biscuit to go to the end of the ten metre length. I repeated this five times, and recorded a mean average. This was done on each of the 3 river sections. To get velocity we divided the distance by the time taken. **This is a good method as it clearly allows us to find a correct velocity – but if the biscuits are different sizes, it may affect our end result, due to the difference in the surface area. This information was because important for me, one of my aims is to find out 'how velocity changes downstream' which will help me to answer this aim. Inaccurate measurements will affect my calculation of the discharge.**

Width - example

To measure the width, I'm going to use a primary technique of using a tape measure from one end of the bank, to the other; in a straight line and record the width using this simple, but effective method, which would benefit my investigation, as I can then compare my results with others upstream. The only limitations I could have with this method are that my results alone will not represent the entire river. In addition to this; if the velocity of the river is high, then the ten metre tape measure may not be as straight as I hope it will be, so to resolve this, I'm going to attach each end to the bank, and hold the middle part of the tape measure, to stop it from moving – this will allow me to gain an accurate result. This is very important because one of my aims is to find out whether the river's width changes at each course along the river, and this method will help me to do so. **Inaccurate measurements will affect my calculation of the discharge.**

Depth - example

To measure the depth, I'm going to use a primary technique of using the tape measure again, across the width of the river, and use a metre stick to record the water level, by placing the metre stick at five equal – but different points along the width and taking the depth in centimetres. This will be a beneficial method, because I can compare my results with other ones collected. This method also has limitations because it will also not be a reliable representation of the whole river. According to the Royal Geography Society, this method may also have limitations because "a soft river bed can affect values" and so I would have to make sure that the ruler is just touching the riverbed. This is very important because one of my aims is to find out whether the river's depth changes at each course along the river, and this method will help me to do so. **Inaccurate measurements will affect my calculation of the discharge.**

Introduction

The Bradshaw Model

The Bradshaw model shows how characteristics change downstream. The wider the triangle, the greater the value for that characteristic at that point. For example, channel depth is quite small upstream and then increases as the river moves downstream. You investigated different aspects of the river to answer the question about discharge. The discharge of a river is the volume of water which flows through it in a given time. It is usually measured in cubic meters per second. The volume of the discharge will be determined by factors such as climate, vegetation, soil type, drainage basin relief and the activities of man.

Fieldwork 1

Investigating Bradshaw

River discharge is measured in m^3/s (that is, cubic metres per second)

To calculate the discharge.

To measure this, we need to measure velocity (m/s) and cross-sectional area (m^2).

Velocity = speed measured over a 10m distance. 10 divided by time taken = velocity (m/s)

Cross-sectional area = width x depth. So width across the stream and the average depth and to be worked out.

Method

Photos are very important. They give the reader a clear idea of what the area is like. You can show key features like the upper and lower course differences. A waterfall or a meander.



You can show how measurements are made.



You can show what a point on a map looks like with a photo – using a GIS.



Primary techniques. These involve first hand data collection. All the data needed to calculate the change in discharge – width, depth, speed etc was primary data.

Secondary techniques. Information collected from the internet or books in school. Velocity had to be calculated from the primary data so it's a good example of secondary data.

We used **systematic sampling** to measure the particle size – 1 stone every metre along the 10m section.

A systematic sample assumes that you are looking for a pattern of change over distance or time

Hazard	Risk	Risk Level	Control Measures
Heavy Traffic	Hit in a moving vehicle	Medium	Be careful and vigilant especially around the car parks and roads
Rocky Footpath	Falling and twisting an ankle or breaking a bone	High	Walk carefully especially and stick to footpaths especially in muddy and wet weather
Steep Banks	Slipping down the steep banks into the stream	High	Take care especially at the first three sites

Planning the fieldtrip - Risk Assessment

It is important to complete a risk assessment so that you are aware of the potential dangers of the investigation you are going to carry out and so that you can be prepared in the event of an accident.

Locating the study area – Using a range of maps. Different scales helped to show the UK and more local settings – Derbyshire –River Dove. You analysed a GIS to help show OS maps of the local area and compare these to satellite images – the GIS allowed you to compare different maps at the same scale. It also allowed you to look at the geology (rocks) found under the valley.

Locating the Dove.

Evaluation - example

When collecting my data, there were several factors that helped and hindered how accurately I managed to obtain my results from each of the river sections.

The methods that I used were easy to understand and therefore, it was easy to get my results – for example when measuring the bed load, using a simple 30cm ruler to measure from different corners. Judging the middle axis length was left to individuals to decide and may be inaccurate as a result. Deciding on the longest and shortest axis presented no problems. We planned to use methods that did not harm the environment as we collected information – biodegradable dog biscuits for example.

Although the methods were easy to follow, there were some limitations with them, as well as limitations from factors that we couldn't control, which could have contributed to some inaccuracy of my end results. An example of this was rocks that were either too heavy to pick up or ones that were stuck at the bottom of the river; which could have altered our measurements for particle size.. Deciding where the edge of the river channel falls was open to individual interpretation and lets some inaccuracy into the measurement and therefore calculations that depend on this data.

There were some bigger factors that could have altered our results, such as the land use where the Dove flows. It runs by an access road meaning that a lot of the river perhaps has not developed as naturally as it could from erosion. The Dove is managed by people to reduce its impact on the valley these changes would have affected our width, depth and speed results on the final section which would impact on discharge results. Overall, I believe that our results were not that biased, as we tried to be fair and accurate when measuring, in order to produce reliable data. By making use of averages across the different groups we have tried to eliminate human error and bias from the data.

I presented my width and depth information using cross sections which give a clear idea of how the river looks beneath the surface and allows comparison of differences so I can see if width and depth are developing as expected along the river course.

Once the data had been put into a table we were able to calculate velocity and then discharge for each stream section studied. The discharge data was plotted onto a scatter graph which is then used to observe relationships between distance down stream and the discharge we found. We could clearly see a trend with this graph showing a positive relationship – as distance downstream increased the discharge increases. We could also see this relationship is not completely true of all the data and we were able to pick out a clear anomaly in the data from one group.

Depth - example

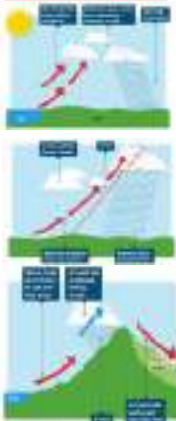
To measure how the sediment and particle sizes change downstream compared to upstream, I will use a ten metre stick, and across a ten metre length, I will take 10 pieces of stone, one per metre and measure the width and depths of each. I will start at the beginning of the ten metre length, and for each step, a piece of the river's sediment will be picked up and collected; allowing me to clearly see how the load size changes. This is beneficial because I can then answer my final aim of 'does the particle size change downstream?' but this method may sometimes be inaccurate as, if there are small waterfalls, we may have to move further into the banks to collect the sediment. The Royal Geography Society also agrees with me, stating that there may be "large boulders or debris" which can affect my results. **Inaccurate measurements will affect my calculation of the discharge.**

Global pattern of air circulation	
Atmospheric circulation is the large-scale movement of air by which heat is distributed on the surface of the Earth.	
Hadley cell	Largest cell which extends from the Equator to between 30° to 40° north & south.
Ferrel cell	Middle cell where air flows poleward between 60° & 70° latitude.
Polar cell	Smallest & weakness cell that occurs from the poles to the Ferrel cell.



Climate Zones	
	The global circulation system controls temperatures by influencing precipitation and the prevailing winds. This creates distinctive climate zones.
	Temperate Climate Mid-latitude, 50° - 60° north & south of the Equator. Here air rises and cools to form clouds and therefore frequent rainfall. e.g. UK.
	Tropical Climate Found along the Equatorial belt, this zone experiences heavy rainfall and thunderstorms. E.g. Brazil.
	Polar Climate Within the polar zones cold air sinks causing dry, icy and strong winds. E.g. Antarctica.
Desert Climate 30° north and south of the equator, sinking dry air leads to high temperatures without conditions for rainfall. E.g. Libya.	

High and Low Pressure		What is wind?
High Pressure Caused by cold air sinking. Causes clear and calm weather	Low Pressure Caused by hot air rising. Causes stormy, cloudy weather.	

Types of wind		Types of precipitation
Katabatic Winds	Winds that carry air from the high ground down a slope due to gravity. e.g. Antarctic.	
Trade Winds	Wind that blows from high pressure belts to low pressure belts.	
Jet Streams	These are winds that are high in the atmosphere travelling at speeds of 225km/h.	

What is precipitation?
This is when water vapour is carried by warm air that rises. As it gets higher, the air cools and the water vapour condenses to form a cloud. As water molecules collide and become heavier, the water will fall to Earth as precipitation.

Distribution of Droughts	
Drought can occur anywhere throughout the world but they are more frequent between the tropics of Cancer and Capricorn. Many countries in Africa suffer from severe drought, such as Ethiopia but Australia also suffer.	
Causes of Drought: El Nino effect	
The El Nino effect is also associated with creating dry conditions.	
	Normally, <u>warm ocean currents</u> off the coast of Australia cause <u>moist warm air</u> to rise and <u>condense</u> causing storms and <u>rain</u> over Australia.
In an El Niño year (every 2-7 years) the <u>cycle reverses</u> . Cooler water off the coast of Australia reverses the wind direction leading to <u>dry, sinking air</u> over Australia causing <u>hot weather</u> and a <u>lack of rainfall</u> .	



Topic 1 Global Hazards

Extremes in weather conditions	
Wellington, New Zealand Very high wind speeds (248km/h) due to the surrounding mountains funneling wind.	Puerto Lopez Found along the equator, high temperatures lead to rapid condensation and heavy rainfall.
The Atacama, Chile The Andes mountains block moist warm travelling any further west. This causes rainfall to the east, but a rain shadow to the west.	Mawsynram, India This village sees a lot of rain each year (11m per yr). This is due to the reversal of air conditions/directions from sea to land. In the summer, this contributes to monsoons.

Changing pattern of these Hazards	
Tropical Storms	Scientists believe that global warming is having an impact on the frequency and strength of tropical storms. This may be due to an increase in ocean temperatures.
Droughts	The severity of droughts has increased since the 1940s. This may be due to changing rainfall and evaporation patterns related to gradual climate change.

Distribution of Tropical Storms.
They are known by many names, including hurricanes (North America), cyclones (India) and typhoons (Japan and East Asia). They all occur in a band that lies roughly between the tropics of Cancer and Capricorn and despite varying wind speeds are ferocious storms. Some storms can form just outside of the tropics, but generally the distribution of these storms is controlled by the places where sea temperatures rise above 27°C.

Formation of Tropical Storms	
1	The sun's rays heat large areas of ocean in the summer. This causes warm, moist air to rise over the particular spots
2	Once the temperature is 27°, the rising warm moist air leads to a low pressure. This eventually turns into a thunderstorm. This causes air to be sucked in from the trade winds.
3	With trade winds blowing in the opposite direction and the rotation of earth involved (Coriolis effect), the thunderstorm will eventually start to spin.
4	When the storm begins to spin faster than 74mph, a tropical storm (such as a hurricane) is officially born.
5	With the tropical storm growing in power, more cool air sinks in the centre of the storm, creating calm, clear conditions called the eye of the storm.
6	When the tropical storm hits land, it loses its energy source (the warm ocean) and it begins to lose strength. Eventually it will 'blow itself out'.

Case Study: UK Heat Wave 2015

Causes
The heat wave was caused by an anticyclone (areas of high pressure) that stayed in the area for most of August. This blocked any low pressure systems that normally bring cooler and rainier conditions.

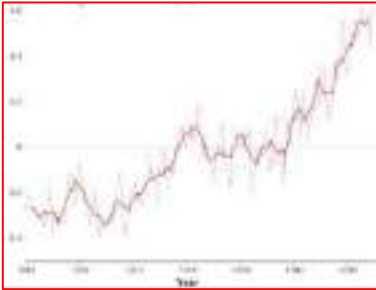
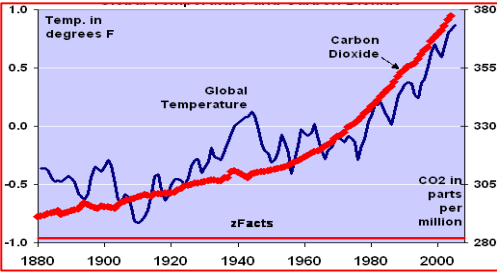
Effects	Management
- People suffered from heat strokes and dehydration. 2000 people died from causes linked to heatwave. - Rail network disrupted and crop yields were low.	- The NHS and media gave guidance to the public. - Limitations placed on water use (hose pipe ban). - Speed limits imposed on trains and government created 'heatwave plan'.

Case Study: Typhoon Haiyan 2013

Causes
Started as a tropical depression on 2 nd November 2013 and gained strength. Became a Category 5 "super typhoon".

Effects	Management
- Almost 4,000 deaths. 130,000 homes destroyed - Water and sewerage systems destroyed caused diseases. - Emotional grief for lost ones.	- The UN raised £190m in aid. - USA & UK sent helicopter carrier ships deliver aid remote areas. - Education on typhoon preparedness.

The structure of the Earth		Types of volcanoes		Volcanic Hazards	
The Crust	Varies in thickness (5-10km beneath the ocean. Made up of serval large plates.	Shield	Made of basaltic rock and form gently sloping cones from layers of runny lava. Location: hot spots and constructive margins. Eruptions: gentle and predictable	Ash cloud	Small pieces of pulverised rock and glass which are thrown into the atmosphere.
The Mantle	Widest layer (2900km thick). The heat and pressure means the rock is in a liquid state that is in a state of convection.	Composite	Most common type found on land. Created by layers of ash and lava. Location: Destructive margins Eruptions: explosive and unpredictable due to the build of pressure within the magma chamber.	Gas	Sulphur dioxide, water vapour and carbon dioxide come out of the volcano.
The Inner and outer Core	Hottest section (5000 degrees). Mostly made of iron and nickel and is 4x denser than the crust. Inner section is solid whereas outer layer is liquid.	Hotspots	These happen away from any plate boundaries. They occur because a plume of magma rises to eat into the plate above. Where lava breaks through to the surface, active volcanoes can occur above the hot spot. E.g. Hawaii.	Lahar	A volcanic mudflow which usually runs down a valley side on the volcano.
Convection Currents		Case Study: Eyjafjallajökull Eruption, Iceland 2010		Pyroclastic flow	A fast moving current of super-heated gas and ash (1000°C). They travel at 450mph.
The Lithosphere is divided into tectonic plates which are moving due to convection currents in the asthenosphere.		Causes		Volcanic bomb	A thick (viscous) lava fragment that is ejected from the volcano.
1	Radioactive decay of some of the elements in the core and mantle generate a lot of heat.	- The North-American and Eurasian plates move apart- called constructive plate boundary. - The disruption caused by Eyjafjallajökull was the result of a series of small volcanic eruptions, starting on the 20th March and ending in the October.		Managing Volcanic Eruptions	
2	When lower parts asthenosphere heat up they become less dense and slowly rise .	Effects		Warning signs	Monitoring techniques
3	As they move towards the top they cool down, become more dense and slowly sink .	Management		Small earthquakes are caused as magma rises up.	Seismometers are used to detect earthquakes.
4	These circular movements of semi-molten rock are convection currents	Iceland had a good warning system with texts being sent to residents within a 30 minutes warning. Large sections of European airspace were closed down due ash spreading over the continent. Airlines developed ash monitoring equipment		Temperatures around the volcano rise as activity increases.	Thermal imaging and satellite cameras can be used to detect heat around a volcano.
5	Convection currents create drag on the base of the tectonic plates and this causes them to move.	Preparation		When a volcano is close to erupting it starts to release gases.	Gas samples may be taken and chemical sensors used to measure sulphur levels.
Types of Plate Margins		Causes of Earthquakes		Creating an exclusion zone around the volcano. Having an emergency supply of basic provisions, such as food	
Destructive Plate Margin		Earthquakes are caused when two plates become <u>locked</u> causing <u>friction</u> to build up. From this <u>stress</u> , the <u>pressure</u> will eventually be released, triggering the plates to move into a new position. This movement causes energy in the form of <u>seismic waves</u> , to travel from the <u>focus</u> towards the <u>epicentre</u> . As a result, the crust vibrates triggering an earthquake.		Earthquake Management	
Constructive Plate Margin		The point directly above the focus, where the seismic waves reach first, is called the EPICENTRE .		PREDICTING	
Conservative Plate Margin		SEISMIC WAVES (energy waves) travel out from the focus.		Methods include:	
Collision Zones		The point at which pressure is released is called the FOCUS .		- Satellite surveying (tracks changes in the earth's surface) - Laser reflector (surveys movement across fault lines) - Radon gas sensor (radon gas is released when plates move so this finds that) - Seismometer - Water table level (water levels fluctuate before an earthquake). - Scientists also use seismic records to predict when the next event will occur.	
		Depth of Earthquake		PROTECTION	
		How do we measure earthquakes?		You can't stop earthquakes, so earthquake-prone regions follow these three methods to reduce potential damage:	
		Mercalli Scale		- Building earthquake-resistant buildings - Raising public awareness - Improving earthquake prediction	
		Richter Scale		Earthquake proof buildings ideas	
		- Measures how much damage is caused, based on observations, not scientific instruments. - Base from 'Instrument' and 'Weak' to 'Extreme' and 'Cataclysmic'. - Limitations is that its subjective due to it being based on perception.		1. Counter-weights to the roof to help balance any swaying. 3. Foundations made from reinforced steel pillars, bail-bearings or rubber. 5. Lightweight materials that cause minimal damage if fallen during an earthquake.	
		- Is a scientific measurement based on the energy released. - Measured by seismometers using measurement from 1 – 10 - Logarithmic – each point up the scale is 10 times greater than the one before.		2. Roof made from reinforced cement concrete. 4. Windows fitted with shatter-proof glass to reduce breakage. 6. Ensure gas pipes have an automatic shut off to prevent risk of fire.	

What is Climate Change?		Natural Greenhouse Effect		Linking CO₂ and Global temperatures	
Climate change is a large-scale, long-term shift in the planet's weather patterns or average temperatures. Earth has had tropical climates and ice ages many times in its 4.5 billion years.		The Earth is kept warm by a natural process called the Greenhouse Effect. As solar radiation hits the Earth, some is reflected back into space. However, greenhouse gases help trap the sun's radiation. Without this process, the Earth would be too cold to support life as temperature would average as -18°C instead of +15°C.		 	
Quaternary geological period				Global Temperature	
The quaternary period is the last 2.6 million years. During this period temperatures have always fluctuated. The cold 'spikes' are the glacial periods, whereas the warm points are the interglacial periods.					
Today's temperature is higher than the rest of the period. Despite alternate cold and warm moments within this period, global temperatures have increased above average in the past 100 years. This current trend is what's become known as global warming.		Enhanced Greenhouse Effect			
		Recently, there has been an increase in humans burning fossil fuels for energy. These fuels (gas, coal and oil) emit extra greenhouse gases. This is making the Earth's atmosphere thicker, therefore trapping more solar radiation but causing less to be reflected. As a result, our Earth is becoming warmer.			
Evidence for climate change		Retreat of the Columbia Glacier, Alaska, USA		Greenhouse Gases	
Earth's temperature has changed over the last 2.6 million years. Scientists know this by collecting a range of evidence that is trapped or stored in the environment around us.		Located in southern Alaska, it flows 50km to the sea. The glacier has been retreated by 16km and has lost half of its thickness in the last 30 years. Scientists believed this is due to global warming, which if continued will contribute towards continued sea level rises.			
Geological fossil evidence	Plants and animals fossils/remains which favour certain environmental conditions have been found in contractionary conditions, thus suggesting periods of a warmer and colder time. E.g. Mastodon in USA.	Topic 2 CHANGING CLIMATE			
Ocean Sediment	Layers of sediment that has built up over time have provided scientists trapped oxygen isotopes. Scientists have used them to calculate and understand that atmospheric temperature have indeed changed.				
Ice Cores	Ice cores are made up from different layers that each represents a different historical time. By exploring the water molecules of these cores, scientists have calculated fluctuating temperatures of the atmosphere.				
Historical records	Historical records from ancient cave paintings, diaries and written observations have provided evidence of climate change through personal accounts from the people through them.				
Recent Evidence for climate change.		Past Evidence: The Little Ice Age (1300-1870)		Carbon dioxide	
In the past 100 years, scientists have become pretty good at collecting accurate measurements from around the world. These measurements have suggested a trend that the climate is yet again changing.		The Little Ice Age was a period of cooling that occurred after the Medieval Warm Period in parts of Europe and North America. Impacts included...		Accounts for 60% of the enhanced greenhouse gases. It is produced by burning fossil fuels through producing electricity, industry, cars and deforestation.	
Global temperature data	Evidence collected by NASA suggests average global temperatures have increased by more than 0.6°C since 1950.	1. Price of grain increased and vineyards become unproductive.		Methane	
Ice sheets and glaciers	Evidence from maps and photos have shown many of the world's glaciers and ice sheets are melting. E.g. the Arctic sea ice has declined by 10% in 30 years.	2. Sea ice engulfed Iceland and the sea force around parts of the UK. Frost Fairs were held on rivers such as the River Thames.		Accounts for 15% of the enhanced greenhouse gases. 25x more efficient than Carbon dioxide. Produced from landfills, rice and farm animals.	
Sea Level Change	Evidence from the IPCC has shown that the average global sea level has risen by 10-20cms in the past 100 years. This is due to the additional water from fresh water ice and thermal expansion of the ocean due to higher temperatures.	3. People suffered from the intense cold winters as food stock were limited.		Halocarbons	
				Human made and makes a tiny proportion of all greenhouse gases. 15000x more efficient at trapping radiation than Carbon dioxide. Produced from air-conditioning, refrigerators and aerosols.	
				Nitrous Oxide	
				Accounts for 6% of the enhanced greenhouse effect. 250x more efficient than Carbon dioxide. Produced from fertilisers and car exhausts.	
				Whose responsible?	
					
				Not what it seems	
				Although China is responsible for the highest amount of carbon emission, 1.4 billion people do live there. However, per person, the USA (320 million) actually contributes far more CO ₂ emissions.	
				</	

Global impacts of climate change		Rising Sea Levels: Tuvalu			Climate change management: Paris Agreement 2015				
The impact of rising temperatures is affecting the world socially, economically and environmentally in several potential problematic ways.					Tuvalu is a group of tiny islands in the South Pacific. Most islands are low-lying with the highest point being 4.5m above sea level. Population is 11,000 people and the economy relies mainly from exporting copra.				
Impacts from climate change									
Extreme Weather		Climate is causing more unpredictable and severe weather events. This includes more frequent and powerful tropical storms; more extreme heatwaves and lasting droughts. E.g. Typhoon Haiyan 2013			Social		Economic	Environmental	
Rising sea levels		Sea levels have risen by 20 cm since 1901. due to thermal expansion, melting glaciers and ice caps. Some coastal countries are now disappearing such as the Maldives in the Indian Ocean.			- Water supply due to droughts becoming more common. - Wells are becoming polluted by seawater. - High tides are starting to threaten homes and roads.		- Increased levels of salinization affecting soil for agriculture. - Coastal erosion is destroying productive farmland. - Main runway threatened by flooding.	- Ocean acidification is reducing fish stocks around the island. - Warmer temperatures are destroying fragile ecosystems such as coral reefs.	
Food supply		Warmer temperatures and changing rainfall will make it harder to produce a reliable source of food to sustain a rising global population. E.g. In 2011, Russia banned crop exports after a incline in yield.							
Plants and Animals		About a quarter of animals and plants on Earth could become extinct. With warmer temperatures and changing rainfall environments will no longer be able to provide for the world's fragile ecosystems.			Management				
Disease and Health		Warmer temperatures will increase the spread of infectious diseases like malaria. In addition, more frequent floods could cause more waterborne disease such as dysentery.			• Campaigning internationally for a reduction in carbon emissions. • Migration to safer islands off the coast of New Zealand. • Low sea walls have been constructed to prevent erosion and flooding. • Japan supporting coral reef restoration by introducing new species to damaged reefs.				
Water Supply		People need freshwater to drink but with 1 billion people predicted to not have excess to enough water by 2025 due to climate change, this might cause several social, economic and environmental problems. E.g. fishing, irrigation and sanitation.			 				
Climate refugees		Climate refugees are people who are forced to leave their home due to the impact of climate change. This can be due to sea level rises or extreme weather conditions such as drought.							
Impacts of climate change on the UK.		Negative impacts of climate change for the UK			Positive impacts of climate change for the UK				
The UK's climate is also changing. It is expected to... • Increase in average temperature. • Have warmer, but wetter winters. • Have warmer and drier summers.		Coastal Flooding		Extreme Rainfall		Tourism		Environment	
		• Vulnerable low lying areas could flood homes and infrastructure. • Increase of coastal erosion. • Damage to the economy.		• Increase in extreme flash floods. • Flood damage to homes and businesses. • Soil contaminations on farmland.		• More people likely to take holidays within the UK. • The economy could be boosted: helping to create new jobs. • More outdoor events could become common.		• New wetlands from coastal flooding could become established. • New wildlife and plants could be drawn to the UK'.	
However, not all the impacts to the UK will be negative, there are clear benefits for a changing climate.		Water Shortages		Extreme Heat		Farming		Industry	
		• Farmers will find it difficult to irrigate land. • Water restrictions, with London being worst affected.		• Warmer weather can increase health problems. • Infectious diseases such as malaria might spread.		• Agriculture productivity may increase under warmer conditions. • Farmers could potentially grow new foods used to warmer climates.		• Heating cost will fall. • Construction industry will be boosted by the need to build sea defences. • New designs produced to cope with conditions.	

What is a landscape?		Relief of the UK	
A landscape has visible features that make up the surface of the land. Landscapes can be broken down into four ‘elements’.		Relief of the UK can be divided into uplands and lowlands. Each have their own characteristics.	
Landscape Elements			
Physical - Mountains - Coastlines - Rivers	Biological - Vegetation - Habitats - Wildlife		
Human - Buildings - Infrastructure - Structures	Variable - Weather - Smells - Sounds/Sights		
		Key	
		Lowlands	
		Uplands	

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

Transportation	
A natural process by which eroded material is carried/transported.	
Solution	Minerals dissolve in water and are carried along.
Suspension	Sediment is carried along in the flow of the water.
Saltation	Pebbles that bounce along the sea/river bed.
Traction	Boulders that roll along a river/sea bed by the force of the flowing water.

Glaciation in the UK	
Over many thousands of years, glaciation has made an impression on the UK's landscape. Today, much of upland Britain is covered in u-shaped valleys and eroded steep mountain peaks.	
During the ice age	
Ice covered areas eroded and weathered landscapes to create dramatic mountain scenery.	
After the ice age	
Deep valleys and deposition of sediment revealed	

Geology of the UK	
The UK is made from a variation of different rock types. The varied resistance of these rocks influences the landscape above.	
Igneous Rock Volcanic/molten rock brought up to the Earth's surface and cooled into solid rock.	
Sedimentary Rock Made from broken fragments of rock worn down by weathering on Earth's surface.	
Metamorphic Rock Rock that is folded and distorted by heat and pressure.	

Soil & Landscape
- Soils are created from weathered rocks, organic material and water. Rock types have influence over fertility of soil. - Low-laying areas such as the Cambridgeshire Fens have deep soil whereas uplands have thin soil. - Deep soil is more often associated with deciduous woodland rather than coniferous woodlands.

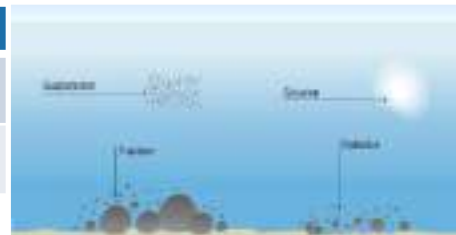
Human activity on Landscape		
Farming has changed the vegetation which grows there.	Much of the rural landscape has been replaced by urban sprawls.	Infrastructure such as roads and pylons cover most of the UK.
Over thousands of years, much of the UK's woodlands have gone.	Increasing population of the UK means more houses are needed.	UK's marshes and moorlands are heavily managed by people.

Topic 3

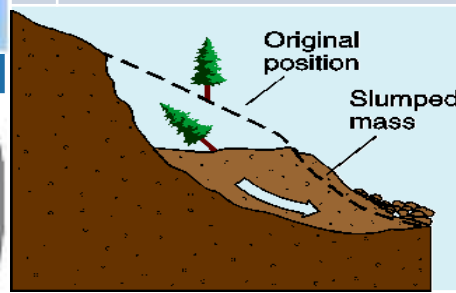
Distinctive Landscapes

Climate and Weather in the UK		Average rainfall in the UK
The variations of climate and weather means there are different influences on the UK's landscape.		
Climate	Weathering	
The rainfall map of the UK shows variations in average rain. • Less precipitation occurs in low land areas. East England • Most precipitation occurs in upland areas. Scotland. <i>These differences mean...</i> Uplands experience more weathering, erosion and mass movement.	Mechanical Caused by the physical action of rain, frost and wind.	
	Chemical Action of chemicals within rain dissolving the rock.	
	Biological Rocks that have been broken down by living organisms.	
Freeze-thaw weathering		

Stage One		Stage Two		Stage Three	
Water seeps into cracks and fractures in the rock.		When the water freezes, it expands about 9%. This wedges apart the rock.		With repeated freeze-thaw cycles, the rock breaks off.	



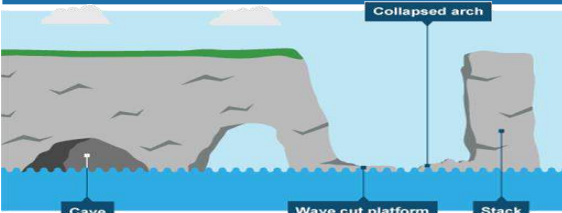
Mass Movement	
A large movement of soil and rock debris that moves down slopes in response to the pull of gravity in a vertical direction.	
1	Rain saturates the permeable rock above the impermeable rock making it heavy.
2	Waves or a river will erode the base of the slope making it unstable.
3	Eventually the weight of the permeable rock above the impermeable rock weakens and collapses.
4	The debris at the base of the cliff is then removed and transported by waves or river.



Deposition

When the sea or river loses energy, it drops the sand, rock particles and pebbles it has been carrying. This is called deposition.

Formation of Coastal Stack



- 1) Hydraulic action widens cracks in the cliff face over time.
- 2) Abrasion forms a wave cut notch between HT and LT.
- 3) Further abrasion widens the wave cut notch to form a cave.
- 4) Caves from both sides of the headland break through to form an arch.
- 5) Weather above/erosion below –arch collapses leaving stack.
- 6) Further weathering and erosion eaves a stump.

Coastal Defences

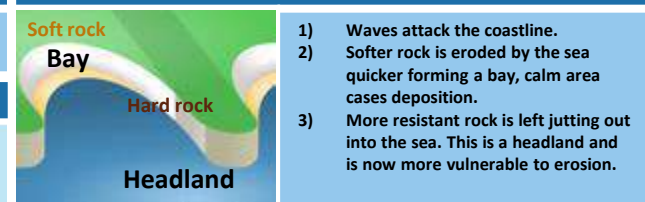
Hard Engineering Defences

Groynes	Wood barriers prevent longshore drift, so the beach can build up.	✓ Beach still accessible. ✗ No deposition further down coast = erodes faster.
Sea Walls	Concrete walls break up the energy of the wave . Has a lip to stop waves going over.	✓ Long life span ✓ Protects from flooding ✗ Curved shape encourages erosion of beach deposits.
Gabions or Rip Rap	Cages of rocks/boulders absorb the waves energy, protecting the cliff behind.	✓ Cheap ✓ Local material can be used to look less strange. ✗ Will need replacing.

Soft Engineering Defences

Beach Nourishment	Beaches built up with sand, so waves have to travel further before eroding cliffs.	✓ Cheap ✓ Beach for tourists. ✗ Storms = need replacing. ✗ Offshore dredging damages seabed.
Managed Retreat	Low value areas of the coast are left to flood and erode naturally.	✓ Reduce flood risk ✓ Creates wildlife habitats. ✗ Compensation for land.

Formation of Bays and Headlands



Formation of Coastal Spits - Deposition

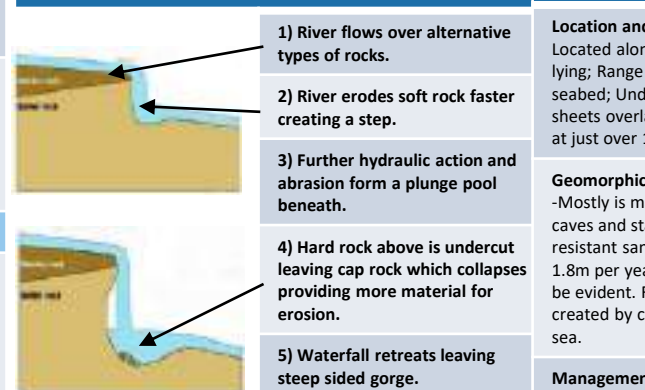


- 1) Swash moves up the beach at the angle of the prevailing wind.
- 2) Backwash moves down the beach at 90° to coastline, due to gravity.
- 3) Zigzag movement (Longshore Drift) transports material along beach.
- 4) Deposition causes beach to extend, until reaching a river estuary.
- 5) Change in prevailing wind direction forms a hook.
- 6) Sheltered area behind spit encourages deposition, salt marsh forms.

Upper Course of a River

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

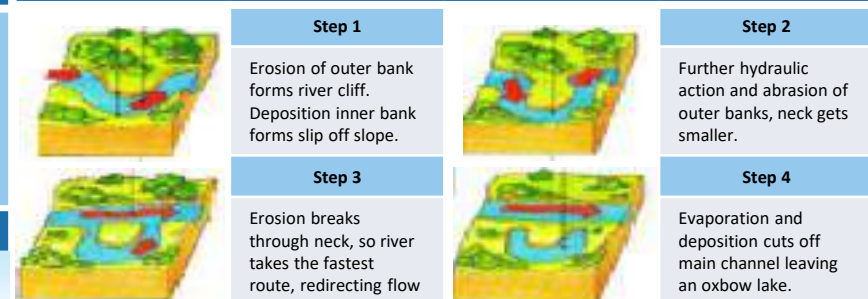
Formation of a Waterfall



Middle Course of a River

Here the gradient get gentler, so the water has less energy and moves more slowly. The river will begin to erode laterally making the river wider.

Formation of Ox-bow Lakes



Lower Course of a River

Near the river's mouth, the river widens further and becomes flatter. Material transported is deposited.

Formation of Floodplains and levees



River Management Schemes

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

Case Study: North Norfolk

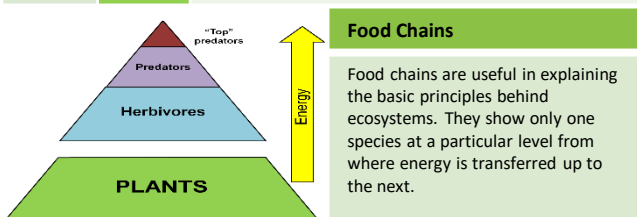
Location and Background Located along the East coast in the county of Norfolk. Low-lying; Range of habitats e.g. salt marshes, sand dunes; Shallow seabed; Underlying rock is chalk; Drift material from ice sheets overlays the chalk; Highest point is on the chalk ridge at just over 100m in the north.	Case Study: The River Tees
Geomorphic Processes -Mostly is made from less resistant drift (glacial). Features:; caves and stacks etc are not seen. Use Dorset for them. Less resistant sands, silts and clay are dominant. This coast erodes 1.8m per year and is the fastest in Europe. Cliff slumping can be evident. Further north, Blakeney Point is a coastal spit created by continual deposition from LSD that extents out to sea.	Location and Background Located in the North of England flows 137km from the Pennines to the North Sea at Red Car.
Management -Rapid erosion means there are a number of different management schemes from soft to hard engineering. High population centres such as Cromer are protected by 'hold the line' defence measures such as sea walls, groynes & heavy beach nourishment. Underpopulated & economic centres, such as farmland, are under 'managed retreat' schemes.	Geomorphic Processes Upper – Features include V-Shaped valley, rapids and waterfalls. Highforce Waterfall drops 21m and is made from harder Whinstone and softer limestone rocks. Gradually a gorge has been formed. Middle – Features include meanders and ox-bow lakes. The meander near Yarm encloses the town. Lower – Greater lateral erosion creates features such as floodplains & levees. Mudflats at the river's estuary.
	Management -Towns such as Yarm and Middleborough are economically and socially important due to houses and jobs that are located there. -Dams and reservoirs in the upper course, controls river's flow during high & low rainfall. - Better flood warning systems, more flood zoning and river dredging reduce impact from flooding.

What is an Ecosystem?

An ecosystem is a system in which organisms interact with each other and with their environment.

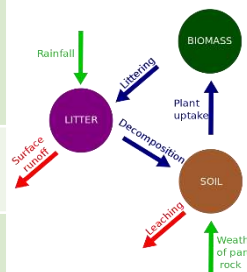
Ecosystem's Components

Abiotic	These are non-living, such as air, water, heat, rock.
Biotic	These are living, such as plants, insects, and animals.
	Flora is plant life occurring in a particular region or time.
	Fauna is all animal life of any particular region or time.



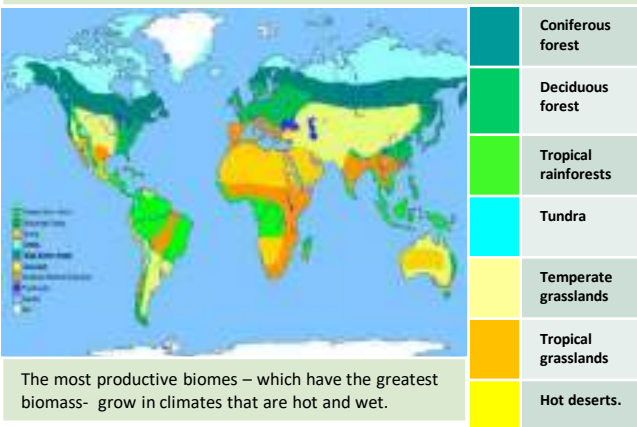
Nutrient cycle

Plants take in those nutrients where they are built into new organic matter. Nutrients are taken up when animals eat plants and then returned to the soil when animals die and the body is broken down by decomposers.	
Litter	This is the surface layer of vegetation, which over time breaks down to become humus.
Biomass	The total mass of living organisms per unit area.

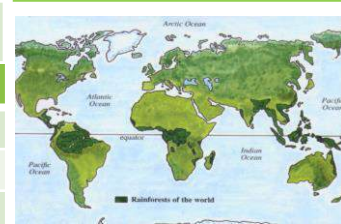


Biomes

A biome is a large geographical area of distinctive plant and animal groups, which are adapted to that particular environment. The climate and geography of a region determines what type of biome can exist in that region.



Tropical Rainforest Biome



Distribution of Tropical Rainforests

Tropical rainforests are centred along the Equator between the Tropic of Cancer and Capricorn. Rainforests can be found in South America, central Africa and South-East Asia. The Amazon is the world's largest rainforest and takes up the majority of northern South America, encompassing countries such as Brazil and Peru.



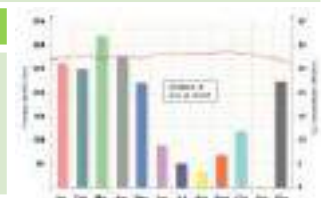
Convectional rainfall	
1	The roots of plants take up water from the ground and the rain is intercepted as it falls.
2	As the rainforest heats up, the water evaporates into the atmosphere.
3	Finally, the water condenses and forms clouds to make the next day's rain.

Rainforest nutrient cycle

The hot, damp conditions on the forest floor allow for the rapid decomposition of dead plant material. This provides plentiful nutrients that are easily absorbed by plant roots. However, as these nutrients are in high demand from the many fast-growing plants, they do not remain in the soil for long and stay close to the surface. If vegetation is removed, the soils quickly become infertile

Climate of Tropical Rainforests

- Evening temperatures rarely fall below 22°C
- Due to the presence of clouds, temperatures rarely rise above 32°C
- Most afternoons have heavy showers
- At night with no clouds insulating temperature drops



Topic 4 Sustaining Ecosystems

Interdependence in the rainforest

A rainforest works through interdependence. This is where the plants and animals depend on each other for survival.

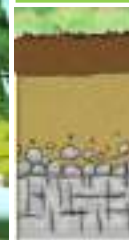
Layers of the Rainforest

Emergent	Highest layer with tree reaching 50 metres.
Canopy	Most life is found here as it receives 70% of the sunlight and 80% of the light.
U-Canopy	Consists of trees that reach 20 metres high.
Shrub Layer	Lowest layer with small trees that have adapted to living in the shade.



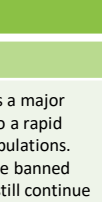
Rainforest soil profile

Leaf Litter	Thin litter layer rapidly decomposes in heat.
Top Soil	Shallow topsoil is a mixture of decomposed organic matter and minerals.
Sub Soil	The sub-soil is deep due to weathering of rocks below.
Rock	Underlying rock weathers quickly at high temperatures to form sub-soil.



Biome's climate and plants

Biome	Location	Temperature	Rainfall	Flora	Fauna
Topical rainforest	Centred along the Equator.	Hot all year (25-30°C)	Very high (over 2000mm/year)	Tall trees forming a canopy; wide variety of species.	Greatest range of different animal species. Most live in canopy layer
Tropical grasslands	Between latitudes 5°- 30° north & south of Equator.	Warm all year (20-30°C)	Wet + dry season (500-1500mm/year)	Grasslands with widely spaced trees.	Large hoofed herbivores and carnivores dominate.
Hot desert	Found along the tropics of Cancer and Capricorn.	Hot by day (over 30°C) Cold by night	Very low (below 300mm/year)	Lack of plants and few species; adapted to drought.	Many animals are small and nocturnal: except for the camel.
Temperate forest	Between latitudes 40°- 60° north of Equator.	Warm summers + mild winters (5-20°C)	Variable rainfall (500-1500mm/year)	Mainly deciduous trees; a variety of species.	Animals adapt to colder and warmer climates. Some migrate.
Tundra	Far Latitudes of 65° north and south of Equator	Cold winter + cool summers (below 10°C)	Low rainfall (below 500mm/year)	Small plants grow close to the ground and only in summer.	Low number of species. Most animals found along coast.
Coral Reefs	Found within 30° north – south of Equator in tropical waters.	Warm water all year round with temperatures of 18°C	Wet + dry seasons. Rainfall varies greatly due to location.	Small range of plant life which includes algae and sea grasses that shelters reef animals.	Dominated by polyps and a diverse range of fish species.

Tropical Rainforest Biome			Polar/Tundra Regions Biome				
Adaptations to the rainforest		Rainforest inhabitants	Distribution of Polar Regions		Climate Change on Polar Regions		
Sloths	Are camouflaged to forest environment.	Many tribes have developed sustainable ways of survival, such as shifting cultivation. The forest provides inhabitants with... - Food through hunting and gathering. - Natural medicines from forest plants. - Homes and boats from forest wood.	Arctic		Scientific reports outline the effect global warming is having on these regions. Ice sheets and glaciers are melting at an alarming rate leading to fears of rising sea levels. Thawing of permafrost is increasing methane emissions and the decline of arctic ice is creating waves that are capable of causing unseen coastal erosion.		
Buttress Roots	Support tall trees & absorb nutrients.		Antarctic				
Drip Tips	Allows heavy rain to run off leaves easily						
Lianas & Vines	Climbs trees to reach sunlight at canopy.						
Effects of Human Activity on the Rainforest		Benefits of the rainforest					
Logging	Agriculture	Raw Materials	Commonly used materials such as timber and rubber are found here.				
- Most widely reported cause of destructions to biodiversity. - Timber is harvested to create commercial items such as furniture and paper. - Has lead to violent confrontation between indigenous tribes and logging companies.	- Large scale ‘slash and burn’ of land for ranches and palm oil. - Increases carbon emission. - River saltation and soil erosion increasing due to the large areas of exposed land - Increase in palm oil is making the soil infertile.	Water	Controls the flow of water to prevent floods/droughts regions..				
		Food	Important foods such as Bananas, pineapples and coffee are grown there.				
		Health	25% of modern medicines are sourced from rainforest ingredients.				
Mineral Extraction	Tourism	Energy	Large dams generate 2/3 of Brazil’s energy needs.				
- Precious metals are found in the rainforest. - Areas mined can experience soil and water contamination. - Indigenous people are becoming displaced from their land due to roads being built to transport products.	- Mass tourism is resulting in the building of hotels in extremely vulnerable areas. - Lead to negative relationship between the government and indigenous tribes - Tourism has effected wildlife (greatly increases threat to forest by increasing threat to forest products)	Climate	Acts as carbon sinks by storing 15% of carbon				
Case Study: Sustainable Rainforest Management in the Amazon Rainforest							
Location & Background		Threats to the Amazon Rainforest					
The Amazon is in the north of South America and covers an area of 8 million sq km. It covers parts of countries like Brazil, Ecuador, Columbia and Peru and Costa Rica		- Cattle Ranching and agricultural development by clearing land through slash & burn methods. - Gold and other metal mining meant large scale soil and rock removing. This meant areas were deforested and chemicals entered water systems. - n the Amazon, around 17% of the forest has been lost in the last 50 years, mostly due to forest conversion for cattle ranching.					
Ecotourism							
Ecotourism is tourism that is directed towards the natural environments & conversation. Yachana Lodge is a popular ecotourism destination in Ecuador.							
Advantages		Rainforest Management					
- Businesses have opened employing local people. - Profits are invested in education projects to promote conservation locally. - Tourists come in small groups so impacts are minimal. - Forest is conserved so tourism has a future		- In Costa Rica for example the government created 28 National Parks with 24% of the country’s land protected. - Laws and enforcement meant that differentiation had fallen from 1.8 to almost zero by 2005. - Agroforestry encourages growing trees and crops together to create better farming conditions. - Afforestation has led to the replanting of trees to replace original forest that have been lost.					
Disadvantages				Case Study: Small Scale Sustainable Management: Ny Alesund, Svalbard, Arctic Circle.			
- Land prices have increased. - Deforestation to clear areas for tourism industry. - Some pollution from hotels and camps linked to tourism				Location & Background			
				Located north of Norway. Sustainable tourism run by Kings Bay AS.			
				Features and Activities			
				- The locations is run by Kings Bay AS. - Tourists have to follow strict environmental rules. - They have to stick to a planed route and can only come by cruise ships which stay for only a few hours.			
				Sustainable Management			
				- Strict guidelines on how tourists should behave are enforced to respect the natural environment. - Solar panels used to reduce carbon emissions. - All waste is carefully contained and removed.			
			Case Study: Global Scale Sustainable Management: The Antarctic Treaty System				
			Background				
			Signed by 50 nations in 1961, the Treaty sets aside Antarctica as a scientific preserve, establishes freedom of scientific investigation and bans military activity.				
			Basic Principles of the Antarctic Treaty				
			- Bans mining and resource extraction. - Prevents territorial disputes of the continent. - Promotes scientific research and co-operation. - Protects the fragile environments and its wildlife by preventing and managing waste/pollution.				
			Successful?				
			Stayed in place for 50 years with more countries signing up to enforce strict controls and improve its stability.				

What is Urbanisation?
This is an increase in the amount of people living in urban areas such as towns or cities. In 2007, the UN announced that for the first time, more than 50 % of the world's population live in urban areas.
Settlement Hierarchies
If we group and classify a number of settlements according to their size and shape, the result is settlement hierarchy.
Key Characteristics of Settlement Hierarchy. - The number of services that a settlement provides increases with settlement size. - Small settlements will only provide low-order services such as a post offices. - Larger settlements and conurbations have a much larger sphere of influence than smaller ones. - The range of a service or product is the maximum distance people are prepared to travel to purchase it.

Types of Cities
Megacity An urban area with over 10 million people living there.



World City	Cities that are centres for trade and business. They hold global influence.



Causes of Urbanisation

The movement of people from rural to urban areas.	
Push	Pull
- Natural disasters - War and Conflict - Mechanisation - Drought	- More Jobs - Better education & healthcare - Increased quality of life. - Following family members.

Consequences of Rapid Urbanisation in LDCs	
Although there are lots of opportunities in urban areas, the rapid growth can place many pressures that causes various problems.	Social Consequences - Little official housing available. - Infrastructure struggles to support growing population. - Increase in crime rates.
Environmental Consequences	Economic Consequences
- Rubbish may not be collected. - Sewage and toxic waste pollutes river environments. - Increased congestion produces more pollution.	- May not be enough jobs – increased unemployment. - Informal sector increases Little access to education and healthcare.

Counter-Urbanisation in ACs	
This is the movement of people from city centres to the outskirts.	
Push	Pull
- Overcrowding and pollution. - Unemployment increases. - Deindustrialisation of centre. - Traffic congestion increases CO².	- Green spaces & family friendly. - New modern housing estates. - Improved public transport. - Rents cheaper on outskirts.

Topic 5 Urban Futures

Suburbanisation	
This is the movement of people from city centres to the outskirts.	
Push	Pull
- Overcrowding and pollution. - Unemployment increases. - Deindustrialisation of centre. - Traffic congestion.	- Green spaces & family friendly. - New modern housing estates. - Improved public transport. - Rents cheaper on outskirts.

Consequences of Suburbanisation

Environmental Consequences	Economic Consequences	Social Consequences
- New housing damages countryside and habitats. - Increase of cars adds air pollution.	- People leaves centres and they become deserted. - Unemployment increases, which leads to poverty.	- Offices and businesses are abandoned. - Economic and ethnic segregation.

Rapid Urbanisation: Life in Dhaka.		
Background		
Dhaka is in the capital of Bangladesh. Recently the city has experienced rapid population growth with 8.5 million extra people calling it home between 2000 and 2017		
Effects of Urbanisation		
Social	Economic	Environmental
- Many live without electricity. - High diseases rate and life expectancy low - Low literacy rate	- High rate of corruption to officials. - Business is limited due to poor infrastructure.	- Large scale traffic issues. - Slums such as Dharavi are heavily polluted with poor sanitation.
Management		
- Authorities remove many illegal dwellings in slums . - The literacy rate of the city has been increased over the years, rising from 69.2% in 2001 to 74.6% in 2011 through improved education . - Clean water is made available to communities at an affordable price, but is not always reliable. - Employment is often informal. Many work in the textile industry which is the cities biggest earner. Earning \$19 billion in 2013.		

Re-urbanisation in ACs	
This is the movement of people back into urban areas.	
Push	Pull
- Lack of jobs in rural and suburban areas. - Less leisure and entertainment in rural areas. - Counter-urbanisation may have increased house prices.	- Redevelopment of brownfield sites with improved housing. - Young people are attracted to the Universities. - People are attracted to entertainment facilities available.

Consequences of Re-urbanisation

Social Consequences
- Shops and services benefit from the additional residents. - Increase in tension between new and older residents. - House prices in redeveloped areas increase. - Schools benefit from the increase of students. - More jobs and less employment within the area.

Environmental Consequences	Economic Consequences
- Redevelopment of brownfield sites improves old industrial and polluted areas - Decreases pressures on greenfield areas. - Could destroy urban wildlife.	- New shops and services will improve local economy. - Jobs available may not be accessible to original residents. - Urban tourism may increase.

Informal Housing

Greenbelt Area

This is housing that is built on land which does not belong to those who are building it. This may be on land that is unsuitable due to its surroundings.

Internal Growth



Internal growth occurs when urban areas experience rapid rates of population growth. This comes as a result of a large amount of arrival of people in cities, who after finding a job, house and partner will have children. This occurs mostly in LIDCs.

This is a zone of land surrounding a city where new building is strictly controlled to try to prevent cities growing too much and too fast.

Counter urbanisation



Counter urbanisation is the movement of people out of towns and cities like London to the countryside (rural) areas. Older people often retired to these areas and younger people moved here to raise families. In many AC's this leads to neglect and decline of city areas.

AC: Challenges & Opportunities for Cities: Birmingham Case Study



Location and Background

Birmingham is the UK's second city. It is found in the West Midlands and is interconnected to other UK cities across the UK. The city is at the heart of a conurbation which includes cities such as Coventry and Wolverhampton.



City's Importance

- Has a multi cultural population of 1.1 million and growing.
- It was one of the UK's largest manufacturing centres, but now its reinvented itself as a centre of culture and shopping.
- Contains five independent universities.
- Birmingham has become a thriving commercial and financial center.
- Has major transport links that connect effectively to the UK and the world.

Migration to Birmingham

Birmingham began in Saxon times but developed into a major manufacturing location during the Victorian era of the 1800s. Now Birmingham is a truly multicultural city with 47% being from Asian, black and other minority communities.

- The population has an above average number of young people (0-39 years).
- Many commonwealth populations, such as India and the West Indies, moved in during the 1950s.
- The city is also home to a large Irish community from the 18th century onwards.
- Many East European migrants have arrived in the last 10 years.



City Challenges

- There is a lack of affordable housing, especially for the younger generation.
- Social inequality including deprivation and poverty is a problem for young people and some ethnic groups.
- Some communities suffer from segregation which requires different help and services.
- The rapid increase in population has caused pressures on transport and services such as education.
- Unemployment due to industrial decline had to be tackled from the 1980's onwards.
- The Bull Ring needed redeveloping in the 1990's – it reopened in 2003 as Europe's largest city centre, retail led urban regeneration project.

Birmingham's way of Life

- The city benefits by the diversity and many different cultures which influence religion, language, food, dress and culture.
- The population benefits from many companies and shops locating there. (the Bull Ring Redevelopment)
- The city is only a short distance from the Peak National Park.
- Good entrainment centres and night life.
- The Balti Triangle attracts thousands of locals and tourists to eat in the city.
- It's a globalised city with residents and tourists making use of its transport links – road, rail and its international airport.



The Library Redevelopment

- The central library has undergone major redevelopment in the last decade. This has led to...
- The biggest UK library which is considered to be part of a sustainable future for the city centre.
- Education services are supported with 2.5 million visitors each year.
- A new areas for modern art displays.
- Educational improvements have occurred for Birmingham's future knowledge based economy.
- Construction has cut down carbon emissions and increased energy efficiency.
- Construction provided jobs for 250 local unemployed people.

Location and Background

Istanbul is a Turkish coastal city situated between two continents. Europe and Asia. It is the fastest growing most populated city in the country (15 million).



Population and Urbanisation

- The city began in the 7th century BC.
- In 1950 it had a population of 1 million.
- Since then, Istanbul has become home to 15 million.
- Growth is due to national migration, millions of people have migrated from rural areas that have suffered from drought, lack of services and unemployment to Istanbul.
- People do this to search for a better quality of life – employment.
- This expanding population has resulted in the rapid urbanisation of Istanbul.
- It is home to most of Turkey's ethnic groups. It has the largest Kurdish population in the world – 3 million.



City Challenges

- Shanty towns called gekecondu are established around the city, typically on unfavourable land, such as hills.
- There are a severe shortage of housing, schools and healthcare centres available.
- The city suffers from earthquakes – a problem for the poorly built squatter settlements.
- The rapid urbanisation causes dangerous levels of pollution and traffic congestion.
- Large scale social inequality, is creating tensions between the rich and poor.

City's Importance



- Has the largest GDP in Turkey. It is headquartered to many of Turkey's main companies.
- Textiles and food processing are the main Industries.
- It has had 3 names during its long history. Byzantium (7th century BC), Constantinople from Roman times up to 1923 when Turkey was created as a country.
- It is home to 20% of Turkey's population and generates 50% of the country's wealth.

Istanbul's way of Life

- The old city centre remains an important part of this growing city.
- Suburbanisation has improved parts of the city's infrastructure and some services.
- The city has a thriving tourism industry – most tourists in Turkey visit Istanbul.
- The old city is an important cultural destination for tourism
- Standards of living are gradually improving.



City management

- The authorities have provided basic materials to improve peoples homes with safe electricity and sewage pipes.
- Government has demolished houses and created new estates. (Esenier).
- Young wealthy people have moved into run down areas and improved the homes – this is called gentrification. (Beyoglu).
- Greater investment in an integrated transport network to reduce pollution and increase connections between areas using new rail links and the old ferry system more efficiently.

Topic Area 1 & 2: Key components of performance		
Individual Sports	Team Sports	Strengths and weaknesses of sports performance
Identify: 1. Individual Sports. 2. Performance of skills and techniques. 3. Individual activities. 4. Appropriate use of compositional ideas. 5. Appropriate use of creativity. 6. Decision making in individual sports. 7. Appropriate and timely decisions. 8. Managing and maintaining performance in individual activities 9. Ability to arrange and maintain own performance in individual activities. 10. Continuing to perform under pressure. 11. Maintaining focus.	Identify: 1. Team Sports. 2. Performance of skills and techniques. 3. Appropriate use of Tactics. 4. Appropriate use of Strategy. 5. Decision making in team sports. 6. Appropriate and timely decisions. 7. Managing and maintaining performance in team activities 8. Ability to arrange and maintain own performance in team activities. 9. Continuing to perform under pressure. 10. Maintaining focus. 11. Awareness of role and contribution to the team	Identify: 1. Skills and techniques 2. Tactics and strategies 3. Compositional ideas 4. Practices 5. Passive drills 6. Altering the context of performance 7. Use of tools to aid evaluation. 8. Video analysis 9. Other assistive technology 10. Monitoring competition results
Describe: <u>Individual Sports</u> Individual sports are those involving a single performer competing against other performers or another single performer. <u>Performance of skills and techniques.</u> Skills are a learned combination of movements using muscles and joints to produce a co-ordinated action. <u>Individual activities.</u> Different sporting activities have different technical demands. In some individual activities the range of techniques required is relatively small. However, there are some activities such as table tennis that have a large range of skills.	Describe: <u>Team Sports</u> Team sports involve two or more players working together towards a shared goal of winning. <u>Performance of skills and techniques.</u> Skills are a learned combination of movements using muscles and joints to produce a co-ordinated action. <u>Team activities</u> Most team sports require specific skills to be performed and the skill varies with the activity. The majority of team sports require a large range of skills and techniques to be performed. <u>Appropriate use of tactics.</u>	Describe: <u>Skills and techniques</u> Most people are able to perform some of the skills and techniques needed for an activity quite well however they may struggle with more difficult skills. Performers have skills that are strengths and some skills that mean the performance is weaker. Being able to perform skills occasionally is not a strength. Skilled performers are consistent in their execution and accuracy of skills. <u>Tactics and strategies.</u> Tactics are plans a performer uses to play against their opponent's weaknesses and to their own strengths. Tactics can be pre planned because most performers know their own strengths. Strategies are an overall plan of how best to perform. Strategies take more time to change and are often based on your opponents weaknesses. <u>Compositional Ideas</u>

<u>Appropriate use of compositional ideas.</u> Composition is the art of creating and arranging something, such as a series of planned situations, like dance arrangements. In dance, compositions are also referred to choreography. Composition involves the use of space, speed, and height. <u>Appropriate use of creativity.</u> Creativity is the ability to create or react to a situation in a unique/unusual way. It involves using your own ideas to solve a problem. <u>Decision making in individual sports.</u> Decision making during performance is very important in sporting activities and its one of the main differences between the good and no so good performer. Performers make decisions based on what they see, hear, touch, and feel. The decisions they make affect what, when and how they respond to a situation. An experiences performer is more likely to make correct decisions because they already have the skills needed to suit a range of situations. <u>Appropriate and timely decisions.</u> Decision making involves the performer selecting a suitable movement or skill from a range of possible responses that are stored in their memory. The bigger the bank of skills stored the more choice the performer has of choosing the right one for that situation. In individual sports decision making is even more critical because you don't have as many variables to fall back on if the wrong skill or movement is chosen. <u>Reaction time, anticipation and decision making in individual sports.</u> Reaction time is how long it takes for you to respond to a stimulus. Anticipation is the ability to predict what an opponent will do. <u>Managing and maintaining performance in individual activities</u> The performer in an individual activity needs to have the ability to manage and maintain their own performance. When competing in a sporting activity. Performance does not always go perfectly, and this can cause a change in levels of arousal. Arousal is the physical and mental state	Tactics are the plans a performer uses to play against their opponent's weaknesses and to their own strengths. <u>Appropriate use of Strategy.</u> Strategies are bigger plans. The difference between a strategy and a tactic is that your strategy is a primary plan or set of goals. Changing strategies is like turning around a ship, it can be done but not quickly. Tactics and the specific actions or steps you take to complete your strategy. <u>Decision making in team sports.</u> In team sports, decision-making during performance is constant. Often the decision making is instantaneous. In team sports the following questions are constantly being decided upon. Which direction should I run in? Shall I pass to my team mate? Which team mate should I pass to? Shall I kick it to them? How much power to I need to apply to be successful? All these are answered, and a decision is made in a fraction of a second. Better team players will be able to make the correct decision quicker than their opponents. <u>Reaction time, anticipation and decision making in team sports.</u> Decision making in team sports is limited by how long it takes to decide. The more choices there are available the longer it takes to decide on what to do. In team sports there are more choices than in individual sports. Practice speeds up reaction time but the practice needs to be specific to the needs of the performer. Reaction time is how long it takes for you to respond to a stimulus. Anticipation is the ability to predict what an opponent will do. <u>Continuing to perform under pressure.</u> In team sports there are peaks and troughs in performers arousal levels. If a performer arousal level is too high or too low them performance will drop. This can have a negative impact on your team as they are relying on you to	Composition is the art of creating and arranging something, such as a series of planned situations. Composition involves creativity in that you have to solve a problem. <u>Practices</u> The type of practice that a performer does to improve their performance depends on both the ability of the performer and the type of skill being improved. <u>Fixed Practice</u> Fixed practice involves the repetition of a skill in a constant unchanging situation. This method suits those skills where a movement is performed in an environment that does not change. Swimmers, gymnasts and divers use fixed practice. They continuously repeat the skills involved until they are perfected. The advantages of fixed practice are that the movement becomes so well learned that it can be performed perfectly with little conscious thought which means that the performer can concentrate on other aspects of the skill. A disadvantage of fixed practice is the lack of variety and challenge in the practices, and they can become boring. Also, the repeated movements and lead to fatigue. <u>Variable practice</u> Variable practice involves changing the skill practices to include as many different situations as possible which reproduce the various circumstances found in a match. This type of practice allows the performer to learn the skill and apply it to different situations. The variety of situation prevent the performers from getting bored. Varied practice helps to build the parts of the skill and it also helps to develop ways of adapting existing skills. The disadvantages of varied practice are that it is time consuming. It also places high demands on the performers so they may become fatigued. <u>Whole Practice</u> Whole practice involves the skill being practiced as a whole from the start to finish. Whole practice helps the learner to get a feel for the skill, the timings, and the end product. Whole practice is best used for skills that are very fast and cannot be easily broken down into separate parts. Whole practice is not suitable for beginners and there is a danger of fatigue using whole practice repeatedly. <u>Part practice</u>

or alertness, or excitement and these levels can change dramatically when performing. - Physical: Increase in arousal may cause a rise in heart rate or cause a performer to sweat more. - Mental: Increases in arousal may lead to increased anxiety. Anxiety is a negative emotional state with feeling or worry, nervousness and apprehension. <u>Ability to arrange and maintain own performance in individual activities.</u> As arousal increases, a performer must use specific strategies to control their level of arousal, because if arousal is not at the correct level, performance may suffer. For all performances, there is a optimal level of arousal where performance will be good. <u>Continuing to perform under pressure.</u> When performance does not go as expected and arousal levels change, the performer must be able to continue to perform under pressure. This involves getting their arousal back tot the correct level needed for that skill in the activity. <u>Maintain Focus</u> You can often observe elite performance trying to control their arousal levels and maintain focus. One method of controlling arousal is mental rehearsal. Mental rehearsal is picturing the perfect performance to control arousal.	play your part. Your team will suffer if you cant control your arousal levels. <u>Maintain Focus.</u> In team sports arousal level can often become too high due to the chaotic nature of the activities. Team sports such as rugby require high levels of arousal due to is being a contact sport. <u>Awareness of role and contribution to the team</u> Most team sports have specific roles for several players within the team and players must be aware of their role and contribution to the team.	Part practice involves the different parts of the skill being practiced in isolation. This makes it suitable for complicated skills and skills that are easily broken down into their main parts. Part practice is good for maintaining motivation and focusing on specific elements of the skill especially if one particular aspect of a skill is weaker than the others. A disadvantage of part practice is that practicing parts of a skill may not necessarily improve the whole skill. <u>Progressive Drills</u> Progressive drills are those that show a clear increase in difficulty as the performer improves. The types of drill that are practiced are dependent on the ability of the performer and the type of skill being practiced. <u>Altering the context of performance.</u> Altering the context of performance means changing the setting in which practice takes place. This could be done by introducing more players into a practice for a team game. Another way could be to introduce better more experienced players into the practice so the learner can see others performing the same skills at a more advanced standard. <u>Measuring improvement in performance</u> The vast majority of people who play sport want to improve their skills and tactics as they get more experienced in their chosen sport. Measuring improvements can boost confidence. The type of tool to measure performance depends on the level of performance there is a financial cost involved in most technology and the types of activities involved. <u>Video analysis</u> Video analysis is being used more and more by coaches and performers to identify and improve weaknesses in performance. Video can be used to measure and correct technique and to analyse team and individual performances. Video analysis can be used to identify key points from the activity such as goals, shots, tackles and errors. This data provided by video analyse is very accurate and more importantly is presented in both quantitative (numbers) and qualitative (opinions) forms. - Quantitative data is objective and can be quantified as a number. - Qualitative data is subjective and involves opinions. <u>Other assistive technology</u> Activity trackers, also know as fitness trackers are a wearable device with a software application for monitoring and tracking fitness related measurements such as distance walked, cycled, swam or run, time taken, average speed, calorie consumption and in some cases heart rate.

		GPS (Global Positioning System) Provides location and time information to a GPS receiver. They are used to track position, distance, velocity and acceleration and this will help performers understand where they can improve. HUD (heads up display) are used in cycling to display heart rate, speed, incline and other relevant information. <u>Monitoring Competition Results</u> Another way of measuring performance is to monitor competition results. This involves recording all results in the activity over a period of time, usually over months or years.
Give a practical example: <u>Individual sports</u> 1. Cycling 2. Tennis 3. Squash 4. Badminton 5. Trampolining <u>Performance of skills and techniques</u> 1. Front somersault in trampolining 2. Backhand smash in badminton <u>Individual activities.</u> 1. Long jump 2. Archery 3. Javelin <u>Appropriate use of compositional ideas and creativity.</u> Compositional ideas – acceleration and deceleration of movements in dance Creativity - communicating a theme to an audience through performance of a ballet dance or feint to pass, then dribble in basketball. <u>Appropriate and timely decisions.</u> In golf the performer has to decide which type of shot to play next and which club to use to execute the intended shot. A gymnast who is in the middle of a floor routine may feel themselves landing awkwardly from a move. They would need to make a rapid decision in the middle of performing the skill to try and correct themselves.	Give a practical example: <u>Team sports</u> 1. Rugby 2. Netball 3. Basketball 4. Football <u>Performance of skills and techniques.</u> Spin pass in rugby Reverse hitting in hockey <u>Appropriate use of Tactics.</u> In rugby using a driving maul if you have a bigger pack. In football playing long balls into the box if your striker is tall. <u>Appropriate use of strategies.</u> In rugby kicking the ball into touch to gain territory and contest at the line out. In cricket playing a night watchman to ensure that your higher order batsman don't get out. <u>Decision making in team sports.</u> In netball the better centre is able to see, decide and pass much quicker than a less effective centre. In addition the better centre creates more shooting opportunities by finding a pass into the shooting circle. In volleyball a effective setter is able to perform not only the necessary skill to set the ball to an appropriate hitter, but they are also able to decide whether to set the ball for the middle hitter or the outside hitter. <u>Appropriate and timely decisions.</u> Choice of pass, kick or run in rugby union	Give a practical example: <u>Skills and Techniques</u> A trampolinist may be able to perform a good back drop but may struggle with a back somersault which limits the level of difficulty of their routines. A volleyball player may be brilliant at blocking when defending but if they cannot spike (smash) or retrieve effectively they have limited benefits as a team player. <u>Tactics and strategies.</u> Tactics example – you may know that you have a very good short backhand serve in badminton. Using this type of serve is the tactic you tend to use frequently. Strategy example – after much practice the badminton player becomes quite skilful at the disguised backhand flick serve. This allows them to change their strategy from continually serving backhand short serves to occasionally adding a disguised backhand flick serve. <u>Compositional Ideas</u> It is easier to compose a new trampolining routine than it is to invent a new golf shot. It is easier to invent a new penalty corner routine in hockey than it is to invent a new method of tumble turn in swimming. Whole Practice Practicing the whole of a trampoline sequence rather than the individual movements or practicing the whole 100m swim rather than just the start. <u>Part Practice</u> Triple jump is made up of the runup, the take off, the hop phase, the step phase, the jump phase and the landing. Each one of these parts can be practiced separately. <u>Progressive Drill</u> A progressive drill for netball could be a basic passing drill where two players stand opposite from each other and perform a chest pass to one another. Once performed satisfactorily this could progress on to where one player is moving when they receive the ball. This could be further developed by introducing a defender.

<u>Managing and maintaining performance in individual activities.</u> Arousal can affect performance in two ways: 1. Muscle tension and co-ordination can be affected. Too much muscles tension can have a negative effect on performance. 2. Attention or focus – Too much arousal can lead to the performer being unable to concentrate on the sort and performance of skills. Insufficient arousal can lead to performer paying too much attention to their surroundings and not focused on the task at hand. <u>Ability to arrange and maintain own performance in individual activities.</u> When putting in golf, the fine, precise movements involved requires low levels of arousal whereas shot putt involves high levels of arousal. Top performers can adjust their arousal levels to the optimum level for the skills they are performing. <u>Continuing to perform under pressure.</u> Platform divers need to control their levels of arousal to ensure they don't mistakes such as under or over rotation. A poor dive may lead a performers arousal level to drop due to feeling deflated. <u>Maintaining focus.</u> Staying composed after two illegal jumps in triple jump Manging to serve 'in' after several 'outs'. Mental rehearsal by looking at pictures of the performer doing the skill before they attempt it. 1.	In cricket deciding to leave a tempting ball from a leg spinner to avoid getting caught out. <u>Reaction time, anticipation and decision making in individual sports.</u> 1. In hockey you can speed up your decision making by anticipating which way your opponent will try and go round based on pervious encounters in the match. 2. In football the goalkeeper must have excellent reaction time to save a penalty or free kick. 3. In cricket a good batter will be able to tell what type of delivery the bower will use based on the grip the bowler has chosen of the ball. 4. Covering for a team mate who is out of position in football 5. Acting in a different role to cover someone who is in the 'sin bin' in a game of rugby <u>Continuing to perform under pressure.</u> In rugby players can get over aroused if they make a big tackle and this may lead there performance to drop or may even result in a red or yellow card because they will go even harder for the next tackle. <u>Maintaining focus</u> In cricket a batsman may need to increase there arousal levels to improve their reaction time for a fast bowler. <u>Awareness of role and contribution to the team</u> • In rugby there are specific positions such as scrum half, full back and prop as well as specific performance roles such as who take the penalty kicks. • In volleyball the main positions are more rigid; there is a setter, outside hitter, libero, middle hitter and opposite hitter. • In handball there is usually a goalkeeper, two full backs, two wingers, a circle runner and a centre player.	<u>Altering the context of performance.</u> For a basketball player who is still learning to pass the context could be changed by introducing a defender or giving the learner a choice of two attackers to pass to with two defenders. <u>Video analyses</u> Video analysis is not only used to track overall performance it is also useful for identifying and correcting poor technique. For example, things that can be measured and identified using video analyse include the head and body positions during a high jump, the angle of release during a shot putt and the joint angles and speed of the limbs during a 100m sprit. <u>Monitoring Competition Results</u> A discus thrower could record the distance they achieved in every competition during a season to see if they are improving.

<u>Learning Outcome 1</u>			
Participation in Sport	Solution to the Barriers	Factors Impacting on the Popularity of Sport	The Popularity of Sports
<u>Identify:</u> Different user groups in sport; Gender Different ethnic groups Retired people/people over 60 Families with children Carers People with Family commitments Young Children Teenagers People with disabilities Parents (singles or couples) People who work Unemployed/economically disadvantaged	<u>Identify:</u> Provision Promotion Access	<u>Identify:</u> The number of people participating The provision of facilities Environment/Climate influences Live spectator opportunities The amount and range of media coverage The high-level success of both individuals and teams. The number and range of positive role models. Social acceptability	<u>Identify:</u> Current trends in the popularity of different sports in the UK. Growth of new/emerging sports and activities in the UK. Use the following to research this at the current time: • www.sportengland.org • www.sportengland.org/know-your-audience/data/active-lives • In a search engine type 'emerging sports in the UK'
<u>Describe:</u> Possible barriers which affect participation in sport; Employment and unemployment Family or other commitments Lack of disposable income Lack of transport or access Lack of positive family role models or family support Lack of appropriate activity provisions Lack of awareness Lack of equal coverage in the media in terms of gender and ethnicity.	<u>Describe:</u> Provision; Appropriate programmes for user groups to attend Specific session for user groups to attend Suitable activities for user groups to attend Session at appropriate times that suit the user group/s Promotion; Targeted promotion to attract user groups Using role models to inspire member of a user group. Targeted initiatives to inspire user groups Access; Increase availability and appropriateness of transport for user groups to use. Improved access to facilities for user groups Appropriate pricing for user groups.	<u>Positives (+) and Negatives (-):</u> The number of people participating – The more people who participate the more people hear about it. This increases interest and participation. Lack of participation will lead to a drop in interest. The provision of facilities – What is provided. The more facilities available will lead to increase in popularity to both play and watch. Lack of facilities will lead to little interest. Environment/climate influences – Britain having lots of coast line, rivers and lakes has led to an increase in popularity of sports like sailing. The UK does not have the climactic conditions for skiing due to the lack of mountains. Live spectator opportunities – The more opportunity for spectators to watch live sporting events the more popular that sport will become. If there are fewer opportunities to spectate then this will lead to a decrease in popularity of that sport. The amount and range of media coverage – Sports that receive a lot of media coverage will be of more interest. Equality of a sport	<u>Examples:</u> Examples of current emerging sports; Netball Walking Quidditch Foot golf Lacrosse Extreme running Disc golf Kabaddi Tough Mudder Ultra marathons
<u>Give a practical example:</u> Employment and unemployment – Employed people may struggle to find time to take part in physical activity/unemployed people may lack the income to help participate in sport. Family or other commitments – Lack of time due to commitments. Lack of disposable income – People might not be able to afford to join a sporting activity. Lack of transport or access – Some people might not be able to get to a sporting facility to take part. Lack of positive family role models or family support – some groups might have a lack of sporting role models and therefore will not be inspired to emulate these people. Lack of appropriate activity provisions – some sports might not be available to certain groups.	<u>Give a practical example:</u> Provision • Targeted campaigns e.g. to attract women • Appropriate times to suit user groups • Transport support for suitable users • Singles clubs for single parents Promotion • By advertising in appropriate places to increase visibility to different user groups. • Using role models to encourage participation. • Walking football for Over 60's • Promotion of children's activities • Free taster session for teenagers and use of social media • Media coverage of disabled sports		

Lack of awareness – how knowledgeable a particular group is about what sporting opportunities are available. Lack of equal coverage in the media in terms of gender and ethnicity –stereotyping of particular groups may demotivate them or lower their self esteem.	Access • Female or male only sessions • Subsidised transport links for ethnic minorities • Day time sessions for over 60's • Free or affordable creches in leisure centres for young families • Possibility to exercise at home for carers • Provision of transport in rural areas, ramps for wheelchair access to buildings • Reduction on restrictions when young children can attend. • Standardised of free transport of teenagers • Wheelchair access, disabled parking bays • Workplace gymnasiums for parents or people who work • Subsidised transport for unemployed/economically disadvantaged	revives less media coverage then the interest in it will decrease. The high-level success of both individual and teams – If a team or individual achieves high-level success then the popularity of that sport will increase. Equally failure to achieve high-level success can lead to a decrease in popularity for that particular sport/event. The number and range of positive role models – an increase in positive role models tends to lead to an increase in popularity. Equally if there is lack of positive role models it may lead to a decrease in inspiration to participate. Social acceptability – If a sport is seen to be socially acceptable then more people will participate. Sports like hockey and swimming are deemed to be socially acceptable however boxing and horse riding are occasionally viewed as violent or cruel leading to a drop in participation.	

Learning Outcome 2

Values Promoted Through Sport	The Olympic and Paralympic Movement	Etiquette and Sporting Behaviour	Performance Enhancing Drugs
<u>Identify:</u> Team Spirit Fair Play Citizenship Tolerance and Respect Inclusion National Pride Excellence	<u>Identify:</u> The Creed The Symbol The Olympic and Paralympic values: ➤ The Olympic values of Excellence, Friendship and Respect ➤ The Paralympic values of Courage, Determination, Inspiration and Equality	<u>Identify:</u> Reasons for observing etiquette and sporting behaviour Sportsmanship Gamesmanship Spectator Etiquette Spectator Safety	<u>Identify:</u> Reasons why they are used Reasons against use World Anti-Doping Agency (WADA) Current Initiatives Drug offences by elite performers Impact of drug taking on the reputation of the sport Ethical issues related to drug taking Educational Strategies to prevent the use of PEDs.
<u>Describe and Example:</u> Team Spirit – The support and loyalty that a performer can have with their fellow team members. E.g. Encouraging a teammate during a football game. Fair Play – Appropriate behaviour that follows the rules while not cheating and showing respect to competitors. E.g. Don't make noise when someone is serving in tennis. Citizenship – How people act as a good citizen of their community by creating community links and community spirit. E.g. Helping out a your local hockey club. Tolerance and Respect –Seen as one single value, tolerance and respect relates to showing a greater understanding of other performers from different cultures and ethnicities. E.g. Respecting the national anthem Inclusion – the idea that there should be equal opportunities for all social groups in society to take part in sport. E.g. Ice hockey UK has equal opportunities embedded in their policy. National Pride – the creation of a feeling of unity within the whole population in the support of their country. supporters and performers unite behind country in international events. E.g. Shops and businesses displaying messages and support for the nation team. Excellence – striving to be the best that you can in your favourite sport. Committing maximal	<u>Describe and Example:</u> The Creed – <i>The most important thing is not to win but to take part, just as the most important thing in life is not the triumph but the struggle. The essential thing is not to have conquered, but to have fought well.</i> (P. De Coubertin) The Symbol – five interlocking rings represent the union of the five continents. The Values; Respect – Athletes must abide by the rules and portray fair play and sportsmanship. Excellence – Athletes give the best of themselves in order to achieve excellence. Friendship – Athletes train and sometimes live with other athletes, forming friendships for life. Courage – Athletes must have the courage and self-belief to overcome adversity in order to achieve. Determination - Athletes have the drive and motivation to train hard and overcome barriers in order to achieve to the best of their ability. Inspiration - Athletes and the public are motivated to achieve/participate themselves due to the achievements of others Equality - The games show that everyone can achieve regardless of ability or disability <u>Examples of other initiatives and events which promote values through sport:</u> Local level: Emphasis on key values during training and competitive events such as Fair play Citizenship Tolerance and respect Excellence Regional Level: The Yorkshire Sport Foundation launched “Mum’s Team” to encourage citizenship and Mum involvement in local clubs.	<u>Describe and Example:</u> Reasons for observing etiquette and sporting behaviour – fairness, promoting sporting values, safety of participants, acting as a positive role model, maintaining silence at appropriate times e.g. during a conversion in rugby Sportsmanship – gracious and respectful when winning and losing, clapping an opposition goal in netball, “giving” a small putt to your opposition in golf, shaking hand before and after a game, not using gamesmanship to gain the upper hand, talking in an appropriate manner at opposition, maintaining silence at appropriate times. Gamesmanship – taking a long time to retrieve the ball in football to waste time (time-wasting), re-tying shoelaces when an opponent is about to serve in tennis, grunting when playing a shot in tennis to put of your opponent, taking a long time to set the scrum position in rugby. Spectator Etiquette – being quiet in golf and tennis when players are taking their shots, no booing a referee’s decision during a match, spectators being respectful to the player they are not supporting, clapping even when the opposition score or win to recognise the excellent level of performance. Spectator safety – spectators should act in an appropriate manner to facilitate a safe environment t for all to enjoy the sport.	<u>Describe and Example:</u> Reasons why they are used – Improve aspects of performance, gain advantage over competitors, think everyone else is doing it, pressure from peers/family/coach/sponsors, financial gain/sponsorship/prize money/fame, to win a trophy/medal, to mask pain/train harder/improve recovery, improve aspects of performance. E.g. personal best time. Reasons against use – May suffer long-term ill health, suffer harsh consequences when found guilty, unfair advantage over others, immoral to take PEDs and cheat, Over-reliance/addition, reputational damage when caught. Marion Jones – found guilty and jailed for lying to federal prosecutors Tyson Gay – Banned for using PEDs. World Anti-Doping Agency (WADA) – Whereabouts Rule - Random testing\Drug testers can then visit unannounced for testing to take place. Performers must inform the authorities of their location, accommodation being used, training schedule, and competition schedule and provide a 1hr time slot to be tested. Testing methods – blood sample collection, urine sample collection, hair sample collection, nail sample collection. Current Initiatives – Educator athletes on world-anti doping code, administer tests to a range of sports, process test samples, administer bans and financial penalties.

effort in the pursuit of high performance. E.g. Committing to a demanding train schedule.	National Level: English Cricket Boards “Chance to Shine” promotes citizenship, Inclusion, tolerance and respect. Kick it Out – Inclusion, tolerance and respect Rainbow Laces LGBT+ Equality, tolerance and respect Sporting Equals – Equality, tolerance and respect This Girl Can – Equality and inclusion	Sports initiatives to break down barriers – Kick Racism Out of Football, This Girl Can, FA Rainbow Laces campaign.	11 anti-doping rule violations which could result in sanctions. These consequences include: Lifelong ban 4 year ban 1 or 2 year ban if they were not completely at fault Fines Loss of medals or trophies Reputational damage Drug offences by elite performers – Dwain Chambers (steroids), Lance Armstrong (blood doping) Rio Ferdinand (missed test). Educational strategies to prevent the use of PEDs: “100% me” Clean Sport Week Athlete Support Personal (ASP) education Whistle Blowing Strategy – “Protect Your Sport” Spirt of Sport (for 7-10 year old athletes) Spirt of Sport Competition (for 11-14 year olds) Think Real – Partnership between Sport England, British Olympic Foundation, British Paralympic Association and the English Institute of Sport. Impact of the use of PEDs on the sport Reputation of the sport is damaged Spectators may question weather the sport is “clean” Mistrust of the results within the sport Damage of credibility of the sport. Examples of Impact of drug taking on the reputation of the sport – mistrust of results/events such as Tour De France as a result of so many scandals.

Learning Outcome 3

Features of Major Sporting Events	Pre-event aspects of Hosting Major Events	During the event	Immediate and longer term Post-event
<u>Identify:</u> The types and scheduling of major sporting events: Regular Sporting Events “One-Off” sporting events Regular and recurring Sporting events The nature of the participants and spectators: the event is usually international: involving participants and spectators from two or more countries	<u>Identify:</u> Bidding for the event Infrastructure and transport systems development Financial/commercial investment/support Potential for increased employment Local/national objections to the bidding process	<u>Identify:</u> Potential positive and negative aspects/benefits during the event	<u>Identify:</u> The links between potential benefits and drawbacks and legacy. Sporting participation Social development Economic growth/profile Legacy: The long-term effects and positive impact of having hosted a major sporting event for the country, its people and its provision of sporting activities
<u>Describe and Example:</u> Regular Sporting events: The Champions League Final – Occurs annually in a different city each year. British Open Squash Championships – Occurs annually and there has been 8 different venues in 17 years. “One-Off” sporting events: The Olympic Games/Paralympic Games – these happen once every four years and the best athletes from all over the world compete to be crowned Olympic champions. Local and international spectators attend. Regular and recurring sporting events: Formula 1 Grand Prix – annual events recur in the same cities and the best F1 racing car drivers compete. Wimbledon tennis championships – occurs annually and the best tennis players all over the world compete at this grand slam event. The Masters Golf – Occurs annually and the best golfers compete on golf course around the world and try to win the famous “green jacket”.	<u>Describe:</u> <u>Bidding for the event</u> Positives: Winning the right to host may be once in a life time and holds a certain amount of “kudos”. Promotion of the city/country National pride Private companies and government supporting the field of sport in that country Development of infrastructure (new stadiums/venues) Negatives: The bid is a huge financial cost Money spent of the bid could be a waist The event may make a loss Population might not be happy about the money spent on the bid when the money could have been invested elsewhere. <u>Infrastructure and transport systems development</u> Positives: Prior investment on roads, transport and infrastructure before bidding. Venues improved for local use. Projects halted by planning and bureaucracy problems may be given the go ahead. Negatives: Cost – rise in taxation Disruption to host city due to building works year prior to hosting event Host city needs to prove that the infrastructure will provide the improvements and “legacy” impact desired. City/country may be international shamed if workers are not payed enough or have poor working conditions.	<u>Describe:</u> <u>Potential positive aspects/benefits</u> Improved social infrastructure: Accommodation and businesses will be developed due to the increase in tourism and visiting athletes Improved transport systems: Improvements will have been made for both spectators and athletes. Improved national moral/pride and social cohesion: “feel good factor” and “togetherness” due to the rise in national pride. If the host nation is successful then further growth in national pride will occur. Commercial gains: tourist will spend more money in the local area (restaurants, hotels and merchandise). Tourists spending money at the event are known as direct tourist. Shop Window Effect: People will see what the host national has to offer such as (landmarks, historical sites) therefore increasing tourism. These tourist who visit the country in the future a knows as indirect tourists. Improvements in facilities: Stadia and event venues will be used both during and after the event. Increased inspiration and interest: Athletes will generate interest and may inspire others to copy these role models.	<u>Describe:</u> <u>Positive aspects/benefits</u> Legacy of improved/new sporting facilities: Citizens can now make use of the new facilities built for the event. Legacy of improved/new transport and social infrastructure: encouragement of grassroots participation and social development such as more cafes, hotels, cafes and businesses who benefit from the event. Increase in participation: people may become inspired to participate due to successful performances during the event. Increase in the profile of the sports involved: the media cover of a sport may increase the interest and generate a higher profile for those sports. Increase in the city/nation’s international profile/status and indirect tourism: Extensive media coverage will raise the city/nations profile. This may result in an increase in tourism. Increase in future financial investment: The city/nation may receive further investment from those business and corporations see the social and economic attractiveness of the host nation. <u>Negative aspects/drawbacks</u> Making a loss: The event may cost the host nation more that is generated. Unused Sports Facilities: Sports facilities are left unused after the event and are left to ruin.

	Human rights violations will be looked at during the preparations for the event. <u>Financial/commercial investment/support</u> Positives: Investment will be generated at government level Private a commercial opportunity to raise funds. Collaboration of different sectors such as national governing bodies, Department of transport, department for culture, media and sports and so on... Negatives: Financial Risk Difficult to justify to tax payer that the rise in taxes is worth it Commercial backers may only promise investment if the bid is successful. <u>The potential for increased employment</u> Positives: Employment opportunities for the construction sector to build roads and stadia Employment opportunities in marketing, communications, policing, stewarding and security. Negatives: Difficult to fill all of the relevant vacancies Checks need to be carried out on all employed/involved to ensure safety of the event. <u>Local/national objections to the bidding process</u> Positives: Long term improvement of facilities Improvements of transport to and from the event area Tourism – more money being spent in the area Improvement of national pride as the event start gets closer. Negatives: Potential protests/political arguments regarding cost and taxation. Not every part of the country will benefit from the investment. Some may feel begrudged.	Increased media coverage: The sports featured will become more readily available to the watching public. Increase in short-term employment opportunities: there will temporary job available at event venues, in hotels in restaurants and volunteers. <u>Potential negative aspects/drawbacks</u> Increased transport, pollution litter and noise all have a negative environmental impact. Potential for an increase in terrorism and crime: Criminals may see opportunities to commit crimes due to the increase in people and terrorists may see the event as a world stage to get their political message across. Poor Performance by the home nation/team and the impact on national pride/moral: If the host nation performs poorly it may lead to frustration and a drop in national pride. Perceived relegation/lack of investment in regional areas not involved in the national event: Feeling of being “left out/uninvolved/forgotten”. E.g. UK northern cities during 2012 Olympics. Negative media coverage/scandals: media may highlight negative aspects of the event. E.g. Drug scandals in 1988 Seoul Olympics or Unfinished facilities at Rio 2016.	Loss of national reputation/status: If the event was badly organised it can lead to the hosts reputation being damaged.

Learning Outcome 4 – National Governing Bodies in Sport

NGBs are typically independent organisations that govern their sports at UK, GB or home country level.	e.g. England Netball, Football Association, British Cycling, England Athletics	NGBs have specific roles and responsibilities for managing their sport, in these areas: see below...
<u>Promote participation:</u> Provide equal opportunities policies: e.g. equal opportunities policy, LTA youth Start Schemes progression through specific pathways. Develop schemes to encourage participation and allow those already participating to develop further: e.g. LTA youth start scheme to encourage children of ages 4-11 to start playing tennis Development centres in Hockey as player pathways Academy centres which provide a high quality talent programme. Increase exposure in the media: New media deals, press releases about upcoming events, public relations (PR), community engagement projects such as athlete visits, social media profiles (Instagram moments).	<u>Develop the sports coaching and officiating infrastructure:</u> Coaching awards e.g. England Netball UK Coaching Certificate coaching awards form Levels 1-3 upwards. Training of officials e.g. The Rugby Football Union has a young officials award which can be used as a starting point to become an official.	<u>Infrastructure:</u> NGS's are responsible for the infrastructure of their sport Infrastructure refers to: • How competitions are organised • How leagues are administered • How rules are made, changed and administered • How disciplinary procedures and administered • How strategy and direction for the sport is delivered • Providing guidelines for all stakeholders and members • Running and assisting with the development of facilities. Organise competitions and tournaments e.g. The FA organise the FA Cup competition but act "special shareholder" in the Premier League. Amend the existing rules and apply disciplinary procedures for rule breaking e.g. The FA changed the rule to allow VAR in football. Ensure safety within their sport. E.g. scrum caps, safeguarding policies, information about banned substances and testing procedure
<u>Develop policies and Initiatives:</u> <u>Policies NGB's provide</u> • Customer care and complaints policy • Disability awareness policy • Disability plan policy • Equality and diversity policy • Equal opportunities policy • Social media guidelines • Whistle-blowing policy • Diversity action plan • Safeguarding guidelines • Transgender Guidelines. • Anti doping policies e.g. The ECB has an anti-doping policy and has a list of all substances which are permitted and those that are banned. Promoting etiquette and fair play e.g. The FA's 'Respect' campaign.	<u>Lobby for funding:</u> Lobby refers to presenting an argument that seeks to influence another decision. NGB have to present their arguments to the Department of Digital, Culture, Media and Sport to receive funding. NGB's generation of funds: • Grants • Government and non-government • Membership • Subscription/Match fees • Lottery funding • Income from media/sponsorship/advertising • Private investment and donations • Merchandising • Admission charges • Fund raising events Examples of NGB's distribution of funds • National success and teams	<u>Provide support, insurance and technical guidance to members:</u> <u>Support</u> NGB's will have a website, email address and phone numbers where you can acquire advice or information. <u>Technical Advice</u> • Advice on playing equipment, for example clothing, footwear, safety equipment • Advice on what is and what is not allowed, for example any banned or restricted equipment. • Advice on playing surfaces, for examples England Hockey provides information about artificial playing surfaces. • Assist with facility developments. <u>Other Advice</u>

Community programmes e.g. Amateur Swimming Association's 'Swimfit'. Information and guidance on safeguarding.	• Performer grants • Grassroots participation • Education • Community engagement • Sports venues and facilities • Digital engagement/internet/social media • Targeting minority user groups • Rules and administration NGB's also provide members with advice about funding • Websites include advice to performers in that particular sport on how to apply for funding. E.g. The LTA provides information about pro scholarship funding	• Where your local club is • What age ranges are catered for • When starter events are being held Providing technical advice e.g. England Hockey provide information about playing surfaces. Providing location and contact details for local clubs, how to get started in the sport etc.

Learning Outcome 5 - The Use of Technology in Sport

To enhance performance	To Increase the Safety of Participants	To Increase fair play and increase the Accuracy of Officiating	To Enhance Spectatorship
Equipment Examples - Tennis rackets use composite material making them stronger and generate more power. - Balls such as rugby balls and Netballs have dimples to make them easier to catch Clothing - Breathable fabric helps performer maintain a suitable body temperature - Compression garments are designed to stay tight to the skin and although the science isn't proven they are supposed to improve oxygen delivery to the working muscles. Analysis - Heart rate monitors monitor the speed in which the heart beats and allow long-distance runners the chance to analyse they are training at the right level. - Video and tracking analysis monitors and records performance allowing the coach and the athlete to watch the technique that has been used to work on ways to improve performance. Recovery and rehabilitation - Ice baths are used in many sports. The cold temperature causes the blood to rush to the core of the body and after getting out oxygen-rich blood returns to the muscles aiding recovery. - Foam rolling helps release tension in the muscles and relieves muscle soreness. Accessibility - Wheelchairs are designed and altered in various ways to help make many sporting activities accessible for disabled performers. - Prosthetics are artificial devices used to replace missing body. - To Increase the Safety of Participant	Helmets Helmets are used in many sports in the case of impact. E.g. horse riding, ice hockey, cycling, and cricket. Gloves Golf gloves help performers by enhancing grip. Goalkeeping wear gloves to protect their hands. Protective padding and guards prevent injuring during boxing, football, and hockey. Mouth guards used in rugby and hockey to protect performer's teeth. Formula 1 cars F-1 cars have used technology to help the car deal with high speed impact and driver wear the "halo" head protection tech to keep them safe.	Video Assistant Referee VAR is a system used in football to determine whether decisions need to be changed. Television match official TMO is used in rugby union to confirm or change the decisions of the referee and their assistance. Hawkeye is a camera system used to track the ball trajectory and use used in tennis and cricket. Hotspot is an infrared imaging system used to determine whether the ball has struck to batter, bat or pad. Time/distances and at the line Photo finish technology can help officials determine what order the athletes cross the line. Post-event disciplinary action In a sport like rugby union when a player has been seen breaking the rules (e.g. violent actions) but not disciplined by the referee at the time the use of technology enables the officials to charge the player after the event.	Video replays At major sport event video replays are shown from different camera angles on the big screen to enhance the spectator experience. Decision-making Sometimes spectators can hear communications between officials and can see decisions being made on large screens. Hawkeye in tennis can be seen by the spectators. Scores and information Live up-to-date scores of other sporting events happening at the same time.

Impact On Performers	
Positives	Negatives
Enhanced Performance Accuracy of times and distances can be improved through the use of technology Lower Risk of Injury The RFU found that scrum caps found could decrease impact force by 47%. Quicker recovery from injury Leicester City advocate cryotherapy (cold treatment) to help player cover and rehabilitate quicker. More accurate decisions Decisions are more accurate therefore the standard of performance is improved. Technical analysis Analysis of performance and training allows performers to remain safe and train to optimum levels. E.g. Rowing technique can be adjusted to avoid injury and enhance performance.	Unequal access Some performers can't gain the potential benefits while others can. Increased Cost Up-to- date technology cost have increased. Some countries can't afford such tech to their athletes therefore they will be at a disadvantage. Availability and Affordability There is an argument that there is a unequal playing field with those who are wealthy enough to invest in technology which gives them an unfair advantage over those who can't afford similar tech. Changes to the nature of the sport Technology can lead to a change in how a sport is played and may result in delays or disruptions such as waiting for VAR decisions. Decisions influenced by technology Officials decision may be influenced by the the fact that technology may be used.
Impact on Spectators	
Positives	Negatives
Increased Understanding Technology can help spectators to understand the sport better. E.g. helping pundits (expert guests) to analyse footage from game situations and provide statistics such as possession percentages and meters run. Fairness Technology can help make the sport for spectator fairer. E.g. drug testing, TMO. Action replays/angles Large screens allow for spectators to relive moments within the sport they are watching a catch up on anything they may have missed 24/7 coverage Spectators at home can watch, listen or learn about their sporting heroes at any time via the internet.	Changing nature of sport – technology can cause and lead to changes within the sport. Some spectators are very traditional and prefer the original version of the sport without the use of technology. Hold up's in play –As technology is used to make decisions play is help up and spectators have to wait for the verdict before play can resume and this may cause frustration or boredom Technology over natural talent – It is sometimes argues that the standard of performance relies on technology rather than natural talent. E.g. controversy over the use of blades when running Lessons excitement – it could be argued that technology reduces the excitement level for the spectator. In sports like cricket the use of Hotspot and Hawkeye takes away from the initial excitement of taking a wicket.

How does automation in factories affect people in local communities?

Industry & Enterprise

Industrial Revolution 1780
Digital Revolution 1940
Automation
Computer Aided Design CAD
Computer Aided Manufacture CAM
Computer Numerically Controlled CNC
Flexible Manufacturing Systems FMS
Just in Time production JIT
Virtual and Augmented Reality AI

People

Technology Push – new tech on the market
Market Pull – what the target market wants
Trends
Culture inclusive
Planned obsolescence – built to break

Why do some products break easily compared to others?

Energy

Fossil Fuels
Turbines and generators
Shale gas – fracking
Nuclear power – renewable / clean but toxic waste
Renewable Energy – solar, tidal, wind, hydroelectric, biomass
Batteries and flywheel – energy storage

Life Cycle Assessment LCA

Finite Resources – run out
Infinite Resources – can be replenished

Ecological Footprint

Product Miles
Carbon Emissions
Mining
Deforestation

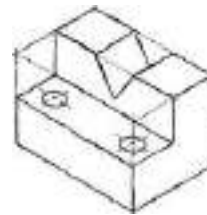
6 R's

Rethink
Refuse
Reduce
Reuse
Repair
Recycle



Quality Controls

Tolerances
Templates and Jigs
Tessellation / Nesting
Seam Allowances



Communication of Design Ideas

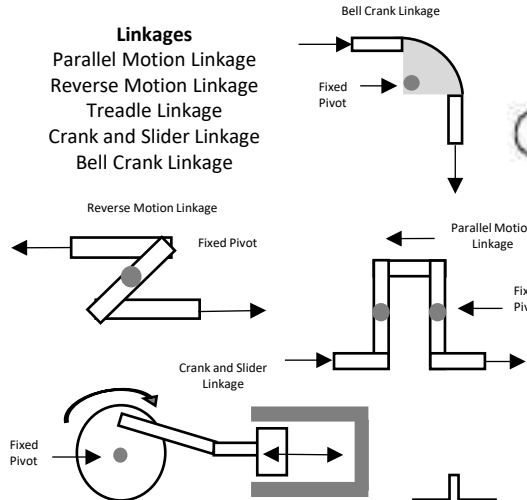
Sketches
Isometric
Perspective – 1 point, 2 point, 3 point
Orthographic – 3rd Angle Projection

Exploded Diagrams
Sectional View
Annotations
CAD
Prototypes / Models

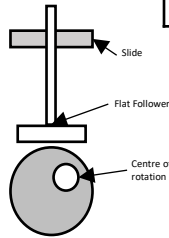


Linkages

Parallel Motion Linkage
Reverse Motion Linkage
Treadle Linkage
Crank and Slider Linkage
Bell Crank Linkage



Cams
Snail Cam
Heart-shaped Cam
Irregular Cam
Eccentric Cam
Converting rotary motion to reciprocating motion



Systems & Electronics

Input -> Process -> Output

Inputs – LDR, Resistors, Switches, Sensors

Process – Microcontroller MC, Programmable Component

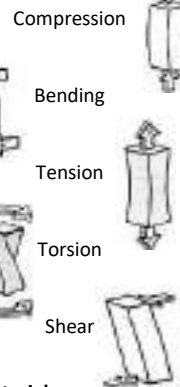
Output- Buzzer, speaker, lights, LED,

Useful Conversions	
1mm	1000 microns
1cm	10 mm
1m	100cm
1km	1000m
1m²	10,000m²
1kg	1000g
1litre	1000ml

Movement

Linear
Reciprocating
Oscillating
Rotary

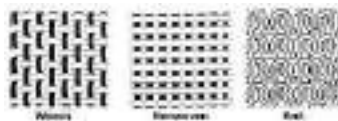
Forces & Stresses



Textiles:

Natural
(plant & animals)
Cotton
Wool
Silk
Synthetic
(oil)
Nylon
Elastane
Polyester

Blended / Mixed Textiles
Woven Textiles
Non-woven – bonded / felted
Knitted Textiles



Metals:

Ferrous
(contains Iron – Fe)
Low Carbon Steel
High Carbon Steel
Cast Iron
Non-Ferrous
Aluminium
Copper
Zinc
Tin
Alloys
Brass – Copper & Zinc
Stainless Steel – LC Steel & Chromium
High Speed Steel



Polymers:

Thermoforming Plastics

Flexible when heated
Polymer chains can move freely
Majority are recyclable
Used with Vacuum Formers, injection moulding, blow moulding

Common Plastics

Polyethylene Terephthalate PETE
High Density Polyethylene HDPE
Polyvinyl Chloride PVC
Low Density Polyethylene LDPE
Polypropylene PP
High Impact Polystyrene HIPS
Acrylic



Thermosetting Plastics

Rigid, 'set', cannot be reshaped/ formed
Polymer chains have cross links – cannot move
Harder & Brittle
Not easily recycled

Common Plastics

Epoxy Resin – Araldite
Melamine Formaldehyde MF
Urea Formaldehyde UF
Polyester Resin PR
Phenol Formaldehyde PF



Physical Properties

Electrical Conductor – ability to conduct electricity
Thermal Conductor – ability of a material to conduct heat
Absorbency – tendency to attract or absorb an element, usually water or moisture, can also include light and heat
Density – mass of the material per unit of volume, how compact a material is
Fusibility – ability of a material to be converted through heat into a liquid state and combined with another material (usually the same) before cooling

Working Properties

Strength – ability to withstand force (pressure, tension, shear)
Hardness – ability to resist abrasive wear through impact, can be brittle, crack, snap, shatter
Toughness – ability to absorb energy through shock without cracking
Malleability – ability to deform under compression without cracking, tearing, splitting
Ductility – ability to be stretched out or drawn out into thing strands / sheets without snapping
Elasticity – ability to return to its original shape after being stretched or compressed.

Enhancing Materials

Bending
Folding
Interfacing
Webbing
Lamination

Timbers:

Hardwood
Ash
Beech
Mahogany
Oak
Balsa

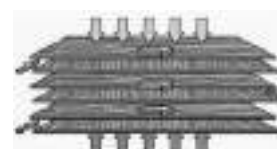
Softwood

Larch
Pine
Spruce

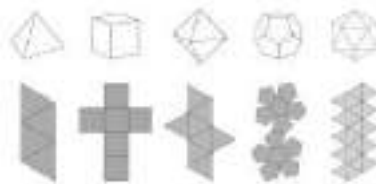
Manufactured Boards

MDF
Plywood
Chipboard

Plywood, thin sheets of veneer are stacked with grain alternating to improve strength.



Design & Technology
AQA GCSE



Papers & Boards:

Common Papers

Bleed proof Paper
Cartridge Paper
Grid Paper
Layout Paper
Tracing Paper

Common Boards

Corrugated Cardboard
Duplex Board
Foil Lined Board
Foam Core Board
Ink Jet Card
Solid White Board

GSM – Grams per Sq Meter

Levers
1st Order / Class Lever

2nd Order / Class Lever

3rd Order / Class Lever

Effort
Load
Fulcrum

Modern Materials:

Graphene, metal foams, titanium, nanomaterials, LCD screens

Smart Materials:

Polymorph, Quantum Tunnelling Composite QTC, thermochromic pigment, photochromic pigment, self healing concrete / polymers, shape memory alloy SMA
Stimuli – heat, sound, electricity, movement, UV light

Composite Materials:

Glass-Reinforced Plastic GRP
Carbon Reinforced Plastic CRP
Carbon Fibre

Technical Textiles:

Gore-Tex, Microfibres, fire-resistant fabrics, conductive fabrics
Kevlar – aramid fibre





Qu'est-ce qu'il y a sur la photo?

Dans l'image... In the image Dans la photo... In the photo Sur la photo... In the photo...	au premier plan... in the foreground au deuxième plan.. in the background à gauche.. to the left à droite.. to the right	il y a... there is/ are je vois... I see on peut voir... you can see je peux voir... I can see...	...beaucoup de <u>gens</u> lots of <u>people</u> ...des personnes some people ...un homme a man ...une femme a woman ...une fille a girl ...un garçon a boy ...une famille a family ...<u>deux</u> personnes <u>two</u> people ...des bâtiments some buildings ...des arbres some trees ...un parc a park ...un collège a school		
À mon avis... In my opinion... Selon moi... In my opinion... Je crois que... I think that... Je pense que... I think that... J'imagine que... I imagine that... Je suppose que... I suppose that... Je dirais que... I would say that... Il me semble que... It seems to me that..	il a l'air... he seems elle a l'air... she seems ils ont l'air... they seem (m/mix) elles ont l'air... they seem...(f) il est... he is elle est... she is il/elle a ...ans he/she is ...yrs old	content(e)(s) happy triste(s) sad fatigué(e)(s) tired énervé(e)(s) annoyed drôle(s) funny grand(e)(s) tall petit(e)(s) short <i>*remember to add an e when describing a female, an s when describing more than one person and an es for feminine and plural</i>	<i>For describing what the people are doing only (not how they look):</i> Il est en train de... He is... elle est en train de... She is... Ils sont en train de... They are ...(m/mix) Elles sont en train de... They are ...(f)	...parler (talking) ...manger (eating) ...se disputer (arguing) ...travailler (working) ...s'amuser (having fun) ...jouer (playing) ...faire (doing) ...boire (drinking) ...se relaxer (relaxing) ...rire (laughing) ...étudier (studying) ...regarder (watching) ...écouter (listening) ...lire (reading)	C'est en été It's in summer C'est en hiver It's in winter Il y a du soleil it's sunny Il fait beau it's nice weather Il fait mauvais It's bad weather Il pleut it's raining il neige it's snowing Il y a du vent it's windy

Knowledge Organiser: Customs and Festivals (Theme 1) Foundation & Higher

Vocabulary:

my birthday **mon anniversaire**
Mother's Day **la fête des Mères**
Bastille Day (14th July) **la fête nationale (le quatorze juillet)**
Twelfth Night/Epiphany **la fête des Rois**
Christmas Eve **la veille de Noël**
May Day (Labour Day) **le premier mai (la fête du travail)**
_____ 's wedding **le mariage de _____**
Christmas **le Noël**
April Fools' Day **le premier avril**
to celebrate **fêter**
Diwali **le Diwali**
presents **des cadeaux**
a bank holiday **un jour férié**
a religious celebration **une célébration religieuse**
a party / a celebration **une fête**
celebrations **les festivités**
Christmas tree **un sapin de Noël**
pancake day **la Chandeleur**
pancakes **des crêpes**
Fireworks **Les feux d'artifice**
Mosque **la mosquée**
Church **l'église**
Temple **le temple**
Synagogue **la synagogue**
Easter **pâques**
Armistice day **l'Armistice**
parades **les défilés**
Valentine's day **le Saint Valentin**

Opinions:

What I prefer is... **ce que je préfère est...**
The best thing is... **la meilleure chose est...**
I think that **je pense que**
I believe that **je crois que**
I find that **je trouve que**
In my opinion **à mon avis**
I would say that **je dirais que**
It's **c'est**
It's not **ce n'est pas**
As far as I know **Autant que je sache**
Although it is **Bien que ce soit**
I'm of the opinion that it's **Je suis d'avis que c'est**

Time phrases:

normally **normalement**
usually **d'habitude**
every year **tous les ans**
every year **chaque année**
last year **l'année dernière**
next year **l'année prochaine**
this year **cette année**
at the weekend **le weekend**

Sentence starters [past tense]:

I celebrated **j'ai fêté**
I went **je suis allé[e]**
I watched **j'ai regardé**
I gave **j'ai donné**
I ate **j'ai mangé**
I drank **j'ai bu**
I spent time with **j'ai passé du temps avec**

Questions:

What do you think of French festivals? **Qu'est-ce que tu penses des fêtes françaises?**
How do they celebrate Christmas/Easter in France? **Comment fête-t-on Noël/Pâques... en France?**
How do you celebrate your birthday? **Comment fêtes-tu ton anniversaire?**
What do you like to get as a present? **Qu'est-ce que tu aimes recevoir comme cadeau?**
What is your favourite celebration? **Quelle est ta fête préférée?**

Sentence starters [present tense]:

We eat **On mange**
We hide **On cache**
We celebrate **On célèbre**
We say **On dit**
We stick **On accroche**
We offer **On offre**
We work **On travaille**
We watch **On regarde**
We listen **On écoute**
We return **On rentre**
We put **On met**
We go **On va**
We commemorate / honour **On commémore**
We prepare **On prépare**
We give **On donne**
We exchange **On échange**
We drink **On boit**

Change *on* to *je* if you want to say I
e.g. I eat – je mange



IDEAS FOR LEARNING:

Look, say, cover, write, check. Use this strategy when trying to memorise words.
Sticky notes. Write new words on sticky notes and stick them in places where you will see them regularly. When learning vocabulary, remember little and often is better than a lot at once.
Language links. Make links in your mind when you are learning a new word. Is it like English? Does it remind you of another word? Try to learn things in sentences as your brain will find it easier to retain the information in chunks
Vocabulary ranking. List new vocabulary from the easy ones to the most difficult. Don't spend too much time on the easy words. Start with the difficult ones and spend more time learning those.

LINKS

Ongoing, key skills: *Opinions & justifications, use of 3+ tenses, time phrases*
Previous topic vocab links with: *free time, food & drink, family, holidays/travel*



Cultural Information

France celebrates many festivals throughout the year, each with its own customs.

France's predominant religion is Christianity (the main denomination being Catholicism), with the other major religions being Islam, Judaism, Buddhism, Hinduism and Sikhism. However, France is one of the least religious countries in the world according to recent statistics.

- **L'Ephiphanie/La fête des Rois:** 6th January. Celebrates the visit of the 3 wise men to the baby Jesus. Traditions include eating a special cake **la galette des rois** which has a figurine hidden inside
- **La Chandeleur** Candlemas. Religiously, 2nd February marks the day when Jesus was presented at the temple in Jerusalem. Traditionally lots of pancakes are eaten on this day but this is not the same as pancake day!
 - **Le Carnaval** is a fun period that takes place in February just before **le Carême** - Lent. It is a time of celebration with parties, parades and lots of foods. The final day of *le Carnaval* is **le Mardi Gras** - Shrove Tuesday. (pancake day)
- **Pâques** Easter (celebration of the resurrection of Jesus, celebrated in a similar way to the UK)
 - **Poisson d'avril** April Fool's Day. Often celebrated with jokes including children trying to stick paper fish onto adults' backs without them noticing!
- **La Fête du Travail** Celebrates the achievements of workers and gives you a day off.
- **L'Armistice** Marked on 8th May commemorating the Second World War and on 11th May for the First World War
- **La Fête de la Musique** A celebration of music where people are encouraged to perform in public. Lots of concerts take place free of charge to celebrate music.
- **La Fête Nationale** National celebration which marks the beginning of the French revolution in 1789. Celebrations include fireworks and parades, and a day off!
- **La Toussaint** 1st November – a special day for honouring the dead
- **Noël** Christmas (celebration of the birth of Jesus, celebrated in a similar way to the UK)

Knowledge Organiser: Customs and Festivals (Theme 1) Foundation & Higher

L'Epiphanie / La fête des Rois le 6 janvier <i>C'est la Fête des Rois pour célébrer la visite des Rois Mages au bébé Jésus.</i> <i>On mange la galette des rois</i> <i>Dans la galette, on cache une fève (une petite figurine).</i> 	La Chandeleur le 2 février C'est une fête catholique. On mange des crêpes. 	Le Carnaval en février  En février on célèbre le carnaval. Il y a des bals, des chars et des personnages déguisés. On mange des beignets Mardi gras: le dernier jour du carnaval.
Pâques en mars / avril  C'est la plus importante fête chrétienne. C'est la célébration de la résurrection du Christ. Les enfants mangent des œufs et des poules au chocolat. Les cloches des églises sonnent.	Poisson d'avril le 1^{er} avril On dit des blagues. On accroche des poissons. 	La Fête du Travail le 1^{er} mai  On offre du muguet. On ne travaille pas
L'Armistice le 8 mai C'est l'anniversaire de la fin de la Deuxième Guerre Mondiale en 1945. Il y a beaucoup de défilés militaires qu'on regarde à la télé ou dans la rue. 	La Fête de la Musique le 21 juin Le 21 juin on célèbre la fête de la musique On écoute de la musique dans les rues et on va au parc pour le concert gratuit C'est aussi le début de l'été. 	La Fête Nationale le 14 juillet C'est l'anniversaire de la prise de la Bastille. C'est le début de la Révolution française Il y a des feux d'artifice, des bals et des défilés militaires. 
La Toussaint le 1^{er} novembre C'est la Fête des Morts On va au cimetière et on mets des fleurs (des chrysanthèmes) sur les tombes. 	L'Armistice le 11 novembre C'est l'anniversaire de la fin de la Première guerre mondiale de 1918. On commémore ceux qui ont perdus la vie Il y a beaucoup de défilés militaires. 	Noël le 25 décembre  C'est la célébration de la naissance du Christ. On prépare le sapin. On donne et on échange des cadeaux. On mange le repas de Noel: la dinde et la bûche de Noel



Marriage & Partnerships Key Vocabulary

to get engaged **se fiancer**
to get married **se marier**
to separate **se séparer**
to get divorced **divorcer**
separation **la séparation**
married **marié(e)**
the future **l'avenir**
to get married **se marier**
the Church **l'église**
to live **vivre**
engagement **les fiançailles**
single **célibataire**
boyfriend **un petit ami**
girlfriend **une petite amie**
marriage/wedding **le mariage**
civil partnership **le PACS**
fiancé(e) **le/la fiancé(e)**
divorce **le divorce**
to live together (unmarried) **vivre en concubinage**
to bring up children **élever les enfants**
to have children **avoir des enfants**
partner (m/f) **le/la partenaire**
money **l'argent**
love **l'amour**
arguments **les disputes**

I am for marriage	Je suis pour le mariage
I am against marriage	Je suis contre le mariage
There are advantages and disadvantages	Il y a des avantages et des inconvénients
I would like to get married one day	Je voudrais me marier un jour
I don't know what I want to do	Je ne sais pas ce que je veux faire
I would like to have children in the future	Je voudrais avoir des enfants dans le futur
I would prefer to stay single	Je préférerais rester célibataire
My parents have been married for 20 years	Mes parents sont mariés depuis 20 ans
My parents are not married	Mes parents ne sont pas mariés
My sister is married	Ma sœur est mariée
I would like 2 or 3 children	Je voudrais deux ou trois enfants

Questions:

Are you going to get married in the future? Why?**Tu vas te marier à l'avenir? Pourquoi?**
Are you going to have a family in the future? Why?**Tu vas avoir une famille à l'avenir? Pourquoi?**

Opinions:

Me, I find that...**Moi, je trouve que...**
For me, it's important to....**Pour moi, il est important de**
I am convinced that...**Je suis convaincu que**
I personally believe that...**Je crois personnellement que ...**
On the other hand, I think that...**Au contraire, moi je pense que ..**
On the other hand, I believe that...**En revanche, je crois que ...**
You must not forget that...**Il ne faut pas oublier que...**
I'm of the opinion that... **Je suis d'avis que...**



IDEAS FOR LEARNING:

- Look, say, cover, write, check.** Use this strategy when trying to memorise words.
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- Vocabulary ranking.** List new vocabulary from the easy ones to the most difficult. Don't spend too much time on the easy words. Start with the difficult ones and spend more time learning those.

LINKS

Ongoing, key skills: *Opinions & justifications*
Previous topic vocab links from topics: *family, self, future plans*



Cultural Information:



- In France you have to be 18 to get married
- Getting legally married in France is only possible through a civil ceremony which takes place at the town hall (la mairie). The couple can then follow this with a religious ceremony, or any other type of celebration.
- Same-sex marriage was legalised in France in 2013. France was the 13th country in the world to make gay marriage possible.
- Marrying a French citizen does not automatically grant you French citizenship. You have to wait around 2 years for this.
- An alternative to marriage is a **pacte civile de solidarité (PACS)**, which gives some of the rights of marriage but is much easier to leave. This was first established in 1999. It is a civil partnership which can be between a heterosexual or homosexual couple.
- Lots of wedding traditions are different in France, for example generally there are not bridesmaids or a best man, however children may scatter flowers or carry the rings..
- A grand entrance is traditional with the groom walking down the aisle with his mother then the bride with her father
- Traditionally wedding parties last a long time and include lots of good food.
- Technically in France, you can marry a dead person...as long as there is lots of evidence you were planning to get married before the person died. The President has to give permission.

It's a public declaration of love	C'est une déclaration publique d'amour
It's not necessary	Ce n'est pas nécessaire
You can unite before God	On peut se réunir devant Dieu
For me, it's important to be married to have children, and I want children	Pour moi, c'est important d'être marié(e) pour avoir des enfants, et moi je veux des enfants!
I would like to organise the wedding party	J'aimerais organiser la fête du mariage
I would prefer to be more independent and concentrate on my career	Je préférerais être plus indépendant(e) – et me concentrer en ma carrière
Marriage is often followed by a divorce (the majority of marriages end in divorce)	Le mariage est souvent suivi d'un divorce (la majorité de mariages se termine en divorce)
You can get together with family and friends to celebrate	On peut se réunir en famille et amis pour célébrer
If you're happy with your partner, why get married to prove it to someone else?	Si tu es content(e) avec ton/ta partenaire, pourquoi te marier pour le prouver à quelqu'un d'autre ?
It's only a bit of paper	Ce n'est qu'un morceau de papier



IDEAS FOR LEARNING:

- **Look, say, cover, write, check.** Use this strategy when trying to memorise words.
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- **Language links.** Make links in your mind when you are learning a new word. Is it like English? Does it remind you of another word? Try to learn things in sentences as your brain will find it easier to retain the information in chunks
- **Vocabulary ranking.** List new vocabulary from the easy ones to the most difficult. Don't spend too much time on the easy words. Start with the difficult ones and spend more time learning those.

Questions:

What is the importance of marriage for you? **Quelle est l'importance du mariage pour toi?**

What are the arguments for and against marriage? **Quels sont les arguments pour et contre le mariage?**

More complex opinions:

As far as I know **Autant que je sache**
 Although it is... **Bien que ce soit...**
 I'm of the opinion that it's... **Je suis d'avis que c'est...**
 In my opinion **Quant à moi**
 I have to admit that ... **Je dois avouer que...**
 I don't believe it's... **je ne crois pas que ce soit...**
 If I can.... **Si je peux...**
 If I have enough money... **Si j'ai assez d'argent...**
 Personally I would prefer... **Personnellement je préférerais...**



Knowledge Organiser: Local Area (Theme 2)

In town **En ville**
The region **La région**

There is/are **il y a**
There isn't/aren't **il n'y a pas de**

a butcher's **une boucherie**
a bakery **une boulangerie**
a factory **une usine**
a railway station **une gare**
a bus station **une gare routière**
a hotel **un hôtel**
a library **une bibliothèque**
a swimming pool **une piscine**
some houses **des maisons**
a castle **un château**
an ice rink **une patinoire**
a Church **une église**
some shops **des magasins**
a market **un marché**
a museum **un musée**
a shopping centre **un centre commercial**
a leisure centre **un centre de loisirs**
a stadium **un stade**
a school **un collège**
a cinema **un cinéma**
a restaurant **un restaurant**
a zoo **un zoo**
a post office **une poste**
a bank **une banque**

In my town there are some shops	Dans ma ville il y a des magasins
In my village there is a bakery	Dans mon village il y a une boulangerie
You can visit the monuments	On peut visiter les monuments
You can't go to the beach	On ne peut pas aller à la plage
Last weekend, I visited a theme park	Le weekend dernier j'ai visité un parc d'attractions
Next weekend I am going to visit a museum	Le weekend prochain je vais visiter un musée
I went to the park	Je suis allé(e) au parc
In the future I'm going to live in France	Dans le futur je vais habiter en France

Infinitives:
to watch **regarder**
to listen **écouter**
to play **jouer**
to take **prendre**
to do **faire**
to be **être**
to have **avoir**
to visit **visiter**
to go **aller**

Key phrases:
there used to be **il y avait**
it was **c'était**
I used to live **j'habitais**
I used to like **j'aimais**
I went **je suis allé(e)**
I visited **j'ai visité**
I'm going to go **je vais aller**
I'm going to visit **je vais visiter**

Questions:

Where do you live? **Où habites-tu?**
What is there in your town? **Qu'est-ce qu'il y a dans ta ville?**
What can you do in your area? **Qu'est-ce qu'on peut faire dans ta région?**

Articles:

There are 2 words for **a/an** in French.
In French nouns are either masculine or feminine.
un = a for masculine nouns e.g. un immeuble
une = a for feminine nouns e.g. une ferme
In the plural you say **des** which means 'some' and is used for both masculine and feminine nouns.
To say **the** in French you must also use the word which matches the noun's gender:
Le = the for masculine words
La = the for feminine words
L' = the in front of words which start with a vowel (remember in French 'h' behaves like a vowel!)
Les = the for plural words (masculine or feminine)

To say 'to the' or 'at the'
you need to use the following words...

au + masculine noun
à la + feminine noun
à l' + noun beginning with a vowel
aux + plural noun

Prepositions:

behind **derrière**
in front of **devant**
between **entre**
on **sur**
at ...'s house **chez**

LINKS

Ongoing, key skills: *Opinions & justifications, use of 3+ tenses*
Previous topic vocab links from Key Stage 3 topics: *house/home, nationalities*
Links to upcoming topics: *environment, social issues, holidays/travel*



Cultural Information:



- Switzerland has four official languages including French. It is a landlocked country (meaning it has no coastline) and is surrounded by Germany, France, Austria, Liechtenstein and Italy. Geneva is the largest French-speaking city in Switzerland due to its proximity to the French border.
- Overseas there are many other territories which are governed by France these include the Caribbean islands of Guadeloupe and Martinique, Guyane, located on the northern coast of South America and, in the Indian Ocean, the island of Réunion and the archipelago Mayotte.
- Across the world there are a total of 29 countries where French is the official language.
- The number of French speakers has tripled since 1945 largely since most former French and Belgian colonies kept French as their language of government, education and science after decolonisation.
- Between 6 and 11 million Americans speak French, as does half the population of Algeria.
- The most populous country where French is the official language is the Democratic Republic of the Congo. In the Congo there are over 84 million people.

Knowledge Organiser: Local Area 2 (Theme 2)

Modal Verbs

The modal verbs are listed below, these are followed by infinitives.

	devoir to have to	pouvoir to be able to	vouloir to want to
Je I	dois have to	peux can	veux want (to)
Tu You Singular/ informal	dois have to	peux can	veux want (to)
Il/Elle/On He /She /One	doit has to	peut can	veut wants (to)
Nous We	devons have to	pouvons can	voulons want (to)
Vous You singular formal +formal informal +plural	devez have to	pouvez can	voulez want (to)
Ils/Elles They (masc or mix / fem)	doivent have to	peuvent can	veulent want (to)

If I had the choice, I would live in Spain	Si j'avais le choix, j'habiterais en Espagne
It's a historical, touristy and industrial town	C'est une ville historique, touristique et industrielle
If possible , you can go to the museum	Si possible , on peut aller au musée
If you want , you can visit the stadium	Si on veut on peut visiter le stade
Last night I went out to walk the dog	Hier soir je suis sorti(e) promener le chien
If it's nice tomorrow, I will go to the park	S'il fait beau demain, j'irai au parc

Il y a vs il n'y a pas de

Remember if you are saying *there isn't* you do not need to use the article
e.g. **il y a un stade** – there is a stadium
il n'y a pas de stade - there isn't a stadium

In town **En ville**
The region **La région**

a service station **une station-service**
a cake shop **une pâtisserie**
a building **un bâtiment**
a jeweller's **une bijouterie**
a police station **un commissariat**
a town hall **un hôtel de ville**
a block of flats **un immeuble**
a bookshop **une librairie**
a field **un champ**
a farm **une ferme**
a tree **un arbre**
overcrowded **surchargé**
things to do **des distractions**
clean **propre**
dirty **sale**



In town **En ville**
The region **La région**
There is/are **il y a**
There isn't/aren't **il n'y a pas de**
You can **on peut**
You can't **on ne peut pas**
I visit **je visite**
I go **je vais**
I do **je fais**
building **le bâtiment**
butcher's **la boucherie**
bakery **la boulangerie**
jeweller's **la bijouterie**
factory **l'usine**
police station **le commissariat**
railway station **la gare** -
bus station **la gare routière**
traffic **la circulation**
town hall **l'hôtel de ville**
block of flats **l'immeuble**
bookshop **la librairie**
house **la maison**
countryside **la campagne**
field **le champ**
farm **la ferme**
tree **l'arbre**
lively **animé**
bruyant **noisy**

Infinitives
to go **aller**
to visit **visiter**
to do **faire**
to see **voir**
to eat **manger**
to buy **acheter**

I live in a big house	J'habite une grande maison
In my house there are 6 rooms	Dans ma maison il y a 6 pièces
It's a historical, touristy and industrial town	C'est une ville historique, touristique et industrielle
If I had the choice, I would live in Spain	Si j'avais le choix, j'habiterais en Espagne
I feel that it's important to protect the environment	J'estime qu'il est important de protéger l'environnement
Last weekend, I visited a theme park	Le weekend dernier j'ai visité un parc d'attractions
Next weekend I am going to visit a museum	Le weekend prochain je vais visiter un musée
I recycle paper and glass	Je recycle le papier et le verre
I take a shower instead of a bath	Je prends une douche au lieu d'un bain
I went to the park	Je suis allé(e) au parc
In the future I'm going to live in France	Dans le futur je vais habiter en France

Opinions:
What I prefer is...**ce que je préfère est...**
The best thing is...**la meilleure chose est...**
I think that **je pense que**
I believe that **je crois que**
I find that **je trouve que**
In my opinion **à mon avis**
I would say that **je dirais que**
It's **c'est**
It's not **ce n'est pas**

Environment
L'environnement
pollution **la pollution**
plastic bags **les sacs en plastique**
polluted **pollué**
noise **le bruit**
plastic **la plastique**
to recycle **recycler**
rubbish **les déchets**
to waste **gaspiller**
rubbish **les ordures**

LINKS
Ongoing, key skills: *Opinions & justifications, use of 3+ tenses, connectives & time phrases*
Previous topic vocab links with: *town & area, holidays*

Questions:
Where do you live? **Où habites-tu?**
What is there in your town? **Qu'est-ce qu'il y a dans ta ville?**
What can you do in your area? **Qu'est-ce qu'on peut faire dans ta région?**
What have you done in your area recently? **Qu'est-ce que tu as fait dans ta région récemment?**
Where are you going to live in the future? **Où vas-tu habiter dans le futur?**
What do you do to help the environment? **Que fais-tu pour aider avec l'environnement?**
How can we help the environment? **Comment peut-on aider l'environnement?**

Time phrases:
today **aujourd'hui**
tomorrow **demain**
at the weekend **le weekend**
next week **la semaine prochaine**
last year **l'année dernière**
last Monday **lundi dernier**

Connectives:
because **car**
because **parce que**
whereas **tandis que**
however **pourtant**
as well/too **aussi**
furthermore **de plus**

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Cultural Information:



- France is the third biggest country in Europe
- France has a varied landscape, which includes many big cities as well as lots of countryside, mountains and 4,853 kilometres of coastline
- Overseas there are many other territories which are governed by France these include the Caribbean islands of Guadeloupe and Martinique, Guyane, located on the northern coast of South America and, in the Indian Ocean, the island of Réunion and the archipelago Mayotte.
- Across the world there are a total of 29 countries where French is the official language.
- The most populous country where French is the official language is the Democratic Republic of the Congo. In the Congo there are over 84 million people.
- At present France's main source of energy is nuclear power however the use of renewable energy is on the rise
- France does not currently recycle as much as other countries but provision for recycling is reportedly improving

Knowledge Organiser: Home, Town, Neighbourhood & Region / The environment (Theme 2)

HIGHER

In town **En ville**
 The region **La région**
 overcrowded **surchargé**
 things to do **les distractions**
 traffic jam **l'embouteillage**
 place **l'endroit**
 safety **la sécurité**
 service station **la station-service**
 public transport **le transport en commun**
 cake shop **la pâtisserie**
 clean **propre**
 dirty **sale**
 area **le quartier**
 there is/are **il y a**
 there isn't/aren't **il n'y a pas de**
 Remember if you are saying *there isn't* you do not need to use the article
 e.g. **il y a un stade** – there is a stadium
il n'y a pas de stade – there isn't a stadium

My mum has just bought an electric car	Ma mère vient d'acheter une voiture électrique
We make compost by using the peelings from the kitchen	Nous faisons du compost en utilisant les épluchures de la cuisine
Last weekend I recycled bottles	Le weekend dernier j'ai recyclé des bouteilles
In my opinion it's necessary to do your best to not pollute	D'après moi il faut faire de son mieux pour ne pas polluer
I protect the environment by recycling paper and glass	Je conserve l'environnement en recyclant le papier et le verre
I cycle regularly in order to avoid using the car	Je fais du vélo régulièrement pour éviter de prendre la voiture
Last night I went out to walk the dog	Hier soir je suis sorti(e) promener le chien
If it's nice tomorrow, I will go to the park	S'il fait beau demain, j'irai au parc
My ideal house would be a castle	Ma maison idéale serait un château

Comparative
 • **Plus** + adjective + **que** to say **more ... Than**

• **Moins** + adjective + **que** to say **less ... Than**

• **Aussi** + adjective + **que** to say **as ... as**

• **The adjective must 'agree' with the noun it is describing**

• My house is bigger than her house **Ma maison est plus grande que sa maison**

• The countryside is less polluted than the town **La campagne est moins polluée que la ville**

Questions:

Where are you going to live in the future? **Où vas-tu habiter dans le futur?**
 Are there any problems in your area? **Est-ce qu'il y a des problèmes dans ta région?**
 How could we resolve these problems? **Comment pourrait-on améliorer ces problèmes?**
 What would your ideal house be like? **Comment serait ta maison idéale?**
 Would you like to live abroad? Why? **Tu voudrais habiter à l'étranger? Pourquoi?**

Environment L'environnement

coal **le charbon**
 ozone layer **le couche d'ozone**
 deforestation **le déboisement**
 greenhouse effect **l'effet de serre**
 packaging **l'emballage**
 renewable energy **l'énergie renouvelable**
 carbon dioxide **le gaz carbonique**
 exhaust fumes **le gaz d'échappement**
 fire **l'incendie**
 to flood **inonder**
 to switch off **éteindre**
 oil **le pétrole**
 cycle lane **la piste cyclable**

Opinions:

As far as I know **Autant que je sache**
 Although it is... **Bien que ce soit...**
 I'm of the opinion that it's... **Je suis d'avis que c'est...**
 In my opinion **Quant à moi**
 I have to admit that ... **Je dois avouer que...**
 I don't believe it's... **je ne crois pas que ce soit...**



Poverty **La pauvreté**
homeless people **les SDF / les sans-abri**
a financial crisis **une crise financière**
inequality **l'inégalité**
accommodation **le logement**
illiteracy **l'illettrisme**
a volunteer **un(e) volontaire**
a natural disaster **une catastrophe naturelle**
a vicious circle **un cercle vicieux**
disadvantaged areas **les quartiers défavorisés**
homeless (without a fixed address) **sans domicile fixe**
drugs **la drogue**
unemployment **le chômage**
a charity **une organisation caritative**
malnutrition **la malnutrition**
money **l'argent**
crime/criminality **la criminalité**
a cardboard box **un carton**
the third world **le tiers-monde**
to give **donner**
meals **les repas**
I give **je donne**
I do **je fais**
I distribute **je distribue**
a crisis **une crise**
a sleeping bag **un sac de couchage**
a blanket **une couverture**

We give...	On donne...
I support an organisation called...	Je soutiens une organisation qui s'appelle...
I help with...	J'aide avec...
A charity that's important to me is...	Une organisation caritative qui est importante pour moi est...
I give money	Je donne de l'argent
I am a volunteer for...	Je suis bénévole pour...
I give out soup	Je distribue de la soupe
I make food boxes	Je fais des cartons alimentaires
The government could give/do/help	Le gouvernement pourrait donner/faire/aider
There is too much poverty in modern society	Il y a trop de pauvreté dans la société contemporaine

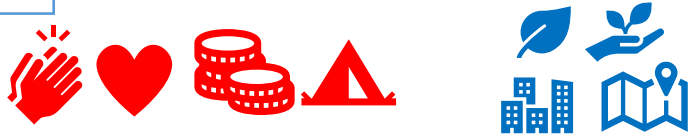
Questions:
What do you think of charities? **Que penses-tu des associations caritatives?**
Do you support charities? Why? How? **Est-ce que tu soutiens des associations caritatives? Pourquoi? Comment?**
How can we help charities? **Comment peut-on aider des associations caritatives?**
What do you think of homeless people? **Que penses-tu des gens sans domicile?**
Is there a lot of unemployment in your area? **Est-ce qu'il y a beaucoup de chômage dans ta région?**
Would you like to volunteer (in Africa) in the future? Why? **Tu voudrais faire un stage bénévole (en Afrique) à l'avenir et pourquoi?**

Opinions:
What I prefer is...**ce que je préfère est...**
The best thing is...**la meilleure chose est...**
I think that **je pense que**
I believe that **je crois que**
I find that **je trouve que**
In my opinion **à mon avis**
I would say that **je dirais que**
It's **c'est**
It's not **ce n'est pas**
Lots of people think that...**beaucoup de personnes pensent que...**
It's necessary to try to... **il faut essayer de...**

Advice Le conseil
You could use these phrases (followed by an infinitive to give advice)
You should **vous devriez**
You could **vous pourriez**
We/one/you should **on devrait**
We/one/you could **on pourrait**

Key phrases
We can (+infinitive) **On peut (+infinitive)**
There is/are...**il y a**
There isn't/aren't..**il n'y a pas de...**
We don't have a choice **on n'a pas de choix...**

LINKS
Ongoing, key skills: *Opinions & justifications, use of 3+ tenses, connectives & time phrases, present participle*
Previous topic vocab links with: *town & area, environment*



Cultural Information:

Some well-known charities in France include:

Les Restos du Cœur provide food packages and free meals to the poor and homeless

Le Secours Populaire is one of the most active charities in France, dedicated amongst other things, to exclusion problems related to children and poor families, provision of food and clothing, professional integration, access to culture, sports, hobbies, health, holidays, defence of human rights.

Emmaüs is an organisation founded to combat poverty and homelessness. They collect, sort and resell items e.g. furniture.

The AFM Telethon (l'Association Française contre les Myopathies et les maladies neuromusculaires)
The AFM Telethon is France's major fund-raising event. The event raises money to provide those with neuromuscular diseases support and to inform the general public about rare genetic disorders.

Médecins Sans Frontières (MSF or Doctors Without Borders) is a medical charity who provide medical support from doctors, nurses and other medical staff abroad in conflict/war zones and areas where disease has broken out.

Knowledge Organiser: Poverty/Homelessness, Charity/Voluntary Work (Theme 2) HIGHER

Impersonal verbs

Impersonal verbs are set expressions used only in the third person singular form. All examples below must be followed by infinitives

It's necessary to **il faut**
It's not necessary to **il ne faut pas**
It's better to **il vaut mieux de**
It's advisable to **il convient de**
It's necessary to **il est nécessaire de**
It's easy to **il est facile de**

More complex opinions:

As far as I know **Autant que je sache**
Although it is... **Bien que ce soit...**
I'm of the opinion that it's... **Je suis d'avis que c'est...**
In my opinion **Quant à moi**
I have to admit that ... **Je dois avouer que...**
I don't believe it's... **je ne crois pas que ce soit...**

Infinitives

to give **donner**
to donate **faire un don de**
to spend money **dépenser de l'argent**
to spend time **passer du temps**

In my opinion housing is too expensive these days

Inequality is a problem which worries me hugely

The government has to make more effort

It's possible to find a solution

If there were more housing prices **would be** lower

Homeless people **are sometimes helped** by charities

It's possible to help the homeless **by giving** money

In the future **I am going to do** some charity work

We can help the poor provided that there is enough help

There are too many poor children throughout the world

À mon avis le logement est trop cher aujourd'hui

L'inégalité est un problème qui me préoccupe énormément

Il faut que le gouvernement fasse plus d'efforts

Il est possible de trouver une solution

S'il y avait plus de logements, les prix **seraient** plus bas

Les SDF **sont parfois aidés** par les associations caritatives

Il est possible d'aider les sans-abri **en donnant** de l'argent

Dans le futur **je vais faire** du bénévolat

On peut aider les pauvres à condition qu'il y ait assez d'aide

Il y a trop d'enfants pauvres dans le monde entier

Questions:

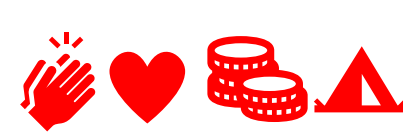
What is the importance of charities? **Quelle est l'importance des associations caritatives?**
How can we help homeless people? **Comment peut-on aider les SDF?**

Present participle

The present participle is like '-ing' in English. It is used with **en** (+ present participle) to mean 'while... -ing' or 'by... -ing':

To make the present participle: Take the **nous** form of the present tense, eg: nous **jouons**. Drop the nous and the **-ons** ending to get the stem, eg: **jou**. Add **-ant**, eg: **jouant**. Precede the verb with **en**, eg: **en jouant**.

Examples you could use:
by giving – **en donnant**
by doing – **en faisant**
by helping – **en aidant**



Key words:

I eat **je mange**
 I drink **je bois**
 I don't eat **je ne mange pas de..**
 I don't drink **je ne bois pas de...**
 I take (I have) **je prends...**
 I do **je fais**
 I play **je joue**
 I smoke **je fume**
 I don't smoke **je ne fume pas**
 (some) pasta **des pâtes**
 (some) potatoes **des pommes de terre**
 (some) bread **du pain**
 (some) butter **du beurre**
 (some) beef **du boeuf**
 (some) fish **du poisson**
 (some) vegetables **des légumes**
 (some) rice **du riz**
 (some) cheese **du fromage**
 (some) crisps **des chips**
 (some) biscuits **des biscuits**
 a cake **un gâteau**
 a banana **une banane**
 (some) water **de l'eau**
 an ice cream **une glace**
 (some) fruit **des fruits**
 (some) chips **des frites**
 a pizza **une pizza**
 an apple **une pomme**
 (some) chicken **du poulet**
 a salad **une salade**
 a cheese sandwich **un sandwich au fromage**

Health is important	La santé est importante
I play football once a week	Je joue au foot une fois par semaine
I swim three times a week	Je nage trois fois par semaine
I do gymnastics at the weekend	Je fais de la gymnastique le weekend
It's good for your health	C'est bon pour la santé
It's bad for your health	C'est mauvais pour la santé
I am in good shape/healthy	Je suis en bonne forme
It's necessary to drink lots of water	Il faut boire beaucoup d'eau

Smoking **le tabagisme**
 tobacco is bad for the lungs **Le tabac est mauvais pour les poumons**
 it smells **ça pue**
 it's expensive **c'est cher**
 it's dangerous **c'est dangereux**
 a fag **une clope**
 it's difficult to give up **c'est difficile de laisser tomber**
 addicted **accro**
 addicted **addictif**
 I think that people have the right to smoke if they want **je pense que les gens ont le droit de fumer s'ils veulent**
 my friend smokes **mon copain fume**

Food **la nourriture**
 For breakfast I eat **Pour le petit-déjeuner je mange**
 For lunch I eat **Pour le déjeuner je mange**
 For dinner I eat **Pour le dîner je mange**

Sport and exercise **le sport et l'exercice**
 It's fun **c'est amusant**
 I enjoy it (it pleases me) **ça me plaît**
 I do it with my friends **j'en fais avec mes amis**
 It's good for your morale **c'est bon pour le moral**
 sport, it's not my thing **le sport, ce n'est pas mon truc**
 athletics **l'athlétisme**
 boxing **la boxe**
 cycling **le cyclisme**
 climbing **l'escalade**
 swimming **la natation**
 windsurfing **la planche à voile**
 sailing **la voile**

Past Tense Phrases

I ate **j'ai mangé**
 I drank **j'ai bu** yesterday **hier**
 I did **j'ai fait** last week **la semaine dernière**
 I played **j'ai joué** last night **hier soir**
 It was **c'était**

Questions:

What do you normally eat? Is it healthy? **Que manges-tu normalement? C'est sain?**
 Do you smoke? Why? **Tu fumes? Pourquoi?**
 Do you do any sport? **Tu fais du sport?**
 What did you eat last night? **Qu'est-ce que tu as mangé hier soir?**
 Are you going to do any sport this week? Why? When?etc **Tu vas faire du sport cette semaine? Pourquoi? Quand? Etc**

Café & Restaurant:

the waiter **le serveur**
 the waitress **la serveuse**
 The bill., please **l'addition, s'il vous plaît!**
 There's a mistake **Il y a une erreur**
 I'll have...**je vais prendre...**
 I would like...**je voudrais**
 a fork **une fourchette**
 a knife **un couteau**
 a spoon **une cuillère**
 enjoy your meal **bon appétit!**
 the menu **le menu / la carte**
 the bill **l'addition**
 starter **l'entrée**
 main course **le plat principal**
 dessert **le dessert**
 I don't have a... **je n'ai pas de...**
 it costs...**ça coûte**

LINKS

Ongoing, key skills: *Opinions & justifications, use of 3+ tenses, connectives & time phrases*
 Previous topic vocab links with: *holidays, free time, family*



food **la nourriture**

(some) milk **du lait**

(some) tea **du thé**

(some) jam **de la**

confiture

an orange juice **un jus**

d'orange

(some) cereal **des**

céréales

(some) eggs **des œufs**

(some) coffee **du café**

a pain au chocolat **un**

pain au chocolat

a slice of bread and

butter **une tartine**

a hot chocolate **un**

chocolat chaud

(some) toast **du pain**

grillé

food **la nourriture**

It contains **ça contient**

some sugar **du sucre**

some fat **des matières**

grasses

some fibre **des fibres**

some salt **du sel**

some caffeine **de la**

caféine

some calcium **du**

calcium

some vitamins **des**

vitamines

When I was younger, I didn't used to like green beans	Quand j'étais plus jeune, je n'aimais pas les haricots verts
After having eaten , I watch TV with my parents	Après avoir mangé , je regarde la télé avec mes parents
Before eating , I always wash my hands	Avant de manger je me lave toujours les mains
When I have enough time in the morning , I have (take) breakfast	Quand j'ai assez de temps le matin , je prends le petit déjeuner
After school , I do sport with my friends	Après l'école , je fais du sport avec mes copains
I stay healthy by eating well and by doing sport	Je reste sain en mangeant bien et en faisant du sport
It's necessary that we do lots of exercise	Il faut qu'on fasse beaucoup d'exercice
I never eat it	Je n'en mange jamais
I have never smoked	Je n'ai jamais fumé

Imperfect **L'imparfait**
 I used to eat **je mangeais**
 I used to drink **je buvais**
 I used to do **je faisais**
 I was **j'étais**
 I used to like **j'aimais**

Future Tense Phrases
 tomorrow **demain**
 next week **la semaine prochaine**
 I'm going to eat **je vais manger**
 I'm going to play **je vais jouer**
 I'm going to do **je vais faire**

Questions:

What are the dangers associated with smoking **Quels sont les dangers associés avec le tabagisme?**

What are the benefits and advantages of sport? **Quels sont les bienfaits et avantages de faire du sport?**

How could you improve your lifestyle? **Comment pourrais-tu améliorer ton mode de vie?**

What did you used to eat/drink/do when you were younger? **Que mangeais/buvais/faisais tu quand tu étais plus jeune?**

Impersonal verbs

Impersonal verbs are set expressions used only in the third person singular form. All examples below must be followed by infinitives

It's necessary to **il faut**

It's not necessary to **il ne faut pas**

It's better to **il vaut mieux de**

It's advisable to **il convient de**

Advice **Le conseil**

You should **vous devriez**

You could **vous pourriez**

We/one/you should **on devrait**

We/one/you could **on pourrait**

(all followed by an infinitive to give advice)

The partitive article

The partitive article (*du/de la/des*) means 'some'

You often use it in French when you could miss it in French e.g. Je mange du poulet – I eat (some) chicken

du is used for masculine nouns

de la is used for feminine nouns

de l' is used for nouns which start with a vowel

des is used for plural nouns



At school **Au collège**
 English **L'anglais**
 Drama **Le théâtre**
 Art **Le dessin**
 PE **L'EPS / le sport**
 French **Le français**
 History **L'histoire**
 Geography **La géographie**
 ICT **L'informatique**
 Maths **Les maths**
 Music **La musique**
 Science **Les sciences**
 DT **La technologie**
 Physics **La physique**
 Chemisty **La chimie**
 Biology **La biologie**
 Health & Social **La santé et bien sociale**
 Homework **les devoirs**
 Headteacher **le directeur (m) / la directrice (f)**
 Pupils **Les élèves**
 Timetable **l'emploi du temps**
 exam **l'examen**
 a lesson **une leçon / un cours**
 reading **la lecture**

Key phrases
 There is/are **Il y a**
 There used to be/was/were **il y avait**
 There would be **Il y aurait**
 There will be **Il y aura**
 We are going to change **va changer**
 It would be **Ça serait**

I arrive at school at 8.30	J'arrive au collège à huit heures et demie
There is too much homework	Il y a trop de devoirs
Next year I would like to stay at sixth form	L'année prochaine je voudrais rester au lycée
Yesterday I had a maths exam	Hier j'ai eu un examen de maths
I have a lot of homework	J'ai beaucoup de devoirs
I revise for the exams	Je réviser pour les examens
We have five lessons a day	Nous avons cinq cours par jour
There are 60 teachers and 1000 pupils	Il y a soixante profs et mille élèves
One day I would like to go to university	Un jour je voudrais aller à l'université
We wear a uniform	On porte un uniforme
Yesterday I ate a sandwich and I spoke to my friends	Hier j'ai mangé un sandwich et j'ai parlé avec mes amis
I went to the library	Je suis allé à la bibliothèque

Opinions:
 What I prefer is... **ce que je préfère est...**
 The best thing is... **la meilleure chose est...**
 I think that **je pense que**
 I would say that **je dirais que**
 It's **c'est**
 It's not **ce n'est pas**
 My favourite subject is **ma matière préférée est**
 The most difficult subject is **La matière la plus difficile est**

Time Phrases:
 before **avant**
 in the past **dans le passé**
 in the future **à l'avenir**
 in the future **dans le futur**
 now **maintenant**

Infinitives
 to go **aller**
 to visit **visiter**
 to do **faire**
 to eat **manger**
 to learn **apprendre**

Questions:
Que portes-tu au lycée? What do you wear to school?
Que penses-tu des devoirs ? Pourquoi ? What do you think of homework? Why?
Qu'est-ce que tu étudies au lycée? What do you study at school?
Que penses-tu de...? What do you think of...? (insert any subject/element of school)
Tu voudrais aller à l'université? Pourquoi? Would you like to go to university? Why?



IDEAS FOR LEARNING:

- Look, say, cover, write, check.** Use this strategy when trying to memorise words.
- Sticky notes.** Write new words on sticky notes and stick them in places where you will see them regularly. When learning vocabulary, remember little and often is better than a lot at once.
- Language links.** Make links in your mind when you are learning a new word. Is it like English? Does it remind you of another word? Try to learn things in sentences as your brain will find it easier to retain the information in chunks
- Vocabulary ranking.** List new vocabulary from the easy ones to the most difficult. Don't spend too much time on the easy words. Start with the difficult ones and spend more time learning those.

LINKS

Ongoing, key skills: *Opinions & justifications, use of 3+ tenses*
Previous topic vocab links from Key Stage 3 topics: *school subjects, school life, clothing*
Links to upcoming topics: *jobs, work and future plans*



Cultural Information:



- The French school system has a good reputation across the world.
- School in France is free and compulsory from the age of 6-16 (most pupils start before 6 by going to nursery/pre-school)
- At 16 you take an exam called **le brevet** some of which is based on continuous assessment
- You must study until 18 and pass the exam called **le baccalauréat** to get into university
- Schools are mixed and secular (meaning religion does not play a role in schools at all)
- French schools do not have school uniform
- The school day is longer than in England (usually around 8.30am-4.30pm)
- The school holidays are longer
- Pupils go to school for between 4-5 days per week – some high schools close on Wednesday afternoons but are open on Saturdays (this practice has been phased out in primary and is less popular now)
- Pupils get a lot of homework (around 2 hours a night in high school)
- There are 3 phases to education: primary school (**école primaire**) ages 6-11, middle school (**collège**) ages 11-15 and upper school (**lycée**) ages 15-18
- If pupils do not pass the end of year exams they have to repeat the whole year
- Exams are graded as a score /20 You have to get 10+ to pass

Knowledge Organiser: My studies, life at school & college (Theme 3) HIGHER

Opinions:

The most useful subject is... **La matière la plus utile est...**

Although it's difficult, I prefer... **Bien que ce soit difficile, je préfère...**

I can't stand **J'ai horreur de**

The most important thing for me is... **La chose la plus importante pour moi est**

I don't think it's... **Je ne pense pas que ce soit...**

I used to think that **je pensais que**

It's not my thing **ce n'est pas mon truc**

Uniform Pros & Cons

Pupils behave better in uniform **Les élèves se comportent mieux en uniforme**

You can't show your individuality **On ne peut pas montrer son individualité**

It's expensive **Ça coûte cher**
It's old fashioned **C'est démodé**

You know what to wear in the mornings **On sait quoi mettre le matin**

It's practical **C'est pratique**
It's not good as everyone looks the same **Ce n'est pas bien puisque tout le monde se ressemble**

In France if you don't work hard you have to resit a year

If it were up to me I would change the uniform

If I could choose a new uniform, I would wear

I love teachers who explain things clearly

You can do well by doing lots of revision

One day I plan to go to university to study English

After finishing my studies I will find a job

Before going to university I am going to work for a year

Before I used to like maths now I prefer English

En France, si on ne travaille pas bien il faut redoubler

Si ça ne tenait qu'à moi, je changerais l'uniforme

Si je pouvais choisir un nouvel uniforme, je porterais

J'adore les profs qui expliquent bien la matière

On peut réussir en faisant beaucoup de révisions

Un jour je compte aller à l'université pour étudier l'anglais

Après avoir fini mes études je trouverai un emploi

Avant d'aller à l'université je vais travailler pour un an

Auparavant j'aimais les maths maintenant je préfère l'anglais

Questions:

What is your favourite subject? Why? **Quelle est ta matière préférée? Pourquoi?**

Describe your school **Décris ton lycée**
What do you think of school uniform? **Que penses-tu de l'uniforme scolaire?**

Describe your ideal school **Décris ton lycée idéale**
What did you do at break time yesterday? **Qu'est-ce que tu as fait pendant la récré hier?**

What are your future plans? **Quels sont tes projets pour l'avenir ?**

Impersonal Verbs

Impersonal verbs are set expressions used only in the third person singular form. They are followed by infinitives.

Examples include:

- It is necessary to/ you must **il faut...**
- It's not necessary to/you must not **il ne faut pas...**
- It's better to **il vaut mieux de...**
- It's advisable to **il convient de...**

Si clauses

if it were up to me **si ça ne tenait qu'à moi**
if possible **si possible**

If I have good grades **si j'ai de bonnes notes**

If I pass my exams **si je réussis aux examens**

if the possibility arose **si l'occasion se présentait**

if my dreams come true **Si mes rêves se réalisent**

Si clauses must be used in a particular way:

Si + present tense + future tense

Si + imperfect tense + conditional



Jobs les métiers

I am a... **Je suis...**

I would like to be a(n)... **Je voudrais être...**

electrician **électricien / électricienne**
mechanic **mécanicien / mécanicienne**
postman/woman **facteur / factrice**
chef **cuisinier / cuisinière**
nurse **infirmier / infirmière**
graphic designer **graphiste**
doctor **médecin**
hairdresser **coiffeur / coiffeuse**
student **étudiant / étudiante**
police officer **agent de police / agente de police**
unemployed person **chômeur / chômeuse**
gardener **jardinier / jardinière**
fire fighter **pompier / pompière**
teacher **professeur**
lawyer **avocat / avocate**
engineer **ingénieur / ingénieuse**
accountant **comptable**
pharmacist **pharmacien / pharmacienne**
mid-wife **sage-femme**
solicitor **notaire**
interpreter **interprète**
sales assistant **vendeur / vendeuse**
checkout operator **caissier / caissière**
primary school teacher **instituteur / institutrice**
computer programmer **informaticien / informaticienne**
businessman/woman **homme d'affaires / femme d'affaires**
air steward **un steward / hôtesse de l'air**

Grammar note:

In French most jobs have a masculine and feminine version. These are shown on the list (masculine then feminine)

Grammar note:

To change jobs from the masculine to feminine version you generally need to look at the endings and change them as follows:

Endings from masculine --> feminine

•eur --> euse

•teur --> trice

•er --> ère

•en --> enne

•ier --> ière

Jobs which already end in 'e' do not change, as well as a few others (e.g. médecin) and some jobs do not fit the patterns at all so it's always best to check

Grammar note:

In French when talking about jobs you don't need to include 'a' in front like you do in English e.g. I'm a plumber – you just say **je suis plombier**

Places of work:

I work... **Je travaille**

I would like to work... **Je voudrais travailler**

on a building site **sur un chantier**
on a farm **à la ferme**

in... **dans...**

a hospital **un hôpital**
a restaurant **un restaurant**
a clinic/ surgery **une clinique**
an office **un bureau**
a hair salon **un salon de coiffure**
a theatre **un théâtre**
a shop **un magasin**
a school **une école**
a garage **un garage**
a factory **une usine**
a workshop **un atelier**
a studio **un studio**
a police station **un commissariat**
a doctor's surgery **un cabinet médical**
a garden **un jardin**
an airport **un aéroport**
a chemist **une pharmacie**
outside **à l'extérieur**
outside **en pleine air**
in the countryside **à la campagne**
indoors **à l'intérieur**

Questions:

What are your future plans? **Quels sont tes projets pour l'avenir ?**

What would you like to do as a job? **Qu'est-ce que tu voudrais faire comme travail ?**

Would you like to work with children/animals/people... ?

Why/not? **Tu aimerais travailler avec les enfants/les animaux/les personnes... ? Pourquoi/pas ?**

I would like to be a doctor	Je voudrais être médecin
I intend to be an engineer	J'ai l'intention d'être ingénieur
A mechanic works in a garage with cars	Un mécanicien travaille dans un garage avec des voitures
I would like to become a lawyer because it's well-paid	Je voudrais devenir avocat car c'est bien-payé
I couldn't be a model because it isn't very rewarding	Je ne pourrais pas être mannequin parce que ce n'est pas très enrichissant

Opinions:

It's **C'est**

easy **facile**

difficult **difficile**

well paid **bien payé**

badly paid **mal payé**

dangerous **dangereux**
rewarding **enrichissant**
repetitive **monotone**
satisfying **satisfaisant**
stressful **stressant**

LINKS

Ongoing, key skills: *Opinions & justifications, use of 3+ tenses, agreements (masculine/feminine)*

Previous topic vocab links with: *school subjects, school life, Post 16 plans*



Cultural Information:



- France has laws which limit the working week to 35 hours, although overtime is allowed.
- There are 11(or 13 in some provinces) national holidays in France. Most offices, businesses and shops in France close for a national holiday (bank holiday).
- Working hours are generally Monday to Friday from 8am or 9am to 12:00/12:30pm and then from 2/2.30pm to 6pm. However, this obviously varies and depends on the workplace and where it is located
- In 2017, France introduced a new law: "right to disconnect". The law required an organisation with more than 50 employees to forbid employees from sending or replying to emails after certain hours. The aim of this was to promote a good work-life balance and allow people to have protected private time.

Future Plans:
 in the future **à l'avenir**
 next year **l'année prochaine**
 later **plus tard**
 after I have finished college **après que j'aie fini au lycée**
 I would like **je voudrais**
 I would like **j'aimerais**
 I want **je veux**
 to be **être**
 to become **devenir**
 to work **travailler**
 to do an apprenticeship **faire un apprentissage**
 to do a manual job **faire un métier manuel**

I will go **j'irai**
 I will be **je serai**
 I will have **j'aurai**
 I will do **je ferai**
 I will study **j'étudierai...**
 I will find a job **je trouverai un emploi**
 I will earn a lot of money **je gagnerai beaucoup d'argent**
 I will have a career **j'aurai une carrière**
 I will travel **je voyagerai**
 I will live **j'habiterai**

I'd like to have a career in the sciences	Je voudrais faire une carrière dans les sciences
I don't really know what I want to do	Je ne sais pas trop ce que je veux faire
The main advantage of being a dentist is working with clients	L'avantage principal d'être dentiste est travailler avec des clients
I'm interested in caring for the ill	Je m'intéresse à soigner les maladies
One of the disadvantages of being a hairdresser is...	Un des inconvénients d'être coiffeur est

Advantages & disadvantages of jobs
 You can travel **On peut voyager.**
 There are opportunities to develop your career **Il y a de possibilités de développer la carrière.**
 You don't work everyday 9-5 **On ne travaille pas tous les jours de 9h à 17h**
 The hours are irregular **Les heures sont irrégulières.**
 You earn a lot of money **On gagne beaucoup d'argent.**
 The working conditions can be dangerous **Les conditions peuvent être dangereuses.**
 You can visit other countries **On peut visiter les autres pays.**
 You can have a good career **On peut avoir une bonne carrière.**
 You have to pass a lot of exams **Il faut passer beaucoup d'examens.**

Questions:

What do you want to do in life?
Qu'est-ce que tu veux faire dans la vie? Pourquoi?
 What are the advantages/disadvantages of being a _____?
Quels sont les avantages/inconvénients d'être _____?
 What job doesn't interest you? Why?
Quel métier ne t'intéresse pas? Pourquoi?

Duties at work:

You have to **il faut**
 You must **on doit**
 You are responsible for **on est responsable de**
 to fix cars **réparer les voitures**
 to write articles **écrire des articles**
 to care for the ill **soigner les maladies**
 to wear a uniform **porter un uniforme**
 to teach maths **enseigner les maths**
 to look after... **m'occuper de...**
 to drive an HGV **conduire un poids lourds**
 to travel **voyager**
 to deliver mail **livrer / distribuer le courrier**
 to get up very early **me lever très tôt**
 to build houses **construire des maisons**
 to serve clients **servir les clients**
 to prepare meals **préparer des repas**
 to style hair **coiffer les cheveux**
 to sell flowers **vendre les fleurs**





GCSE History AQA



Paper 1

USA Opportunity & Inequality 1920-1973
Conflict and Tension between East and West (Cold War)
1945-1972

Knowledge Organiser Booklet

What are knowledge organisers?

What they are:

Knowledge organisers are designed to help condense complicated material into much simpler formats with topics and overviews on one page.

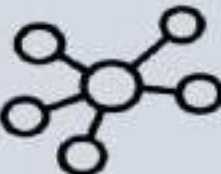
They are a good way to start your revision if you feel overwhelmed or to help if you have missed a topic and don't quite understand it even if you have caught up. They are also useful for reading ahead to prepare for new topics.

What they are not:

- The only or 'perfect' way to revise (you can do rhymes, songs, timelines, quizzes, flashcards etc.)
- Something which will magically get facts into your head just by reading them.
- The only facts which are useful to you – Grade 7, 8 and 9 students will also use their own notes in their folders.
- Something which helps you practise exam questions – for that you will need to use the A3 revision sheets which your teacher sets for homework and class work.
- Something which will help you cram everything into your head the day before the exam.

“Success is the sum of small efforts repeated day in and day out.”
– Robert Collier, American self-help author.

Ways to use your knowledge organiser

	Look, Cover, Write, Check	Self Quizzing	Mind Maps	Paired Retrieval	Definitions to Key Words
Step 1	Look at and study a specific area of your knowledge organizer. 	Use your knowledge organizer to create a mini quiz. Write down questions using your knowledge organizer. 	Create a mind map with information from your knowledge organiser. 	Like self quizzing, use your knowledge organizer to create a quiz. 	Write down the key words and definitions. 
Step 2	Cover or flip the knowledge organizer over and write down everything you remember. 	Cover or flip the knowledge organizer over and answer the questions and remember to use full sentences and key words/vocabulary. 	Add pictures to represent different facts, knowledge. Try to categorise different areas in different colours. 	Ask a family member to ask you the questions and tell you which ones you get right and which ones you get wrong. 	Try not to use your knowledge organiser to help you. 
Step 3	Check what you have written down. Correct any mistakes in a different coloured pen and add anything you missed. Repeat. 	Check your answers. Correct any mistakes in a different coloured pen and add anything you missed. Repeat. 	Try to make connections that link information together. 	Following the quiz, summarise which areas you got wrong and need to revise further. 	Use a different coloured pen to check you work and correct any mistakes you may have made. 



History knowledge Organisers – GCSE: America 1920-1973 Opportunity and Inequality

	Working class- low skilled urban	Middle Class- managers and owners	Rural Communities- Farmers	Minority Communities- African Americans, immigrants and Native Americans	Women
1920s	- Economic boom meant greater demand for jobs which meant more employment and higher wages - Higher wages and defined working hours leads to a demand for entertainment	- Boom times see profits soar. - Many start to invest and speculate on stock market. - Thirst for entertainment increases - Prohibition makes drinking hard.	- Overproduction as a legacy from WW1 - New technology bought using loans from bank - Migration from rural to urban	- Black people in south suffer - KKK operate freely. - Many migrate north for jobs - Immigrants arrive from Europe and are greeted by fear and mistrust. - Red Scare makes life hard.	- Granted the vote after WW1 - Free time allows some to become flappers - Not all approve the Anti-Flirt league oppose their new found freedoms.
1930s	- Depression hits these people hard, factories close meaning jobs are lost. - Many made homeless - Vote for FDR for ‘New Deal’ - Helped by some alphabet agencies e.g. PWA/CCC/NRA	- Depression means business fail. - Stock prices collapse meaning money lost - Homelessness increases - Tariffs make trade harder - Vote for FDR for New Deal - Helped by HOLC	- Cost of producing and transporting is more than value of goods meaning profits destroyed. - Vote for FDR who promises New Deal. - Some agencies help owners, AAA.	- First to be fired in depression - Back of queue for jobs - Not really helped by the New Deal. - FDR reluctant to help because he is scared of losing votes.	- Suffer as men leave families during depression - Lose jobs as men valued more. - No specific New Deal agencies. - FDR’s wife promotes women’s rights but no <i>real</i> progress made.
1940s	- Some join army and go to war - War creates jobs in factories.	- Demand for munitions increases - Profits start to rise again.	- Demand increases as War breaks out again. - Prices steady making life easier.	- Germans and Asians face persecution. - Black communities drafted into army. Initially in inferior roles but as war progressed they moved into more important roles. - Frontline responsibility reflects slight improvement.	- War means trusted to work in factories - Temporarily respected for helping out. - Money from jobs means freedom and independence.
1950s	- Factories close down as production moves abroad. People move into office jobs. - Moves from inner cities to suburbs. - Increased free time allows emergence of entertainment.	- Jobs as managers in offices . - Move to suburbs - Increased wealth → consumerism - More time allows entertainment boom. - Teenagers appear. - Fear of atomic bomb- red scare	- Prices remain steady - Migration continues as people from rural areas continue to move into cities	- KKK return with aggression, murder of Emmet Till proves this. - Red Scare (McCarthyism) returns so immigrants persecuted. - Start of civil Rights movement, Brown vs. Topeka and Bus Boycott. - Segregation banned in 56	- Women encouraged to return to role as housewife. - Consumerism promotes new gadgets to make women’s lives ‘easy’.
1960s and 1970s	- Consumerism continues - Fear of Communism - Anti-War movement related to Vietnam	- Consumerism continues - Fear of Communism - Anti-War movement related to Vietnam	- Prices remain steady - Migration continues as people from rural areas continue to move into cities - A new form of rural poverty becomes clear. The forgotten states in the south illustrate this.	- Civil Rights movement up and running. - Inspired by Martin Luther King - Civil Rights Bill in 64 and Voting rights in 65. - Poverty blights northern ghettos. (Malcolm X)	- Women’s Liberation and Second Wave feminism. - Women start to demand equal rights - Equal pay - Contraception and the Pill give women power over body and future



Knowledge Organiser GCSE History: America 1920-73



1920's

Constitution	Describes how America should be governed.
Bill of Rights 	The first part of the constitution. It says people have: Freedom of belief; Freedom of Information; Freedom in Law; Freedom of protection; Freedom of assembly; Freedom of speech.
Republican Party 	Supported by the wealthy and businessmen. They believed that government should not get too involved with people and business. They did not like too much help for the poor and liked low taxes.
Democrat Party	Believed government should get involved to help the poor.
Laissez Faire 	Leave alone – idea that the government should not interfere in businesses or people's lives.

M A R S H

Mass production- made products in bulk and so goods could be produced quickly and cheaply.

Henry Ford created the Assembly Line which broke a big job into smaller jobs. Cars could now be made quicker.



Advertising- Advertised luxury products to more people including working class people.



CAUSES OF THE ECONOMIC BOOM

Republican Policies- Low taxes; Tariffs; Weak unions; Laissez Faire (Last Time We Lost).



Businesses were left alone to make profit. They could make workers work long hours for less pay. Tariffs made foreign goods more expensive so, people bought American goods.

Stock Market- Businesses sold shares of their business. Ordinary people were making money from buying these and businesses were making money from selling them.



Hire Purchase- Meant that you could pay for a product in instalments. This encouraged working class people to buy luxury items.

PROBLEMS DURING THE BOOM

Native Americans- **Never**
Had to live on 'reservations' where the land was poor.



Farmers- **Forget**
They were not doing well because: After WW1 Europe did not need American crops; Overproduction; Europe had introduced their own tariffs.

Traditional industries- **The**
Cotton/ wool factories and coal mines were closing down.



Gap between rich and poor- **Good**
The richest 5% earned 33% of all money. 42% of families earned less than \$1000 a year.

African Americans- **Americans**

Many Christians linked alcohol consumption to sin, including gambling and prostitution. In 1873, the **Women's Christian Temperance Union** was founded. They suggested that men neglected and/or were abusive to their families if they drank.



Many groups also linked alcohol to poverty. The **Anti-Saloon League** published leaflets suggesting that alcohol caused more than 3/5 of poverty, 3/4 of crime and more than one half of insanity in the community.



Many groups also suggested it was to drink alcohol. Groups such as the **Anti-Saloon League** claimed that any American who drank beer was a traitor to their country because many of the beers on sale in America were made in Germany or by German immigrants who had settled in America. (During and after the First World War this idea was popular).



WHY WAS PROHIBITION INTRODUCED?

Many WASPs (White-Anglo-Saxon-Protestants) often associated alcohol with immigrant communities, and anti-alcohol campaigners played on this prejudice.



33 states already had limits on alcohol consumption and some already banned it completely (mainly southern rural states). Many people in rural areas associated alcohol with the cities. Many rural people disliked the changes happening in the cities (flappers and the popularity of jazz music).



Businessmen such as Henry Ford also favoured Prohibition because it would, he believed, banish workers and make the economy more efficient. Other businessmen believed that workers would produce more if they did not drink alcohol.



Prohibition	1920-1933. Selling, making or transporting any drink with 0.5 % of alcohol was banned.
St Valentine's Day Massacre 1939 	Al Capone attempted to get rid of his rival – 'Bugs Moran' and his northside gang. Dressed as policemen, 7 members of the gang were killed.
Racketeering	Where gangsters demand payment from a business in return for 'protection'.

CHANGE FOR WOMEN

WOMEN

NO CHANGE



Flapper women – wore short dresses, smoked, wore make up and hung out in speakeasies.

During the First World War, women went out and did men's jobs.

By the end of the 1920's, there were over 10 million women with a job.

The divorce rate doubled during the **1920s**.

Mass produced goods such as vacuum cleaners gave women more free time.

Many rural areas were poorer and couldn't afford the new fashions but also didn't have the leisure time. Many women had to help out on the farms and carry out domestic chores.

Segregation in the south meant that African American women did not enjoy the same access to employment as white women. Native American women too were discriminated against.

The Anti-Flirt Club was set up in the 1920's. They created a list of rules about how women should behave and dress. They disliked flapper culture.

There was still an expectation that women should marry and have children, the media and magazines reminded women about this.

AFRICAN AMERICANS

Plessy V Ferguson 1896

Homer Plessy was sat in the whites section of a train and was arrested. He took his case to the Supreme Court arguing that he shouldn't have been. After this, the Supreme Court ruled that he should have been arrested and that "Separate is equal".

Supreme Court



The highest court in America. This court decides whether something is 'unconstitutional' (goes against the constitution).

Jim Crow Laws



Introduced in the southern states after Plessy and the abolition of slavery in 1865. These laws kept black and white people segregated in all social places. E.g. restaurants, cinemas schools etc...

Lynching



When black people were hung from trees without a trial.

Ku Klux Klan



A racist white organisation that became popular again in the 1920's, this was after the release of 'Birth of a Nation' in 1915.

RED SCARE 1920's

IMMIGRANTS

Communism



A way of running a country where wealth is shared out equally and individual people are not allowed to make lots of profit. In this system, there is an attempt to ensure that there is no big gap between rich and poor so there are no social classes. Russia became the Soviet Union in 1917, which was a Communist country. America was terrified that Communism was going to spread to America.

Capitalism



A way of running a country where individual people are encouraged to start businesses and make lots of money. In this system, there is often a big gap between rich and poor as people are encouraged to make profit. America was a Capitalist country and so feared America being influenced by Communists.

Trade Union



A group that workers join to protect their rights. They fight for higher wages and better working conditions.

Anarchist



A person that believes in a country where there is no government and people make decisions and share wealth out between themselves.

Palmer Raids #1920



In 1920, 6,000 people with radical political beliefs (even Catholics and Jews) were arrested with no trial and many were deported (sent back to their original country). This was called the "Palmer Raids" as it was organised by Alexander Mitchell Palmer (man in charge of America's law and police).

Sacco and Vanzetti



In 1920, two Italian immigrants were arrested for robbery and murder. The two immigrants were executed although, the evidence against them was not sound. They faced a lot of racist stereotyping throughout their trial. Their political beliefs (Anarchist) were also mocked.

In the late 1800's and early 1900's groups of "new immigrants" arrived mainly from



southern and eastern Europe – Italy, Austria-Hungary, Poland, Greece and Russia. Large communities developed in larger cities e.g. Little Italy in New York and Greektown in Detroit.



At the end of the First World War, many Americans were suspicious of people from other countries. In Russia in 1917 there was a Communist revolution in Russia where ordinary Russians had risen and taken over land, businesses and banks. Many Americans feared this could happen in America.



Many immigrants were able to take advantage of the opportunities available and they created successful businesses. It was easier for people to start businesses in America due to Republican policies.



Living and working conditions were generally quite poor for new immigrants. They often did jobs that no one else wanted to do and so often worked long hours for little pay. They lacked the education to stand up for myself and it was rare for them to be part of trade unions.



Many "old immigrants" (immigrants that had arrived earlier from Britain, Ireland and Germany) resented the "new immigrants" as they were usually poor and had unfamiliar religious practices. Many were Jewish or Catholic. Most people in America were Protestants.



By the early 1920s, the government began introducing new laws that limited immigration. 1917 - banned entry to the USA to any immigrant over the age of 16 who was unable to read a sentence of 40 words. Many eastern Europeans were poorly educated and so were refused entry. 1921 - Emergency Quota Act It set the maximum number of immigrants in any year to 350,000. 1924 - National Origins Act Cut immigration to 150,000 favoured Western Europeans.



Many new immigrants had arrived from countries where wages were very low or there were no jobs. In America they had the opportunity to work and earn a wage.



GOOD EXPERIENCE
BAD EXPERIENCE



Knowledge Organiser GCSE History: America 1920-73

1930's



WALL STREET CRASH 1929

On 'Black Thursday'- 13 million shares were sold as people began 'panic selling' on the New York Stock Exchange on Wall Street and share prices began to drop. A share in General Electric Company fell from \$3.15 to \$2.83.



Overproduction in agriculture

Farmers started producing too much food. After the First



World War, there was less demand from Europe for food from America because they could grow their own crops. Prices fell as there were too many crops unsold.



CAUSES OF THE WALL STREET CRASH

Over speculation

As it was easy to borrow money, some people would buy shares on the margin. They would borrow money to buy shares and then hold on to them until they were worth more than the debt. Then, they would sell the shares, pay off the original debt and make a profit.



Overproduction in industry

By the end of the 1920's, there were



too many goods being made and not enough people needing to buy them anymore.

Tariffs

The Fordney-McCumber Tariff Act was introduced by to make it more expensive for Americans to buy foreign goods. European countries did not like this and so, introduced their own tariffs. America now, struggled to sell their overproduced goods abroad.



Too many small banks

There were no large banks in America, but rather lots of small banks. These small banks could not cope with the rush for money when the Wall Street Crash happened. A number of banks had to close, leaving thousands of customers with no money at all.



GREAT DEPRESSION 1930's

Unemployment	13 million people had lost their jobs by 1932. Between 1929 and 1932, factory production dropped by 45%. 20,000 companies went out of business.
Breadlines	Huge queues formed outside charities of people wanting soup and bread.
Hobos and Hoovervilles	Hobos were unemployed workers looking for work. 'Hoovervilles' were areas where homeless people would build their own homes from scrap metal. They were named after the President.
Okies and Arkies	Due to unemployment, farmers could not get good prices for their food. Many farmers could not afford their mortgages and so, by 1932- 1 in 20 farmers had been evicted. As a result, Okies originating from Oklahoma and Arkies originating from Arkansas would move states looking for work.
Dust Bowl	Due to over-farming the land and long hot summers, the land on some farms turned into dust and blew away.

Federal Farm Board

- Bought wheat and cotton to try to help farmers, but did not buy enough, and farm prices continued to fall.
- Created loans to help farmers when crop prices fell. The Farm Board did not have enough money to do this over a long period, and it encouraged farmers to keep overproducing.



Infrastructure (building) Projects: Provided \$1.8 billion for new construction and repairs to roads, dams etc.

Hoover Dam (1931)

- These projects did create many new jobs.



Republican Policies

- Hoover believed in 'rugged individualism' that people could help themselves by hard work and without government help.
- He cut taxes by \$130 million
- This meant that the government had even less money to help the unemployed and poor.



HERBERT HOOVER'S RESPONSE TO THE GREAT DEPRESSION (REPUBLICAN PRESIDENT)



Relief

- The Emergency Relief Act (1932) provided \$300 million to state governments to help the unemployed.
- The Home Loan Bank Act (1932) provided \$125 million to 12 banks to help with house building and home ownership.
- The Organisation for Unemployment Relief was set up. Many Republican states refused to use this money. In June 1932, Philadelphia City Council ran out of money and stopped giving aid to 50,000 families.



Bonus Army: In 1932, 25,000 unemployed ex-soldiers marched to Washington DC and asked for their war pension early. In response, Hoover set the army on them, who drove them away with guns, tanks and tear-gas.



Reconstruction Finance Corporation

Would give \$2 billion worth of loans to banks, insurance companies and railroads.

- It was to last only 2 years.
- This did help some businesses.



Tariffs

He introduced the Hawley-Smoot Tariffs (1930). European countries however, introduced their own.



WHY DID ROOSEVELT WIN THE 1932 ELECTION?



Roosevelt won 42/48 states in America. Hoover had told people to 'Smile through the Depression', saying that things would get better. Roosevelt was a Democrat however, and promised the 3 R's.

RELIEF 	Assist those in poverty Provide food for the starving Help those struggling
RECOVERY	Ensure the economy recovers and improves.
REFORM 	Ensure changes are made to prevent a repeat of the Great Depression.

ROOSEVELT'S FIRST 100 DAYS 1933

Beer Act 	Beer was now legal. Taxes were charged on it.
Economy Act 	Cut the wages of government workers.
Emergency Banking Act 	Roosevelt closed down banks for an inspection. Then, he only re-opened the good banks and provided them with loans.
Fireside Chats 	Informed people about the changes that he was making on the radio.

OPPOSITION TO THE NEW DEAL

NEW DEAL IS DOING TOO MUCH Republicans - They believed in 'Laissez-Faire' (not intervening to help the poor) and 'Rugged Individualism' (idea that Americans should look after themselves without government help). They felt that Roosevelt was acting like a dictator. Rich - Disliked paying higher taxes. They also felt that some Alphabet Agencies were a waste of money as they paid people to plant trees etc... Business - Disliked higher taxes. They also disliked the NRA as it interfered too much into wages and working conditions.	NEW DEAL IS NOT DOING NOT ENOUGH Huey Long - 'Share our wealth'- suggested that all fortunes over \$5 million would be confiscated and shared out. Francis Townsend - Wanted everyone to retire at 60 to give more job opportunities to the young. Charles Coughlin - Set up the National Union for Social Justice. Wanted to provide work and fair wages for everyone.	SUPREME COURT AAA - The Supreme Court suggested that the AAA was unconstitutional (went against the constitution). They said that the President was interfering too much into state affairs. 

ALPHABET AGENCIES

For farmers AAA Agricultural Adjustment Agency - Paid farmers to produce less and destroy crops. Food prices rose. 1933-39 farmers incomes doubled Supreme Court opposed it. FCA Farm Credit Administration - \$100 million loaned out in 18 months to farmers that couldn't pay back loans. 	For Industry and workers NRA National Recovery Administration - Encouraged workers and employers to set out a fair code of working conditions and wages. 2.5 million firms joined. Many did not. TVA Tennessee Valley Authority - Provided work building dams and electric power stations along the Tennessee river. 	For the unemployed CCC Civilian Conservation Corps - Unemployed 18-25 year olds were employed in the countryside to plant trees, dig canals and strengthen footpaths. It created jobs for 2.5 million men. 
	HOLC Home Owners Loan Corporation - Gave loans to people who were struggling to pay mortgages. Helped 300,000 in first year.	CWA Civil Works Administration - Provided temporary work for 4 million men. Building schools, airports roads and public toilets. FERA Federal Emergency Relief Agency - \$500 million was given to states to help homeless.

SUCCESSES AND FAILURES OF THE NEW DEAL

FARMERS AAA & FCA set up for farmers. By 1936, farmers' incomes were one and half times higher than they had been in 1933. 	NATIVE AMERICANS The Indian Reorganisation Act 1934 provided money to help Native Americans to buy and improve land. 	BANKING Emergency Banking Act- ensured only banks with enough money reopened. There were no major bank collapses during the New Deal period. 	SUCCESS FAILURE MIXTURE
WOMEN 10,000 women were employed in the CCC out of the 2.5 million employed. There were no New Deal programmes aimed directly at women. 	INDUSTRIAL WORKERS The NRA fair work codes were voluntary. During the 1930s, strikes continued to be broken up by violence. 	AFRICAN AMERICANS Many New Deal agencies discriminated against African Americans. They either got no work or received worse treatment or lower wages. 200,000 Black Americans gained employment. 	UNEMPLOYMENT Unemployment fell from a peak of 24.9 million to 14.3 million in 1933. Even by 1939, unemployment never reached the pre-depression levels.



Knowledge Organiser GCSE History: America 1920-73

WW2 1939-1945



ECONOMY

Roosevelt persuaded Congress to change the Neutrality Laws (Laws that said that USA would keep out of war). The USA then sold high quality weapons to Britain and France.

CASH AND CARRY PLAN 1939- Britain and France began buying US weapons, warships and planes. This created lots of jobs at a time when unemployment was still fairly high.



LEND LEASE 1941- Roosevelt agreed to a Lend Lease deal with Britain. Instead of selling, America would 'lend' Britain up to \$7000 million worth of weapons.

WAR PRODUCTION BOARD 1942- Was created to turn Industries from peace time work to war work.

In 1941 there were 5.5 million unemployed compared to over 10 million 4 years before. By 1944 unemployment had dropped to 670,000. Some consider that it was WW2 and not the New Deal that ended unemployment.



WOMEN

Women took over men's jobs in factories, railways and shipyards.

Between 1940 and 1945, the number of women in work rose from 12 million to 19 million.

Around 350,000 women joined the women's sections of the Armed forces.



AFRICAN AMERICANS

Early in the war, there had been suggestion of a huge march to Washington DC to protest against the treatment of African-American workers, especially in the weapons factories. Roosevelt asked for the march to be cancelled and then he set up the **Fair Employment Practice Committee (FEPC)**.

The **FEPC** found widespread racism e.g. one aircraft maker employed only 10 African-Americans out of a workforce of 30,000.

Around a million African-Americans fought in the war, despite widespread discrimination in the armed services.

When war broke out, black sailors were only allowed to work in ships' kitchens, black soldiers were not allowed to work in ships' kitchens, black soldiers were not allowed to train as officers and the air force wouldn't train black pilots at all!

Air force had 'black only' squadrons and all other army units were segregated. African American nurses were only allowed to treat other African Americans.





Knowledge Organiser GCSE History: America 1920-73

Popular Culture 20's-50's



20's

CINEMA

was very affordable, you could get a ticket for five cents. Many people went to the cinema 2/3 times a week. Cinema had a 'Star System' - which is where the star actors of a film would heavily promote the film. Stars such as Charlie Chaplin, Rudolf Valentino, Clara Bow, Gloria Swanson and Laurel and Hardy Were household names. Talking films were introduced.



THE HAYS CODE- Hollywood introduced this to stop nudity and limit on screen kissing. This was introduced as older people had been shocked at many films.

SPORT

'Golden Age' for American sport. Babe Ruth- baseball player for the New York Yankees, became a hero after setting a home run record that lasted until 1961.



JAZZ

Jazz originated in the southern states of America among African Americans. The music appealed to be both black and white. The Charleston, One Step, Tango and Black Bottom were popular dances. Black performers such as Duke Ellington became popular and made a lot of money.



30's

MUSIC AND MOVIES

Jazz was still popular- artists such as Glen Miller; Judy Garland and Bing Crosby found fame in this decade.



Most people listened to music on the radio but vinyl also became popular and so, people bought gramophones.

COMIC BOOKS

First publication of 'Action Comics' in 1938- this included the debut Superman.

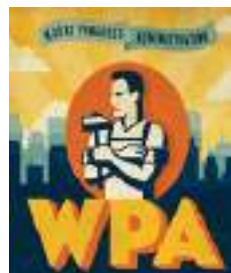


WRITERS

The Great Depression inspired writers such as Erskine Campbell, John Steinbeck and James T Farrell to write about poverty and racism.

THE ARTS

Roosevelt set up the WPA- Works Progress Administration. This provided work for unemployed artists of all kinds.



50's

BEFORE THE WAR

Young people had little freedom. They were expected to leave school, get a job and get married.

AFTER THE WAR

The economy was doing better and so parents wanted their children to finish High School and maybe college.

BIRTH OF THE TEENAGER

Teenagers had more leisure time and spending power. Teenagers spent between \$10 and \$15 a week compared to \$1 - \$2 in the early 1940s.

Some teenage boys became 'thrill seekers' who raced cars, drank heavily and formed gangs.

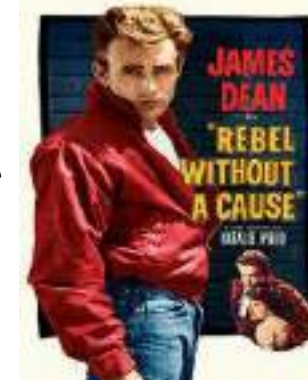
A 'generation gap' formed between old and young.

1953 film- The Wild One- portrayed a rebellious teenagers.



ROCK N ROLL

Blended 'Country and Western' music with 'Rhythm and Blues'. The lyrics often contained sexual references. It was very unpopular amongst older Americans. Before long, 'Rock n Roll' was seen as dangerous and was linked to teenage crime and gangs. In 1956- Elvis was watched by 82% of Americans.





Knowledge Organiser GCSE History: America 1920-73

1950's-70's



MCCARTHYISM- 'SECOND RED SCARE' 50's

Senator Joseph McCarthy claimed in a speech that he knew of over 200 communists working in the government. The government set up HUAC (House of UnAmerican Activities) to investigate people to see if they were communists. The following were reasons why there was a second 'Red Scare'...



The Soviet Union and Nuclear Weapons



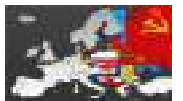
After World War Two, Russia of the Soviet Union emerged as a superpower and wanted to challenge America. Russia had learned how to make nuclear bombs, which America also had, and used against the Japanese in 1945, so the two countries were evenly matched in terms of weapons. This period of rivalry between the two nations became known as the 'Cold War' because there wasn't any actual fighting, but it became a war of words.

Spies



A member of the American government, Alger Hiss was accused of spying for the Soviet Union. Two other Americans, Ethel and Julius Rosenberg were also accused of spying and were executed in June 1953, which shocked America and filled the newspapers.

Communism in Eastern Europe and China



Many countries in Europe had also become Communist after the war and the Americans were worried that Communism might spread to America. So America came up with an idea to stop Communism coming to America which was called containment. However, as China became a Communist country in the late 1940s, it seemed that containment wasn't working!



JOHN F KENNEDY 1960-63 'NEW FRONTIER'

CIVIL RIGHTS

CEEO Commission on Equal Employment Opportunity. This ensured gov't workers were treated equally.

ECONOMY

He cut taxes. Gave \$900 million to businesses to create new jobs and gave grants to companies to buy high-tech equipment.

HEALTHCARE, POVERTY & EDUCATION

Increased the minimum hourly wage from \$1-\$1.25 and made \$4.9 billion available for loans to improve housing, clear slums and build roads. He also established the Peace Corps – an organisation that sent volunteers abroad to assist people in poorer countries.



LYNDON B JOHNSON'S 1963-69 'GREAT SOCIETY'

- 'Operation Headstart' - gave money to schools in cities to provide education.
- Minimum wage increased from \$1.25- \$1.40.

- Housing Act funded low income housing.
- Model Cities Act cleared up inner city slums.
- Elementary and Secondary Education Act provided major funding for schools.
- Medicare was introduced to fund healthcare for the elderly.
- The Job Corps was set up to help high school leavers get a job.

LBJ ALSO PASSED CIVIL RIGHTS LEGISLATION



BABY BOOM

After the war, many soldiers returned home and wanted to start a family. Lots of babies were born. New housing needed to be built. This led to the growth of 'suburbs'.



CONSUMERISM

Luxury items such as fridges, vacuum cleaners and cars became popular again. TV was invented. Out of town shopping malls were created.



NEW OVERSEAS MARKETS

After the war, Europe was buying from America. By 1952, America was supplying the world with 65% of its manufactured goods. In 1950, America entered the Korean War and then started making and selling Weapons.

HELP FOR SOLDIERS

a GI Bill was passed. It established hospitals, made cheap home loans available and offered grants to pay for ex-soldiers to attend college. From 1944 to 1949, nearly 9 million received \$4 billion from the government.



TRUMAN'S FAIR DEAL

He was a Democrat. Truman raised the minimum hourly wage from 45 cents, to 75 cents and cleared large slums to make way for new housing projects.



DWIGHT EISENHOWER

Was a Republican but America continued to be wealthy whilst he was President.



REASONS WHY AMERICA PROSPERED IN THE 50'S



KENNEDY 1960

Under pressure from his wife, Eleanor, he set up a report on women in the workplace. It found that: Women earned 60% less than men and women could be sacked if they were married in some jobs



BETTY FRIEDAN FEMININE MYSTIQUE

Explained that women should want more than being a housewife.

She set up, in 1966, NOW National Organisation for Women. It had 40,000 members.



NEW DOMESTIC GOODS

Products such as hoovers, gave women more free leisure time.

CAUSES OF THE FEMINIST MOVEMENT

FEMINIST MOVEMENT



THE PILL

Gave women freedom to have children when they wanted.



WW2

Gave women more freedom as they had begun to work.

Laws that were passed

ROE V WADE 1973- Supreme Court ruled that women had the right to safe and legal abortion.

CIVIL RIGHTS ACT 1964- Banned discrimination in employment on the basis of race and sex.

In 1972, campaigners tried to get the ERA (Equal Rights Amendment) passed. This would have added to the constitution that people should not be discriminated against due to sex. Phyllis Schlafly however, argued against the change and it never passed.

CIVIL RIGHTS MOVEMENT

PEACEFUL PROTESTS



SIT INS

First sit in took place at Woolworth store in 1960. White and black sat together in segregated areas.



FREEDOM RIDES

In May 1961, CORE activists began riding through segregated areas on buses. They faced massive violence. One bus was even set on fire.



NATION OF ISLAM

Combined the ideas of Islam and Black 'Nationalism'. Malcolm X was a member.



SNCC

Student non-Violent Coordinating Committee. Helped with voter registration drives in the south. Stokely Carmichael was leader and called for "Black Power" in a speech.



BLACK POWER MOVEMENT

BLACK PANTHER PARTY

Formed in 1966. They drew attention to racism in the north. They carried guns to monitor the police's behaviour. They also introduced community programmes. They scuffled with police and killed 9 officers.



MACOLM X

Originally in the Nation of Islam. Believed that MLK and traditional Civil Rights movement were not acting quickly enough. He set up the Organisation of Afro-American Unity in 1964.

Brown V Board 1954



In Topeka, Kansas, Linda Brown had to walk 1 mile to get to the nearest all black school. She wasn't allowed to go to the nearest white school, due to segregation. The NAACP took this case along with others to the Supreme Court. The Supreme Court ruled that schools must now be desegregated. They stated that "separate but equal" has no place in education. This overturned Plessy V Ferguson 1896, which had ruled that "separate is equal".

Montgomery Bus Boycott 1955



In Montgomery, Rosa Parks refused to give up her seat to a white person. She was arrested and then a bus boycott of the Montgomery bus service was called. Martin Luther King was involved in this. After a year, the supreme court ordered that the buses should be desegregated.

Little Rock 1957



The Little Rock Nine were chosen as the first nine black students to attend Little Rock Central High School in Arkansas. There were angry white protestors and the governor, Orville Faubus had sent the Arkansas national guard to stop them from entering the school. President Eisenhower had to send the army in to ensure that they could go to school.

March on Washington 1963



More than 200,000 African Americans and 50,000 white Americans gathered in Washington, D.C., for a political rally known as the March on Washington for Jobs and Freedom. MLK made his, "I have a dream speech" here.

Civil Rights Act 1964



Signed by Lyndon B Johnson, after the assassination of JFK. It brought legal segregation to an end across America. Although, black people still faced discrimination when voting, getting housing and trying to get employment.

Selma to Montgomery march 1965



March 7, 1965, when peaceful protestors in a Selma to Montgomery march for voting rights were met by Alabama state troopers who attacked them with nightsticks, tear gas and whips after they refused to turn back. Some protestors were severely beaten and bloodied, and others ran for their lives.

Voting Rights Act 1965



Signed by Lyndon B Johnson The act banned the use of literacy tests, enabled the government to oversee how people were registering to vote in areas where less than 50 percent of the non-white population had not registered to vote. It also allowed the U.S. attorney general to investigate the use of poll taxes in state and local elections.

Fair Housing Act 1968



Signed by Lyndon B Johnson, The Fair Housing Act of 1968 made it illegal to discriminate when selling or renting based on race, religion, national origin or sex.

Communism VS Capitalism



The USA

- Businesses and property were privately owned
- Its government was chosen in free democratic elections
- People were alarmed by Communist theory

The USSR (Soviet Union)

- All industry was owned and run by the state
- Elections were held, but all candidates belonged to the Communist Party
- Individuals lives were tightly controlled

Summary: Who was to blame for the Cold War?

- 1) At the Yalta and Potsdam Conferences the wartime allies tried to reach agreements about the peace settlement, including the division of Germany into four zones.
- 2) Some disagreements remained, fuelled by mutual suspicions.
- 3) Soviet fears of the USA escalated after the USA dropped atomic bombs on Japan.
- 4) The USSR took over eastern European countries 1945-48.
- 5) The Truman Doctrine (1947) and Marshall Plan (1947) made the USA's intentions clear.
- 6) The USSR set up Cominform and Comecon to control Communist eastern Europe.
- 7) The Berlin Blockade and Airlift (1948-949) showed how serious and dangerous the Cold War had become.

Who was to blame for the Cold War?

The War-Time Conferences – Yalta and Potsdam

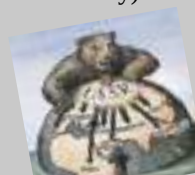
Yalta (February 1945)		Potsdam (July-August 1945)	
Agreements	Disagreements	Changes after Yalta	Disagreements
Stalin agreed to enter the war against Japan once Germany had surrendered	Poland boarder dispute with the USSR. America allowed them to move Poland's boarder west into Germany if they did not interfere in the events that were happening in Greece	Stalin's armies were occupying most of eastern Europe	Stalin wanted to cripple Germany, but Truman did not
Countries liberated from German occupation would be allowed to hold free and democratic elections		Harry Truman was now president of America. He was anti-communist and suspicious of Stalin	Russia wanted reparations but Truman did not want to repeat the mistakes of the end of World War One
Germany (and Berlin) would be divided into four zones (American, French, British and Soviet)		The USA had tested the first atomic bomb before the conference	Truman did not like the fact that Stalin's Red Army was in control of eastern Europe
The Big Three (USA, Britain, USSR) agreed to join the United Nations to prevent future wars		Churchill was replaced as Britain's Prime Minister by Clement Atlee	



Communist takeover of eastern-Europe

By the end of 1946 the USSR controlled the majority of countries in eastern Europe through the installation of a Communist government which they achieved through the following methods:

- Banning other political parties (Romania)
- Removed opponents (Yugoslavia)
- Won democratic elections (Hungary)
- Use of the Red Army (Poland)
- Agreements at Yalta (East Germany)



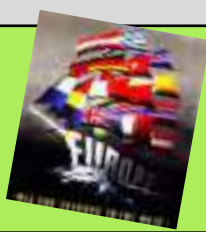
The 'Iron-Curtain' Speech

Churchill described the border between the Soviet-controlled countries and the West as an 'Iron Curtain' this created more tension between the East and West

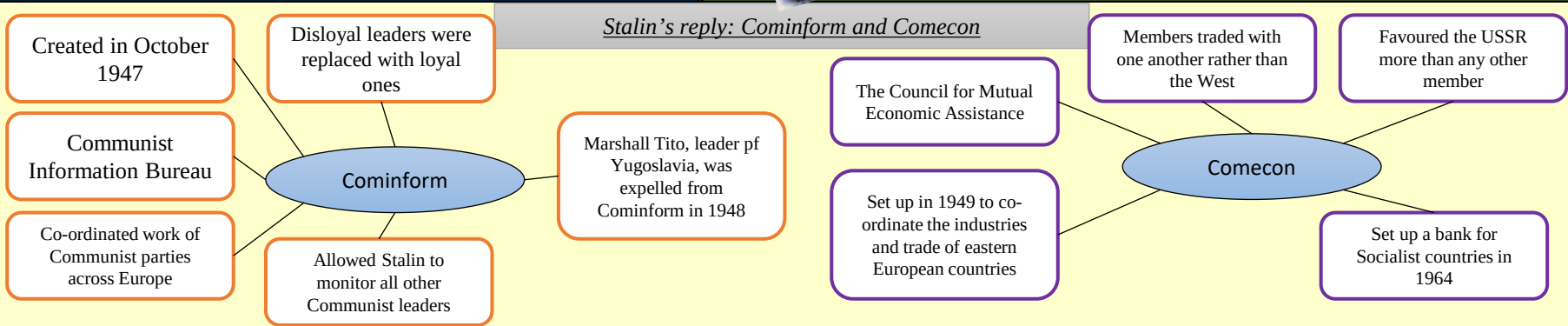


Keywords

The Truman Doctrine (1947)	
	Truman Doctrine (1947)
Greece 1947 (The Cause)	- In 1944 there was fighting between the monarchists and Communists about who should rule the country. - Churchill sent British troops to repel the Communist advances in 1945 which led to a civil war. 24th February 1947 the British announced they were withdrawing troops from Greece due to lack of funds. - Truman stepped in and paid for British troops to stay in Greece and prop up the king's government
What it entailed	- America were prepared to send money, equipment and advice to any country that was threatened by a Communist take over. - Aim was to stop Communism spreading into western Europe (<i>Containment</i>)
Consequences	- Begun the American policy of <i>containment</i> against Communism - Truman accepted that eastern Europe was now Communist

Who was to blame for the Cold War?	
	Marshall Aid or Marshall Plan (1947)
	Marshall Aid (1947)
Cause	- General George Marshall toured post war Europe and found it in a horrid state with shortage of food, fuel and clothing and limited amount of resources to rebuild their damaged homes. - Marshall feared that these extreme conditions would push people towards Communism and suggested a loan of \$17 to rebuild Europe. - The American Congress only agreed after a pro-American minister in Czechoslovakia was murdered in 1948.
What it entailed	\$17 billion was made available to European countries over a period of four years to rebuild.
Consequences	- New markets were created for American goods. - Stalin saw this as anti-Communist propaganda by the Americas. - Stalin forbade all eastern European countries from accepting Marshall Aid.
 	

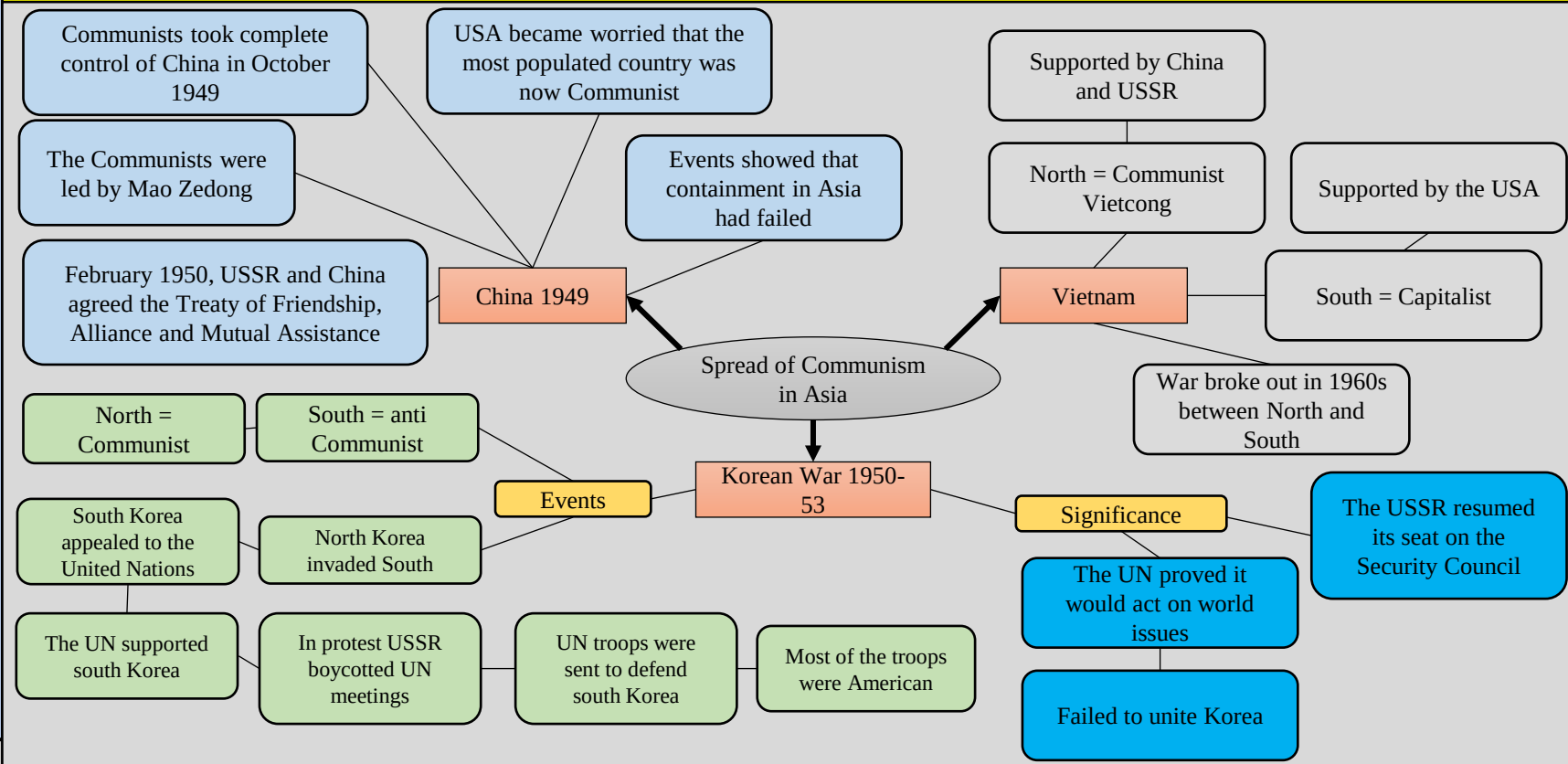
The Berlin Blockade and Airlift (1948-49)	
	The Berlin Blockade
Causes	1948 the allies combined their zones to form one zone 'West Germany'. - The currency of West Germany was changed and it helped Germany to recover after the war. - West Berlin was rebuilt to a high standard and had a large amount of consumer goods in their shops to undermine Communism.
Events	- June 1948 Stalin blocked off all supply lines into West Berlin. - Cut off supplies to more than 2 million people. - Hoped the blockade would force the allies out of Berlin. - The only way to get supplies into Berlin was to 'airlift' them in which the allies started in June 1948. - The allies continued the airlift for ten months until Stalin backed down and lifted the blockade
Consequences	- Germany was now firmly divided into two nations. - The Berlin Blockade set out the pattern for Cold War confrontations



Summary: How did the Cold War develop between 1949-60?

- 1. China became Communist in 1949 and allied with the USSR – a huge threat to the USA.
- 2. The Korean War was fought by the USA and her allies to prevent the spread of Communism.
- 3. The war showed how dangerous the international situation was.
- 4. The West set up NATO (1949) and Khrushchev responded in 1955 with the Warsaw Pact – the two organisations that were ranged against each other.
- 5. The arms race, together with the beginnings of the Space Race, further heightened tensions in the Cold War.
- 6. Khrushchev, succeeding Stalin, promised a thaw and made some concessions
- 7. However, in 1956 he ordered troops into Hungary to stop the reforms taking place that would have weakened Communist control.
- 8. The U-2 spy plane and its pilot Gary Powers were shot down over Soviet territory.
- 9. The USA was forced to admit spying activities on the USSR, and this wrecked the Paris Peace Summit of 1960.
- 10. The effects of this further encouraged the proliferation of weapons of destruction.

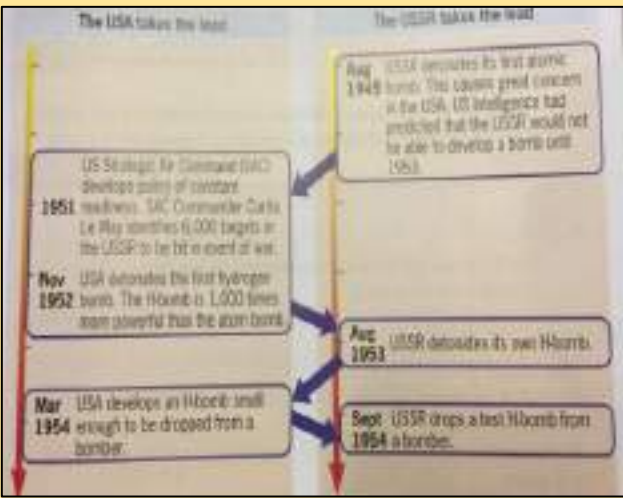
How did the Cold War develop between 1949-60?



Military Alliances: NATO vs the Warsaw Pact

NATO vs The Warsaw Pact

NATO (1949)	The Warsaw Pact (1955)
• North Atlantic Treaty Organisation • Created during the Berlin Blockade • Agreement to work together to resist attacks from their enemies • Agreed that an attack on one was an attack on all • Gave American forces secure bases in Europe to defend western Europe if the USSR invaded	• Created by Khrushchev to use eastern Europe as a buffer against attacks from the West • Created after West Germany was allowed to become a member of NATO and have its own armed forces again • Members would defend each other if one was attacked. • Included all Communist countries of eastern Europe – except Yugoslavia



The Arms Race

- 1945: America develop and drop the worlds first atomic bomb
- 1949: The USSR create their own atomic bomb which begins the **Arms Race**.
- America allocated 40% of its defence spending to its air force to create nuclear bombers.
- Fear in America of the 'bomber gap' after the USSR developed the Bison jet bomber and the long range TU-95 bomber.
- Large businesses in America supported the Arms Race as they benefited from the government contracts for the military.

Why was the Space Race and the Arms Race so important?

Space Race

- Was a powerful propaganda tool which caught the imagination of people all over the world.
- USSR and USA were mainly interested in space technology in order to build missiles.

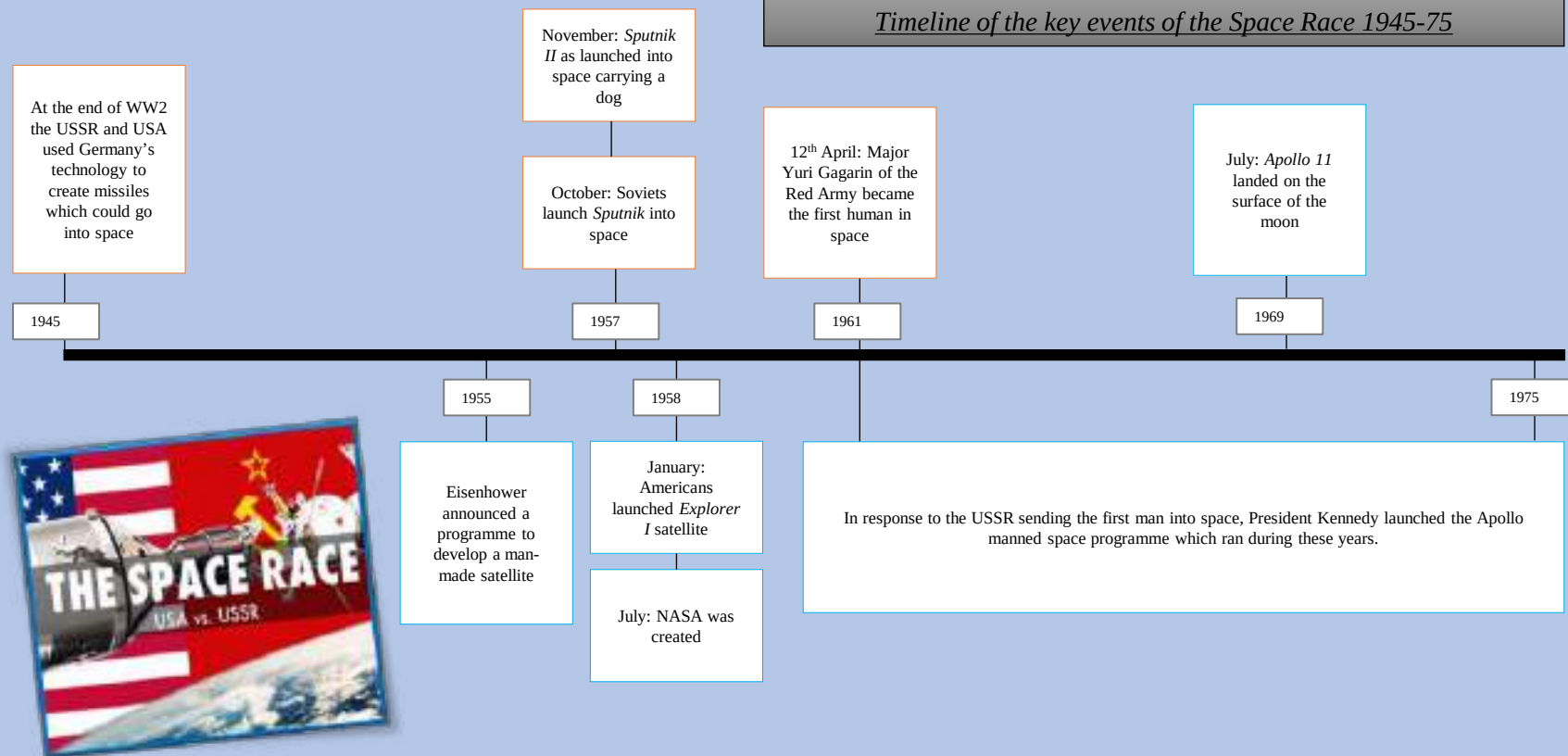
Arms Race

- Using Space technology the USSR created the first Intercontinental Ballistic Missile (ICBM) in May 1957.
- 1959 USA create their own ICBMs. Now both countries could attack each other from their own nation.
- Early 1960s the USA began to pull ahead in the nuclear arms race, however the people in America did not know that.
- The American public became worried that the USSR had more nuclear missiles than the USA – however the President knew there was no missile gap due to secretly spying on the USSR.



How did the Cold War develop between 1949-60?

Timeline of the key events of the Space Race 1945-75



Nikita Khrushchev and the 'thaw' in relations:

After the death of Stalin in 1953 many minds turned to the question of who would succeed him as leader of the USSR. By 1955 Khrushchev had taken on this role.

Ended USSR's long feuds with China and Yugoslavia

Reduce expenditure on arms

Talked of 'peaceful co-existence' with the West

Attended first post-war summit between USSR and the Allies in 1955

Agreed to pull Soviet troops out of Austria



De-Stalinisation

Released political prisoners

Close down Cominform as part of his policy of reconciliation with Yugoslavia.

Invited Marshal Tito to Moscow

Dismissed Stalin's former Foreign Minister, Molotov

Keywords

The Hungarian Uprising 1956

How did the Cold War develop between 1949-60?

The U-2 Crisis and the Paris Peace Summit

Causes



- Hungary was led by a hard-line Communist leader called Rakosi.
- The people hated the restrictions on their freedoms put on them by their government – in particular the lack of freedom of speech.
- They resented the presence of thousands of Soviet troops in their country as they had to pay for Soviet forces to be in Hungary.
- Some areas of Hungary had Russia street signs, schools and shops.

Events



- June 1956 Rakosi was removed from power by a group within the Communist Party and replaced by Erno Gero.
- The Hungarian people did not support Gero and during a demonstration on 23rd October a giant statue of Stalin was pulled down in Budapest.
- USSR allowed a new government to be formed under the leadership of Imre Nagy and removed Soviet tanks and troops from Hungary.
- Nagy's government stated it would hold free elections, create impartial courts and restore farmland to private ownership.
- Nagy also planned to remove Hungary from the Warsaw Pact and declare them neutral in the Cold War in the hope that the USA would support the new independent Hungary.

How did the USSR react?



- Khrushchev could not accept Hungary leaving the Warsaw Pact.
- November 1956 thousands of Soviet troops and tanks moved into Budapest and two weeks of fighting followed.
- About 3,000 Hungarians and 7-8,000 Russians were killed.
- 200,000 Hungarians fled into Austria to escape the Communist forces.
- Imre Nagy and his fellow leaders were imprisoned and then executed.
- Western powers sent no help as they were involved in their own crisis.
- Janos Kadar was made leader of Hungary and he arrested 35,000 anti Communists.

Causes

- In 1956 America resumed illegal flying spying mission over the USSR with the agreement of President Eisenhower.
- The U-2 spy plane flew so high that it could not be shot down by the USSR and carried sophisticated spying equipment.
- Khrushchev was frustrated about the flights by could not complain because he had no proof.

Events

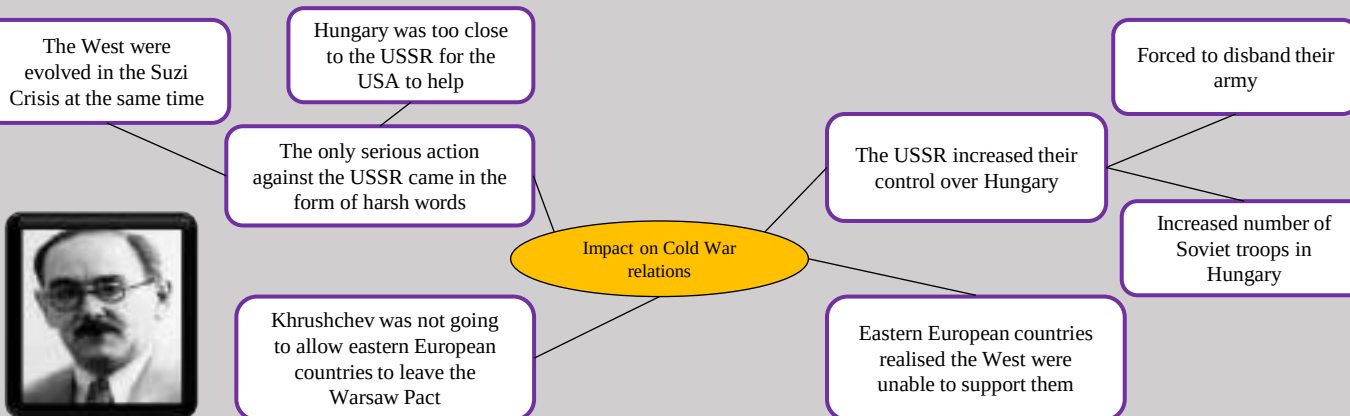
- May 1960: Khrushchev was preparing for the Four Power Summit with France, Britain and the USA which was to be held in Paris.
- 1st May 1960: the USSR shot down a U-2 spy plane and arrested the pilot, Gary Powers.
- The USSR paraded Powers on television and accused the USA of spying.
- The USA at first denied that Powers was on a spying mission but then admitted he was.
- President Eisenhower refused to apologise or promise it would not happen again.

What were the outcomes?

- Khrushchev refused to attend the Paris Peace Summit.
- Gary Powers was sentenced to ten years in a Soviet Prison, but was exchanged for a captured Soviet spy in February 1962.
- Eisenhower was criticised in America for being too soft with the Soviets. Kennedy used this feeling to become the new President of America.



Impact on Cold War relations



Summary: How did the Cold War transform 1960-72?

- 1) The Berlin Wall became a symbol of division between East and West in the Cold War.
- 2) Castro became the ruler of Cuba, which held America financial and military interests.
- 3) Khrushchev was keen to assist Cuba- in return for placing missiles on the island.
- 4) The Crisis in October 1962 could have led to world destruction.
- 5) Eventually both sides backed down in order to avoid further escalation.
- 6) The Czechs wanted to loosen the hold of Communism on the country.
- 7) The USSR sent in troops to end the Prague Spring in 1968.
- 8) IN spite of all the crisis in international relations, tensions began to ease at the end of the 1960s under Nixon and Brezhnev, with both having solid reasons for doing so.
- 9) The result in 1972 was SALT 1 which was a step towards limiting nuclear weapons.

Keywords

How did the Cold War transform 1960-72?

The Berlin Wall: 1961



Causes:

- There were large contrasts in living standards between East and West Berlin.
- Western powers had invested in West Berlin to undermine Communism.
- Many East Berliners travelled to West Berlin and then onto West Germany to escape the harsh Communist government in East Berlin.
- Those defecting were highly skilled workers which the Communist government could not afford to lose.
- In 1961 Khrushchev thought he could bully the new President, Kennedy, and ordered that he remove all US troops from Berlin.

Events:

- 13th August 1961, East German soldiers erected a barbed-wire fence between East and West Berlin.
- This ended free movement from East to West Berlin.
- The fence was replaced by a concrete wall.
- West Berlin was sealed to foreigners and allied soldiers. The only crossing point was ‘Checkpoint Charlie’
- Border guards had orders to shoot people trying to cross from East to West.

Consequences:

- Families were divided and many West Berliners were unable to go to work.
- 27th October Soviet and US tanks had a tense stand-off at Checkpoint Charlie.
- After an 18 hour stand off the tanks retreated 5 meters at a time.
- The Communists presented the wall as a protective shell around East Berlin.
- The West presented the wall as a prison wall.



Czechoslovakia and the Prague Spring 1968

Causes:

- People in Czechoslovakia did not like the lack of progress in their country and 20 years of Communist control.
- 1967: Dubcek became the leader and proposed ‘*Socialism with a human face*’.
- Dubcek wanted less censorship, more freedom of speech and restrictions on the secret police.
- With the easing of censorship people started to attack the Communist leadership on television and radio debates.
- Summer of 1968: talk of allowing another political party, Social Democratic Party, to rival the Communist Party.

How did the USSR respond?

- Brezhnev, the new leader of the USSR, came under pressure from the East German and Polish leader to stop the reforms in Czechoslovakia.
- First Brezhnev got Soviet, Polish and East German troops to perform training exercises on the Czech border in order to scare Dubcek.
- 20th August 1968 Soviet tanks moved into Czechoslovakia and removed Dubcek with little opposition.

Consequences of the Prague Spring:

- Brezhnev issued the ‘Brezhnev Doctrine’ which defined the essentials of Communism.
- A one party system and to remain a member of the Warsaw Pact.
- The USSR showed the West that it would not tolerate losing any part of its control over eastern Europe.

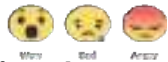


Background:

- Cuba is a large island 160km from the southern USA.
- The Americas supported the Cuban leader (Batista) because was just as opposed to Communism as they were.
- Batista was a dictator and he was unpopular in Cuba.
- January 1959 Fidel Castro removed Batista and became the new Communist leader of Cuba.
- Castro won over the majority of Cubans and arrested or exiled many of his political opponents.

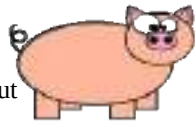
How did USA respond to Castro's rule?

- Thousands of Cuban exiles fled to the USA and formed pressure groups demanding action against Castro.
- Castro took over some American businesses in Cuba.
- The CIA provided funds to the Cuban exiles.
- American companies working in Cuba refused to co-operate with any Cuban business which used materials from the USSR.
- Castro responded by assuring Americans living in Cuba that they were safe.
- Summer 1960: Alienated himself with the Soviet Union and began to receive weapons from the USSR.



The Bay of Pigs:

- January 1961: Kennedy armed 1,400 anti-Castro Cuban exiles.
- The exiles invaded Cuba at the Bay of Pigs but were met by 20,000 Cuban troops.
- The invasion failed and further enhanced the relationship between Castro and Khrushchev



The Crisis:

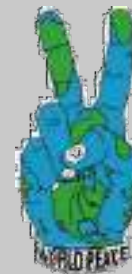
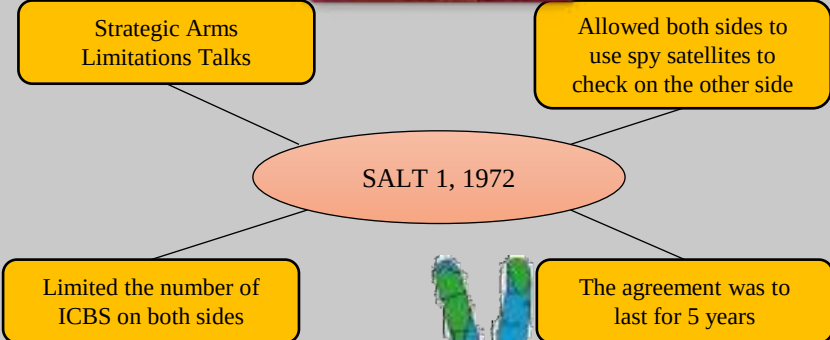
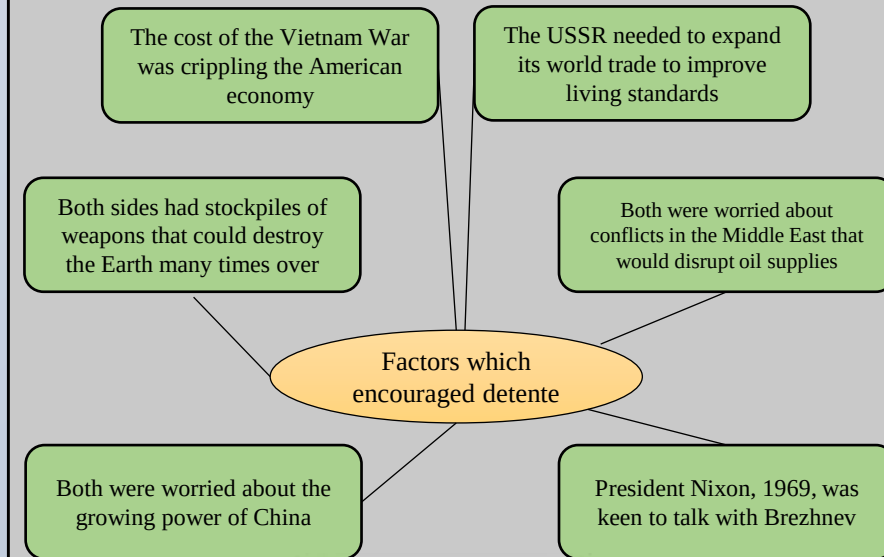
- After the Bay of Pigs, the USSR sent even more weapons to Cuba.
- 14th October 1962 an American spy plane flying over Cuba took pictures of Soviet nuclear missile sites being built on Cuba.
- The USSR had also sent 20 ships from Russia to Cuba carrying nuclear missiles.
- President Kennedy decided to create a naval blockade to block the ships from entering Cuba,
- 23rd October: Khrushchev writes to Kennedy explaining that he will not stop for the blockade.
- 24th October: the Soviet ships approach the blockade, then either stop or turn around.
- 27th October: An American spy plane is shot down and Kennedy is advised to attack Cuba.
- 27th October pm: Kennedy decides to delay the attack and send a final ultimatum to Khrushchev.
- 28th October: Khrushchev agrees to return the missiles to the USSR as long as the USA remove their ICBMs from Turkey. The crisis has ended peacefully.

Consequences of the Cuban Missile Crisis:

- Nuclear missiles were removed from Cuba.
- Kennedy came out of the crisis with an improved reputation in America and western Europe.
- Khrushchev was able to claim a personal triumph as Cuba remained Communist in the American sphere of influence. The events in Cuba helped to thaw tensions between East and West.
- A permanent 'hot line' phone link between the White House and the Kremlin was set up.
- 1963 Nuclear Test Ban treaty was signed.



Détente and SALT 1





GCSE History AQA



Paper 2

Britain; Health and the People c. 1000 to Present Day
Elizabethan England c. 1568-1603

Knowledge Organiser Booklet

What are knowledge organisers?

What they are:

Knowledge organisers are designed to help condense complicated material into much simpler formats with topics and overviews on one page.

They are a good way to start your revision if you feel overwhelmed or to help if you have missed a topic and don't quite understand it even if you have caught up. They are also useful for reading ahead to prepare for new topics.

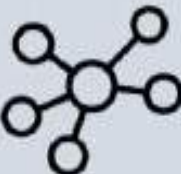
What they are not:

- The only or 'perfect' way to revise (you can do rhymes, songs, timelines, quizzes, flashcards etc.)
- Something which will magically get facts into your head just by reading them.
- The only facts which are useful to you – Grade 7, 8 and 9 students will also use their own notes in their folders.
- Something which helps you practise exam questions – for that you will need to use the A3 revision sheets which your teacher sets for homework and class work.
- Something which will help you cram everything into your head the day before the exam.

“Success is the sum of small efforts repeated day in and day out.”

– Robert Collier, American self-help author.

Ways to use your knowledge organiser

	Look, Cover, Write, Check	Self Quizzing	Mind Maps	Paired Retrieval	Definitions to Key Words
Step 1	Look at and study a specific area of your knowledge organizer. 	Use your knowledge organizer to create a mini quiz. Write down questions using your knowledge organizer. 	Create a mind map with information from your knowledge organiser. 	Like self quizzing, use your knowledge organizer to create a quiz. 	Write down the key words and definitions. 
Step 2	Cover or flip the knowledge organizer over and write down everything you remember. 	Cover or flip the knowledge organizer over and answer the questions and remember to use full sentences and key words/vocabulary. 	Add pictures to represent different facts, knowledge. Try to categorise different areas in different colours. 	Ask a family member to ask you the questions and tell you which ones you get right and which ones you get wrong. 	Try not to use your knowledge organiser to help you. 
Step 3	Check what you have written down. Correct any mistakes in a different coloured pen and add anything you missed. Repeat. 	Check your answers. Correct any mistakes in a different coloured pen and add anything you missed. Repeat. 	Try to make connections that link information together. 	Following the quiz, summarise which areas you got wrong and need to revise further. 	Use a different coloured pen to check you work and correct any mistakes you may have made. 



Hippocrates	Galen
- One of the first doctors to use 'clinical observation'. Developed the theory of the four humours, the idea that the body was a system made of four fluids which had to be 'balanced' to ensure good health. - All newly qualified doctors still take the 'Hippocratic Oath'.	- Worked as a doctor in a gladiator school, allowing him to develop the discipline of anatomy. - Performed dissections on pigs and monkeys to aid with this. - Largely influenced by Hippocrates. - Ideas fitted with Christian ideas, so had the support of the Church.

God sent diseases as punishment for sin.	Since disease rates were higher in towns than the countryside, people began to believe that the 'bad smells' (miasma) in towns, was causing disease.
What did Medieval people believe caused disease?	
Many believed an imbalance of the four humours (blood, black bile, yellow bile, phlegm) in the body caused illness.	Most people believed that illness and premature death were simply an inevitable part of life.
Some astronomers blamed the planets being 'out of line'	

Where could the sick go for help?	
Apothecary	• Sold medicines, herbs and spices.
Physicians	• Trained at universities, learning from the texts of Hippocrates and Galen.
Local 'wise women'	• Used various herbs to produce homemade medicines.
Barber surgeons	• Performed small surgical operations such as bloodletting.
Church	• Priests could pray for diseases to be cured.

Key dates:	
460BC-370BC	Time of Hippocrates (Ancient Greece)
129AD-216AD	Time of Galen (Ancient Greece / Rome)
500AD	The 'Medieval' period begins
1348	The Black Death arrives in England
1363	Guy de Chauliac publishes <i>Great Surgery</i>
1376	John of Arderne publishes <i>Practica</i>
1388	Parliament introduces river-waste fine

Britain: Health and the People: c1000– present day
Part 1: Medieval medicine
What did people believe caused disease in medieval times?
How did Christianity influence medieval medicine?
How did Islam affect medieval medicine?
How good was medieval surgery?
What was public health like in medieval times?
What were the causes and consequences of the Black Death?

Key terms:	
Barber-surgeon	Performed minor surgeries
Bubonic	The most common form of plague
Bloodletting	The practise of withdrawing blood
Cauterisation	Burning a wound closed
Four Humours	Theory that the body contained four fluids
Miasma	Theory that bad smells held diseases
Trepanning	Drilling a hole into the skull

Surgeon	Example of contribution
Abulcasis	Invented 26 new surgical instruments
Ibn al-Nafis	Challenged Galen on the circulation of blood around the body – no one believed him
Hugh of Lucca	Used wine on wounds to reduce infection
John Bradmore	Invented the forceps to remove an arrow from Henry V's face
Guy De Chauliac	Wrote famous textbook <i>Great Surgery</i> .
John of Arderne	Formed 'Guild of Surgeons' in London.



Public Health was good	Public Health was poor
- Some towns had Roman aqueduct systems to supply water. - Streets outside the houses of wealthier citizens were cleaned by servants. - Some local town councils introduced laws and / or fines to try and keep the streets clean.	- Streets were often overrun with animals. - No sewers meant household waste was thrown into the street. - If cesspits were not regularly emptied, sewage could seep into rivers. - Water was rare so people didn't wash often.

Individual	Discovery
Andreas Vesalius	Carried out dissections of the human body, proving that some of Galen's ideas were wrong.
Ambroise Paré	During his time as a French army surgeon, experimented with using ointment on wounds instead of burning oil, and using ligatures in amputations.
William Harvey	Proved that blood circulated around the body, challenging Galen's idea that new blood was constantly produced in the liver.



Medicine got more scientific	Medicine remained traditional
• People began to question traditional ideas. E.g. Paré tested and dismissed the Bezoar stone • Explorers brought back new medicine from foreign lands. • Hospitals began focusing on treatment over care.	• Bloodletting continued to be a common treatment. • People still had a lot of faith in 'the royal touch' • Herbal remedies continued to be popular and were passed through generations (though some of these did work) • Quacks became more prominent e.g. James Morrisons' vegetable pills

Key dates:	
1543	Vesalius publishes <i>The Fabric of the Human Body</i>
1545	Paré publishes a book on treating wounds
1628	Harvey published his theory that blood circulates
1665	The 'Great Plague' hits London
1674	Leeuwenhoek invents the first practical microscope
1768	Hunter is admitted to the Company of Surgeons
1796	Jenner discovers the smallpox vaccine

Britain: Health and the People: c1000– present day
Part 2: Renaissance medicine What impact did Vesalius, Paré and Harvey have? How scientific was 17th and 18th century medicine? How was the 'Great Plague' dealt with? How did hospitals develop in the Renaissance period? How did surgery develop in the Renaissance period? How did Edward Jenner help defeat smallpox?



Developments in surgery	Problems in surgery
• By 1811, surgeons had to attend at least one course in anatomy and one in surgery. • By 1813, aspiring surgeons had to have at least a year of experience in a hospital. • Surgeons could only practise with a license.	• There were still no reliable anaesthetics, so surgery remained extremely painful. • There were also no antiseptics to prevent infections. • Many patients described their experiences of surgery negatively.

How did Jenner develop the smallpox vaccine?
1720s – People began to use a basic form of inoculation to prevent smallpox, scratching pus or scabs from smallpox victims onto healthy peoples' skin. However, this was only affordable to the rich, and was risky as the 'dose' of the disease was uncontrollable. 1790s – Country doctor Edward Jenner heard stories that milkmaids who had caught cowpox were not catching smallpox, and experimented by injecting cowpox into an 8-year-old boy. Six weeks later, he attempted to give the boy smallpox, and discovered he had developed immunity. He tested this 16 times to prove it worked, and published his findings in 1798.

Jenner could not explain how it worked, so it was difficult for many to accept.	Use of contaminated equipment meant that some patients died
	Jenner was not a fashionable city doctor, so faced snobbery
What was the response to Jenner's discovery?	
Parliament gave Jenner £10,000 in 1802 for his research.	In 1853, the British government made vaccination compulsory.
Royal family members vaccinated.	

Idea	Description
Spontaneous Generation	The ideas that microbes were the <i>product</i> of decay, rather than the cause of it.
Germ Theory	- Louis Pasteur proved that it was microbes in the air which caused liquids to 'go off', and that heating these liquids could kill these microbes. - Robert Koch continued this research, proving that specific germs caused specific diseases.



James Simpson	Joseph Lister
- In 1847, Simpson and his friends knocked a bottle of chloroform over by accident. - When his wife later discovered them all asleep after having breathed it in, Simpson realised its potential use as an anaesthetic.	- Lister believed it may be germs causing surgical patients' wounds to go septic. - In 1865, he experimented by soaking dressings in carbolic acid before applying them to wounds, proving that this prevented infection.

Key dates:	
1831	Cholera arrived in Britain
1847	James Simpson discovered chloroform
1848	The First Public Health Act was passed
1858	The 'Great Stink'
1861	Louis Pasteur published his Germ Theory
1865	Joseph Lister uses carbolic acid as an antiseptic
1875	The Second Public Health Act was passed

Britain: Health and the People: c1000– present day
Part 3: Industrial medicine How important were Louis Pasteur and Robert Koch? How were the main problems in surgery overcome? Why was John Snow important? How did public health improve in the 1800s? How significant were the Public Health Acts?

Key terms:	
Anaesthetic	Substances used to help manage pain
Antiseptic	Substances used to prevent infection
Chloroform	Used as an anaesthetic
Cholera	A water-borne bacterial disease
Laissez-Faire	Leaving things to take their own course
Microbes	Organisms which cause decay / infection
Pasteurisation	Sterilising liquids such as milk with heat

Dr John Snow and his work on cholera
1831 – Cholera arrives in Britain, spreading quickly and killing 30,000 people in 1831 alone. 1837 – Following further outbreaks, the government tasked Chadwick with an investigation into Public Health. 1854 – Over 700 people living in or around Soho died of cholera within 10 days, prompting Dr John Snow to begin investigating. He eventually found that all victims had drunk water from the Broad Street Water Pump, and concluded there must be a link between this water and cholera. Snow insisted the handle be removed from the pump, and there were no further deaths in the street.



First Public Health Act	Second Public Health Act
- Passed in 1848. - Gave local town councils the power to spend money on cleaning up their towns. - This was not compulsory, so by 1853, only 103 towns had set up their own Boards of Health. - In 1854, the Central Board of Health was closed down.	- Passed in 1875. - Forced local councils to appoint medical officers to be responsible for public health. - Councils were also ordered to cover up sewers, keep them in good condition, supply fresh water, collect rubbish, and provide street lighting.

Individual	Summary of their findings	The creation of the NHS		Impact of WWI	Impact of WWII
Charles Booth	Worked out a 'poverty line' – a level of income required to stay beyond starvation.	1899	Recruitment campaigns for the Boer War revealed that 40% of the UK's population were too unhealthy to fight.	- Shell shock led to a recognition of PTSD. - Aided the development of successful blood transfusions. - Harold Gillies developed plastic surgery. - New techniques were developed to repair broken bones. - X-Rays used on soldiers	- Led to creation of NHS. - Shortages of food meant people grew their own vegetables, improving peoples' diets. - Propaganda encouraged people to stay healthy. - Use of new drugs such as penicillin. - Development of heart surgery.
Seebohm Rowntree	Used the term 'primary poverty' to describe those whose earnings were low but who could survive, and the term 'secondary poverty' to describe those whose earnings were enough but who spent their money in a wasteful way.	1911	The National Insurance Act introduced free medical care, but only for those who were employed.		
		1939	WWII breaks out, creating a need for adequate medical services to cope with civilian casualties.		
		1942	The Beveridge Report is published, proposing the idea of 'a free National Health Service'.		
		1948	The NHS was officially established.		

Key dates:

1899	Britain begins fighting in the Boer War
1901	Rowntree publishes <i>Poverty: A Study of Town Life</i>
1911	The National Insurance Act was introduced
1928	Alexander Fleming discovered penicillin
1942	The <i>Beveridge Report</i> is published
1948	The NHS is established
1953	Watson and Crick map out the structure of DNA

Britain: Health and the People: c1000– present day

Part 4: Modern medicine

Why did government intervention in Public Health increase?
 What was the impact of the creation of the NHS?
 How did the World Wars impact medicine?
 Why was the discovery of penicillin significant?
 What does medicine look like going into the 21st century?



The development of 'magic bullets'

1909	Paul Ehrlich discovers that Salvarsan 606 can be used to treat syphilis.
1928	Alexander Fleming discovers penicillin, which could be used to kill the staphylococcus germ
1932	Gerhard Domagk discovers that prontosil kills the bacteria which causes blood poisoning. New electron microscopes helped scientists discover that the active ingredient in this was a sulphonamide, aiding the development / discovery of more magic bullets.

Alexander Fleming and the discovery of penicillin

While researching ways to combat the staphylococcus germ, Fleming left briefly to go on holiday. When he returned, he noticed one of his petri dishes had grown mould, which had killed the microbes next to it.

He published his findings in 1928, but labelled penicillin as an antiseptic, not an antibiotic, meaning few people regarded this discovery as any kind of breakthrough.

After reading Fleming's article, Oxford scientists Florey and Chain requested government money to begin further research, and proved its potential as an antibiotic, at which point it began to be mass produced for use in World War Two.

In 1973, Hounsfield invents the CAT scanner.

In 1990, the Human Genome Project is launched, declared complete in 2003

In 1953, Crick and Watson map the structure of DNA

How have drugs & treatments developed since 1945?

Fibre-optic cables and computers mean that surgeons can perform keyhole surgery

In 1968, the first British heart transplant takes place

Pregnant women can now be scanned for genetic conditions

Elizabeth and her Court

Timeline

1533	Elizabeth I was born.
1536	Anne Boleyn, Elizabeth's mother, was executed for treason.
1547	Henry VIII, Elizabeth's father, dies. Her younger brother, Edward, becomes king, aged 9.
1558	Mary I dies. Elizabeth becomes Elizabeth I, Queen of England.

Key people

Henry VIII	Elizabeth I's father. He married six times and broke away from the Catholic church in order to divorce his first wife.
Anne Boleyn	Elizabeth I's mother. She was the second wife of Henry VIII and was executed for treason in 1536.
William Cecil	Cecil served as Secretary of State twice and as a Member of Parliament and was Elizabeth's most trusted advisor. He played a key role in developing the Poor Laws.
Francis Walsingham	He served as Secretary of State and was one of the queen's closest advisors. He was known as Elizabeth's 'spymaster' and played a role in the trial and execution of Mary, Queen of Scots.



Key terms

Inherit	To gain possessions after someone has died.
Treason	An attempt to kill or overthrow the monarch or betray the country; punishable by death.
Royal Court	The nobles, advisors and others who surrounded the monarch.
Parliament	Country's law-making body made up of the House of Lords and the House of Commons.
Nobility	The earls, dukes, lords and ladies, the most respected members of society; they were given special rights and privileges and owned most of the land.
Privy Council	A monarch's private counsellors that took responsibility for the day-to-day running of the country.
Secretary of State	The leader of the Privy Council; a very powerful position.
Lord Lieutenants	Appointed by the Queen to take administrative responsibility for an area of the country.
Militia	A non-professional army raised to fight for a particular cause, e.g. to defeat a rebellion or fight a war.
Justices of the Peace	They were selected from the gentry to ensure order was kept.
Gentry	High social class ranked below the nobility; they might be local JPs or hold similar office.
Patronage	Land, titles or power given to ensure an individual's support.

Key questions

Who was Elizabeth I?

- When Elizabeth was born, no one expected her to become monarch. Her mother had been executed for treason and her elder sister, Mary I, saw her as a threat to her own rule.
- As a princess, Elizabeth had been educated and brought up within the royal household.
- When she became queen she needed to establish her authority.

Who had power in Elizabethan England?

- Privy Council**—responsible for the day to day running of the country. Technically, the queen could choose who was on the Council but in reality she had to appoint the most powerful landowners to avoid rebellion. Led by the Secretary of State.
- Parliament**—made up of the House of Lords and the House of Commons. Had influence over tax and was responsible for passing laws. The queen could choose when to call Parliament and was free to ignore their advice.
- Lord Lieutenants**—appointed by the queen and responsible for running a particular area of the country. Responsible for raising a militia to fight for the queen if needed.
- Justices of the Peace**—responsible for maintaining order and enforcing the law. They were selected from the local gentry.

What was the royal court?

- The royal court was the centre of Elizabethan power.
- It was made up of government officials, ladies-in-waiting, servants and advisors who surrounded Elizabeth.
- Elizabeth's court consisted of around 1000 people and it was the centre of political power.
- The Privy Council was a key part of the court.
- Elizabeth ensured loyalty through patronage.

Exam question:

Explain what was important about the Privy Council, (8 marks)

Name:

Elizabeth's problems and marriage

Timeline

1558	Elizabeth becomes queen of England, aged 25.
1559	A revolt began in northern Ireland which became a major problem for Elizabeth.
1562	Elizabeth contracts smallpox and nearly dies, drawing attention to the succession crisis.
1568	Mary Queen of Scots, Elizabeth's cousin and heir to the throne, is exiled.

Key terms

Succeed	To take over the throne.
Exile	Being sent to live in another country that is not your own, especially for political reasons.
Pope	The head of the Catholic Church.
Prerogative	An exclusive right or privilege.
Concessions	Something granted following demands for it.
Monopolies	The exclusive right to sell a product. Elizabeth sold these monopolies to favourite courtiers as a way of keeping support.
Suitors	Possible husbands.
Subsidies	Grants of money to the Queen.



What were Elizabeth's main problems?

Succession	Elizabeth had yet to produce an heir. In the past, there had been wars when people were not sure who would succeed the monarch. Parliament were keen for her to marry.
Mary, Queen of Scots	Without a direct heir, Mary, Queen of Scots, was next in line as Elizabeth's cousin. In 1568, Mary was exiled from Scotland to England and became a real threat to Elizabeth.
Ireland	Elizabeth considered herself Queen of Ireland but many of the Irish disagreed. When a revolt broke out in northern Ireland in 1559, she spent thousands to limit the rebellion.
Taxation	The government needed money and one of the few ways to get it was through taxes. However, at a time of great poverty, taxes would be very unpopular with the people.
Foreign policy	Elizabeth had to deal with powerful countries that wanted influence over England, France and Spain, which were both Catholic and had the support of the Pope, saw Protestant England as a target.
Religion	Elizabeth's father had broken away from the Catholic Church. However, when Mary became queen she tried to re-establish Catholicism. Elizabeth was a Protestant but allowed Catholics to follow their faith privately. However, many Catholics remained unhappy as they didn't recognise Elizabeth as queen. The growing popularity of Puritanism was also seen as a threat.

Marriage: potential suitors

Robert Dudley	The queen's favourite advisor and they had been close friends since childhood and he had wanted to marry her. However, when his wife died in suspicious circumstances, it would have been scandalous for the Queen to marry him.
King Philip II of Spain	Philip had been married to Elizabeth's sister Mary. Spain was the most powerful country in Europe so marriage to Philip would have been useful. However, he was Catholic and the marriage to Mary had not produced an heir.
Francis, Duke of Anjou and Alençon	The French King's brother and heir to his throne. By the time marriage was proposed, Elizabeth was 46 and probably beyond having children. A childless marriage would see England falling into French control. He was Catholic and many figures in Elizabeth's court were against the marriage.

Key questions

Why did Elizabeth have a difficult relationship with Parliament?

- The Queen had the power to call, dissolve, and postpone Parliament.
- Elizabeth saw Parliament as a necessary evil to get its permission to raise money.
- The Queen usually got what she wanted from Parliament but over time, the MPs grew in confidence and tried to influence her decisions.

How did Elizabeth control Parliament?

- She reminded MPs of her prerogative on religion, whether to get married, who should be heir, going to war and the treatment of Mary, Queen of Scots.
- She imprisoned those who challenged her e.g. Peter Wentworth.
- Her leading Councillors were also MPs and they planned Parliamentary business in advance in order to control it.
- In 1603, she granted concessions to MPs on the issue of monopolies.

Why was marriage so important and why did she never marry?

- Marriage was seen as an important duty for a monarch. It was a way of cementing alliances.
- More importantly for Elizabeth, it was necessary to produce an heir that could succeed her on the throne.
- Arguments in favour: creating alliances, producing an heir.
- Arguments against: loss of authority, giving birth was risky for a mother, her experience of marriage had been bad (her father had her mother executed). Elizabeth was able to use the possibility of marriage to her advantage when dealing with foreign leaders and important figures in England.
- Historians have disagreed over why Elizabeth never married. Elizabeth said she was married to 'the kingdom of England'.

Exam questions:

1. Write an account of Elizabeth's relationship with her Parliament. (8 marks)
2. Explain what was important about Elizabeth's decision regarding her marriage. (8 marks)

Name:

Plots and Rebellions

Timeline

1569	The Northern Rebellion
1571	The second rebellion—the Ridolfi Plot
1595	The queen makes the Earl of Essex a privy councillor and gave him the monopoly of sweet wine in England.
1599	The queen makes the Earl of Essex the Lord Lieutenant of Ireland.
1601	Essex leads a rebellion but it is a disaster and he executed for treason.

Key terms

Mass	A Catholic church service.
Monopoly	The exclusive right to sell a product. Elizabeth sold these monopolies to favourite courtiers as a way of keeping support.
Treason	An attempt to kill or overthrow the monarch or betray the country; punishable by death.

Exam questions:

- Write an account of the Northern Rebellion (1569). (8 marks)
- Write an account of the failure of the Earl of Essex's rebellion. (8 marks)



Duke of Norfolk



A portrait of Elizabeth I in her old age



Earl of Essex

Key figures

The Duke of Norfolk	The Queen's second cousin and the leading English nobleman. He was raised a Protestant despite being from a Catholic family. He was made Lord Lieutenant of the North.
The Earl of Northumberland	His father was executed for leading a rebellion against Henry VIII. He was not allowed to inherit his father's title under Mary I's reign. He was a Catholic but was treated well by Elizabeth.
The Earl of Westmoreland	A Catholic who had become powerful under Mary I's reign. He lost influence under Elizabeth but remained powerful in the north.
Roberto Ridolfi	An Italian banker who travelled widely across Europe. It is believed that he sent money to support Catholic rebels in England. It is likely that he worked as a spy for the Pope for many years.
The Earl of Essex	Robert Devereux, the Earl of Essex, became a privy councillor in 1595. His power grew further when the queen gave him a monopoly of sweet wine. He led a rebellion against the queen in February 1601.

Why did plots against Elizabeth fail?

Spies	The network of spies, led by Francis Walsingham, meant that very few plots ever got beyond their earliest stages.
Unconvincing alternatives	Regardless of their religions, most people preferred an English queen over the alternative: Mary, Queen of Scots or Philip II of Spain.
Punishments	Elizabeth took swift action against traitors. Rebel were tortured and put to death, for example, Mary, Queen of Scots and Essex.
Religious settlement	Elizabeth's religious policy kept most of the population happy. Although it became tougher for Catholics as her reign went on, there remained a level of tolerance.
A skilled politician	Elizabeth dealt with her most difficult relationship, with her Parliament, very effectively. She was skilled at getting her own way while still allowing Lords and MPs to feel influential. She would listen but was clear where power lay.

Key questions

What happened during the Northern Rebellion, 1569?

- Many people in northern England retained their Catholic beliefs and there was support for Mary, Queen of Scots, replacing Elizabeth.
- Elizabeth was aware of the threat and even stopped Mary marrying the Duke of Norfolk.
- Norfolk left the royal court and headed north. A group of northern lords led by Westmoreland and Northumberland began a rebellion.
- 4000 men marched south but soon faced opposition and disbanded.

What was the Ridolfi Plot, 1571?

- Norfolk spent ten months in the Tower of London before his release when he soon became involved in another plot led by Ridolfi.
- Having seen the Northern Rebellion fail, he planned for the Netherlands to invade England at the same time as another northern rebellion. The plan was to then murder Elizabeth and replace her with Mary, Queen of Scots.
- Elizabeth's spies proved too much for the plotters and when Norfolk's involvement was uncovered, he confessed and was executed.

What does Essex's rebellion tell us about her authority of Elizabeth?

- Essex developed a rivalry with Robert Cecil, another member of the court.
- In 1598, he became involved in an argument with Elizabeth during a Privy Council meeting but Elizabeth took no further action.
- Essex was made Lord Lieutenant of Ireland and was given the important job of defeating a rebellion there. However, instead of crushing it, he made a truce.
- Elizabeth was furious and banned him from Court and removed his 'sweet wine' monopoly which ruined him financially.
- Essex mounted a poorly thought out rebellion. With other disgruntled courtiers, he marched to London to take Elizabeth prisoner.
- He underestimated the support for Elizabeth. His route was blocked and he was arrested and executed for treason in February 1601.
- The failed rebellion showed that despite Elizabeth's problems, loyalty to the Queen remained firm.

Name:

Religious Settlement & Puritan Threat

Key terms

Puritan	An extreme Protestant who believed that churches should be plain and that prayer and Bible readings should be a solemn activity undertaken every day.
Surplice	A white gown worn by priests in the Church of England.
Presbyterian	A Protestant Church that believes bishops should be replaced by elders.
Clergy	Members of a religious order, e.g. priests.
Prophesying	A meeting of Protestant clergy which usually involves criticism of the English Church under Elizabeth.
Separatist	Someone who wants to break away from the mainstream.

Catholic and Protestant beliefs and practices

Catholic beliefs and practices	- The Pope is head of the Church. - Bible and church services are in Latin. - Priests should not marry. - High decorated churches. - Bread and wine transform into body and blood of Jesus (transubstantiation). - Priests are ordinary people's link with God.
Protestant beliefs and practices	- The monarch is the head of the Church. - Bible and church services are in English. - Priests can marry. - Plain churches. - Bread and wine represent the body and blood. - Ordinary people connect to God through.
Both	- God created the world. - Jesus was God's son. - Those who challenge the true faith must be punished.

Key Puritan figures

Sir Francis Walsingham	The queen's senior minister and spymaster. He largely kept his religious views to himself, aware they might make him unpopular.
Robert Dudley	A privy councillor and seen as a potential husband for Elizabeth. He was unwilling to put his position at risk by openly challenging the Church.
Peter Wentworth and Anthony Cope	Presbyterian MPs who tried to bring change to the Church by introducing bills to Parliament, however, they did not gain much support from other MPs.

Key questions: Elizabeth's religious settlement

Why was religion a big issue for Elizabeth?

- The Reformation during Henry VIII's reign had officially made the country Protestant but very little changed until Edward VI's reign. During these six years there were drastic changes, including the introduction of the Book of Common Prayer which firmly established a more Protestant approach.
- Mary I spent five years returning the country to the Catholic faith. Almost 300 Protestants were burned alive.
- Elizabeth was a Protestant but she was also practical. She set about a compromise to bring aspects of both faiths together in a 'religious settlement'.

What was Elizabeth's religious settlement?

- Priests were allowed to marry.
- Services were all in English and followed the Protestant Book of Common Prayer.
- She declared herself 'governor' rather than 'head' of the Church.
- Catholics could worship in their own way in private.
- A moderate Protestant, Matthew Parker, was appointed Archbishop of Canterbury.

Exam questions:

- Explain what was important about Elizabeth's religious settlement. (8 marks)
- Write an account of Puritanism during the reign of Elizabeth I. (8 marks)

Key questions: Puritan threat

Who were the Puritans?

- Puritans were Protestants who were unwilling to compromise in how their faith was practiced. They argued for the removal of all Catholic elements from the English Church.
- Some Puritans were appointed as bishops by Elizabeth, though some argued over their robes. By 1568, most of them had agreed to wear the white gown or surplice required by the Church of England during services.
- A small group, known as Presbyterians, questioned Elizabeth's religious settlement and the need for bishops.

How much of a threat were the Puritans?

- In the 1570s, they held popular meetings, called prophesyings, to discuss the Bible. There was often criticism of the queen at these meetings.
- Edmund Grindal, the Archbishop of Canterbury encouraged prophesyings and was suspended by Elizabeth.
- In 1580, John Field, a prominent and very strict Puritan was banned from preaching.
- The leaders of a new separatist church founded in London in 1593, Henry Barrow and John Greenwood, were hanged.

How did Elizabeth and her government deal with Puritans?

- When Grindal died in 1583, Elizabeth replaced him as Archbishop with John Whitgift, who took a tough stance against Puritans. With this key appointment, and the deaths of Dudley and Walsingham, Elizabeth began to crack down on Puritanism.
- These measures included:
 - ⇒ New rules banning unlicensed preaching and forcing church attendance with recusancy fines.
 - ⇒ A new High Commission with the power to fine and imprison Puritans who refused to follow the rules.
 - ⇒ The dismissal or imprisonment of hundred of clergyman.
 - ⇒ The punishment of printers for spreading the Puritan message.
 - ⇒ A crackdown on high profile Puritans, like Anthony Cope, who was imprisoned in the Tower of London.

Name:

The Catholic Threat

Key terms	
Recusancy	When a person refused to attend services of the Church of England.
Papal Bull	Special message issued by the Pope.
Excommunicate	Officially remove from the Catholic Church by order of the Pope.
Seminary	A training college for priests.
Missionary	Someone whose aim is to spread their religious faith.
Counter-Reformation	The reform of the Catholic Church in Rome in the sixteenth and seventeenth centuries, in response to the Protestant Reformation.
Rosary Beads	An item used by Catholics during prayer.

Key figures	
Pope Pius V	Pope between 1566 and 1572. He issued a papal bull in 1570 in which he excommunicated Elizabeth from the Catholic Church.
Cardinal William Allen	An English Catholic who was made a Cardinal on the recommendation of King Philip II of Spain in 1581. He was a key figure in the Pope's plan to return Catholicism to England. He was involved in the Throckmorton Plot and the Spanish Armada.
Edmund Campion	He became a scholar at Oxford University during Mary I's reign. As his Catholic views became known and less acceptable, Campion left England. He travelled alone and by foot to Rome to join the Jesuits in 1573.

Exam question:

Write an account of how Elizabeth's policy towards Catholicism changed in the 1580s. (8 marks)

Key plots and rebellions	
Northern Rebellion, 1569	Inspired by Elizabeth's refusal to allow the Duke of Norfolk to marry her Catholic cousin Mary, Queen of Scots, two northern nobles led a rebellion against Elizabeth. *See Knowledge Organiser on rebellions for more detail.
Ridolfi Plot, 1571	A plot led by an Italian named Ridolfi which would involve a second northern rebellion and an invasion of foreign Catholics. *See Knowledge Organiser on rebellions for more detail.
Throckmorton Plot, 1583	Led by Sir Francis Throckmorton. The plan was to assassinate Elizabeth and replace her with Mary, Queen of Scots. There would be an uprising of English Catholics and a French invasion. The Spanish Ambassador was also involved. The plot failed and Throckmorton was executed.
Babington Plot, 1586	Led by Anthony Babington. The plan was to murder Elizabeth and replace her with Mary, Queen of Scots. The plot's discovery led to the trial and execution of Mary.

New laws introduced by Elizabeth	
1571	Recusancy fines for Catholics who did not take part in Protestant services. They could be fined or have property taken away. However, the rich could afford to pay them. It became illegal to own any Catholic items such as rosary beads.
1581	Recusancy fines were increased to £20—more than most could afford; this law was strictly enforced, it became high treason to convert to Catholicism.
1585	Any Catholic priest who had been ordained (made a priest) after 1559 was considered a traitor and he, and anyone protecting him, faced death. It became legal to kill anyone who attempted to assassinate the queen.
1593	The 'statute of confinement' - Catholics could not travel more than five miles from home without permission from the authorities.

Key questions
<u>What was the papal bull and how did Elizabeth respond to it?</u> - On 27 April 1570, Pope Pius V issued a papal bull. In this message, he excommunicated Elizabeth from the Catholic Church and called on Catholics to end her rule. - English Catholics were faced with the dilemma of whether to be loyal to their queen or the Pope. - Plots after the papal bull showed that Elizabeth could no longer rely on the loyalty of all her Catholic subjects. New laws were introduced to try to disrupt Catholic activities and show that challenges to the queen's rule would not be tolerated.
<u>Who were the Jesuits?</u> - The Society of Jesus was created in 1540. Its members were known as Jesuits and they were part of the Counter-Reformation. Their aim was to convert the Protestant population to the Catholic faith. - Jesuit priests were seen as a threat to Elizabeth so the 1585 Act against Jesuits and Seminary Priests called for all Jesuits to be driven out of England and many were executed. - Although the Protestant faith was now widespread across Europe, the two most powerful countries, Spain and France, remained firmly Catholic. War was avoided but France and Spain supported the Jesuit missionaries and also gave financial support to those who wanted to get rid of the queen.
<u>What threat did Campion pose?</u> - In 1580, the Jesuits began a mission to England with two exiled Englishmen, Robert Parson and Edmund Campion, being chosen to lead it. - On arrival in England on 24 June, Campion, disguised as a jewel merchant, began to preach to the ordinary English people. He travelled the country spreading his message. News of his presence reached the authorities and he became a wanted man. - Campion was arrested on 14 July in Berkshire and taken to the Tower of London. Under questioning, Campion maintained he didn't want to overthrow the queen. He was held for four months and tortured several times on the rack. - He was found guilty of treason on 20 November 1581 and he was then hung, drawn and quartered on 1 December.

Name:

Mary Queen of Scots

Mary, Queen of Scots: a profile

- Mary, Queen of Scots, was Elizabeth's cousin. Her grandmother was Henry VIII's sister.
- Mary was a Catholic and posed a threat to Elizabeth. She became Queen of Scotland at only 8 days old and married the heir to the French throne in 1558. She was briefly queen of two countries.
- As Elizabeth had no children, Mary was also heir to the throne of England and some believed she was the rightful queen.
- After her husband's death, she returned to Scotland but became increasingly unpopular. Scotland had become increasingly Protestant in her absence.
- In 1567, having been accused of the murder of her second husband, Lord Darnley, Mary was forced to abdicate and fled to England. Her young son, James, was crowned King of Scotland in her place.



Key terms

Abdicate	To give up the throne.
Regicide	Killing of a monarch.
Martyr	Someone who dies for his or her religious beliefs.

Exam question:

- Write an account of the ways in which the Babington Plot affected Elizabeth's policy towards Mary, Queen of Scots. (8 marks)
- Explain what was important about the execution of Mary, Queen of Scots, for Elizabethan England. (8 marks)

Key questions

Why was Mary, Queen of Scots, a threat to peace?

- Many English Protestants reacted to Mary's arrival in England with shock and fear. They saw a potential Catholic queen and a possible return to the horrors of Mary I's reign.
- Parliament saw Mary as a threat to security. A number of Elizabeth's advisors in the Privy Council immediately called for Mary's execution but Elizabeth was hesitant.
- Mary was moved around the country as Elizabeth's prisoner for 19 years. She was treated well.
- There is not much evidence to suggest that Mary was directly involved in many plots to overthrow Elizabeth but it is clear that she was an inspiration to Catholic plotters and rebels.

What was the Babington Plot?

- In 1586, a rich young Catholic, named Anthony Babington planned to kill Elizabeth, rescue Mary and place her on the throne.
- Babington needed to know if Mary supported his plan. He managed to get Mary's servants to hide coded messages within beer barrels. The messages reached Mary and she replied, giving her backing.
- However, the servants were spies for Sir Francis Walsingham, Elizabeth's spymaster. The original message and Mary's reply were decoded and taken straight to Elizabeth.
- With such clear evidence, Elizabeth had little choice but to act. Although still hesitant, she ordered that Mary should go on trial for treason.

Historic environment: Hardwick Hall

- Mary, Queen of Scots spent time imprisoned under the care of the Earl of Shrewsbury. He was the fourth husband of Bess of Hardwick.
- The Earl of Shrewsbury had to pay for her house arrest in the various places she was consigned to.
- Hardwick Hall offers visitors a glimpse of the life that Mary would have experienced.



Elizabeth's treatment of Mary, Queen of Scots

The trial

- In October 1586, Mary was put on trial before a court of 36 noblemen including Sir Francis Walsingham and Sir William Cecil, two of Elizabeth's closest advisors.
- Mary defended herself strongly. She criticised the fact that she had not been allowed to see evidence against her and claimed that as she was not English, she could not be guilty of treason.
- She was found guilty and sentenced to death on 25 October.

The execution

- Elizabeth was reluctant to sign Mary's death warrant. She feared that executing a fellow monarch (regicide) might inspire her enemies, or that Mary's son James might want revenge.
- She even told the French ambassador that she had been in tears over the 'unfortunate affair'.
- She was also concerned about the reaction of the Catholic powers: France and Spain.
- Despite this, she signed the death warrant on 1 February 1587.
- Mary was executed, in private, seven days later. The Earls of Shrewsbury and Kent were the official witnesses.
- Elizabeth was said to have been angry about the execution and had the privy councillor who delivered the death warrant briefly executed.

The impact

- Without Mary, Catholics had no clear alternative monarch. The new heir to the English throne was Mary's son James - a Protestant.
- Even in death, Mary remained an important figure. Mary saw her as a martyr to her faith and her execution as proof that Elizabeth was a wicked heretic.
- Elizabeth's concern about the reaction abroad was unwarranted. There was outrage but no action from France and Spain. King James of Scotland accepted Elizabeth's apology for the death of his mother.

Name:

Conflict with Spain

Key terms

Iconoclasm	The destruction of religious images and sculptures.
Fireship	Unmanned ship filled with burning material.
Line of battle	A naval tactic used in battle; ships line up to create a long wall of cannon fire.
Propaganda	Something that spreads a message in order to encourage people to think or behave in a particular way.

Naval warfare

Fleet	Henry VIII spent a fortune building a huge navy to protect England. Before 1500, ships had simply been a way to get to battle, but Tudor ships were designed to fight. During Elizabeth's reign, under the command of John Hawkins, England's navy continued to grow.
Tactics	When full scale battles were fought, a tactic called line of battle was sometimes used. Ships formed into a single line and fired together on the enemy. Raids were a common form of attack. They took enemy ports by surprise and destroyed as many ships as possible before the enemy had chance to fight back. Fireships were an effective tactic. An old ship would be set alight and sent into the middle of the enemy fleet.
Technology	A new type of triangular sail, a lateen, allowed for much faster travel and new ships allowed for greater speed and manoeuvrability. New, more powerful, cannons meant it was now possible to fire at enemy ships from a distance. New inventions like the astrolabe allowed for greater accuracy when planning voyages and working out locations.

Exam question:

- Write an account of the growing conflict between England and Spain from 1568 to 1587. (8 marks)
- Write an account of the failure of the Spanish attempt to invade England in 1588. (8 marks)

Reasons for conflict

Issue of marriage	King Philip of Spain had been married to Elizabeth's sister, Mary I. During this time, he had been joint monarch of England their plan was to have a child to unite Spain and England but this never happened. Philip proposed to Elizabeth in 1559, but she kept him waiting for an answer. As it became clear the marriage wouldn't happen, tensions grew.
Papal bull	In 1570, the Pope excommunicated Elizabeth and called for all Catholics to challenge her rule. As a Catholic, Philip was keen to follow the Pope's instructions.
Religious differences	Elizabeth had returned England to Protestant faith after the Catholic years of Mary I. Spain had remained Catholic throughout the Reformation. Such opposing religious ideas led to conflict.
Actions of sailors	Sir Francis Drake and other English sailors had spent years raiding Spanish ports and ships, and stealing treasures from Spanish colonies in South America and closer to home. Elizabeth encouraged these acts by granting licences in exchange for sharing the treasures with the country.
The Netherlands	As well as Spain, Philip also ruled the Netherlands. In 1566, there was a Protestant uprising in the country. Philip sent troops to restore order but this led to even greater resistance. Although she wanted to avoid war with Spain, Elizabeth agreed to send money to support the Protestants and allowed English volunteers to go and help in the fight. She also let rebel ships use English ports. All of this angered Philip greatly. William of Orange, the Dutch rebel leader was assassinated in 1584. In December 1585, Elizabeth agreed to send English troops to support her fellow Protestants. It was a clear act of war against Spain.



Key questions: The Spanish Armada

What was Philip's plan and what happened?

- In 1588, Philip II of Spain launched his great Armada: 151 ships, 7000 sailors and 34,000 soldiers. They would sail to the Netherlands and collect more men before invading England. They would sail in an unbreakable crescent formation. Philip was confident of defeating the English navy.
- By 6 August, the Armada was anchored off the Dutch coast. They were delayed waiting for more soldiers to arrive. At this moment, the English, commanded by Drake, chose to strike. On 7 August, 8 fireships were sent into the Spanish fleet causing mass panic and plunging the Spanish into chaos.
- On 8 August the Battle of Gravelines began. The English fire constantly from a distance of 100 metres. The Spanish ships were badly damaged and tried to retreat. The English gave chase.
- A great storm blew the Armada off course. Many ships were wrecked and only 65 of the 151 ships returned to Spain.

How was the Spanish Armada defeated?

- English tactics: the fireships broke the formation of the fleet and made individual ships vulnerable to attack. The English had faster ships and more experienced and skilled commanders.
- The weather: storms caused destruction to the Spanish fleet. It delayed their return to Spain. Many sailors became too sick to sail.
- Spanish mistakes: Spanish ships were not designed for the harsh conditions of the English Channel and the North Sea. They were delayed in the Netherlands because the soldiers were not ready. Their weapons were mostly for land use and the commander of the fleet was inexperienced.

What made the defeat so significant?

- It proved that England was a major naval power.
- However, invasion remained a concern and Philip quickly began planning a second attempt, but he never actually tried again.
- The Armada had brought England together. Under threat of foreign invasion, most Catholics had declared their total loyalty to Elizabeth. It made Elizabeth even more popular and respected as a leader, and helped boost the ideas of the 'Golden Age'.

Name:

Golden Age

Key figures

William Shakespeare	The most celebrated playwright of all time. Shakespeare was the principal writer for the Lord Chamberlain's men, a theatre company. He wrote 38 plays including Romeo and Juliet, Julius Caesar and Twelfth Night.
Richard Burbage	One of the most celebrated actors of the Elizabethan period. As a leading member of the Lord Chamberlain's Men, he was the first to play many famous roles including Hamlet and King Lear.

Key terms

Great Chain of Being	Elizabethan society was based on the Great Chain of Being. God is at the top, followed by his angels. Human beings are beneath, followed by animals and plants. There were subdivisions of humans: the monarch at the top.
Nobility	Most powerful and usually wealthiest; held titles that were passed from father to son; held the most senior positions.
Gentry	Often wealthy landowners; held important positions like JP; might be richer than some nobles but still below them in society.
Peasantry	The poorest members of society; worked as farm labourers; often struggled for work and the rising population made this even more of an issue.
Patron	Someone who funds the work of an artist or performing group.
Renaissance	The revival (rebirth) of European art and literature. It impacted Elizabethan England.
Pit	Where the ordinary people stood in the theatre to watch the performance.
Gloriana	The Elizabethan age was known as 'Gloriana' and was achieved through plays and festivals.

Elizabethan accomplishments

Buildings	The Elizabethans built many of the stately homes that still stand today, for example, Hardwick Hall. These houses were built to impress the queen and other nobles.
Art	Portraits became very popular and were much more than just representations of the sitters. They often included a lot of symbolism, for example, Elizabeth was painted with her hand on the globe to show her power.
Theatre	Theatre became hugely popular during the Elizabethan era. Many theatres were built and the period produced plays that are still performed and studied today.
Science and technology	There were some significant breakthroughs in navigation and astronomy. There were more effective printing presses allowed ideas to spread faster.
Literature	In addition to plays, poetry became very popular. Shakespeare wrote many sonnets.
Education	Education was seen as increasingly important during Elizabeth's reign. Although still focused on wealthy boys, some girls also received a limited education.
Exploration	Europeans discovered new lands and peoples, and England began to become a major power at this time.
Peace, power and pride	Before Henry VII became king, England had spent many years in chaos with different men claiming the throne. Elizabeth's long reign established peace and order, while military success and the country's growing wealth also made people proud to be English.

Key questions

Was it really a 'golden age'?

- The phrase 'golden age' is used to describe a time of great achievement. There is certainly no doubt that the Elizabethan era saw new ideas and accomplishments.
- However, some argue it is a myth and England was the same brutal place. Blood sports continued to be popular, and the population remained very much divided. A small minority were rich but more people were very poor.
- Life expectancy was low and illnesses that would not kill us today were lethal.

What was it like to be wealthy in Elizabethan England?

- Two groups made up the wealthier members of Elizabethan society: the nobility and the gentry.
- The highest noble title was duke and their average income was £6000 per year (equivalent to about £1 million today).
- The gentry were the landlords of the countryside. They lived off the rents of their tenants and could earn up to £200 per year (£34,000 today).
- Rich Elizabethans were proud to show off their wealth and often built fine houses.
- The richest often held banquets and fashion was important. Women whitened their faces and men and women wore a ruff around their neck.

How were theatres transformed in the Elizabethan period?

- From 1572 actors had to be licensed and this led to actors forming companies to perform in purpose-built theatres, the first to open in 1575/76.
- The Globe Theatre opened in 1599 where Shakespeare made his name.
- Theatre became very popular. It was exciting and a social event. Prices varied so everyone could afford to go. The rich sat in tiered galleries which had roofs. In the centre was an unroofed pit where the poor stood.
- The Queen never went to the theatre. Actors performed for her at Court.
- London theatres faced opposition: some saw it as sinful, Puritans saw theatregoing as a distraction from prayer, theatres were dangerous places where there was drunkenness, crime and immoral behaviour.

Exam questions:

- Explain what was important about the 'Great Chain of Being' in Elizabethan society. (8 marks)
- Explain what was important about Elizabethan theatre. (8 marks)

Name:



Poverty in Elizabethan England

Key terms

Pauper	The poorest members of society who were unable to find work.
Retinue	A group of advisors or guards (i.e. private armies) accompanying a private person.
Reformation	The split of Protestantism from the Catholic Church. The English Reformation refers to Henry VIII's break with Rome.
Enclosure	An area surrounded by a barrier.
Rack renting	When landlords unfairly increased rents.
Inflation	A currency becoming worth less, shown through rapidly rising prices.
Deserving poor	People who were poor through no fault of their own; the old, the sick or wounded or people who tried hard to find work but were not able to.
Undeserving poor	Dishonest poor people who tried to trick others out of their money.
Almshouse	Charity building set up to provide food and rest for the poor.
House of Correction	Where beggars would be forced to spend the night as punishment.
Flogged	To be whipped, a punishment used for begging and other crimes.
Vagrant	A person without a settled home or work who wanders and lives by begging.

Exam questions:

1. Explain what was important about the problems of poverty in Elizabethan England. (8 marks)
2. Write an account of how the Poor Law system changed under Queen Elizabeth I. (8 marks)

Causes of poverty in Elizabethan England

Population growth	The population of England rose by 43% from 1550 to 1600. There were fewer jobs to go round and increased demand for food in turn increased food prices.
Inflation	Food prices rose more than wages due to rising population and bad harvests. Inflation was made even worse by monopolies and rent-racking.
War	Injured soldiers could not work. War also disrupted trade which added to inflation.
Bad harvests	Led to food shortages. This pushed up prices, especially in the 1590s. Some faced the threat of famine.
Enclosure	Good farming land had been fenced off for sheep grazing. Sheep farming employed fewer labourers than crop growing so some labourers lost their jobs and lost common land on which they used to graze animals or grow crops to feed their families.
Rents	Landowners increased rents paid by the poor. This was known as rent-racking.
Closure of monasteries	Monasteries had previously helped the poor when they hit hard times but they had all been closed by Henry VIII.

Types of poor in Elizabethan England

Helpless poor	The sick and old who were provided with food to live on and placed in special home where they were cared for.
Able-bodied poor	Those who were considered fit, including children, were expected to work. They were given food and drink as payment.
Idle poor	Those who were seen as lazy were whipped and then sent to a House of Correction where they would be forced to

Key questions

How had the Tudors attempted to deal with poverty?

- Henry VIII and Edward VI passed laws to try to deal with poverty, but not only did the problem remain, it grew more serious.
- From 1495 beggars were punished in the stocks or sent back to their home towns.
- From 1531 beggars were publicly whipped, those caught a second time would have a hole burned in their ear and a third offence would mean they were hanged.
- The 1576 'Act for settling the poor on work' placed the responsibility on local authorities.

How did different towns and cities deal with poverty?

- **London:** Bridewell Palace was used as a shelter for the homeless. Bedlam hospital was built to house the mentally ill. Other hospitals were opened for the sick and orphans but conditions were poor as institutions couldn't cope with the growing numbers coming to the city.
- **York:** In 1515, the city authority issued beggar licences. From 1528 a Master Beggar was appointed to keep order.
- **Ipswich:** Introduced a licensing system for beggars from 1569. Opened a hospital for the sick and old.
- **Norwich:** After a survey shows 80% of the population lived in poverty, the authorities separated the poor into the 'idle poor' and 'unfortunate poor'.

How effective were the Poor Laws?

- In 1601, the first ever Poor Law was introduced. It stated that:
 - ⇒ The wealthy should be taxed to pay for the care of the sick and old.
 - ⇒ Fit and healthy paupers should be given work.
 - ⇒ Those who refused work should be dealt with harshly.
- The poor were categorised into three groups (see 'Types of poor...')
- Over the following few years instances of begging did seem to decrease but this may have been as much due to the threat of the House of Correction as the increased help available.
- Some historians argue the law was unsuccessful because it made each area responsible for its own paupers and some were passed from place to place.

Name:

Exploration and Discovery

Key terms

Circumnavigate	To travel all the way around something, for example, the world.
Privateer	A ship's captain with royal permission to attack foreign ships.
Lateen	A triangular sail that was invented in the sixteenth century; it allowed ships to move much more quickly.
Astrolabe	A navigation tool that allowed for much more accuracy at sea.
Colony	Land controlled by another country.

Key figures

Francis Drake (c1540-96)	He became an English hero although the Spanish saw him as a pirate. He circumnavigated the globe, although he didn't set out to do so. When he returned he carried a huge amount of gold. In 1588, he led the successful defeat of the Spanish Armada.
John Hawkins (1532-95)	He was a key figure in Elizabeth's court and was responsible for building up the Royal Navy. He played a major role in defeating the Spanish Armada. He was also a successful privateer. From 1562, he became involved in the African slave trade.
Sir Walter Raleigh (1552-1618)	He was very loyal to Elizabeth and spent years in Ireland fighting Catholic rebels. He embarked on voyages to South America in search of the legendary city of gold: El Dorado. He funded an attempt to establish a colony in North America.

Exam questions:

1. Explain what was important about voyages of discovery in the reign of Elizabeth I. (8 marks)
2. Write an account of Francis Drake's achievements during his circumnavigation. (8 marks)

What was the impact of voyages?

Wealth	Exploration allowed England to gain wealth in several ways: • Raiding Spanish ships and ports allowed riches to be stolen and brought back to England. • Trading systems were established from which England's wealth grew. For example, trade with the East in spices and the East India Company was established in 1600 to oversee trade in India and the Far East. • Trade in African slaves brought significant wealth to individuals and England as a whole.
Power	Naval power had been growing under Elizabeth and was able to hold its own in any sea battle. Improved weapons and tactics, and the skilled command of men like Francis Drake, played a key role. English victory over the Spanish Armada showed the dominant position of England.
Territory	England was not the first country to build colonies in newly discovered lands, and there were several failed attempts. But perseverance led to increasing numbers of colonies, particularly in North America, being established in the name of Elizabeth and her successors.
Slave trade	Hawkins was responsible for building up the navy and in 1564, he kidnapped several hundred West Africans and sold them in South America. This was not the first example of the European slave trade, but it was the first time the process had been carried out by an Englishman.



Francis Drake



John Hawkins



Sir Walter Raleigh

Key questions

Why is the Elizabethan period referred to as the 'age of discovery'?

- The Elizabethan period was a time of great discovery and exploration.
- At the forefront of exploration was Francis Drake, who circumnavigated the world between 1577 and 1580.
- The main reason for this increase in exploration was new technology. Ships built at this time were of higher quality, with new lateen sails making them faster and easier to steer.
- Improved defences and weapons made sailing through hostile waters much safer and advances in navigation played a significant role. The astrolabe allowed sailors to judge how far north or south they were.

How did voyages make England rich and powerful?

- Before Elizabeth's reign, the majority of trade was with European countries.
- The English were keen to find direct routes to India and the Far East in order to raise their own profits.
- Companies began to be established with the purpose of trading in particular areas. For example, the Muscovy Company was created in 1555 and given the monopoly of trade with the city of Moscow in Russia.
- In 1582, the queen sent Ralph Fitch to India and he returned saying profitable trade was more possible. In 1600 the East India Company was established to oversee this trade.
- England's involvement in the slave trade also grew. Demand grew for slaves to work the land in the Americas and produce materials to be returned to England.

Raleigh's New World: what was this?

- Raleigh was given royal permission to explore the Americas—the New World—in 1584. He would be allowed to colonise any land that was not ruled by a Christian.
- In return, he had to give the queen one fifth of all the gold and silver he found there.
- He did not sail himself, but sent others to explore and establish colonies.
- A colony was established in Roanoke but did not last. In 1587, a second was created but also failed.

Name:

GCSE Media – Audiences

KEY TERMINOLOGY:

Mass audience: large group of people, not individualised.

Specialised audience: smaller/narrower group, defined by factors such as age, socio-economic group or interests.

Target audience: the specific group of people that a media product is aimed at.

Consumption: how a media product is used or experienced by an audience e.g. watched/ listened to/ played etc.

Response: how audiences react to a particular product.

Active audience: selects media to consume for a purpose, interprets/ responds to/ interacts with media products.

Passive audience: not active, e.g. accepts messages in media products without question.

KEY CONTENT:

How and why media products are aimed at a range of audiences, for example:

Small, specialised audiences: producers can target a very specific group to try to guarantee an audience for the product e.g. a specialist magazine might target people with an interest in gardening or heavy metal music.

Large, mass audiences: producers can reach more people, and possibly make more profit, by appealing to a mass audience. These products might include, for example, popular or 'universal' themes/ ideas, or include representations of different social groups to appeal to a wide range of people.

 **Apply it...** identify which of the set products are aimed at a mass audience and which are more specialised.

KEY CONTENT:

How media organisations categorise audiences:

Media producers categorise audiences in order to target their products more effectively. They often use a combination of demographic categories (e.g. age, ethnicity, gender, socio-economic group) and psychographic factors (e.g. interests, lifestyle and values).

The ways in which media organisations target audiences through marketing:

Marketing is very important in appealing to and reaching the target audience for a product. Increasingly, digital technologies and social media platforms are used to target audiences. Media organisations might make **assumptions** about the target audience, e.g. that people in a certain age group and income bracket might share similar values/beliefs that are conveyed in the marketing.

 **Apply it...** select one of the set products you have studied and research the marketing materials. Make notes on the ways in which these target the intended audience.

WHERE WILL I NEED TO STUDY/ APPLY AUDIENCES?

COMPONENT 1: Section B

Question 4 will assess knowledge and understanding of audiences in one of the forms studied: newspapers, radio or video games.

COMPONENT 2: Section A

Question 2 will assess knowledge and understanding of media industries, audiences or media contexts in relation to the television topic studied.

COMPONENT 2: Section B

Question 4 will assess knowledge and understanding of media industries, audiences or media contexts in relation to the music videos and online media products studied.

COMPONENT 3

Learners need to apply knowledge and understanding by creating a media production for an intended audience.

KEY CONTENT:

The ways in which audiences may interpret the same media products very differently:

Media products are polysemic (communicate multiple meanings), so different people are likely to find different meanings in the same text.

These differences may reflect both social and individual differences, e.g. the time/ place in which a product is consumed; a person's age, upbringing, education, where they live, their values and beliefs etc. E.g. *audiences might have very different interpretations of the confrontation between Luther and Madsen in the set episode of Luther.*

 **Apply it...** choose a set product and consider how different audiences (e.g. older and younger age groups, or people who live in different countries) might interpret it in different ways.

KEY CONTENT:

The social, cultural and political significance of media products, including:

The themes or issues they address: media products often explore topics of current interest and importance, e.g. social issues relating to health or the environment, or political issues such as Brexit.

The fulfilment of needs and desires, e.g. for information, entertainment, artistic inspiration, sense of identity etc.

The functions they serve in everyday life and society:

The media fulfil many roles in society, e.g. reporting news/ factual information, discussing/ debating important issues, exploring aspects of human experience, providing entertainment and popular culture.

 **Apply it...** identify the key themes and issues that are addressed in some of the set products you have studied. Think about how these themes reflect current social or political issues.

THEORETICAL PERSPECTIVES AND CONTEXTS:

Active and passive audiences:

In the past, audiences were assumed to be passive, with the potential to be negatively affected by media products (e.g. if the product contained violence). More recent theories argue that individuals actively choose, engage, respond to and interact with products.

Audience response and interpretation:

how audiences react to media products, e.g. they might respond in the way the producer intended (e.g. by agreeing with the viewpoints in a product), or question/ disagree with the intended meaning.

 **Apply it...** consider how these ideas apply to the set products you have studied, e.g. through examples of audience interaction or actual responses.

Blumler and Katz's Uses and Gratifications theory:

States that audiences actively select media products to fulfil particular needs, or pleasures:

Information: to find out about the world.

Entertainment: pleasure of diversion/ escapism.

Personal identity: they can relate to the characters/ situations/ values and beliefs in a product.

Social interaction: pleasure of discussing products with others.

 **Apply it...** consider how the Uses and Gratifications theory applies to all the products you have studied.

Other perspectives, e.g. Stuart Hall's Reception Theory (preferred, negotiated, oppositional readings) or the Effects Debate, may also be studied.

CONTEXTS: Historical, Social, Cultural, Political:

How products reflect the context in which they were made in terms of audience consumption.

How audience responses to/ interpretations of media products may change over time.

APPLYING AUDIENCES: PRACTICAL TASKS

- Research task:** look at a range of magazine covers (e.g. online). Identify the target audience for each and make notes on the methods used to appeal to this group.
- Imagine you are creating a **magazine** in a genre of your choice for a young adult audience. Think of a title, a strapline and a topic for a feature article that would appeal to this audience. Consider how you would need to change your ideas if you wanted to appeal to an older audience.

KEY TERMINOLOGY:

- Conglomerate:** a very large organisation that owns different types of media company, e.g. Comcast or NewsCorp.
- Diversification:** where a media company moves from producing one type of product to creating different media forms (e.g. a TV company moving into film production).
- Vertical Integration:** where one organisation owns more than one stage of the industrial process (production, distribution and circulation) of media product creation.
- Convergence:** making a product available across different platforms, in order to reach different audiences e.g. newspaper content is usually available in print form, on a website, via a digital app, on social media platforms etc.
- Government funded:** a product that is financed by government money, e.g. a public health campaign.
- Not for profit:** products that are made for a reason other than to make money e.g. the BBC is funded by the licence fee and its programmes need to fulfil a public service remit.
- Commercial model:** companies producing products in order to make a profit, often funded by advertising.
- Regulation:** the monitoring/ control of media industries by independent organisations such as Ofcom and IPSO.

KEY CONTENT:

- The nature of media production, including by large organisations, and by individuals and groups:**
- Media products vary in the way they are produced, e.g. some are large scale productions (often high budget, mainstream) by large media organisations, while others are smaller productions (often lower budget, targeting specialised audiences) by independent companies or individuals.
-  **Apply it...** identify the companies involved in producing the set products; consider which are large organisations and which are smaller, independent companies.

KEY CONTENT:

- The effect of ownership and control of media organisations, including:**
- Conglomerate ownership:** these organisations have huge financial resources and a lot of power, e.g. they can control the messages communicated in many areas of the media.
- Diversification:** companies branch into different types of media to increase their chances of success / audience reach.
- Vertical integration:** these companies can control every stage and ensure that their products reach the audience.
-  **Apply it...** identify how one set product, produced by a media conglomerate, has been impacted by its ownership, e.g. in the budget/ production values or messages conveyed.

WHERE WILL I NEED TO STUDY/ APPLY MEDIA INDUSTRIES?

- COMPONENT 1: Section B**
- Question 3 will assess knowledge and understanding of media industries in one of the forms studied:** newspapers, radio, film or video games
- COMPONENT 2: Section A**
- Question 2 will assess knowledge and understanding of media industries, audiences or media contexts in relation to the television topic studied.**
- COMPONENT 2: Section B**
- Question 4 will assess knowledge and understanding of media industries, audiences or media contexts in relation to the music videos and online media products studied.**
- COMPONENT 3**
- Media industries are not assessed in Component 3.

KEY CONTENT:

- The impact of the increasingly convergent nature of media industries across different platforms** which enable organisations to construct/reinforce a brand identity and maximise audience reach e.g. a film marketing campaign including posters, trailers, social media/ viral content and a website, where all of the different elements converge (especially in established franchises such as Bond).
- Different national settings:**
- Many organisations operate on a global scale, distributing their products in many different countries, although elements such as the marketing might vary in each country.
-  **Apply it...** note examples of convergence in relation to the set products, e.g. how the products are made available on different platforms.
- E.g. The Spectre poster uses digital technology to construct an enigmatic layered main image in contrast to the montage of drawn images depicting narrative scenes in the historical poster.*

KEY CONTENT:

- The functions and types of regulation of the media:**
- Regulation varies across different industries in the UK, but usually aims to protect people (especially children/ young people) from unsuitable, inaccurate or harmful media content.
- Types of regulation include: establishing standards ('Code of Practice'); providing age ratings for a product and monitoring organisations to ensure they follow guidelines.
- The challenges for media regulation presented by 'new' digital technologies:**
- The internet is very difficult to regulate as vast numbers of people can generate content. Some media products online are regulated by other industry bodies (e.g. the BBFC age rates some music videos). There is ongoing debate about how to regulate online and social media—but much of the internet remains unregulated.
-  **Apply it...** identify references to other texts in the set products you have studied and think about how these communicate meanings.

CONTEXTS: Historical, Social, Cultural, Political:

- How a product reflects the contexts in which it was made through aspects of its production, distribution, marketing, regulation, circulation and audience consumption.
- E.g. The contemporary music artists reflect current cultural contexts in terms of the use of digital platforms and social media to market and distribute their products.*
- How a product reflects the political contexts in which it was made through aspects of its ownership and political viewpoints.
- E.g. Newspapers are likely to reflect the political leaning of the organisations that produce them, in terms of the way in which they construct representations of issues and events, and versions of reality.*
-  **Apply it...** find examples of how the set products reflect their contexts in the ways they are produced, distributed and marketed.

KEY CONTENT:

- The impact on the final product of:**
- Production processes:** these will depend on the industry, but most involve content creation (filming, photography, written copy), editing etc. to construct the media product.
- Personnel:** the importance of key people; e.g. TV directors, journalists, designers, stars often have a signature 'style', or explore certain themes/ issues in their work. They might also attract an audience due to their past success/ status.
- Technologies** have a significant impact on media products and enable organisations to create exciting and cutting edge products that are likely to appeal to audiences e.g. CGI and special effects are important in many music videos and TV programmes, while video games use techniques such as augmented reality to engage users.
-  **Apply it...** select two different set products (e.g. a newspaper and a music video) and find out how they were produced e.g. the production processes (such as where, when and how the content was created), the people involved in production and the technologies that were used.

GCSE Media – Media Language

KEY TERMINOLOGY:

Denotation: actual/literal meaning e.g. a candle.

Connotation: deeper meanings e.g. a candle might connote hope or light, or have religious connotations.

Codes and conventions: the elements of media

language that usually occur in particular forms

(e.g. magazines or adverts) or genres (e.g. sitcom).

Narrative: how stories are structured and communicated.

Genre: the type or category of product (e.g. crime, sitcom).

Intertextuality: where a media product refers to another text to communicate meaning to the audience.

KEY CONTENT:

The various forms of media language used to create and communicate meanings in media products, for example:

Visual codes: elements that relate to the look of a product, e.g. mise-en-scène, colour palette, layout and design.

Technical codes: e.g. camera shots/ angles, editing.

Audio codes: e.g. non-diegetic music, effects, dialogue.

Language codes: written or spoken words.

 **Apply it...** analyse how these elements of media language are used in the set products e.g. *the red, white and black colour palette on the set GQ cover connotes masculine strength and power to appeal to the target audience.*

KEY CONTENT:

How choice (selection, combination and exclusion) of elements of media language influences meaning in media products, for example:

- How the selection and combination of camera shots **creates narrative** in the *set television episodes* or *music videos*.
- How the written text anchors meanings in the images on the *set newspaper front pages* to **portray aspects of reality**
- What has been excluded from the *set print advertisements*—and how the **point of view** might be different if alternative elements had been included.
- How the combination of design elements, images and cover lines **conveys messages and values** on the *set magazine front covers*.

 **Apply it...** analyse how the choices producers make about media language communicates meanings in the set products.

E.g. *the combination of images and headline on the front page of The Sun (for assessment from 2021) conveys patriotic values and communicates a point of view that MPs should vote for the Brexit Bill. Give examples to support this point.*

WHERE WILL I NEED TO STUDY/ APPLY MEDIA LANGUAGE?

COMPONENT 1: Section A

Question 1 will require analysis of one of the set products detailed on Page 11 of the Specification: magazine front covers, newspaper front pages, film posters and print adverts.

COMPONENT 2: Section A

Question 1 will require analysis of media language or representation in an extract from the set television crime drama or sitcom.

COMPONENT 2: Section B

Question 3 will require analysis of media language or representation in the set music products detailed on page 19 of the Specification: music videos and online media.

COMPONENT 3

Learners will be assessed on their ability to use media language to communicate meanings in the production work (Non-Exam Assessment).

KEY CONTENT:

Codes and conventions of media language: how they develop and become established as 'styles' or genres, for example:

How the conventions of a genre (e.g. crime drama or sitcom) have developed and solidified.

How they may vary over time, for example:

How the conventions of a form (e.g. print advertising) have changed, due to new technologies and changing social/ cultural contexts.

 **Apply it...** analyse how the contemporary set print advert, film poster, television programme and music videos show developments from the older/ historical set products you have studied.

E.g. *The Spectre poster uses digital technology to construct an enigmatic layered main image in contrast to the montage of drawn images depicting narrative scenes in the historical poster.*

KEY CONTENT:

Intertextuality, including how inter-relationships between media products can influence meaning:

Several set products use intertextuality, for example the set music videos by Katy Perry and Taylor Swift are constructed as 'mini-films' and show the influence of other texts.

 **Apply it...** identify references to other texts in the set products you have studied and think about how these communicate meanings.

E.g. *Roar includes intertextual references to the well known 1969 film, The Jungle Book, in the use of visual codes and elements of narrative. These familiar references can communicate meanings (e.g. about a human 'taming' the jungle) and create humour.*

THEORETICAL PERSPECTIVES AND CONTEXTS:

GENRE, including:

Principles of repetition and variation: products usually include typical genre conventions that audiences recognise, and also different elements to engage the audience/ keep the genre 'fresh'.

The dynamic nature of genre: genres are not 'set in stone', they change and develop over time.

Hybridity (combining elements of two or more genres in a product) and **intertextuality** provide further variation and offer something 'new' to engage audiences.

 **Apply it...** consider how these ideas apply to the set products you have studied for Component 2.

NARRATIVE theories:

Propp's theory must be studied: the key character types (hero, villain, 'princess', father, donor, helper, dispatcher, false hero) and their role in the stages of the narrative.

 **Apply it...** consider how Propp's character types could apply to the set products you have studied.

Other theories, such as Todorov's theory (equilibrium, disruption, resolution), Levi-Strauss' Binary Oppositions or Barthes' Action and Enigma codes may also be studied.

CONTEXTS: Historical, Social, Cultural, Political:

How the media language in the set products reflects the contexts of production in terms of:

- themes, values, messages, viewpoints
- genres, styles, technologies, media producers.

APPLYING MEDIA LANGUAGE: PRACTICAL TASKS

Art skills not important!

1. Choose a different song by Katy Perry or Taylor Swift: **storyboard 20 shots for a new music video.** Include some performance and narrative to reflect conventions. Think about the range of camera shots and the mise-en-scène to communicate the meanings in the lyrics to your audience.
2. **Design a front cover for a new magazine** in a genre of your choice. Sketch the layout and design, paying close attention to the colour palette, the font style and the main image. Write 5 cover lines, aiming to communicate messages and use language codes.

GCSE Media – Representation

KEY TERMINOLOGY:

Representation: the way in which people, issues and events are depicted in media products.

Mediation: how media producers represent (rather than just present) the world to audiences.

Reality: ‘real life’, actual events, facts and truth - how aspects of reality and versions of reality are constructed.

Stereotype: an exaggerated, oversimplified representation, reducing a social group to a set of common characteristics e.g. grumpy older people or flat cap wearing northerners.

Feminist: supporting equal rights for women (society was traditionally male-dominated but there has been a move towards more equality, especially from the 1960s onwards).

KEY CONTENT:

The choices media producers make about how to represent:

Events: e.g. *how the set newspaper front pages combine images and text to convey information about the issues and events in the main splash (story).*

Social groups: categorised by age, gender and ethnicity.

Ideas: e.g. *how the set magazine front covers communicate ideas about gender/ identity in the use of media language.*

The ways aspects of reality may be represented differently depending on the purposes of the producers:

e.g. newspapers are informative and need to include factual detail, a sitcom might exaggerate/ subvert reality to entertain.

 **Apply it...** select one set product and analyse how the representations of social groups (e.g. different ethnic groups, genders and/ or age groups) have been constructed.

KEY CONTENT:

How and why particular social groups may be under-represented or misrepresented:

Media products often feature representations of powerful social groups (who have traditionally controlled the media). Certain groups (e.g. minority ethnic or LGBTQ people) may be absent, or under/misrepresented (e.g. stereotyped).

How representations convey: viewpoints, messages:

The choices about how to represent a social group will communicate a point of view, e.g. *the set Pride cover conveys positive messages about black female empowerment.*

Representations also convey **values & beliefs**, e.g. *about diversity and human rights in the set video for Freedom.*

 **Apply it...** identify the key messages in one of the set products. Try to find examples from other media texts that reinforce the same point of view.

WHERE WILL I NEED TO STUDY/ APPLY REPRESENTATION?

COMPONENT 1: Section A

Question 2b (extended response) will require comparison of the representations in one of the set products detailed on Page 11 of the Specification with an unseen resource in the same form.

COMPONENT 2: Section A

Question 1 will require analysis of media language or representation in an extract from the set television crime drama or sitcom.

COMPONENT 2: Section B

Question 3 will require analysis of media language or representation in the set music products detailed on page 19 of the Specification: music videos and online media.

COMPONENT 3

Learners will be assessed on their ability to use media language to construct representations in the production (Non-Exam Assessment).

KEY CONTENT:

The different functions and uses of stereotypes, e.g:

- to communicate meanings that audiences will easily recognise, e.g. products such as adverts need to convey a quick, clear message.
- to create humour, e.g. in the set episode of *The IT Crowd*.

Stereotypes become established when a social group (often a minority group) has been categorised repeatedly in the media and becomes recognised by a particular set of attributes.

How they may vary over time: stereotypes alter and develop over time, mainly due to changes in culture and society.

 **Apply it...** identify examples of stereotypes in the set products and think about how and why they are used. Now, try to find examples of representations that challenge stereotypes and consider why the producers might have made this decision.

KEY CONTENT:

How representations reflect the contexts in which they were produced, e.g:

Social: reflecting society at the time/place of production e.g. in terms of issues such as gender or racial equality, or economic prosperity.

Historical: the time/ period in which a product is created, e.g. the 1950s (*Quality Street*), the 1970s (*The Man With the Golden Gun*).

Cultural influences on a product, e.g. current trends or direct references (such as representations of *Countdown* in *The IT Crowd*).

 **Apply it...** analyse how the representations in the set products reflect the time and place in which they were made.

e.g. *the representation of the active female on the This Girl Can poster differs from the passive females in the historical Quality Street advert, as women now have more power and equality in society.*

THEORETICAL PERSPECTIVES AND CONTEXTS:

Representation, including processes of:

Selection: producers choose to include certain elements in a representation (and exclude others); this communicates meanings/ messages.

Construction: representations are ‘built’ by producers, using elements of media language.

Mediation: media producers construct their own ‘version’ of the world that is represented to audiences. We do not see the ‘actual’ world, but a producer’s view of it.

 **Apply it...** consider how these ideas apply to the set products; e.g. how representations are constructed to show a particular point of view.

Gender and representation, including feminist approaches:

Media industries have traditionally been male-dominated, with fewer opportunities for women.

Women have often been under-represented in the media; they also tend to be ‘passive’ in the narrative, and portrayed as ‘objects’ (Mulvey’s Male Gaze theory could also be studied here).

 **Apply it...** find examples of passive/ objectified females in the set products, and of women who are active/ empowered. Consider why these representations have been constructed.

Other perspectives on gender, such as hypermasculinity, may also be studied.

CONTEXTS: Historical, Social, Cultural, Political:

How these are reflected in terms of representations, themes, values, messages and viewpoints.

APPLYING REPRESENTATIONS: PRACTICAL TASK

Art skills not important!

1. Create profiles (written or drawn) for three characters from a new **TV programme** in a genre of your choice.
2. Create a **film poster** depicting 3 characters (hero, side kick and villain) for a new film in a genre of your choice. You could sketch or photograph your characters.

 **For each task:** Consider how to construct representations using media language (e.g. dress codes, gesture codes and props) and what messages about age, gender and ethnicity to convey.

What is a source?

A source can be absolutely ANYTHING you are inspired by! Below is an example of different sources you might include in your sketchbook:

- **A Theme Mind Map** – Mind map all the things you can think of relating to your topic! Include images if you want to.
- **Mood Board** – Collect images linked to your theme into a moodboard – annotate keywords about the images / theme.
- **Artist / Designer Analysis** – Look at an existing artist or designer and complete an analysis of their work
- **Take your own photographs** – You can use your own photos as a source of inspiration! Annotate them explaining how they link to your theme.

Next Steps.... Using a source

Once you have analysed a source – what do you do next? Here are some ideas:

- Complete a textile sample, using your source as inspiration
- Do some initial idea sketches, using your source as inspiration
- Compare 2 different sources in your sketchbook using a VEN diagram

GCSE Textiles – A01

Develop ideas through investigations, demonstrating critical understanding of sources



Keywords to use in your analysis

• Aesthetics	• Form
• Style	• Tone
• Process	• Texture
• Trend	• Shape
• Connotation	• Pattern
• Textile Technique	• Decoration
• Movement	• Repetition
• Colour	• Scale
• Line	• Structure

How to Analyse a Designer / Artist:

- Introduce the work of your designer or artist (**key facts only**), **how** does their work fit into trends at the time it was produced or current trends?
- Are there any social, environmental, moral, issues surrounding your designers work?
- Consider **what** key features appear regularly in your designers work, **why** might that be?
- **What** colours do they use a lot of? **What** effect does this give?
- **Who** do you think their designs are aimed at? **Why**?
- Explain what you like / dislike about the designs and **why** that is.
- **What** techniques has the designer used? **Why**? Could different techniques be used to create different effects?
- **How** will this designer inspire your work? **How** does the designer fit into the theme? **What** techniques will you sample? **Why**?

Key Points to Remember

There is a difference between **Analysing** and **Stating**. Analysing will always get you more marks than stating.

Denotation: Literally stating what something is
Connotation: Explaining the meaning of something, what it **connotes**.

See the below example:



This is a pink heart.
It connotes, love and friendship

Useful websites to find Textile Artists and Fashion Designers

<https://www.textileartist.org/>

<https://www.patterndesigners.com/top-10-textile-designers-2017/>

<https://www.designer.com/directory/cat/Textile-Design/Designers>

<https://www.msn.com/en-us/money/other/30-most-influential-fashion-designers-of-all-time/ar-BBNNj6y>

<https://sewguide.com/famous-fashion-designers/>

<https://pahaldesign.com/10-best-fashion-designer-of-world/>

<https://www.textileartist.org/10-contemporary-embroidery-artists>

What do I do to meet the assessment objective?

Use the words in the assessment objective to help you understand what it is you should do:

- **Refine work:** Quality over Quantity! – Refine work by going back to old samples and developing them to make them better. Refine work by comparing samples and evaluating to see what works and what doesn't.
- **Explore Ideas:** This can be as a sketch or textile sample, try to create the idea in your head – it doesn't matter if it doesn't work – it's a sample!
- **Experimenting with appropriate media, materials and techniques** – practice creating samples using a range of different techniques, make sure you know how to them using the correct materials. Don't be afraid to experiment and combine different techniques to see what effect they give! – Think outside of the box.

How to Evaluate a sample:

- What** have you done?
- What** techniques did you use?
- What** inspired you?
- How** does it relate to your theme?
- How** have you done it?
- What** did you like / dislike about the technique?
- Was** it successful? **Why / why not?**
- How** could you improve?
- What** else could you try?
- Is** there anything you would change? **Why?**
- How** will you develop your work now?

Next Steps.... Using a sample

Once you have completed a sample– what do you do next?

Here are some ideas:

- Cut the sample in half – keep one half as the original and develop the other half with a different technique
- Sketch an initial idea to show how you would use this sample in your work
- Evaluate your sample to help you refine your ideas and techniques

GCSE Textiles – A02

Refine work by exploring ideas, selecting and experimenting with appropriate media, materials, techniques and processes.



Key Points to Remember

Growth Mindset!

If a sample goes wrong, THAT IS FINE! – this is why we sample, just remember to evaluate it and next time we can do things differently



Key Textile Techniques to try

• Applique	• Patchwork
• Batik	• Pleating
• Beading	• Printing
• CAD	• Quilting
• Couching	• Ruffles
• Embroidery	• Smocking
• Felting	• Suffolk Puffs
• Knitting	• Tie Dye
• Macramé	• Weaving
• Mola	• 3D Shibori

Useful tutorial websites to help with samples

<http://www.embroidery.rocksea.org/reference/picture-dictionary/>

<https://www.ritdye.com/techniques/>

<https://www.theweavingloom.com/beginners-guide-to-weaving/>

<https://rosiepink.typepad.co.uk/rosiepink/tutorial-how-to-make-flat-felt-wet-felting.html>

<https://www.polkadotchair.com/45-beginner-quilt-patterns-tutorials/>

<https://mypatchwork.wordpress.com/2014/07/26/41-fabric-manipulation-tutorials/>

How can I record my ideas?

Recording ideas is really important to show your teacher and the examiner your thought process and development. Here are some ways you can record ideas:

- **Design Ideas** – Draw out your design ideas, they should be clearly inspired by your samples or sources. Annotate these to explain parts of your designs
- **Observational drawing** – Sketching objects that relate to your theme can help inspire design ideas – especially when creating patterns
- **Take photographs** – take photos of sources for inspiration or take process photos when you are making samples as evidence.
- **Annotation** – Annotation, ensure you annotate to explain your thoughts, this does not need to be a lot of writing, sometimes you might just bullet point!

Next Steps.... Developing Ideas

Once you have recorded your ideas, what do you do next?

- Design ideas – develop design ideas by varying aspects e.g. size, shape, features etc.
- Observational sketches – use the sketches to develop a repeat pattern
- Take photographs – annotate your photos when they are stuck into your book
- Annotation – underline any key points you have made / keywords to make it easy for the examiner to identify

GCSE Textiles – A03

Record ideas, observations and insights relevant to intentions as work progresses.



Media you can use to record ideas

(or anything else you can think of!)

Design ideas / drawing

- Pencils
- Collage
- Watercolours
- Paints
- Chalk Pastels
- Charcoal
- Fineliners
- Pen
- Artist Markers
- Photoshop (CAD)
- Photographs

Insights / written annotation

- Written – pen / pencil
- Bullet points / key words / paragraphs
- Typed up on the computer

How to annotate a design:

What textile techniques have you used in your designs? **Why?**

How does it link to the samples you have done?

Is your design inspired by any of your sources?

How? Why?

What materials would you use? **Why?**

How does this design link to your theme?

What developments would you make to your designs? **Why?**

Key Points to Remember

- Any design ideas you do should CLEARLY link back to AO1 and AO2.
- All designs should show how your sources have inspired them – include this in your annotation
- All designs should include AT LEAST three different textiles techniques that you have sampled.

Useful tutorial websites to help you with drawing

<https://www.youtube.com/watch?v=nXKFBA0xeYQ#>

<https://www.youtube.com/watch?v=r1idghDW8KY>

<https://www.youtube.com/watch?v=U68FvwHaOoE>

<https://www.idrawfashion.com/friday-tips/>

<https://www.mybluprint.com/article/drawing-folded-or-draped-fabric-is-an-art-heres-how-to-crush-it-in-a-few-easy-steps>

<https://www.idrawfashion.com/clothes/textiles/>

How can I meet this Assessment objective?

Use the words in the assessment objective to help you understand what it is you should do:

- **Personal and meaningful response** – Your response to a source should be personal to you. What your feelings and reactions are. It must be meaningful by relating to your source inspiration. Make sure everything links and is not random.
- **Demonstrates understanding of visual language** – being able to combine different textures, colours, techniques in an aesthetically pleasing way.
- **Aesthetics** – the way things looks

Next Steps.... Creating a final piece

Though you can demonstrate AO4 throughout your sketchbook, a final piece will help you secure marks.

- Make sure you have developed your design ideas
- Select the design you would like most to make
- Sketch out your final design, planning what techniques you will use where
- Plan your making step by step to make it

GCSE Textiles – A04

Present a personal and meaningful response that realises intentions and demonstrates understanding of visual language.



Ways of showing a personal response

- Creating your own designs
- Developing your designs
- Creating a sample *inspired by* a source
- Creating a developed sample *inspired by* a combination of sources
- Producing a final piece (fashion or interiors)

Developed Sample:

Sample
inspired
by a
source

+

Sample
inspired by
a different
source

=

Developed
sample using
combined
techniques

Reflection on entire project:

You DO NOT need a whole project reflection, however if you have the opportunity and are stuck on what to do next, it is a nice touch.

What was your initial theme and **how** were you inspired by it?

How did you begin your research? **Why?**

How do your samples reflect your own ideas (i.e. your personal response)

What would you do differently? **Why?**

If you were to develop this theme / project, **how** would you do it? **Why?**

Key Points to Remember

A personal response is **any** response where it is your own work.

It is not just your final piece, it is all individual work throughout your folder

You can be inspired by designers but don't copy them, because this is not personal i.e. your own work.

Record the step by step process of creating any developed sample final piece – you can do this with photographs or sketches

Websites where Designers talk about their work and inspiration

Sometimes it is difficult to come up with a personal response! The below links show some designers talking about their design and inspiration process. Seeing how they come up with their ideas, might help you come up with your own.

<https://fashionunited.uk/news/fashion/10-fashion-talks-to-watch/2018102239556>

<https://www.designboom.com/design/interview-with-fashion-designer-carla-fernandez-05-14-2014/>

<https://www.instyle.com/awards-events/fashion-week/new-york/fall-2017-designer-inspiration>

OCR Cambridge National Health and Social Care

Knowledge Organiser

Unit R032 Principles of care in health and social care settings

1. The rights of service users in health and social care settings
2. Person-centred values
3. Effective communication in health and social care settings
4. Protecting service users and service providers in health and social care settings

1.1 Types of care settings

Healthcare	Social care 1.
Dental practice	Retirement home
GP surgery	Day centre
Optician	Residential home
Nursing home	Homeless shelter
Health centre	Foodbank
Pharmacy	Community centre
Walk-in centre	Support group
Hospital	Social services department

1.2 The rights of service users

- Choice 2.
- Consultation
- Confidentiality
- Protection from abuse and harm
- Equal and fair treatment

- Choice-** giving individuals options 3.
- Social care examples
- Offering a range of activities so that residents can choose whether or not to take part
 - Ensuring that residents have access to both a television lounge and quiet room
 - What to eat
 - What clothes to wear
 - When to go to bed/get up
 - Whether they have a bath or a shower
- Health care examples
- Where to receive care e.g. support at home or in a residential home
 - Choice of male or female doctor to meet cultural requirements
 - Whether or not to receive treatment
 - Choosing the GP we want to see

- Consultation-** involves discussing an issue with another person to get their thoughts and opinions so that a decision can be made that is acceptable for all involved 4.
- This means discussing things with people whatever their age
 - People should be asked about the care they want
 - Discuss wants and needs
 - Clarify likes and dislikes
 - Ask for preferences and options
 - Peoples opinions and thoughts about different situations should be found out

- Confidentiality-** keeping limited access and restrictions on personal sensitive information 5.
- Examples include: Having personal notes stored securely, e.g. in a filing cabinet that is locked or passwords on computers only for those that need access to information
 - Passing on information on a “**need to know**” basis
 - Not gossiping about service users
 - Shredding unwanted written information
 - Having conversations in an enclosed room
- Need to know basis**
- Information is only shared with those directly involved with the care and support of the individual.
 - Access to information is restricted to those who have a clear reason to access it when providing care and support for an individual.
 - Telling a practitioner the facts they need to be aware of, to provide care for the individual, at the time they need to know them and nothing more.
 - If something is said on a need to know basis you can only tell it to the relevant people. For example if someone had a problem at school they would tell the head of year, not all the teachers .

1.2 The rights of service users(continued)

Protection from abuse and harm

Some settings provide care for those who are more at risk of abuse and harm , such as:

- Service users with dementia
- Service users with a learning disability
- Children

These service users might not know what abuse is or understand their rights. They may not realise they are being abused or receiving poor treatment and may not remember what has happened or know how to tell anyone clearly. So, it is essential that staff are aware and follow **safeguarding** procedures.

- Staff having CRB (Criminal Records Bureau) checks
- Staff to be trained in first aid, manual handling, safeguarding
- CCTV on entrance and exit
- Another person being there when an examination takes place, e.g. GP and nurse

6.

1.3 The benefits to service users' health and well-being when their rights are maintained

Benefits to service users if rights are maintained:

- To make people feel valued
- To raise self-esteem
- To **empower** individuals
- To instil confidence
- To instil trust
- To make individuals feel safe
- To give equality of access to services
- To meet individual needs



High self-esteem

A person with high self-esteem feels valued and respected. If someone is treated fairly and receives appropriate care that meets their needs , and which enables them to live a better life, they will benefit emotionally and feel more positive. Having high self-esteem improves mental health and leads to feeling:

- Valued
- Respected
- confident

9.



Empowerment

Having choices and being consulted about care preferences gives service users control over their lives and promotes their independence. This increases their self-esteem and makes them feel valued.

Empowerment :

- Encourages independence and being self reliant
- Makes service users feel in control of their lives
- Gives service users choice, control and independence
- Ensures equality of access to care services

10.

Equal and fair treatment- being given the same opportunities and choices as everyone else.

- People should be treated/be able to use services for the needs they have
- e.g. children should all have the same chances in school despite their ability
- elderly people should get the same medical treatment as younger people

A child who has a special educational need or disability should be enabled to take part in the same lessons as the rest of the class. This may mean that they need:

- Extra support such as simpler worksheets or tasks
- One to one support from the teacher or teaching assistant

Staff at a residential home have arranged a trip to the coast. The coach that is taking them must have a wheelchair ramp, otherwise those residents that are wheelchair users will be unable to go.

7.



1.3 continued

Service users’ needs are met

Service users who receive appropriate care and treatment will be helped to recover from injury or illness, or learn to manage a disability or health condition , and still enjoy and achieve in life .
Meeting a service users’ needs:

- Means giving appropriate care and treatment so that service user’s requirements are met
- Results in good and improving physical health
- Results in good and improving mental health

11.

Trust12.

It is important that service users’ receiving care feel able to trust their care providers. They must feel that service providers are trustworthy, that they will not harm them and that they have their best interests at heart.

Service users’ who can trust their care providers will feel:

- Reassured that service providers will not harm them
- Confident that service providers have their best interests in mind
- Confident in the care they receive
- Confident that staff will be able to provide a safe environment for care, following health and safety policies and procedures

2.1 Person-centred values and how they are applied by service providers

Person-centred values of care are key principles that underpin the work of those providing care and support in health and social care.

- They are a set of guidelines that provide ways of working for care settings and their staff
- Person-centred practice enables service users to receive person centred care that meets their own unique needs.

Person-centred values:

- Individuality
- Choice
- Rights
- Independence
- Privacy
- Dignity
- Respect
- Partnership
- Encouraging decision making of the service user

13.

Individuality14.

This means recognising that each person has their own identity, needs, wishes, beliefs and values. These individual differences must be considered and taken account of when providing care.

Choice15.

All service users are entitled to make their own choices. Choice is empowering and this is a feature of person-centred care. For example service users should be offered a range of different care options and given enough information about them to make an informed choice.

Independence16.

Having independence means that a service user :
Does not have to rely on others
Has the opportunity and freedom to make their own decisions
A service provider should support service users’ to have as much control over their lives as possible , as this enables person-centred care

Rights17.

Everyone is entitled to rights (see Topic area 1)
Service providers who support service users rights will be working within the law and providing a high standard of personalised care.

2.1 (continued)

Privacy

Many procedures in healthcare and social care require privacy, such as showering and dressing someone. It is vital to respect and protect the service users' privacy. An example of good practice is to knock on the service users' door before entering. 18.

Dignity

This involves having regard for the feelings, opinions and wishes of others. By respecting and valuing the service users' rights, views and needs, the service provider supports their self-esteem and makes them feel valued. 19.

Respect

Having respect means treating someone in a way that shows they have importance as an individual, and their opinions and feelings have value. Service providers should respect service users'

Diversity
Sexuality
Faith, cultural needs and preferences
Rights
Confidentiality

The people using health and social care will be from a range of different backgrounds. The Equality Act 2010 identifies 9 protected characteristics, and is illegal to discriminate against any of these characteristics:

Age
Disability
Gender reassignment
Marriage and civil partnership
Pregnancy and maternity
Race
Religion
Sex
Sexual Orientation

Any unfair treatment, exclusion or discrimination against service users is against the law.

20.

Partnership

This involves different professionals, service and agencies working together to provide the most effective care for a service user requiring treatment or support. This could involve, for example, the hospital, a social worker and a care home working together to provide care to meet needs of an older adult being discharged from hospital after a fall.

21.

Encouraging decision making of service user

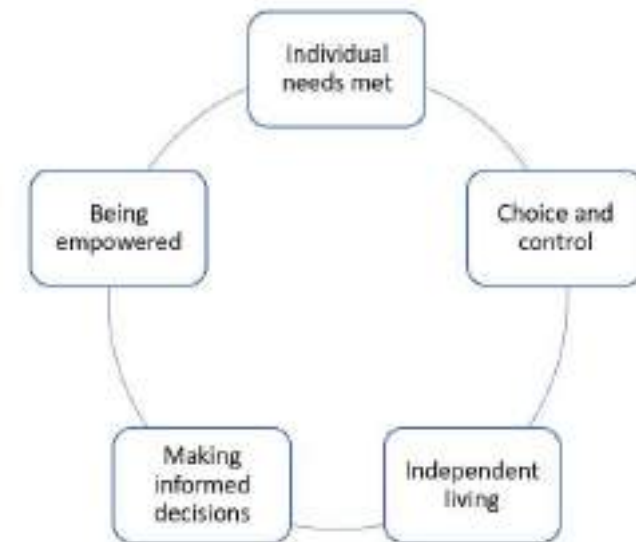
22.

A service user may be recommended to use a walking aid to help with mobility:

- The suggestion is to use a walking frame rather than a stick to help the service user walk short distances, but they do not want to use a frame
- The service user should be encouraged to make their own decision by discussing advantages and disadvantages of each aid.
- The service user is more likely to use a walking aid if it has been their own choice..

Person centred care means..

23.



Qualities of a service provider: The 6 Cs.

24.

1. **Care**
2. **Compassion**
3. **Competence**
4. **Communication**
5. **Courage**
6. **Commitment**

Care- means a service provider will do all they can to provide appropriate treatment or support that will maintain or improve a service users' health and well-being

Compassion – is being able to provide care and support with kindness, consideration, respect and empathy. It is also having consideration for the service user receiving care or treatment, as well as being able to put yourself in the patient's situation and show understanding .

Competence – refers to the ability of a service provider to provide high-quality, effective care through applying their knowledge , skills, understanding and expertise to meet a service user's care needs.

Communication- is essential to developing good relationships with service users , their families and also with colleagues. It is important to be able to listen carefully and speak in a way that service users can understand.

Courage – is being brave: being able to speak up when having concerns, doing the right thing and also trying something new such as a new way of working.

Commitment – is when a service provider is dedicated to providing care and support to meet the service user's needs

Partnership, individuality making and rights.

Producing a plan for an individual should be done in partnership with them and the health and social care services; other family members may be involved if appropriate.. The service user's needs, strengths and wishes should be the focus.

- Everyone should meet together
- The service user should be fully involved in any discussions
- They should be given a copy of the plan that has been decided.

25 .

Examples of how person-centred values can be applied in health and social care settings

26.

Individuality, rights, choice and decision making

Hospitals and care homes could provide access to a prayer room or transport to a place of worship , to support service users' religious beliefs.

The right for a pregnant woman to choose the type of birth she would like e.g. home or hospital birth.

Providing a menu with vegetarian, vegan, halal and kosher options to provide choice and meet individual needs.

Respect

Service providers should always use non discriminatory language and avoid patronising the service user they are caring for.

They should challenge discrimination if they see or hear it happening . The discrimination can be challenged by:

Explaining how they are being discriminatory to raise awareness
Reporting it to senior staff

Privacy and dignity

When someone is receiving help to get dressed/showered it is important that a curtain/screen is used or the bathroom door is closed.

Staff should not gossip about the service users

Independence

An important way to promote independence is to meet a service user's specific needs . For example:

If a theatre trip is arranged in a care home , it should be somewhere that has wheelchair access and a hearing loop system for those that need it.

2.2 Benefits of applying person-centred values

Benefits for **service providers** of applying person-centred care

Benefit	Explanation ^{27.}
Provides clear guidelines of the standards of care that should be given	Service providers will know how to do their job effectively. Service users will receive appropriate care, attention and treatment to meet their individual needs. All of the staff in a care setting will be working to the same high standards
Improves job satisfaction	The service provider's role is clearly defined and they are aware of how to apply "best practice"; this provides job satisfaction for service providers.
Maintains or improves quality of life	People who use services will have their individual needs met. For example , by: • Providing hospital patients with appropriate nutritional meals • Providing help to eat and drink • Discussing their treatment with them • Consulting with them about alternative types of treatment available
Supports rights to choice and consultation	Choice is empowering and this is a feature of person-centred care as service providers will be involved in helping to construct a plan of care with a service user that fully takes account of their care needs and preferences.
Supports service providers to develop their skills; enables the sharing of good practice.	Partnership working enables collaboration between colleagues to develop best practice which will lead to the best possible outcomes as individual needs will be met.

Benefits for **service users** of applying person-centred care

Benefit	Explanation ^{28.}
Ensures standardisation of care given; improves the quality of care being given to the service user.	Provides clear guidelines of the standards of care that should be given, and this maintains quality of care. When service providers apply the person-centred values of care in their day-to-day work , they ensure that service users: • Always receive appropriate care that meets their needs • Do not experience discriminatory attitudes • Have their diversity valued and rights supported
Maintains or improves quality of life for service user	Service users rights, beliefs and preferences will be respected and their individual needs will be met. This ensures that the care they receive is beneficial in every way for example, an occupational therapist carries out a home assessment of an older person with arthritis. As a result of the visit, various kitchen aids such as an easy grip knife and a special bottle and jar opener are provided. These will enable the service user to continue preparing their own meals independently.
Supports service users to develop their strengths	Person centred care ensures the service user is involved in decision-making by discussing their care needs and then being given, for example information about the different options that will meet their needs. The service user can then choose the care that they prefer. This is enabling and empowering, ensuring the service user is at the centre of their care and has choice and control

2.3 Effects on service users’ health and well-being if person-centred values are not applied

Effects on service users can be :

Physical
Intellectual
Emotional
Social

29.

This can be remembered as PIES.

Physical effects

Effects on your body.

30.

A nursing home resident suffers with coeliac disease this causes unpleasant symptoms if gluten is consumed. If they are not given gluten free food, it will lead to a deterioration of their digestive health.

If a hospital patient is not given regular drinks, they will become dehydrated and their condition will get worse.

Intellectual effects

31.

These relate to your thought processes such as thinking skills, understanding, learning, reasoning, comprehension and knowledge.

If a young adult who has learning difficulties is not given support and learning activities matched to their needs, that learning will not progress and they will not reach their potential.

If staff at a retirement home expect residents to sit and watch television for most of the day and do not provide a range of activities to engage their interests, the residents will lack mental stimulation and suffer loss in concentration. This can have negative effects on their mental health and well being.

Physical	Intellectual34.
• Pain • Existing illness gets worse • Bruising • Cuts and grazes • Broken bones • Dehydration • Malnutrition • injury	• Lack of skills development • Lack of knowledge • Lack of progress • Loss of concentration • Losing interest • Lack of stimulation • Will not achieve potential
Emotional	Social
• Low self esteem • Low self confidence • Disempowered • Upset • Loss of trust • Angry • depressed • stress • Frustrated • humiliated • self harm frightened feeling unsafe	• Withdrawn • isolated • Lonely • Excluded • Become anti social • Uncooperative • Lack of friends • Develop behaviour problems • Refusal to use the service

Emotional effects

32.

These relates to a service users feelings.

An elderly woman attends a day centre. She’s a vegetarian but at lunch is expected to eat the same meal as the others, just without the meat. This is unfair treatment, and is likely to upset her as she is not being treated as well as the others. She might develop low self esteem she feels she is not important enough to be given a proper vegetarian meal. She could also feel embarrassed that she’s being a nuisance, expecting a “special “meal.

An expectant mum would be upset, angry and frustrated if her midwife told her that she cannot have a home birth, without explaining the reasons why or giving her the chance to ask questions.

Social effects

33.

These relate to service users relationships with others. If Stafford a centre do nothing about other young adults laughing at a girl who has a birthmark on her face, the girl may lack friends, become isolated and withdrawn, and refused to attend. An elderly resident at a retirement home has an undiagnosed hearing problem. The stuff do not bother to talk to him much because they think he just doesn’t like socialising and prefers to be by himself. He avoids spending time with other residents, he can’t hear properly and has to keep asking for things to be repeated. He doesn’t want to bother other people so he keeps to himself.

3.1 The importance of verbal communication skills

Verbal communication is the exchange of information between people using speech.

Key term

Jargon- specialist or technical language, or terms and abbreviations. That are difficult for non specialists to understand

35.

Adapting communication to meet needs	• Use vocabulary that can be understood – avoid specialist medical terminology and give age appropriate explanations • Use specialist methods such as sign language, interpreter or Braille. • Adapt communication to meet the needs of the service user, for example by using repetition, gestures, body language, flashcards. • Adapt the environment , for example by moving a meeting to a quiet room or provide chairs so people feel more relaxed when having a discussion
Clarity	Being able to share information in a clear and accurate way. • Spoken words must be clear – a service provider must not mumble and must pronounce words carefully. • Straightforward terminology should be used and any technical terms should be explained.
Empathy	This is the ability to put yourself in someone else’s shoes, understand and share the feelings of another person. This can help a service provider to gain a better understanding of other people’s viewpoints , and shows the service user that their feelings have been acknowledged
Patience	This involves giving the service user time the time to do and say what they need, not rushing them and not making them feel pressured.
Using appropriate vocabulary	Vocabulary refers to the collection of words used. • If a nurse was explaining treatment to a child , they would use simple words that are easily understood. • Adults understand more advanced vocabulary but they might not understand some medical terminology. It is therefore important to explain information that service users may not know the meaning of. For example: • CCU - critical Care unit Appropriate vocabulary also includes using the appropriate language. Information should be available in a range of languages. A “welcome “ sign in a variety of different languages will send a positive message that everyone is welcome to use the service.



Tone	This is how your voice is heard • The tone of your voice should be calm and not rushed. A varied tone of voice will come across to others as friendly and interested. • It is important not to use a tone of voice that may come across as aggressive. Also, a slow and steady monotone voice may be boring to listen to and might suggest or cause a lack of interest.
Volume	How loudly (although not shouting) or quietly you need to speak depends on the situation. For example: • Raising your voice may be appropriate in a noisy environment such as in the accident and emergency department in a hospital, to attract someone's attention, but it would not be appropriate when discussing a patient. • You need to speak loudly enough to be heard but not so loud that everyone else can hear. This is particularly important when service users personal information is being discussed. Move into a quiet area or in to an office would be more appropriate, so that confidentiality is not breached.
Pace	It is important to have the correct pace when speaking. If a service provider speaks too quickly, the service user may miss important information. If the service provider speaks too slowly, the service user may become bored and stop listening.
Willingness to contribute to team working	• Team working is when a group work together to achieve a common (shared) goal. When working as part of a team, each individual should : • share information as appropriate for the scenario, and as needed by the team to provide care • communicate effectively • work to meet the teams shared goals in the best interest of the service users. Team workers need to be reliable and contribute fully to any task. If they do not do this, resentment and bad feelings can develop which results in the service users best interest not being met. For example, a team of care assistants working in pairs to bathe residents before bedtime would develop problems if every night one team bathed 2 residents and another team bathed 4 residents. The whole team would need to look at why this is happening - does one team need more help to bathe certain residents because they require more assistance, or are they simply taking longer than they should and not working hard enough? Teams do not always work together face to face they can communicate with each other through: • conference calls • patient records these are usually electronic and must be updated regularly so that up to date information, for example, about care and treatment, is available to the whole team • Emails • Telephone calls. Examples of team working include a GP, midwife, sonographer , obstetrician, anaesthetist and health visitor all work together to achieve the safe development and delivery of a baby

3.2 The importance of non verbal communication

Non verbal communication

Non verbal communication involves the transfer of information through the use of body language such as gestures, eye contact and facial expressions.

Eye contact

Service users must always be sensitive to the service user's views and cultural differences, as shown in these examples.

- In some cultures, such as East Asian including Japanese and Middle Eastern cultures, eye contact is considered disrespectful.
- Western Europeans, however, have a different view and will maintain eye contact, seeing it as positive and reassuring.
- In America and Latin America, not looking the other person in the eye is a sign of disrespect. It might even look suspicious or be interpreted as "they don't dare to look me in the eye. They must be hiding something".

In western society eye contact is a way of showing interest in a conversation.

Facial expressions

These can act as positive and negative responses to a situation. Examples are:

Raising eyebrows
Frowning
Moving your mouth

Facial expressions should match the message, For example, when giving bad news, you would use a sympathetic expression – smiling would not be appropriate.

Gestures

Gestures involve hand movements. Examples include:

- Drumming fingers on a surface or twiddling thumbs (these signal impatience)
- Thumbs up signal
- Thumbs down
- Waving goodbye
- Beckoning someone with your hand
- Pointing



Positioning

Height

It is better for effective communication if people are at the same level. This reduces the risk of feeling dominated by someone "talking down" to them. This is particularly important when speaking to a service user with learning difficulties or someone who is in a wheelchair.

Space and personal space

Personal space differs between cultures and service users. Some people feel uncomfortable if others are close, whereas others find it acceptable.

Many spaces in health and social care settings are not suitable for meetings or consultations; they may be too small, so service users invade each other's personal space or cannot sit facing each other in the position they would like.

Often in offices a large desk is placed between those attending a meeting. This makes it rather formal, which might not be appropriate for what is going to be discussed, for example between a patient and a doctor. This may have a negative impact on service users attending the meeting.

The room layout will be affected by whether it's a group, on-to-one, formal or informal situation.

- A confidential discussion will require a private area where there are no disturbances or noise

A group training activity with the staff will require space and an area where noise doesn't matter.

Positive body language, no crossed arms/legs

- It makes the service provider more welcoming and trustworthy
- It will make the service users feel more comfortable and relaxed in any situation

Sense of humour

This is the ability to see the funny side of things. Careful use of humour can lighten the mood and remove tension, making people feel more relaxed. However, it is important that service users and their families feel they are being taken seriously, and so humour should be used with care.

3.3 The importance of active listening

Active listening involves demonstrating an interest in and responding to what a person is saying by fully concentrating on what is being said rather than just passively hearing.

Active listening skills include:

- Having an open and relaxed posture
- Making eye contact, looking interested,
- Nodding in agreement
- Showing empathy, reflecting feelings
- Clarifying (by asking questions that cannot be answered with a one word response)
- Summarising to show understanding of key points (paraphrasing)

39.

An advocate will:

- Be completely independent and represent the service user's views, not their own personal opinions
- Ensure the service user's rights and needs are recognised
- Represent the service user's wishes and views
- Speak for someone who is unable to do so for themselves

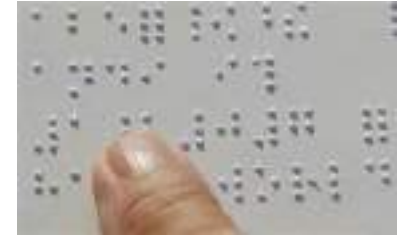
An advocate will not:

- Judge the service user
- Give their own personal opinion
- Make decisions for the service user

41.

Braille

This is a method of communication used by visually impaired or blind people. It was devised by Louis Braille in 1829. It consists of a series of dots which are read by touch. Each character is made up of raised dots; the raised dots may be in any of 6 positions within a rectangle. There are 64 possible combinations of dots.



3.4 The importance of special methods of communication

Advocate

An advocate is someone who speaks on behalf of a service user who cannot speak up for themselves. For example:

- A young child
- a service user with a learning disability
- An older person with dementia
- Someone who has been assessed as having reduced mental capacity

40.

An advocate for a child could be a parent or carer; an advocate for an adult could be a friend or a carer. A professional advocate could be provided by, for example, a charity organisation such as Age UK to represent an older adult.

An advocate will represent the views, needs and interests of service users who are unable to represent themselves, without judging them or giving their own personal opinions.

An advocate can:

- Go with a service user to meetings or attend them for them
- Help a service user to find and access information
- Write letters on the service user's behalf
- Speak for someone at a case conference to express their wishes

British Sign Language

BSL involves using the hands and fingers to make visual signs. This is used by people who have impaired hearing and by other people to communicate with them.

42.



Other communication strategies:

43.

An interpreter – who will convert a spoken or signed message from one language to another, and speak it

A translator – who will convert a written message from one language to another, and write it.

Makaton – a system that uses a combination of speech, gestures, and pictures to communicate.

PECS – Picture Exchange Communication System. It is a method of communicating where pictures are used to indicate what is needed, and can be useful for individuals with communication difficulties such as dementia or autism.



Voice activated software

Speech activated programs allow users to

- Write text
- use the internet
- Send emails
- Use application with their voice rather than a mouse or keyboard

44.

These programs can be very helpful to people who do not have full use of their hands. For example, someone with cerebral palsy may have difficulties with fine motor skills, which make handwriting and using a keyboard challenging.

Below are some examples of software:

- **Dynavox** – speech generating software. The service user touches a screen that contains text, pictures, and symbols which software then converts into speech.
- **Lightwriter** – is a text to speech device. A message is typed on a keyboard, displayed on a screen, and then converted into speech.

3.5 The importance of effective communication skills

Effective communication supports the person-centred values of care

- **Individuality**
 - **Choice**
 - **Rights**
 - **Independence**
 - **Privacy**
 - **Dignity**
 - **Respect**
 - **Partnership**
 - **Encouraging decision making of the service user**
- It also helps to meet service users’ needs ad protects their rights

Successful and effective communication depends on:

- How well the service user can hear and see
- How comfortable they feel
- How attentive they are
- How well they understand what is happening
- How well they can express themselves
- Whether they are motivated to communicate

Communication profiles , sometimes called “ communication passports” are often created to inform staff about how a service user communicates with others and how they wish to be communicated with. The communication passport:

- Helps service providers to understand the communication and other needs of a person who has difficulties communicating information, due to illness or mental or physical disability
- Includes information about the service user such as their likes, dislikes and communication skills
- Will be updated regularly
- Enables consistency between staff



Impact of good communication skills

- Well informed service users will know what to expect, why they are receiving care or treatment, and the effect on their health and well being. They will also feel able to ask questions if they are not sure about something that is worrying them.
- Actively listening to service users needs, concerns and opinions enables them to feel valued and respected. They will be reassured that they are being supported and that their questions and concerns are being taken seriously.
- Using appropriate vocabulary, and avoiding jargon, helps understanding. Service users feel reassured as they will understand the straight forward language that will be used by the service providers.

Impact of poor communication skills

- If information is not clearly explained, it can lead to misunderstandings. Service users need information to be clearly explained to them, or there is a danger that they will not understand complicated medical procedures, treatments or conditions, for example. This could impact on the success of their care, because anxiety and stress about what is happening does not help recovery.
- Do po communication can lead to errors or danger to health due to inaccurate recordkeeping. For example, if medication has been given but not noted on the medication record, or the wrong amount is recorded, there could be serious health consequences for a patient.
- If a service user feels patronised or stupid, it can make them feel upset or distressed. The service providers role is to help the service user with their care needs, and different services service users have different needs. Service users with a learning disability or who have poor hearing, for example, may need information to be repeated. It is important that service providers do not do this in a patronising and disrespectful way.
- If speech is too fast, the listener will not have time to understand it. Service provider should not cause information overload. For example being in hospital is stressful in itself, without being bombarded by lots of new information that the service user cannot understand. Service providers should always be aware of, and be sensitive to, service users need for information, but not overload them with it.

Ways service providers can avoid creating communication barriers

	47.
Not being patronising	• No sarcasm or talking down to the person • Not ignoring their views and beliefs because they are different • Use of positive body language e.g. nodding in agreement • Being polite • Make them feel that they are being taken seriously • Being patient and listening to repetitions
Using vocabulary that can be understood	• No jargon • Specialist terminology must be explained • Age-appropriate vocabulary • Simplified language, for example with young children, individuals with a learning difficulty or patients with dementia. • Using interpreters/translators
Adapting communication to meet service user's needs or the situation	• Emphasising important words • Slowing pace if necessary • Increasing the tone of voice, but not shouting • Repetition where appropriate • Using gestures, flashcards, pictures • Making use of aids to communication e.g. loop system • Using specialist methods e.g. Braille, BSL. • Technological aids, such as Dynavox
Listening to the service user's needs	• Active listening- demonstrating interest to what the person is saying, using body language to show a positive reaction • Ask the person – do not assume you know what they want • Concentrate on what the person is saying



4.1 Safeguarding

Safeguarding refers to the actions taken to protect a service user’s health and well-being to ensure they are not at risk of harm or abuse. All care environments must have safeguarding procedures in place:

- They must have a specific person with responsibility for safeguarding
- All staff and service users should be aware of the procedures to follow to report safeguarding issues.
- Staff should know how to deal with **disclosure** of abuse

Service users who need safeguarding

Some service users are more vulnerable to abuse or harm than others. Vulnerable groups include:

- Homeless people
- Children
- People with physical disabilities
- People with learning disabilities
- People with mental health conditions
- Older adults in residential care settings
- People who have a sensory impairment (sight loss, hearing loss)
- People in residential care dependent on carers – children, older adults

```
graph TD; A[Live in residential care] --- B[Have a sensory impairment]; A --- C[Have a physical disability]; A --- D[Lack mental capacity]; A --- E[Have a learning disability]; B --- C; C --- D; D --- E; E --- B;
```

Abuse and harm are more likely to happen in situations where people are dependent on others . For example:

51.

- If the service user depends on others to provide personal care and money management, this makes them vulnerable
- Some service users are very challenging and may be aggressive. This can lead to carers being verbally or physically abusive in response , especially if they have not been trained properly.
- The service user is vulnerable when there is an invasion of privacy, such as doors or curtains deliberately not being closed when they are receiving help to get dressed or undressed.
- Lack of staff could cause carers to rush as there is so much to do. They could handle a service user roughly when giving personal care , causing bruising. Although not intentional, it is still abuse.
- Lack of staff training can lead to abuse Staff may not know how to bathe someone safely or how to use hoists to move a service user from a bed to a chair. They could unintentionally cause injury.

Key terms

52.

Disclosure – This is when a service user tells you directly, or indirectly through their behaviour, that they have been , or are being, abused.

Vulnerable – someone who is less able to protect themselves from harm or exploitation due to , for example, mental health problems , a learning disability or physical impairment such as mobility problems, loss of hearing or sight.

Impacts for service users of a lack of safeguarding



Physical	Intellectual
• Broken bones • Bruising • Illness • Injury • Lack of sleep • Pain • Health deterioration • Self harm • Depression • anxiety	• Confusion • Denial • Lack of skills/development • Lack on interest • Lack of motivation • Lack of understanding • Loss on concentration • Not asking questions
Emotional	Social
• Feeling betrayed • Feeling disempowered • Feeling excluded • Feeling afraid • Feeling upset • Loss of self-confidence • Loss of self-esteem • Self-harm	• Becoming anti-social • Aggression • Being isolated • Behaviour problems • Lack of trust in others • Refusal to use the service • Withdrawal from people

Safeguarding procedures in care settings

Safeguarding policy

All organisations must have a safeguarding policy that states their ways of working and procedures to follow regarding safeguarding. 54.

Designated Safeguarding Lead

The DSL is the person in an organisation that has responsibility for safeguarding.

Common safeguarding issues in adult care environments

- Maladministration of medication
- Pressure sores- service users who are frail or who have restricted mobility are at risk of developing sores on the points of their body which receive the most pressure. These are known as bed sores or ulcers. People need to be moved often so that these don't develop. If left untreated, they can become very deep and infected.
- Falls- residents not being assessed on their risk of falls; walking aids not provided.
- Rough treatment – being rushed, shouted at, ignored
- Poor nutritional care – appropriate food not provided for chewing and swallowing problems, or for religious or dietary needs; this could result in malnutrition.
- Lack of social inclusion – no stimulation, activity, opportunities for social interaction
- Physical abuse between residents or staff and residents.
- Financial abuse – e.g. theft of personal money or belongings; staff inappropriately accepting gifts.
- Institutional abuse occurs when the routines and systems of an organisation result in poor or inadequate standards of care and poor practice. This affects the whole setting and denies, restricts or ignores the dignity, privacy, choice and independence of service users. Examples would be forcing people to eat or go to bed at a particular time.

Safeguarding training for all staff

55.

All staff, service providers and other staff, regardless of their job role, must be trained in safeguarding. They should receive regular refresher training to stay up-to-date in safeguarding procedures. It is compulsory for all those who come into contact with children and vulnerable adults in their work.

The training will ensure that all staff:

- Are aware of their duty to report a serious concern
- Know the care setting's procedures for reporting a disclosure of abuse or serious concern
- Can recognise possible signs of abuse or harm
- Know who to report to

Disclosure and Barring Service

57.

The Disclosure and Barring Service (DBS) works closely with the police and helps prevent unsuitable people from working with vulnerable service users.

DBS checks are a requirement for anyone aged over 16 for roles that involve working or volunteering with children or vulnerable adults.
This also applies to anyone applying to foster or adopt a child.

There are 3 types of DBS checks:

Standard – checks for criminal convictions, cautions, reprimands and final warnings

Enhanced- an additional check of any information held by police that is relevant to the role being applied for

Enhanced with barred list checks – additionally checks the barred list, which is a list of individuals who are on record as being unsuitable for working with children and vulnerable adults.

The 5 Rs

56.

1. Recognise
2. Respond
3. Report
4. Record
5. Refer

Recognise (all staff)

All staff should be able to recognise the signs and symptoms of abuse and harm.

Respond (all staff)

The issue must be reported, whether it is a specific concern raised by a service user or just a suspicion.

- Do not ask questions - just listen, then write it down as soon as possible, in the person's own words.
- Reassure them that they have done the right thing
- Inform the person sharing with you that the concerns they have raised must be recorded and passed on so that possible abuse can be dealt with, and that this will be done on a limited "need-to-know" basis.

Report (all staff)

Report your concerns, urgently, to the DSL member of staff. It is then their responsibility to take further action.

Record (DSL)

The DSL will record the member of staff's concerns, including direct quotes. If appropriate for the situation, they might include notes about the person's physical and emotional state they have observed.

Refer (DSL)

The DSL will carry out an investigation into complaints, allegations or suspicions of abuse. If a crime is suspected, the DSL will contact the police.

4.2 Infection prevention.

Personal hygiene

58.

- Hair tied back/covered
- Open wounds covered
- No jewellery
- No nail polish
- Appropriate protective clothing/wear an apron/ disposable gloves
- Appropriate hand washing routines
- Regular brushing of teeth
- Regular shower and hair washing
- Appropriate use and disposal of tissues/antiseptic wipes
- Wear blue plasters
- How it protects:

Prevents transfer of bacteria

Destroys bacteria

Carries less bacteria

Ensures high level of cleanliness

Reduces opportunity for spreading bacteria/germs

Stops others coming into contact with bacteria/germs

Barrier method reduces/prevents transfer of bacteria

Removes places for bacteria to be trapped

Nail polish/hair can fall into food and contaminate it

When should workers wash their hands

- Before putting on and after removing disposable gloves
- Before and after treating wounds or caring for a sick or injured person
- Before or after providing personal care such as feeding them or helping get them dressed.
- Before and after changing a nappy or incontinence pad
- Before and after preparing or handling food
- After handling clinical waste
- After cleaning up rubbish and putting it in the bin
- After cleaning up toys and equipment
- After touching your face or hair
- After using the toilet

59.

Personal protective equipment

61

Wearing PPE is a barrier method of preventing the spread of infection. The clothing or equipment can prevent the transfer of germs from one person to another.

Examples of PPE include:

Disposable aprons, disposable gloves, and rubber gloves – a fresh pair of disposable or rubber gloves/apron should be used for each new task, to prevent cross-contamination

Face masks provide a barrier that retains droplets released when talking, sneezing or coughing.

Hairnets or hygiene hats- for example, these are important when serving food to prevent hair contaminating the food, and when changing dressings

Overalls, overshoes- these provide a barrier covering the service provider's clothes and so reduce the likelihood of transferring germs

Surgical garments/scrubs- when carrying out operations and other surgical procedures and dental work, they can protect the service provider and the patient from infection.

General cleanliness

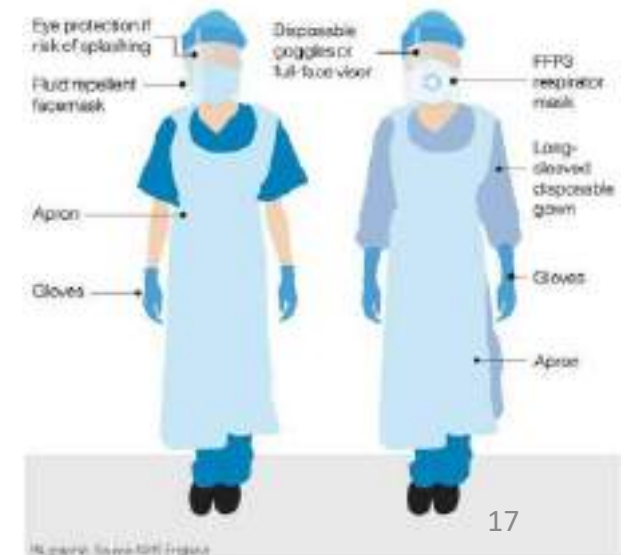
60.

- Clear spillages, for example vomit, urine, blood straightaway then clean and disinfect the area.
- Sterilise surgical equipment after use
- Dispose of hazardous waste following correct procedures, for example dispose of hospital sharps (needles, cannulas) in a hard yellow sharps box.
- Clean and disinfect bathrooms and toilets frequently (at least once a day)
- All used antiseptic wipes and tissues should be disposed of immediately after use into a covered bin.
- Provide specialist disposal methods, such as red laundry bags for soiled bed linen and yellow bags for used dressings, disposable gloves and other clinical waste.

Personal protective equipment (PPE) for health workers

Within metre of patient with possible/confirmed Covid-19

For high-risk procedures including contact with bodily fluids



4.3 Safety procedures and measures

Safety procedure –a set of actions or instructions that are carried out in a particular order. They will tell service providers what they have to do and how to do it. Examples of safety procedures are how to deal with emergency situations such as a fire.

Safety measures – are specific actions, such as putting out a “wet floor” sign or placing a fire extinguisher by each exit. Other examples:

Fire safety notices
Signs indicating fire doors and assembly points
A fire blanket in kitchen areas
General safety measures
A “no entry” sign to prevent unauthorised access

62

Procedures to prevent accidents and promote good practice

- Emergency fire procedures
- Emergency evacuation procedures
- Equipment considerations e.g. appropriate training
- Specialist training for the use of manual handling equipment
- Regular risk assessments
- Regular fire drills
- First aid procedures
- Food safety procedures
- Supervision - children at all times/ adults as necessary
- Adequate staff to children/ patient/ resident ratio

63

How safety procedures protect service users and service providers

Safety procedures provide guidance for staff so they know what to do to keep service users and themselves safe at all times. Knowledge of safety procedures enable staff to take quick, efficient action in emergencies.

64

Staff will know how to treat service users with first aid and how to reduce the risks of cross-contamination to aid the spread of infection. Training staff how to use equipment prevents accidents, which helps to provide a safe environment.

Safety procedures for reducing risk/danger and promoting good practice

First aid policy

It is a legal requirement that all care settings and service providers must have enough trained first aiders available for the number of staff and service users in case of health emergencies.

Numbers of service users with specific health needs or conditions have to be noted, as this may impact on the number of first aiders that should be available.

Staff trained in using adrenaline auto-injectors, e.g. EpiPens, should be available, based on an assessment of the number of service users in a care setting who are at risk of anaphylactic shock.

First aid

First aiders must be trained and attend regular refresher training every three years to ensure they have up-to-date knowledge. The Health and Safety Regulations 1981 require that employers provide:

- Suitable and appropriate equipment
- Facilities such as a first aid room

65

Safety procedures for reducing risk/danger and promoting good practice

66

Risk assessments

Need to be carried out for any activities or visits and trips that care settings organise. They are needed to check that equipment is safe and that the care setting building itself is safe. Risk assessments identify dangers such as

- Potential accidents
- Trip hazards
- Risks activities that require more than the usual amount of staff supervision

The 5 risk assessment steps

1. Look for hazards
2. Decide who might be harmed and how
3. Consider the level of risk – decide on the precautions needed to reduce the risk
4. Make a written record of the findings
5. Review the risk assessment from time to time and improve precautions if necessary

Why carry out a risk assessment?

- It is a legal requirement under the Health and Safety at Work Act
- Staff, service users and visitors have a right to be protected, and kept safe from harm
- An assessment will check what could cause harm to people using the care setting
- A risk assessment should help prevent accidents, illness and danger
- Staff, service users and visitors will feel confident using the service, knowing that risk assessments are carried out.

Safety procedures for reducing risk/danger and promoting good practice

Staff training programmes

Equipment use

Service providers in health and social care settings will use a wide range of equipment, from mobility aids and manual handling equipment to household appliances.

Staff should be trained to use specialist equipment such as:

- Hoists
- Transfer boards
- Slings
- Slide sheets
- Leg-lifters
- Fire evacuation chairs

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Moving and handling techniques

Service providers have to assist service users to move e.g.:

- Assisting an older person with a physical disability to get out of a bed/chair/shower/bath
- Transfer from bed to chair
- Moving or handling objects, such as shopping bags
- Use of hoists when bathing or getting out of bed

4.3 (continued)

Who benefits?	The benefits of being trained in moving and handling techniques	68
Service providers	- Staff are given guidance on good practice – they will be aware of the correct posture and position to be in when using equipment for lifting or moving - The environment, equipment and load will always be risk assessed - The risk assessment identifies if a second person is needed to assist with the lift - It prevents injury to service providers - It helps service providers to do their job correctly ; this results in a safer environment as it reduces risk - Improved knowledge of moving and handling develop the service provider’s confidence when moving an handling service users. - The training provides protection from accusations of abuse as correct procedures will have been followed	
Service users	- Training of staff prevents injury to service users - It improves comfort and dignity of service users - It shows respect - It instils confidence, trust, and a feeling of safety as the service user knows that the service provider is trained and qualified to carry out manual handling - It results in a safer environment and reduces risk to service users - Service users will not feel disempowered by being handled incorrectly	

Safety procedures for reducing risk/danger and promoting good practice

Equipment considerations

Equipment considerations	70.	How it improves safety
Appropriate training of staff for specialist equipment (e.g. hoists, transfer boards)		Staff will know how to use it correctly
Is equipment fit for purpose, appropriate for the task? Is specialist equipment available?		Correct equipment provided for the task , which reduces risk of injury to staff and service users
Regular safety checks for damage-items repaired or disposed of if necessary(e.g. wheelchairs)		No worn out, damaged or potentially dangerous equipment will be used
Is equipment risk assessed to ensure it is safe? is special training required?		Only equipment deemed safe is used. Staff will receive training if required
A reporting system for damaged or faulty equipment		Action can be taken immediately to take equipment out of use. This reduces the risk of accidents
Replacement programme for older or worn-out equipment		A good standard of equipment is maintained
Regular PAT testing of electrical equipment		Testing ensures safe electrical equipment

Safety procedures for reducing risk/danger and promoting good practice

69.

Emergency procedures

All care settings should have emergency procedures in place for situations such as fire, bomb scares and intruders.

- Service providers should be made aware of the procedures and their role in an emergency
- Service users also need to be made aware of fire evacuation procedures
- There should be regular evacuation practices and fire drills so that everyone is familiar with what to do and where to go .
- Emergency events such as:
 - Gas leak
 - Flood
 - Bomb threat



Will all require a setting to be evacuated quickly and efficiently to keep people safe.

In the very rare event of a firearms or weapons attack, the Government provides advice on how service users can keep themselves safe. Care settings are encouraged to ensure that they raise awareness of this advice sensitively, particularly with children.

Run- if you can

Hide – if you can’t run away

Tell – the police when it is safe to do so

4.4 How security measures protect service users and staff

An important part of maintaining the safety of a care setting is keeping it secure from strangers and intruders entering the building. Security measures also prevent service users leaving the care setting on their own, for example children from a breakfast club or service users with dementia leaving a residential home.

71.



Security measure	How it helps keep service users and service providers safe
Identifying staff	Wearing ID lanyards and staff uniform quickly identify who is a member of staff
Monitoring keys	This will limit the number of people with access to keys and there will be a list of authorised key holders. This means the location of each set of keys is known.
Receiving and monitoring visitors	• Manned reception desk – access can be monitored. A receptionist can monitor CCTV to ensure there are no intruders around and report any incidents to the manager • A signing in and out book for visitors ensures that reception knows who is there and who has left the building • Some settings have staff signing in and out, or swiping their ID card • Issuing visitor badges identifies visitors quickly and clearly
Reporting concerns to line managers	It is important to report concerns to the manager so that they are aware of security breaches. Senior staff can take appropriate action to address security issues
External doors, restricting access	• An electronic swipe card entry system or a security pad with a pin code will be able to enter. • A buzzer entry system allows reception staff to control who enters
Window locks and restraints	• Keep vulnerable service users safe – for example, window locks and restraints prevent service users falling out of or leaving through open windows • Prevent intruders from entering

Topic Area 3 - Organisation of sports activity session. Topic Area 4 – Delivering a sports activity session. Topic Area 5 – Reviewing your own performance in planning and leading a sports activity session.			
Organisation of sports activity session – TA3		Delivering a sports activity session – TA4	Reviewing your own performance in planning and leading a sports activity session – TA5
Identify: Organisation of a sports activity session. Appropriate venue – Location Appropriate venue – Size Appropriate venue – Weather Equipment – Type Equipment - Amount Required Timing Appropriate Allowing for Progression Supervision Number of Participants Size of Groups	Identify Contingency Plan Safety considerations when planning a sports activity session. Risk assessment and corrective action Activity Specific Risks Facilities Clothing Checking Equipment Basic first aid and child protection Emergency procedures Objectives to meet the needs of the group Introduction and Conclusion of your session Skill and technique development	Identify: Organisation of a sports activity session Safe practice Timing Adaptability Reliability Leading a sports activity session Activity specific details Leadership Style Delivery style Demonstrations Communication Positioning Enthusiasm for the activity and motivation of the group Confidence	Identify: Review your leadership of a sports activity session. Reviewing your planning Reviewing your leading Reviewing your organising Reviewing your communication Reviewing your enthusiasm Reviewing your positioning Improvements that could be made Opportunities to develop leadership skills for the future.

<u>Describe:</u> <u>Organisation of a sports activity session.</u> When planning, managing and organising a sports activity you will have to consider where the session is going to be held, when the session will be held, how many participants you will have and what equipment you will need. <u>Appropriate venue – Location</u> You should choose a venue that is close to where the majority of attendees are located. The location you choose should be a safe area where the attendees feel comfortable and can be accessed using public transport. <u>Appropriate venue – Size</u> There needs must be sufficient space for the various activities to be performed safely and without hindering the other attendees. The amount of space will depend on the type of activity and the number of attendees. <u>Appropriate venue – Weather</u> The only way to limit the effect of the weather is to use an indoor facility. A contingency plan in case the weather is not suitable for your original plan is important. <u>Equipment</u> The equipment needs of the session should also be considered. Equipment may include fixed equipment or portable equipment that can be moved. You will need to consider how long it may take to get any equipment into the correct position for your session and return it after the session. <u>Equipment - Type</u> The type of equipment needed depends on the activity being planned and the age and gender of the attendees. <u>Equipment - Amount Required</u> The amount of equipment required also depends on the activity. It would be safe to recommend that for team games, where a ball is used, such as hockey for football, the minimum number of balls needed would be one per participant. Safety requirements may actually limit the amount of equipment required. <u>Timing</u> The timing or duration of the activity session is largely determined by the type of activity and the age of the participants. Make sure that you allocate enough time to explain new drills or practices. If some drills are complex or there are several new drills, then you could produce activity station cards that explain the drill that is to be practised. <u>Appropriate</u> How long the activity session lasts needs to be appropriate for the participants and the activity. When planning a sports activity session, you should try to avoid practises that require inactivity or drills that leave some participants standing still and/or doing nothing. It is far better to use lots	<u>Describe:</u> <u>Organisation of a sports actively session</u> The sports actively session you deliver needs to be safe, suitably timed, and adaptable, you must be reliable. You cannot simply arrange a sports actively session. It must be carefully planned and organised. The organisation of a sports actively session will involve making sur that: • There is minimum risk to both yourself and the participants involved. • Everything can be completed withing the session. • The session can be altered if circumstances change. • You are reliable in terms of punctuality <u>Safe practice</u> Safe practice involves organising the participants and the activities appropriately while considering the availability of space, the number of participants and the various types of equipment being used. <u>Timing</u> Timing is all about being punctual and prepared for the session. The amount of time that you plan for your actively session is not limited, but most sessions are on average about an hour. Realistically, the participants want the spend more time doing and learning from the activities than the spend warming up and colling down. <u>Adaptability</u> Learning what the participants prefer to do also means that you must show adaptability, being willing to make changes to the session if the performers are finding the practice too easy or too hard. <u>Reliability</u> It is vitally important that you demonstrate high levels of reliability as a leader of a sports actively session. This means that as a minimum, you turn up on time and the sessions runs the pan and finishes when you said it would. Leading a sports activity session	<u>Describe:</u> <u>Review your leadership of a sports activity session.</u> The review and evaluation of an activity begins as soon as your session starts. You must constantly be reflecting on the successes and effectiveness of the session through observation. The evaluation following a session enables you to identify the strengths and areas for development and make any necessary changes before another session. Consider the following questions to reflects upon: 1. Where the aims of the session achieved? If not, why not? 2. Was the level of activity appropriate for the participants in terms of skills set and fitness? 3. Was it challenging for all? 4. Did you manage risk effectively? Were there any injuries or near misses? 5. Was there and introduction to identify the session aims and a debrief to check for participant progress? 6. Did you have the right equipment and was it fit for purpose? <u>Reviewing your planning</u> You need to review the plan and judge how well you stuck to your original plan. When evaluating your plan, you may want to consider: 1. Was the plan clear and easy to follow? 2. Did the plan contain enough detail? 3. Would you need to include detail in any further sessions? 4. Were the activities suitable for the age, ability, and gender of the group? 5. Where the activities presented in the correct order? 6. Did you have the correct equipment based on the group size?

of groups with a small number of participants rather than a few groups containing large numbers. <u>Allowing for Progression</u> Progression is the idea of developing or moving gradually towards a more advance state. The ability to progress skills and drills effectively and efficiently is the most under-rated skill in coaching. To allow for progression means you have to plan so that activities flow from one to the next smoothly. <u>Supervision</u> Participants in sport activity sessions need supervision. When deciding on the supervision needs of a sports activity session, several key factors to include: • The ages of the participating children. • The need for additional supervision and support for some or all participants (for example due to disability or age). • The competence and experience of the participants for the specific activity. • The nature of the activity (for example, climbing or swimming require higher levels of supervision than an aerobics class). • The nature of the venue, whether enclosed (for example, a swimming pool) or open (for example, parkland); private and exclusive to the group or open and accessible to the public; and what types of equipment children may have access to. <u>Key Term</u> CPSU - Child Protection in the Sport Unit <u>Number of Participants</u> The number of participants is a major factor in determining levels of supervision required. Different activities have different ratios of supervisors to participants. Make sure that you have sufficient supervision for your planned activity. If there is going to be too many participants for you to safely manage, then you will need to seek addition adult supervisors to help out. <u>Size of Groups</u> The size of groups very much depends on the activity involved and the age and/or ability of the participants. <u>Contingency Plan</u> A contingency plan is a back up plan for things that may need to change during a sporting activity session. This is needed because things rarely go completely to plan. It is good practice to plan for the unexpected so that everyone remains safe and continues to learn. Consider the following as examples of what can happen and what you could plan for: • Weather threatens your outside session. • You fall ill during the session and you are no longer able to continue as coach. • There are too few participants for the session. • The facility is double-booked when you arrive for the session. • The group is not responding positively to your style of coaching or the practises that you have chosen. <u>Safety considerations when planning a sports activity session</u>	During the leading of a sports activity session, you will be responsible for making sure that the session is safe, fun and rewarding for the participants, and that those involved are able to learn and develop their skills safely in an enjoyable manor. You must be aware of these responsibilities at all times, as they allow the participants to have a positive experience and increase the likelihood that they will return for another session. <u>Activity specific details</u> Whatever activity it is that you are delivering during the session, you must make sure that anything the participants learn from the session involves the skills, techniques and tactics appropriate to the activity and the needs of the participants. <u>Leadership Style</u> The leadership stye is the way that a leader chooses to lead a group. A group is more likely to be successful if the leader chooses the style that best fits the group. There are three leadership styles: • Democratic style of leadership is one where the leader gets the opinion of the group before making decisions. This type of leadership is a person-orientated style. A democratic style of leadership is concerned with fostering good relationships with the members of the group. • Autocratic style of leadership is one where the leader makes all the decisions and tells the group what to do. This type of leadership is a task-oriented style. In the task-oriented style of leaderships the leader is more concerned with getting good results. • Laissez faire style of leadership involves the leader doing little and letting the group get on with the task without much input.	You should be able to separate responses to these questions into two broad areas, that is positives and negatives. Positives: It would be a positive if you think that plan had enough detail and that the activities were suitable for the age of the participants. Negatives: It would be a negative if you thought that the actives were not presented in the correct order, and you were positioned badly from some activities. <u>Reviewing your leading</u> An evaluation of the activities include within the session could include elements such as: 1. Were the activities too short, too long or just right? 2. Was it challenging enough without putting off your participants? 3. Did the activities show progression, so that the group were challenged? 4. Were all participants motivated to take part? 5. <u>Reviewing your communication</u> Your evaluation may reflect how well you communicated to the group throughout the session. Remember to consider both verbal and non-verbal communication. Questions you may ask yourself include: 1. Did I project my voice? 2. Did I speak clearly enough? 3. Was I loud enough to be heard but not so loud that I was simply shouting? 4. Did my non-verbal communication match my verbal communication? 5. Did I use language appropriate to the knowledge of the group – technical but not too complex?

One obvious safety consideration is to make sure that all participants undertake an effective warm up and cool down. - The warm up needs to be more than a few simple stretches. Depending on the activity involved, the warm up period should be around 5-10mins long. The warm up involves some movement such as jogging to increase the pulse rate and raise the participants' muscle and blood temperature. Also some mobility exercises involving stretching and more dynamic movement to increase the range of motion around their joints. - The cool down is no different. In simple terms, this should be almost a continuation of the activity session for 5-10mins, but at a reduced pace involving low-intensity exercise such as walking or jogging and some stretching. <u>Risk assessment and corrective action</u> In preparation for involvement in sport, a competent person should undertake a risk assessment. A competent person is someone with experience, qualifications and expert knowledge of sport safety. A risk assessment is simply a written document that is designed to minimise the risk of injuries occurring and make sure that equipment is used correctly and the performer is safe. <u>Key Terms</u> Competent person – Someone with experience, qualifications and expert knowledge of sport safety. Risk assessment – A systematic process of evaluation the potential risks that may be involved in an activity. Risk – Situation with the likelihood of danger. <u>Activity Specific Risks</u> Practice sessions for some activities are inherently more likely to produce injuries than others. One of the main risks in sporting activities are the performers themselves. It is important that characteristics of the people involved in the activity be considered. There are different levels of risk associated with beginners undertaking a trampolining activity than there are for expert performers. <u>Facilities</u> The presence of various objects within the facilities being used, such as litter, grass, debris, animal faeces or wet leaves on the playing surface, can result in injury to a participant. The environment surrounding the playing area should also be checked, because objects such as trees, fences and advertising banners could potentially cause injury if performers collide with them. <u>Equipment</u> Items such as goal posts, corner posts and other equipment integral to the activity needs to be checked to make sure they are secure, in good working order and, if necessary, covered to ensure safety. <u>Clothing</u> The performers should also be checked to make sure they are wearing suitable clothing and/or footwear. They should also be checked for jewellery, which should be removed and/or covered up and protected. In some activities, long hair may need to be tied back, to prevent being pulled	<u>Delivery style</u> A pro active delivery style is pre planned. You consider the situation and the group before deciding on the content and delivery of the session. A reactive delivery style is when the leader adapts the session to the situation and changes the delivery as the session develops. <u>Demonstrations</u> When you demonstrate and activity, you must make sure that the demonstration: - Is a technically correct visual image for the participants to copy. - Can be seen clearly by all participants. - Highlights the key coaching points that you are trying to get across. - Is of an appropriate standard/level of difficulty for the participants - Is repeated enough times so that the participants are clear what is required. <u>Communication</u> Your communication must be clear, concise and easy to understand by the participants. There are two types of communication and they are: Verbal communication – It should be loud and clear enough for the whole group to hear and understand. You should pronounce your words clearly and accentuate words that need to be emphasised, for example any technical aspects. Non verbal communication – The use of gestures, hand signals facial expressions and movements. Make sure that your non verbal communication matches your verbal communication. <u>Positioning</u> Many leaders often observe and convey information from one side of the venue. - The advantages of this position are that: - You are out of the way of the participants and do not appear to be getting in the way.	<u>Reviewing your enthusiasm</u> Enthusiasm is a great way to keep your participants motivated and excited to join in. Consider the following questions: - Were the whole group motivated or just some of the participants? - How did they react to any praise given? Did you give any praise? - What would you do differently next time if you used little or no praise? <u>Reviewing your organisation of the session</u> When evaluating the organising of the session you should consider the following questions: - Was the size/make up of working groups suitable? - Did you make changes to the group sizes for practices and was it successful? - How well did you organise the equipment? - Did you use any additional support and, if so, was it successful? - Did you feel the size of the working area was appropriate, too small or possibly too large? - Did the warmup prepare the group for exercise? - Was the timing of different activities successful in preventing boredom? - Did you manage to encourage progression? - Were your instructions given from a position in which all participants could hear and understand?

and in sports such as netball, fingernail length needs to be checked to prevent the fingernails causing scratches. <u>Checking Equipment</u> Most sporting activities either involve the use of different pieces of equipment when performing the activity or equipment is used during practice sessions. This equipment must be checked to make sure it is safe to use and will not cause injuries. <u>Basic first aid and child protection</u> Accidents can happen at any time. Every year, thousands of people in the UK get injured while taking part in a sporting activity. Whether it is a little scratch or a life threatening injury, knowledge of basic first aid will be useful to you. <u>Basic first aid</u> The aim of first aid is to provide care in order to preserve life, prevent the existing condition from deteriorating and to promote recovery. In other words, it is the initial steps taken for any condition that occurs prior to the availability to professional help. Whenever you are planning a sports activity session, you must take responsibility for apply first aid. <u>Child Protection</u> When you are planning or conducting a sports activity session, it becomes your responsibility to be aware of child protection issues. Child protection is the term used to describe the actions of certain organisations such as Children's Services, the Police and health organisations, in their efforts to make sure children are safe from abuse and neglect. <u>Emergency procedures</u> One of the components of an EAP is a list of the key emergency personnel. The list will include details of who the key on-site personnel are, who to contact in an emergency and, if they are not present, where and how to contact them. Another component of the EAP is details of the emergency communication. This includes knowledge of how to contact emergency services, such as the location of the nearest telephone, emergency contact numbers/999 and any on-site, specialist provision. The final part of the EAP is details of the location of all the emergency equipment at the facility. <u>Key Term</u> Emergency Action Plan – A written document identifying what action to take in the event of an emergency at a sport event. <u>Objectives to meet the needs of the group</u> The desired outcomes from any activity session are the aims of any sessions. The aim of the session needs to consider the following: • The age of the participants. This often determines the practises that might be used. • The number of participants, as this will affect the kinds of practices that can be used. • The level of experience and ability of the participants. • Whether the participants have any special requirements relating to diet, health, culture or language. One way of making sure that you reach the overall aim of your sport activity session is to set small achievable targets or goals using the SMART principle. <u>Key term</u> SMART Principle – Setting small targets that are specific, measurable, achievable, realistic and time-bound.	• You have the opportunity to see a wide range of the participants across the venue. • You have the potential to view action in both halves of the field. The disadvantage of this position is: • You are not close enough to some individual participants for the purpose of providing individual feedback. <u>Enthusiasm for the activity and motivation of the group</u> Motivation is the drive to accomplish something. You will need to be motivated and enthusiastic as this will have positive impact on your group's levels of participation. A motivated group will work hard and keep trying within your session. <u>Confidence</u> As the leader of a sports activity session, you must be confident that what you are currently doing or are about to do is correct. Confidence is the basis of being a good leader. You can teach a leader to be good at solving problems; you can show them how to become more decisive; you can have lessons on how to be a better communicator. <u>Creativity</u> You need to demonstrate creativity in the design of your activity session. Do not simply repeat what others have done – be inventive.	<u>Reviewing your positioning</u> In evaluating your positioning, you can consider aspects such as: 1. Were you able to keep an eye on all participants? 2. How well did the group behave? If there was misbehaviour, was that due to the group knowing you could not see them? 3. Did you move around to see the whole group equally? 4. Did you position yourself and the group suability so that all group members could see demonstrations? <u>Improvements that could be made</u> You should be able to make suggestions for improvements that could be made to your lesson. these suggestions will often be the result of realising that different participants have different abilities and that individuals have different needs and skills. You should always review your lessons before planning for the next lesson so that any errors that you have made will be eliminated. <u>Opportunities to develop leadership skills for the future.</u> To develop your leadership skills future you could attend a coaching course organised by the NGB (National Governing Body) of an activity or you could join a sports leadership course such as those run by organisations such as www.sportsleaders.org/qualifications-programmes/spots-leadership or https://sport4life.org.uk/young-people/sports-leader-courses/

<u>Introduction and Conclusion</u> Before the session starts, it is important to: • Review the finished risk assessment. • Make a verbal and/or visual screening of the participants for injury. • Check the suitability of the participants clothes for the activity. • Check that participants understand how to use any equipment correctly. <u>Skill and technique development</u> The main part of the sport activity session should be trying to develop skills and techniques. The activities that you suggest to the participants should be suitable for their abilities and should start off with easier skills which then progress as the skills become more difficult to perform. Example: If the objective is to improve a particular skill, then it would be normal to base the session as follows: • Start with a basic version of the skill • Increase how dynamic the skill practices become • Progress the practise to add more challenge • Incorporate some degree of competition into the practice, for example performing against an opponent.		
Give an example: <u>Organisation of a sports activity session.</u> Location – AFS Sports Hall Time – 15:35 Number of participants – 30 Equipment – 10 footballs, 30 bibs, cones. <u>Appropriate venue – Location</u> If your attendees are from your school then its logical to use the school as your location. <u>Appropriate venue – Size</u> A trampoline session may only need sufficient space for the trampoline and the fitted end decks and securely fitted crash matts. <u>Appropriate venue – Weather</u> An outdoor basketball session that was supposed to focus on developing fast break offence may have to be adjusted if it's raining because of the danger of injuries from slipping when moving at speed. <u>Equipment – Type</u> In team games such as football and rugby, younger children use a smaller sized ball. In Gymnastics, male and female performers use different pieces of apparatus.	Give an example: <u>Safe practice</u> It is much easier to organise a badminton session if the number of participants is limited to a maximum of four player per court. Trying to organise a badminton session with 30 participants and only 4 courts if much more difficult and could result in injury due to swinging rackets in a tighter space. <u>Activity specific details</u> The skills, techniques, and tactics that you deliver in a hockey session will be very different if the participants are all beginners rather than experienced players. You would have to make it much simpler for them. <u>Delivery Style</u> A reactive delivery happens when the header notices that the group of swimmers are getting tired, they may decide to give them longer rest intervals. If the leader notices that the participants are struggling with a complex task, they may simplify the skills to make it easier.	Give an example: <u>Reviewing your planning</u> For example, your evaluation may include a statement such as: “On reflection my session plan was not detailed enough. I struggled to set out my drill according to the space I had because I did not think ahead and draw out a detailed diagram. A diagram would have helped me during the session to have a visual aid to refer to.” <u>Reviewing your leading</u> For example, your evaluation may include a statement such as: “in future I will make sure the group knows that they will receive a certificate of attendance at the end of the session. I will tell them at the start as part of providing extrinsic motivation.” <u>Reviewing your organisation of the session</u> For example, your reflection may include a statement such as this:

<u>Equipment – Amount required</u> A trampolining session may benefit from using four trampolines at once, so that the participants get more time on the actual trampoline. <u>Timing</u> A golf putting session will tend to be less tiring and last longer than a track cycling sprint session, simply because of the different levels of effort required for each activity. <u>Appropriate</u> A football passing drill can easily be adapted by making a condition of the activity that the participants must only use their right or left foot. A tennis volleying drill can be adapted by pacing a target such as a small cone and counting the number of times the cone is hit while attempting a certain number of volleys. <u>Allowing for progression.</u> In basketball, participants may progress from successfully completing a single step lay up from a standing start with the emphasis on placement of the ball onto the backboard, to a two step lay up that includes jumping off the lead leg, to a three-step approach that includes a single dribble. <u>Number of participants</u> The governing body of rugby union recommends the following: • 1:10 (1 adult to 10 children) for children aged 9 years or older • 1:8 for children aged 7-8 years • 1:6 for children under 7 years <u>Size of groups</u> In rock climbing groups tend to be small because of the nature of the activity and the need for low supervision ratios, such that less than 12 is the normal group size, with 3 or 4 supervisions. <u>Safety considerations – Equipment</u> If rugby posts are not padded, a player could easily run into a post and suffer from head or other injuries. <u>Skill and technique development</u> Example: If the objective is to improve a particular skill, then it would be normal to base the session as follows: • Start with a basic version of the skill • Increase how dynamic the skill practices become • Progress the practice to add more challenge	<u>Demonstrations</u> Example of coaching points of a short pass in football Stage one • Move parallel to the ball and place your non-kicking foot to the side of the ball. • Hold your arms up and wide to support your balance. • Keep your eye on the ball until you have it under your control. • Look up to see where is the best place to pass it. Stage two • On selection of your pass, maintain a strong body position. • Swing your kicking foot through and strike the ball with the inside of your foot. • Aim to hit the middle of the ball to ensure it stays close to the ground. Stage three • Keep looking at your target. • Follow your kicking leg through towards the intended target. • The speed of the kicking leg will direct how hard you kick the ball. <u>Communication</u> You should use appropriate language at all times. Try to avoid patronising phrases or demeaning your participants. If you need to give negative try using phrases like:	“I will need to get more hockey ball for a similar session in the future, so that I can provide one ball for every two players” <u>Reviewing your communication</u> For example, your reflection may include a statement such as this: “In future, I need to speak louder and clearer as some participants told me that they could not hear me. I will try and project my voice more.” <u>Reviewing your enthusiasm</u> For example, your reflection may include a statement such as this: “In future, I will try and be more enthusiastic and positive towards the group. I felt that the participants were not giving 100% and this could have been helped with some praise and encouragement.” <u>Reviewing your positioning</u> For example, your reflection may include a statement such as this: “In future, I will insist that the group stands in a semi-circle (horseshoe shape) around me when I demonstrate so that everyone can see.”

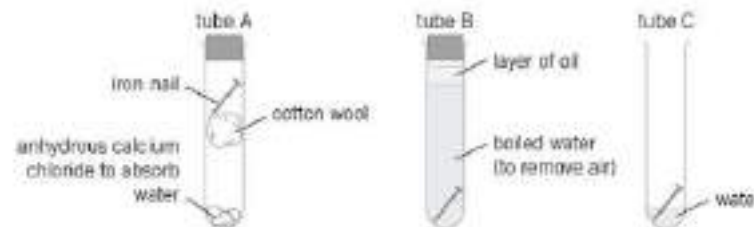
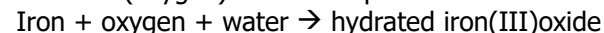
Incorporate some degree of competition into the practice, for example performing against an opponent.	• “that was a great effort, but next time try to...” • “I liked the way you took on the defender with that dribble, but look to get a cross in earlier.” • “fantastic attempt to pass to your teammate, but make sure they are unmarked”. <u>Positioning</u> Move around to observe and interact with all your participants. If you stay in one place you may be able to see what is going on however you will not be able to give individual feedback. <u>Enthusiasm for the activity and motivation of the group</u> There are many simple strategies that can be used to motivate a group: Encourage the participant to do well and emphasises with praise and positive feedback. Use extrinsic rewards as a form of motivation. Tangible extrinsic rewards are things that can be touched, such as prizes, medals or certificates. Intangible extrinsic rewards are things that cannot be touched, such as praise from yourself or others, a smile a nod or clapping. <u>Confidence</u> For example, if you do not show confidence in your own ability to lead your session then your participants might not respond correctly to what you are instructing them to do. By being assertive and confident the group are more likely to listen to you and do ask you wish. <u>Creativity</u> For example, a simple passing drill in rugby, where players run in a line and pass the ball down the line can easily be made different by adding in a defender.	

Section 1: Key Terms

Corrosion	Breakdown of materials due to chemical reactions. It is a form of erosion .
Rusting	The corrosion of iron .
Rust	Rust is hydrated Iron(III)oxide.
Sacrificial protection	An effective way to prevent rusting whereby a metal more reactive than iron is attached to or coated on an object.
Galvanised	Iron or steel objects that have been protected from rusting by a thin layer of zinc metal at their surface.
Oxidation	Loss of electrons.
Reduction	Gain of electrons.
Reducing agent	Tend to get oxidised themselves (and hence reduce other species).
Alloy	A mixture of two or more elements, at least one of which is a metal. For e.g. Steel is an alloy of Iron and carbon.
Bronze	Alloy of copper and tin.
Brass	Alloy of copper and zinc.
Steels	Alloys of iron containing specific amounts of carbon and/or other metals.
Hydrated	A substance that contains water in its crystals.
Polymers	A substance made from very large molecules, polymers are made up of many repeating units.
Thermosoftening polymers	Soften and melt when they are heated. Can be remoulded.
Thermosetting polymers	Do not melt when they are heated. Cannot be remoulded.
Composites	Two materials combined to make a material with useful properties.
Ceramics	Materials made by heating clay to high temperatures making hard materials which are excellent insulators.

Section 2: Rusting

For iron to rust, both **air** and **oxygen** are needed. Providing a barrier between iron either air (oxygen) and water protects the iron from rusting.



Tube A tests to see if air alone makes iron rust. Tube B tests to see if water alone will make iron rust. Tube 3 tests to see if air and water will make iron rust. **Rusting is only observed in tube 3** illustrating that both **air and water are needed** for iron to rust.

Sacrificial protection provides **protection against rusting**. The iron needs to be attached to a more **reactive metal (galvanising it)** for e.g. Zinc, magnesium or aluminium. The zinc is a **stronger reducing agent** than iron, so it has a stronger **tendency to form positive ions** by giving away electrons. As the zinc atoms lose electrons they become **oxidised**. Therefore any water or oxygen reacts with the zinc instead of the iron (protecting the iron from oxidation).

Section 3: Useful alloys

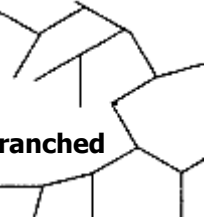
Alloys are **harder** than **pure** metals because the **regular layers** are **distorted** by **differently sized atoms** and hence **cannot slide**.

Pure iron is too **soft** for it be useful in its pure form. Steel is an alloy of iron which contains **carefully controlled quantities of carbon** so that it's hardness is controlled.

Steels	Properties	Uses
High carbon steel	Very hard but brittle	Cutting tools (chisels)
Low carbon steel	Softer but easily shaped	Bodies of cars
Stainless steel	Chromium-nickel steels resistant to corrosion	Cooking utensils, cutlery
Nickel steel alloys	Resistant to stretching	Bridges, bicycle chains

Section 4: The properties of polymers

The properties of polymers depends on what monomers they are made from the conditions under which they are made.

Thermosoftening polymers	Soften or melt easily when heated because their intermolecular forces between the chains are weak .	
Thermosetting polymers	Contain crosslinks (strong covalent bonds) between chains so they do not soften or melt easily.	 cross-link
High density polyethene	Made using very high pressures and trace of oxygen. Polymer chains are randomly branched , can't pack closely together resulting in a low density .	 branched
Low density polyethene	Made using a catalyst at 50°C and a slightly raised pressure. Made of straight chain molecules which are closely packed , stronger and more dense .	 Straight chain

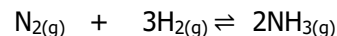
Section 5: Glass, ceramic and composites

Glass	The most common form of glass is Soda Glass which is made by heating a mixture of sand (SiO ₂), limestone (CaCO ₃) and sodium carbonate (soda) at 1500°C. As it cools down the glass turns into a solid. Different types of glass exist depending on amounts of each of the reactants; borosilicate glass involves an extra compound- B ₂ O ₃ . - Atoms arranged irregularly - Transparent, brittle, high melting point, keeps its shape (not flexible)
Ceramics	Wet clay is moulded into a desired shape, then heated in a furnace to 1000°C - Used in bricks, tiles, crockery, bathroom furniture - Atoms are held together in a giant covalent lattice, generally in a regular pattern - Hard but brittle, electrical insulators
Composites	Materials made from two or more different materials, with one material acting as a binder for the other material, reinforcing it . Usually fibres or fragments of one material are held in a 'matrix' (network of atoms) by the other. - Glass-ceramic composites are very hard and tough (not brittle) - Fibreglass (polymer-ceramic) is a low density, tough, flexible material- e.g. used in kayaks - Plywood, carbon fibres and cement are other examples

Section 6: The Haber process

The Haber process is used to manufacture ammonia, which can be used to produce nitrogen-based fertilisers. The **raw materials** are **nitrogen** (from the air) and **hydrogen** (from natural gas, mainly **methane**).

The nitrogen and hydrogen are purified then passed over an **iron catalyst** at a **high temperature** of 450°C and a **high pressure** (200 atmospheres) to make **ammonia** NH₃.



The reaction is **reversible** so ammonia can break down again into nitrogen and hydrogen. The ammonia is removed by cooling the gases so that the ammonia liquefies. It can then be separated from the unreacted nitrogen and hydrogen gas.

The unreacted nitrogen and hydrogen gases are recycled back into the reaction mixture so that they can react again on the surface of the iron catalyst.

Section 7: The Haber process key terms

Reversible reaction	A reaction in which the products can also form the reactants . Its symbol is $\rightleftharpoons$ Shown as: $A + B \rightleftharpoons C + D$
Exothermic	A reaction that transfers energy to the surroundings
Endothermic	A reaction that takes in energy from the surroundings
Equilibrium (HT)	Equilibrium is reached when the forward and backwards reactions occur at exactly the same rate . The amounts of reactants and products present remain constant . Requires a sealed container .
Le Chatelier's Principle (HT)	When a change in conditions is introduced to a system at equilibrium, the position of equilibrium shifts so as to cancel out the change .

Section 8: Changing conditions in the Haber Process

Equation for the Haber process: $N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(g)}$
 ΔH is negative (exothermic in forwards direction).

Changing temperature	The Haber process is an exothermic process (ΔH is negative). If the temperature is decreased , the equilibrium moves to the exothermic side and more NH_3 is made.
Changing the pressure	Increasing the pressure results in the equilibrium moving to the right hand side as there are less gas molecules .
Catalyst	The iron catalyst speeds up the rate of the forwards and backwards reaction equally , hence it doesn't affect the yield of ammonia but does result in ammonia being produced quicker .

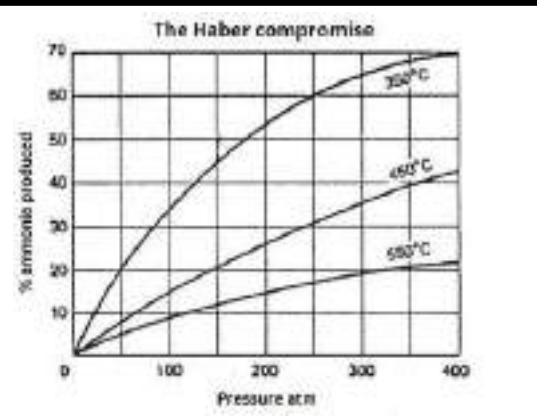
Section 9: The Haber compromise (HT)

Lowering the temperature **slows** down the rate of reaction, taking **longer** for ammonia to be produced.

Increasing the pressure means stronger, more **expensive equipment** is needed. This **increases** the **cost** of producing ammonia.

Hence a **compromise** is reached achieving an **acceptable yield** in a **reasonable timeframe** while keeping **costs down**.

A pressure of **200 atmospheres** and a temperature of **450°C**.



Section 10: Fertilisers

Compounds of nitrogen, phosphorus and potassium are used as fertilisers to improve agricultural productivity.

NPK fertilisers	NPK fertilisers contain compounds of all three elements. Nitrogen for cell growth and making proteins in plants Phosphorus needed to make DNA Potassium needed to make enzymes involved in respiration and photosynthesis.
Synthesis	Fertilisers are made by reacting an acid and base together e.g. Ammonia + nitric acid $\rightarrow$ ammonium nitrate Ammonia + phosphoric acid $\rightarrow$ ammonium phosphate Ammonia + sulphuric acid $\rightarrow$ ammonium sulfate
Obtaining raw materials	Phosphates are obtained from phosphate rocks . Phosphate rocks all contains the phosphate ion PO_4^{3-} . The rocks are insoluble so cant be used directly as fertilisers , but react with acids to make the soluble phosphate compounds. Potassium chloride and potassium sulfate are obtained by mining and are soluble so can be directly used as fertilisers. Nitric acid is required to make nitrate fertilisers (ammonia from the Haber process is oxidised to make nitric acid).
Phosphate rock fertilisers	Phosphate rock + nitric acid $\rightarrow$ phosphoric acid + calcium nitrate Phosphate rock + sulphuric acid $\rightarrow$ calcium phosphate + calcium sulfate Phosphate rock + phosphoric acid $\rightarrow$ calcium phosphate

Important Exam Information - Paper 1 Section B - Extract question -No choice of question -45 minutes	Key Themes (AO1): -Christmas Spirit -Redemption -Poverty -Social responsibility -Supernatural -Family -Loneliness and isolation -Time -Education	'A Christmas Carol' Knowledge Organiser Tips for use: create mind-maps, flash cards, ask someone to test you, look, cover, write, check	Plot (AO1): Preface: Charles Dickens write a note to his readers to explain that he wants to introduce an entertaining idea to them. Stave One 1. Introduced to Ebenezer Scrooge on Christmas Eve. He is a lonely miser obsessed with money. He won't pay to heat the office properly – meaning Bob Cratchit is very cold. 2. We learn Jacob Marley, Scrooge's business partner, died exactly 7 years earlier. 3. Scrooge is irritated that Christmas Day seems to be interrupting his business. 4. Scrooge is visited by his nephew Fred, who invites his uncle to Christmas dinner. Scrooge refuses. 5. Scrooge is visited by two charity workers, asking for donations. Scrooge refuses and exclaims he wants to be left alone. 6. Scrooge allows Bob to have Christmas Day off. 7. Scrooge, when he is home, is visited by the Ghost of Jacob Marley – warning him he will be visited by three more ghosts to help him change his ways. Stave Two 1. Scrooge is visited by the Ghost of Christmas Past who takes him to witness his past. 2. Scrooge is taken first to his schoolboy years and he is reminded how his friends would go home from Christmas while he was left at school. 3. We see him with his sister, who one year took him home for the holidays. 4. Next we are shown Scrooge as a young apprentice, working for Fezziwig. Dickens describes the Christmas ball Fezziwig organised for his employees. 5. Finally, Scrooge is taken to see his ex-fiancée, Belle. We see the scene when they break up, as money has taken over Scrooge's life. 6. Scrooge cannot bear to see any more and struggles with the spirit. Stave Three 1. Scrooge is then visited by the Ghost of Christmas Present. 2. The spirit shows Scrooge how the Cratchit family celebrate Christmas. Scrooge asked if Tiny Tim will live. The spirit explain unless there are changes, he will die. The spirit reminds Scrooge of his earlier words: 'If he is to die, he had better do it, and decrease the surplus population' 3. Scrooge is then taken to see how others celebrate Christmas: miners, lighthouse workers, sailors on a ship. 4. He is then taken to Fred's house at Christmas, where they are playing games. 5. The spirit then begins to age, and see under the spirit's robes two children: Want and Ignorance. 6. The Ghost of Christmas Future then appears. Stave Four 1. The Ghost of Christmas Future is described. 2. The spirit takes Scrooge to see a group of businessmen discussing someone who has died. 3. Scrooge is then taken to see Old Joe, where he is in the process of buying property of the dead man – which have been stolen. 4. Scrooge then returns to Bob Cratchit's house, where it is revealed Tiny Tim has died. 5. Scrooge is then taken to the graveyard and is shown a grave stone and realises this is for him. 6. Scrooge falls to his knees and begs that he will change his ways. Stave Five 1. Scrooge wakes up in his own bed. 2. Scrooge wonders how much time has passed and calls to a boy. He then sends the boy to the poulterer for the prize turkey to give to Bob Cratchit, 3. Scrooge meets one of the charity collectors from earlier and whispers to him that he will give a large donation. 4. Scrooge then goes to Fred's house and is welcomed in. He enjoys the dinner and party. 5. On Boxing Day, Scrooge arrives early to work, and plays a trick on Bob. Scrooge then tells him he is going to raise his salary and promises to help Bob's struggling family. 6. Scrooge is described to have completely changed and becomes a 'second father' to Tiny Tim – 'who did not die.'
Characters (AO1): 1.Ebenezer Scrooge: Miserly, mean, bitter, materialistic, unsympathetic, indifferent, cold, selfish, isolated, cynical, charitable, value driven, generous, happy, sociable, transformed. 2. Marley's Ghost: Materialistic, self-centred, terrifying, haunting, exhausted, direct, reformed, regretful, hopeful, selfless, wise 3. Bob Cratchit: Uncomplaining, tolerant, courteous, deferential, patient, civil, eager, pleasurable, good-humoured, playful, caring, tender, cheerful, loving, forgiving. 4. Fred: Warm-hearted, empathetic, cheerful, optimistic, even-tempered, insightful, determined, generous, forgiving, jovial, enthusiastic, caring 5. Ghost of Christmas Past: Contradictory, strong, gentle, quiet, forceful, questioning, mysterious 6. Ghost of Christmas Present: Compassionate, abundant, generous, cheerful, jolly, friendly, severe, sympathetic 7. Ghost of Christmas Future : Mysterious, silent, ominous, intimidating, frightening, reoslute 8. Tiny Tim: Frail, ill, good, religious	Key Quotations (AO1): Stave One 'He was as tight-fisted as a grind stone' – about Scrooge 'His face was ruddy and handsome, his eyes sparkled' – Fred (presented as the opposite to Scrooge) 'I wear the chain I forged in life' –Ghost of Marley Stave Two 'It wore a tunic of the purest white... from the crown of its head there sprung a bright clear jet of light' – Ghost of Christmas Past 'A lonely boy was sat reading near a feeble fire' – Scrooge as a young boy ""Your lip is trembling,' said the Ghost, 'And what is that upon your cheek?' – first sign of emotion from Scrooge Stave Three 'There sat a jolly Giant, who wore a glowing torch...it was clothed in one simple green robe' – Ghost of Christmas Present 'God bless us everyone!' – Tiny Tim's positive attitude 'Tell me Tiny Tim will live...' – Scrooge showing compassion. Stave Four 'The phantom slowly, gravely, silently approached' – Ghost of Christmas Yet to Come 'I fear you more than any spectre I have seen' – Scrooge 'Tell me I may sponge away the writing on this stone!' – Scrooge desperate to change his ways 'I will honour Christmas in my heart' - Scrooge Stave Five 'I'll raise your salary Bob and endeavour to assist your struggling family' – Scrooge changing his ways. 'to Tiny Tim, who did NOT die, he [Scrooge] was a second father' – Scrooge changing his ways 'Wonderful party, wonderful games, wonderful unanimity, won-der-ful happiness!' – repetition shows Scrooge's joy at the end.	Context (AO3): Dickens' Life 1. Charles Dickens was born on February 7, 1812 in Hampshire into a middle class family. 2. His dad was imprisoned for debt leading to poverty for the family. 3. Charles was put to work at Warren's Blacking Factory. 4. Dickens found employment as an office boy at an attorneys. 5. A Christmas Carol was written in 1843 Industrial Revolution 1. From 1780 factory owners in Britain began to use coal-fired steam engines to power the machines in big factories, bringing great fortune. 2. Transition from traditional farming methods to machinery led to Industrial revolution. 3. People flocked from the countryside to the cities. London's population between 1800 and 1900 from 1 million to 6 million people. This led to over-crowding and hunger, disease and crime. There were no proper drainage / sewage systems. Many families had to share one tap / toilet. Children suffered the most and were exploited by factory owners who forced them to work long hours in dangerous conditions. Charity 1. Industrial revolution led to a gap between the rich and poor with many struggling to survive relying on the generosity of those better off than themselves. 2. Some philanthropists were keen to enhance the lives of the workers. Cadburys tried to provide quality homes and improve lifestyles of workers at their factory in Bournville. Education 1. Dickens believed strongly in the importance of education. 2. As part of his campaign against the treatment of the poor, Dickens worked with a friend called Angela Burdett-Coutts. 3. In 1840s, Dickens and Coutts became involved in the Ragged Schools. The aim was to provide poor children with basic education. 4. Dickens believed that it is through education that one can leave poverty. Religion 1. Christianity held a strong influence in Victorian Britain, especially amongst the middle / upper classes. 2. Good Christians believed in a strict moral code – attending church regularly, avoiding alcohol and exercise sexual restraint. 3. Dicken's view on Christianity was different. He believed that to be a good Christian people should seek out opportunities to do good deeds for other people. 4. Sabbatarianism – when people spent Sunday going to church and resting. Dickens was opposed to this because it meant that working poorer people were denied any enjoyment on their one day off – everything was shut. 5. Poorer people didn't have ovens at home so often food cooked by bakers. Sabbatarianism meant that many people couldn't get a hot meal on Sundays because the bakers were shut.	
Sentence starters: Point (AO1): Use the words from the question and include a method used by the writer. Evidence (AO1): For example/ This is seen when '...' Analysis (AO2): This word/method '...' implies/suggests... It makes us realise/think/feel/imagine... Furthermore, the word '...' is crucial because... Link (AO3): This could represent/symbolise the ... in society/it may represent Dickens view that...			

Section 1: Key terms

Dissipation	Energy becoming spread out to the stores of surrounding objects (usually wasted thermal energy.)
Lubrication	A method of reducing unwanted energy transfers by application of a lubricant (e.g. oil) to reduce friction . Occurs in machines.
Insulation	A method of reducing energy transfers by the use of insulators . Occurs in buildings e.g. Loft insulation.
Conservation of energy	The law that states that energy cannot be created or destroyed .
Closed system	An isolated system in which no energy transfers take place out of or into the energy stores of the system.
Work	Work is done on an object when a force makes the object move.
System	Object or group of objects.
Friction	A contact force resisting the relative motion between two surfaces. Friction in machines always causes energy to be wasted .
Input energy	Energy supplied to a device.
Useful energy	Energy transferred to where it is wanted in the way it is needed.
Wasted energy	Energy that is not usefully transferred.
Efficiency of a device	The proportion of the total input energy that is transferred in useful ways.

Section 3: Methods of energy transfer (also known as energy carriers)

Mechanical	Energy transferred by forces acting on objects.
Electrical	Energy transferred when an electric current flows through a device.
Radiation	Energy transferred by electromagnetic radiation (light, microwaves, sound etc.)
Heating	Energy transferred by conduction, convection or radiation.

Section 2: Different kinds of energy stores

There are a limited number of energy stores .	
Chemical energy	(e.g. fuel + oxygen) – Can be changed by bonds being made/broken
Kinetic energy	All moving objects have it.
Gravitational Potential energy	Energy stored in objects raised up against the force from gravity (possessed by anything that can fall .)
Elastic Potential energy	Energy stored in an object that has been stretched (stretched springs, rubber bands, elastic band etc.)
Thermal (Heat) energy	Flows from hot objects to colder objects.
Nuclear store	Energy stored in the nuclei of atoms. Can be released by the fusing or splitting of nuclei.
Magnetic	Two separated magnets that are attracting, or repelling.
Vibrational	Energy from vibrations or moving to and fro (e.g. a pendulum).
Light, electrical (as in a current) or sound are not energy stores . These are active processes and cannot be stored in a stable state. Electricity is a flow of charge that transfers energy from one energy store to another .	

Section 4: Energy transfers

A Coal fire	Energy is shifted from a store when a fuel like coal burns. The chemical store (fuel) is depleted and the thermal store is filled.
Bow & arrow	Elastic potential energy → kinetic and thermal energy
Placing a book on a shelf	When the book is lifted onto the shelf, energy is shifted from the chemical store of your arm to the gravitational store of the book.
Apple falling from a tree	When an apple falls and gains speed, its store of gravitational potential energy decreases and its kinetic energy store increases. When it hits the ground its kinetic energy is then transferred into thermal and sound energy.

KNOWLEDGE

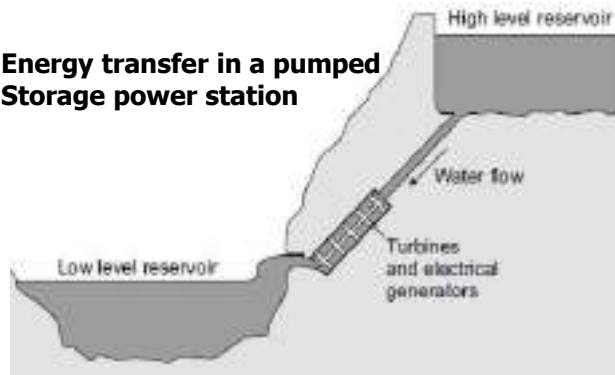


Physics Topic P1

Conservation and dissipation of energy

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Energy transfer in a pumped Storage power station



When electricity is needed, water from the high level reservoir is allowed to flow into the low level reservoir. The flowing water generates electricity. The water in the high level reservoir stores **gravitational potential energy**. The flowing water has **kinetic energy**. The water turns the turbine which is connected to the generator. The generator produces some **sound**, this is **wasted energy**.

Section 5: Equations to learn

Equation	Units
Kinetic energy = $0.5 \times \text{mass} \times \text{velocity}^2$ $E_k = 0.5 m v^2$	Energy – Joules (J) Mass – kilograms (kg) Velocity – metres per second (m/s)
Gravitational potential = mass x gravitational field x height energy strength $E_p = m g h$	Energy – Joules (J) Mass – kilograms (kg) Gravitational field strength – Newtons per kilogram (N/kg) Height – metres (m)
Power = energy transferred ÷ time $P = \frac{E}{t}$	Power – Watts (W) Energy transferred – Joules (J) Time – seconds (s)
Power = work done ÷ time $P = \frac{W}{t}$	Power – Watts (W) Work done – Joules (J) Time – seconds (s)
Work done = force x distance moved	Work done – Joules (J) Force – Newtons (N) Distance – Metres (m)
Efficiency = $\frac{\text{useful energy output}}{\text{total energy input}}$	Energy – Joules (J)
Efficiency = $\frac{\text{useful power output}}{\text{total power input}}$	Power – Watts (W)

Section 6: Improving efficiency (HT)

Why devices waste energy	How to reduce the problem
Friction between moving parts causes heating	Lubrication of moving parts reduces friction
The resistance of a wire causes wire to get hot when current passes through.	Use wires with as little resistance as possible
Air resistance causes force on a vehicle that opposes its motion.	Streamline the shape of the vehicle to reduce air resistance.
Working machinery creates sound	Tighten loose parts to reduce vibration which will reduce the noise.

Section 7: Energy dissipation & Electrical appliances

An electrical appliance is designed for a particular purpose and should dissipate (waste) as little energy as possible.

Appliance	Useful energy	Wasted energy
Light bulb	Light emitted from glowing element	Filament heats surroundings
Electric heater	Heating the surroundings	Light emitted from the glowing element
Toaster	Heating bread	Toaster case heats up and heats air around it.
kettle	Heating water	Kettle itself also heats up and the air around it.
TV	Light and sound	Heating of the TV's casing and heat transferred to surroundings.

KNOWLEDGE



Physics Topic P2 Energy transfer by heating

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Section 1: Key terms

Thermal conductivity	A measure of how good something is at conducting .
(Thermal) Insulator	Thermal insulators reduce energy transfers (prevent heat loss to surroundings and hence have a low thermal conductivity)
Thermal Conductor	Good at transferring heat energy.
Specific heat capacity	The specific heat capacity of a substance is the amount of energy needed to change the temperature of 1Kg of the substance by 1°C . Its units are J/Kg/°C
Joulemeter	Energy meter (measures energy supplied)

Section 2: Energy transfer by conduction

The higher the Thermal conductivity of a material the **higher the rate of energy transfer by conduction** across the material.

Metals	Metals are the best conductors of energy, Copper is a better conductor than steel.
Non-metals	Non-metal material (like wool and fibreglass) are the best insulators .

Factors affecting insulation

Thickness of material	The thicker the material the better the insulation .
Thermal conductivity	The lower the thermal conductivity the better the insulator .

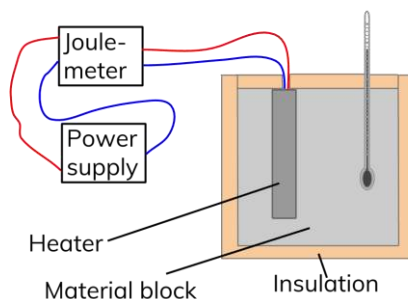
Section 3: Specific heat capacity

Putting the same amount of heat into some materials gives a bigger temperature rise than in other materials. The specific heat capacity of a substance is the **energy needed to raise the temperature of 1kg** of a material by **1°C**.

Investigations show that when a substance is heated, its temperature rise depends upon three factors:

Amount of energy supplied to it	Specific heat capacity increases with temperature .
Mass of the substance	The greater the mass the more slowly its temperature increases when its heated .
What the substance is	Metals tend to have lower specific heat capacities . Water has a high specific heat capacity . Hence it takes less energy to raise the temperature of a block of aluminium metal by 1°C than it does to raise the same amount of water by 1°C.

Measuring specific heat capacity



A metal block of **known mass** is heated. A **joulemeter** is used to **measure the energy** supplied ΔE and a **thermometer** to **measure the temperature rise** $\Delta \theta$.

The measurements are then inserted into the equation and used to calculate the specific heat capacity:

$$\Delta E = m \times c \times \Delta \theta$$

Energy (J) Mass (kg) Specific heat Capacity ($\text{J } ^\circ\text{C}^{-1} \text{ kg}^{-1}$) Change in temperature ($^\circ\text{C}$)

Storage Heaters

Storage heaters **use electricity at night** (off peak hours) to **heat special bricks** (which have a high specific heat capacity). The bricks **store** lots of **energy** and **take time** to heat up and cool down. Hence during the day (on peak) they **release heat slowly** when the **heater element is on** and cool down slowly when it is off.

Section 4: Heating and insulating buildings

Homes are heated by electric or gas heaters, oil or gas central heating systems or solid fuels in stoves or fireplaces. A **poorly insulated house loses** more **energy** and so **costs more** to heat. It also means that **more pollution**, particularly carbon dioxide is released into the environment. The rate of energy transfer can be reduced by:

How to prevent heat loss from a house

Loft insulation	Contains fibreglass which traps air , reducing convection which is a good insulator.	
Cavity wall insulation	Traps air pockets in gaps which is a good insulator	
Double glazed windows	Traps air in gaps between glass which is a good insulator.	
Aluminium foil behind radiators	Reflects radiation.	
External walls with thicker bricks	Thicker bricks have a lower thermal conductivity.	

Section 5: Infrared radiation Key terms (Triple only)

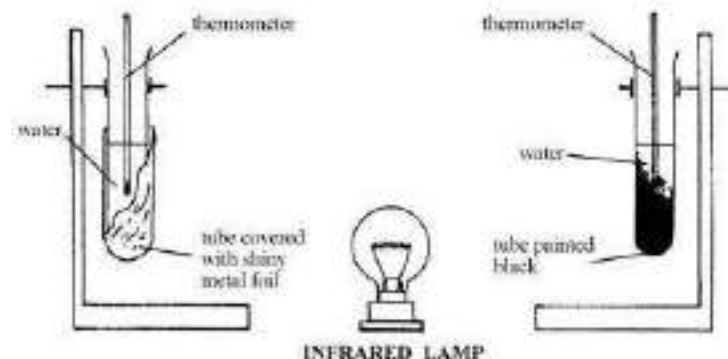
Electromagnetic radiation	Transverse waves that travel at 300,000,000 m/s . Includes radio, microwave, infrared, visible, Ultraviolet, X-ray and gamma waves.
Infrared radiation	An electromagnetic wave . Emitted by warm objects . Also known as heat or thermal radiation.
Black body	A body that absorbs all the radiation that hits it.
Black body radiation	The radiation emitted by a perfect black body
Greenhouse gases	gases that contribute to the greenhouse effect by absorbing infrared radiation

Section 6: Infrared radiation (Triple only)

The Sun emits all types of electromagnetic radiation. Infrared radiation consists purely of electromagnetic waves of a certain range of frequencies. The **hotter** an object is, the **more infrared radiation** it **emits in a given time**.

What happens to infrared waves when they strike different surfaces.

Dark matt surfaces absorb infrared radiation much **better** than light glossy surfaces, **silvered surfaces reflect** nearly all heat radiation falling on them. **Dark matt surfaces** also **emit more infrared radiation**.



In the experiment above, the infrared lamp **radiates energy** to the test tubes. The **black painted tube absorbs** most of the energy (and **its temperature increases faster**) whereas the **shiny foil reflected** most of the energy that reached it.

Absorption and emission of infrared radiation

The **temperature** of an object **will increase** if it **absorbs more radiation** than it emits.

The **Earth's temperature depends** on a lot of factors like the **absorption of infrared radiation**. **Greenhouse gases** in the atmosphere (CO_2 , CH_4 & H_2O) **absorb infrared radiation preventing it escaping** into space. This **process** is known as the **Greenhouse effect** and **makes the Earth warmer** than it would be if these gases were not present in the atmosphere.

Section 1: Key terms

Renewable resources	Resources that will replenish themselves (made quicker than they are used). They will not run out .
Non-renewable resources	Resources in limited supply that are used quicker than they are made, so they will run out .

Section 2: Energy Resources

Our **energy demands** are met mostly by burning fossil fuels (oil, coal and gas). Fossil fuels are non-renewable and causes major environmental problems, hence there is an increasing demand for renewable resources which are less damaging to the environment.

Resource	Renewable?	Uses	Advantages	Disadvantages
Fossil Fuels	Non-Renewable	Electricity, transport, heating	Reliable – electricity can be generated all of the time. Relatively cheap way of generating electricity.	Produces carbon dioxide , a greenhouse gas that causes global warming . Can produce sulphur dioxide , a gas that causes acid rain .
Nuclear Fuel	Non-Renewable	Electricity	Produces no carbon dioxide when generating electricity. Reliable – electricity can be generated all of the time.	Produces nuclear waste that remains radioactive for thousands of years. Expensive to build and decommission power stations.
Bio Fuel	Renewable	Heating, electricity	Carbon neutral . Reliable – electricity can be generated all of the time.	Production of fuel may damage ecosystems and create a monoculture .
Wind	Renewable	Electricity	No CO₂ produced while generating electricity. Cheap to use.	Unreliable – may not produce electricity during low wind . Expensive to construct.
Hydroelectricity	Renewable	Electricity	No CO₂ produced while generating electricity. Cheap to use.	Blocks rivers stopping fish migration . Unreliable – may not produce electricity during droughts .
Geothermal	Renewable	Electricity, heating	Does not damage ecosystems . Reliable source of electricity generation. Cheap to use.	Fluids drawn from ground may contain greenhouse gases such as CO₂ and methane . These contribute to global warming .
Tidal	Renewable	Electricity	No CO₂ produced while generating electricity. Cheap to use.	Unreliable – tides vary . May damage tidal ecosystem e.g. mudflats.
Waves	Renewable	Electricity	No CO₂ produced while generating electricity. Cheap to use.	Unreliable – may not produce electricity during calm seas.
Solar	Renewable	Electricity, heating	No CO₂ produced while generating electricity. Cheap to use.	Unreliable – does not produce electricity at night . Limited production on cloudy days. Expensive to construct.

KNOWLEDGE



Physics Topic P4 Particles at Work – Electric circuits

ORGANISER

Section 1: Circuit Symbols

Symbol	Name	Function
	Switch (open)	Enables current to be switched on or off.
	Cell	Pushes electrons around a complete circuit.
	Battery	Supplies electrical energy, consists of two or more cells.
	Diode	Allows current in one direction only.
	LED	Light emitting diode emits light when a current passes through it in the correct direction.
	Resistor	Limits the current in a circuit.
	Variable resistor	Allows current to be varied.
	Bulb	Emits light as a signal when a current passes through it.
	Fuse	Breaks the circuit if current exceeds a certain amount.
	Voltmeter	Measures potential difference (voltage).
	Ammeter	Measures electric current.
	Thermistor	Temperature dependent resistor. Has high resistance when temperature is low.
	LDR	A light dependent resistor. Has high resistance when levels of light are low.

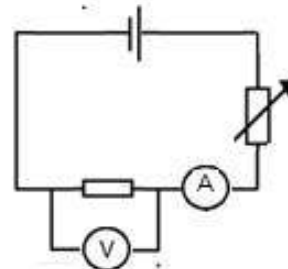
Section 2: Key Terms

Electric current	Flow of electric charge . Units amperes, A
Potential difference	The potential difference (voltage) between two points in an electric circuit is the energy transferred (or the work done) when a coulomb of charge passes between the points. Units volt, V
Resistance	Resistance is caused by anything that opposes the flow of electric charge . Units ohm, Ω
Charge	Anything charged that is able to move within a circuit . Electrons or ions. Units are coulombs, C
Series	A circuit with only one route for charge to take . The different components are connected in a line, end to end.
Parallel	A circuit with more than one route for charge to take . Each component separately connected to the +ve and -ve terminals.

Section 3: The standard test circuit

The standard test circuit is used to test components and determine the resistance of a component. By measuring the current through and potential difference across the component, the resistance can then be calculated and IV graphs obtained.

Standard test circuit



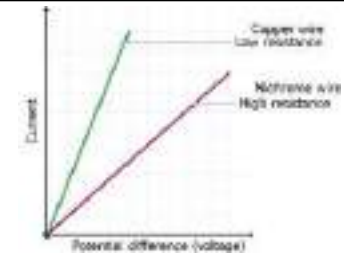
The **Ammeter** must be in **series** and placed **anywhere** in the **circuit**.

The **voltmeter** must be placed in **parallel around the component** (so that it can compare the energy the charge has before and after passing through the component).

Section 4: Current-potential difference graphs

Increasing or decreasing the **potential difference** of the circuit will affect the current. Plotting current-potential difference results for different wires tells us about the resistance of these wires.

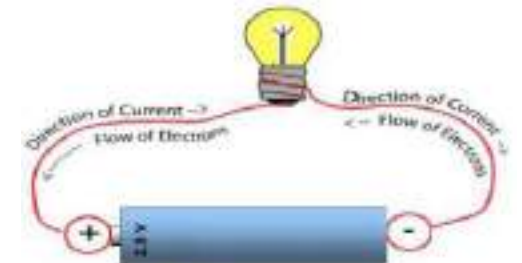
The **steeper the line, the lower the resistance** of the wire.



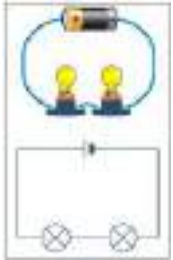
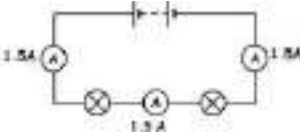
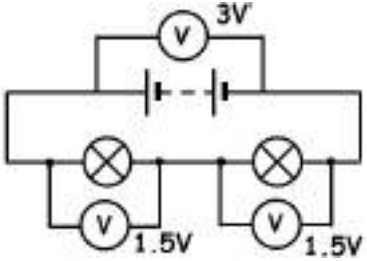
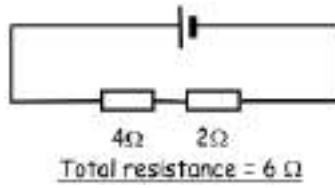
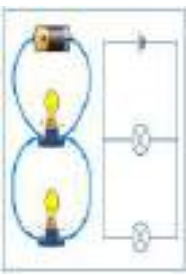
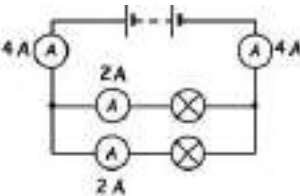
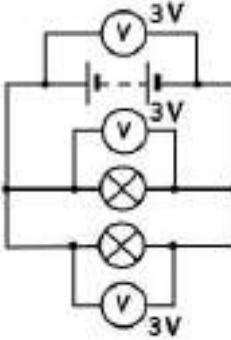
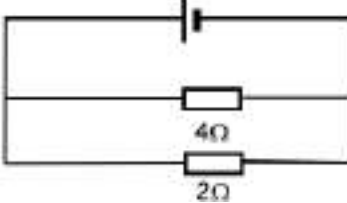
Section 5: Factors affecting resistance of a wire

Length of wire	The resistance of a wire is affected by length. Resistance of a long wire is greater than the resistance of a short wire because electrons collide with more metallic nuclei as they pass through.
Thickness of wire	The resistance of a thin wire is greater than the resistance of a thick wire because a thin wire has fewer electrons to carry the current.
Temperature	As temperature increases the metal nuclei begin to vibrate more. The electrons will have more chance of colliding and so resistance increases .

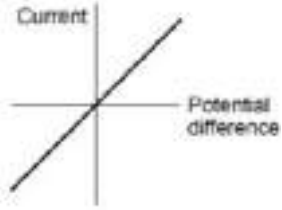
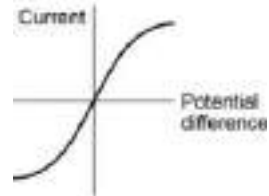
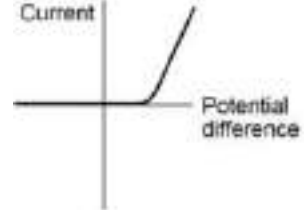
Electrical **current** is **NOT** the flow of electrons, it's the **flow of electric charge**, and as charge can be positive or negative then naturally **current** is in the **direction** of positive charge flow, and in the **opposite direction** to negative charge flow.



Section 6: V, I and R in Series and Parallel

Components connected in...	Current	Potential Difference	Resistance
Series 	The current is the same everywhere in the circuit and in every component. 	The total potential difference of the power supply is shared between the components. 	The total resistance is the sum of the individual resistances. $R_{\text{total}} = R_1 + R_2$ Adding more resistors increases resistance. 
Parallel 	The total current through the whole circuit is the sum of the currents through the separate components. 	The potential difference across each component is the same. 	The total resistance of two resistors is less than the resistance of the smallest individual resistor.  The total resistance for this circuit is less than 2Ω (the resistance of the smallest resistor). Resistance decreases as more resistors are added.

Section 7: IV Graphs

Graph	Example	Explanation
	Ohmic conductor (Fixed resistor or wire)	Fixed Resistor or wires are Ohmic Conductors. Current and potential difference are directly proportional. Resistance is constant.
	Filament Lamp (bulb) non Ohmic conductors	Resistance of a filament lamp is not constant. As temperature increases, resistance increases. Ions within the lamp vibrate more, increasing collisions with electrons.
	Diode or LED	Diode/LED The current through a diode/LED flows in one direction only. The diode has a very high resistance in the reverse direction.

Section 8: Equations to learn

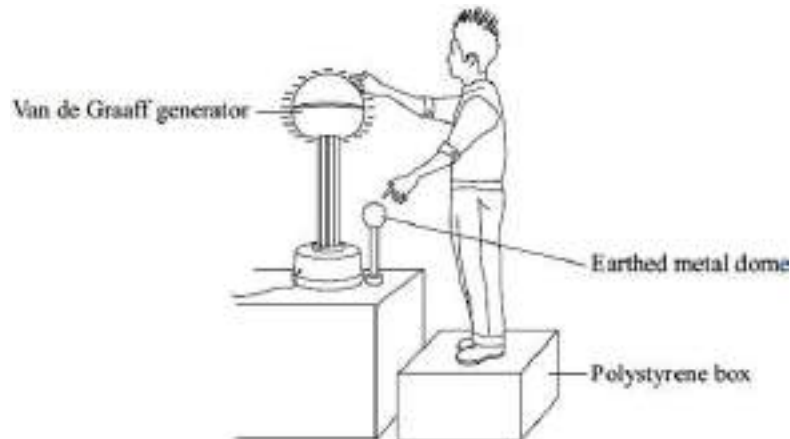
Charge = current x time $Q = I \times t$	Charge flow - coulomb (C) Current – amperes (A) Time – seconds (s)
Potential difference = current x resistance $V = I \times R$	Potential difference – volts (V) Current – amperes (A) Resistance – ohms (Ω)
Energy transferred = charge x potential difference $E = Q \times V$	Energy = joules (J) Charge flow - coulomb (C) Potential difference – volts (V)

Section 9: Static electricity

Static electricity is all about charges which are **not free to move**. This causes them to build up in one place which leads to **sparks** or **shocks** when they finally do move.

Build up of static is caused by friction	When two insulating materials are rubbed together , electrons are scraped off one and dumped on the other. This leaves a positive static charge on one, and a negative static charge on the other.
Only electrons move	When electrons (negatively charged particles) move, ions form. Both positive and negative electrostatic charges form as a result.
Positive charges don't move	A positive charge is always caused by electrons being removed (so the positive charges don't move!)
Like charges repel	Two things with the same charge will repel each other.

Van de Graaff Generator



When the Van de Graaff generator is switched on, **each hair gains the same negative charge**. Similar **charges repel** so the student's **hair stands on end**.

Examples of static electricity

- **Attracting dust:** many objects around a house are insulating materials and get easily charged. Dust particles are attracted to anything that's charged (TV screen, glass, plastic etc.)
- **Clinging clothes and crackles:** When synthetic clothes are dragged over each other (in tumble drier or over your head) electrons get scraped off leaving static electricity.
- **Bad hair days:** Static builds up on hair, each strand having the same charge, so they repel each other.

Section 10: Key Terms

Static electricity	It's the movement of electrons from one insulator to another. The insulator that loses electrons becomes positively charged and the insulator that gains the electrons becomes negatively charged
Insulator	An electrical insulator does not easily allow electricity to pass through it.
Earthing	Connecting a charged object to the ground using a conductor (e.g. copper wire) prevents build up of charge.

Section 11: Dangers

Lightning	Lightning is a sudden electrostatic discharge that usually occurs during a thunderstorm. This occurs between electrically charged regions of a cloud, between two clouds, or between a cloud and the ground.
Synthetic clothes	Static charge can build up on synthetic materials if they are rubbed against each other. The charge can eventually build up large enough to cause a spark, dangerous if close to flammable gases or fuel fumes.
Grain chutes, paper rollers, fuel pipes	Static can build up when grain shoots out of pipes/paper drags over rollers/fuel flows out of filler pipes. Can lead to a spark which might cause an explosion in dusty or fume-y places (like petrol station)
The solution to the problem	Earthing of objects prevents build up of static charge. Earthing cables can be attached to prevent sparks. Conducting soles in shoes prevent static electricity from building up hence preventing you getting a shock.

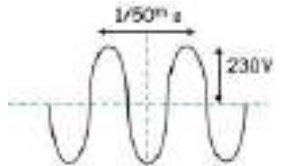
Section 12: Uses

Electrostatic paint sprayers	Used to paint bikes and cars providing a fine even coat.
Defibrillator	A shock from a defibrillator can restore normal heart rhythm. Consists of two paddles connected to a power supply which are placed on the patient's chest. The charge passes through the paddles to the patient which makes the heart contract.

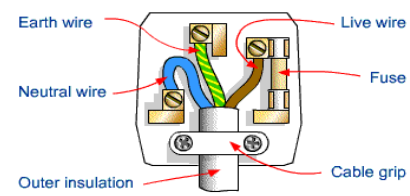
Section 1: Key Terms

Electric current	Flow of electric charge . Units amperes, A
Alternating Current AC	The current alternates (changes direction) e.g. mains electricity
Direct Current DC	The current flows in one direction only e.g. cells or batteries.
Mains Electricity	Electricity provided by the national grid (is an alternating current of 230V and a frequency of 50Hz.)
National Grid	A series of cables and transformers linking power stations to consumers.
Step-up Transformer	Increases the potential difference for transmission across power cables. This makes the National Grid efficient.
Step-down Transformer	Reduces the potential difference from the cables to 230V for use by consumers.

Section 2: Alternating current

Alternating Current AC	 The current alternates (changes direction.)
Direct current DC	 Direct current flows in one direction

Section 3: plugs, sockets & cables

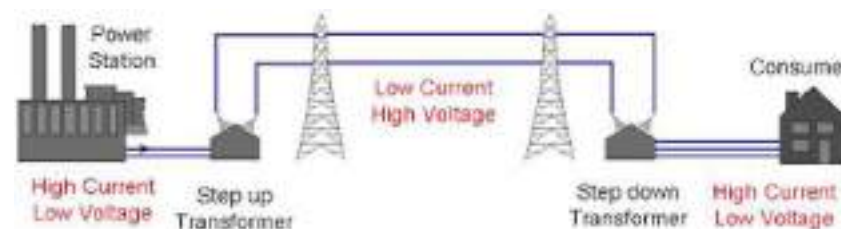
 Three pin electrical plug	
Live wire	Carries the current (brown wire). Connects to fuse. About 230V.
Neutral wire	Completes the circuit (blue wire). Around 0V
Earth	Prevents electric shock (green & yellow wire). Is connected to the longest pin in a plug and carries current safely to earth if there is a fault.
Fuse	Contains a thin wire that melts and cuts off the current if too much current passes through it.
Sockets and plug cases	made of plastic because it's a good electrical insulator .
Mains cable	made up of two or three insulated copper wires surrounded by an outer layer of plastic.

Section 5: Equations to learn

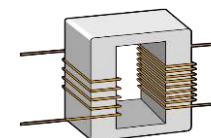
Equation	Units
Charge flow = current x time $Q = I \times t$	Charge flow - coulomb (C) Current – amperes (A) Time – seconds (s)
Power = potential difference x current $P = V \times I$	Power – watt (W) Potential difference – volts (V) Current – amperes (A)
Power = current ² x resistance $P = I^2 \times R$	Power – watt (W) Current – amperes (A) Resistance – ohms (Ω)
Energy transferred = power x time $E = P \times t$	Energy = joules (J) Power – watt (W) Time – seconds (s)

Section 4: The National Grid

The National Grid supplies electricity from power stations via a series of cables and transformers to customers at **high voltages** to **reduce energy loss**.

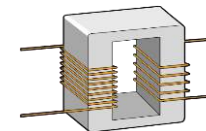


Step-up transformer



More turns on secondary coil than on primary, therefore **increases voltage**. Increasing voltage **decreases the current** in the wires which means **less resistance**. Less resistance means **less energy lost as heat**, therefore it is **more efficient** to transmit electricity at high voltage.

Step-down transformer



Fewer turns on secondary coil than on primary, therefore **decreases voltage**. Reducing the voltage makes it **safer** to use in the **home**.

Section 6: Choosing appliances

Clockwork radio	Battery radio
Store elastic potential energy in a spring when someone winds them up. They are free to use. Better for the environment.	Stores chemical energy and turns it into electrical energy . Expensive to buy and have to be replaced when used up. A lot of energy and harmful chemicals go into making batteries.

Section 1: Key Terms

Density	How much mass a substance contains compared to its volume . Solids are usually dense because the particles are closely packed.
State of matter	The way in which the particles are arranged – solid, liquid or gas.
Change of state	When a substance changes from one state of matter to another (e.g. melting is the change from a solid to a liquid). Energy changes the state, not the temperature.
Physical change	A change that can be reversed to recover the original material. E.g. a change of state.
Chemical change	A change that creates new products . It should not be reversed . E.g. a chemical reaction.
Internal energy	The energy stored inside a system by the particles (atoms and molecules) that make up the system. Internal energy is the total kinetic energy and potential energy of all the particles .
Kinetic energy	Energy stored within moving objects (e.g. particles).
Potential energy	Energy stored in particles because of their position . The further apart particles are, the greater the potential energy .
Specific heat capacity	The specific heat capacity of a substance is the amount of energy required to raise the temperature of one kilogram of the substance by one degree Celsius .
Temperature	The average kinetic energy of the particles .
Specific latent heat	The amount of energy required to change the state of one kilogram of the substance with no change in temperature .
Latent heat of fusion	Energy required to change state from solid to liquid .
Latent heat of vaporisation	Energy required to change state from liquid to vapour .
Gas Pressure	The force exerted by gases on surface as the particles collide with it. As temperature increases, gas pressure increases if the volume stays constant.

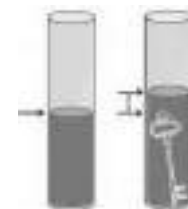
Section 2: Density

The **density of water** is **1000kg/m³**. Objects that have a lower density than water will float in water. **Density** can be **calculated** by measuring its **mass** and **volume**.

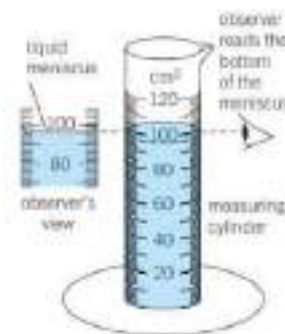
Measure **volume** of a **cuboid**
 $= a \times b \times c$



Volume of an **irregular object** can be found by **dropping in a liquid** and **measuring Displacement**.



When reading a meniscus the observer must read the **bottom** of the **meniscus**.

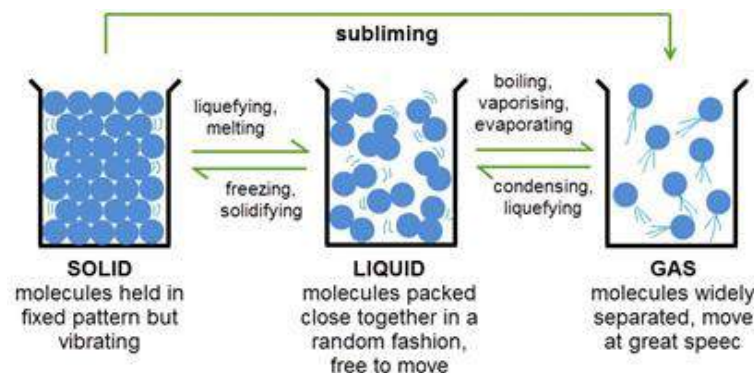


Calculation	Equation	Symbol equation	Units
Density	Density = $\frac{\text{mass}}{\text{volume}}$	$\rho = \frac{m}{v}$	Density = kg/m ³ Mass = kg Volume = m ³

Section 3: States of matter

Everything around you is made up of matter and exists in one of **three states**. **Solids, liquids** and **gases** are made of particles, the physical arrangement of particles determines the state of a particular substance.

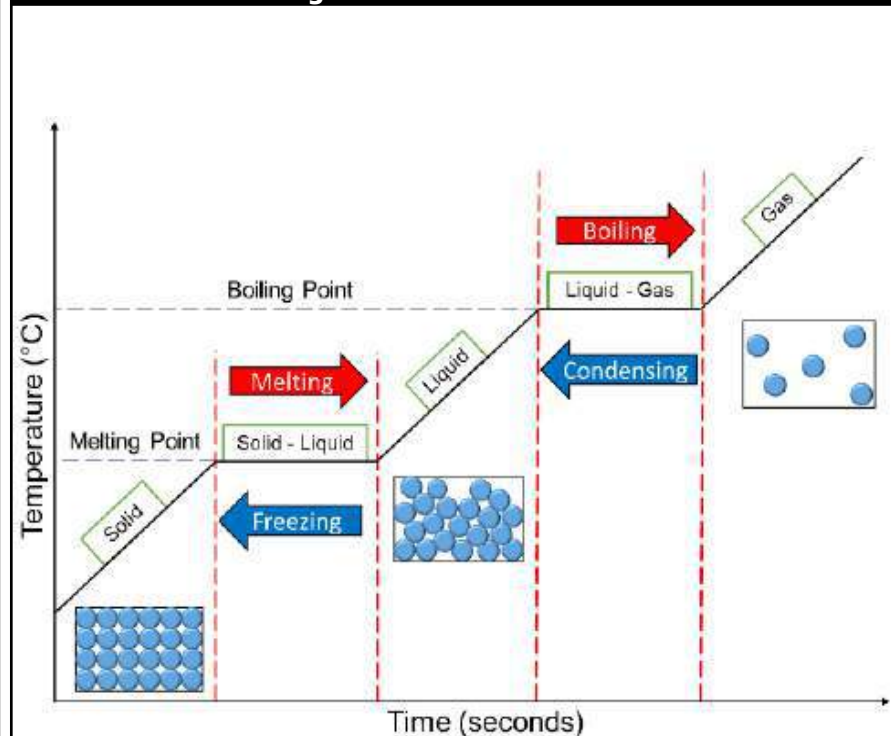
Kinetic theory of matter



Changes of state

Condensation	Process in which a gas turns into a liquid
Evaporation	Process in which a liquid turns into a gas
Freezing	Process in which a liquid turns into a solid
Melting	Process in which a solid turns into a liquid
Sublimation	Process in which a solid turns into a gas

Section 4: The Heating Curve



Solid	Particles are closely packed, fixed and arranged in regular layers. As more energy is absorbed the kinetic energy and therefore the internal energy of the material increases.
Melting	Temperature doesn't change. Energy is used to weaken the forces between particles. As more energy is absorbed the potential energy and therefore the internal energy of the material increases.
Liquid	Particles are touching but no longer arranged regularly. They are able to move. As more energy is absorbed the kinetic energy and therefore the internal energy of the material increases.
Evaporation	Temperature doesn't change. Energy is used to weaken the forces between particles. As more energy is absorbed the potential energy and therefore the internal energy of the material increases.
Boiling point	The temperature at which a liquid boils and turns into a gas
Melting point	The temperature at which a solid melts and turns into a liquid.
Gas	Particles move randomly. As more energy is absorbed the particles move more quickly and the temperature increases.

State	Particle arrangement	Distance between molecules	Strength of forces	Movement of particles	Internal energy
Solid	Fixed	Close together	Strong	vibrates	Lowest internal energy
Liquid	Not fixed	Touching but not arranged regularly	Weak	Move about	Higher than solids but lower than gases
Gas	Not fixed	Far apart	Very weak (insignificant)	Move about freely	Highest internal energy.

Section 5: Internal energy

The **energy stored** by the **particles** of a substance is called its **internal energy**. This is caused by their individual motions and positions. The internal energy is the sum of a particles

- **kinetic energy** (due their individual motions relative to each other.)
- **potential energy** (due to their individual positions relative to each other.)

Increasing the temperature increases the **internal energy** of a substance because:

- Increasing temperature increases kinetic energy
- If it melts or boils, the potential energy increases.

Section 6: Specific latent heat

The **latent heat** is the **energy needed** for a substance to **change its state without changing its temperature**.

Specific latent heat of fusion $L_f = \frac{\text{energy, } E}{\text{mass, } m}$

Specific latent heat of vaporisation $L_v = \frac{\text{energy, } E}{\text{mass, } m}$

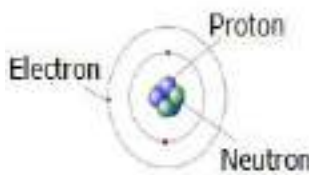
Section 7: Gas Pressure

Gas Pressure	Caused by the force exerted when particles collide with their container
Increasing temperature increases the gas pressure	Gas molecules move faster and hit the surfaces with more force. The number of impacts between the gas molecules and the surface of the container increases, so the total force of impact increases
Motion of gases	The unpredictable motion of smoke particles is evidence of the random motion of gas molecules – this is called Brownian motion
Gas pressure and Volume (Triple only)	A fixed mass of gas at a constant temperature, the pressure is increased if the volume is decreased as the number of molecular impacts per second increases
Boyle's Law (Triple only)	Pressure (p) x Volume (V) = constant (Pa) (m ³)

Section 1: Key Terms

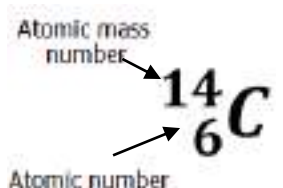
Atom	The smallest part of an element that can exist. All substances are made of atoms. No overall electrical charge . Very small , radius of 0.1nm.
Element	An element contains only one type of atom . Found on the Periodic Table. There are about 100 elements.
Isotope	An atom of the same element with different numbers of neutrons .
Radioactive decay	When an unstable nucleus changes to become more stable and gives out radiation . Random .
Activity	The rate at which decay occurs . Measured in becquerels (Bq) .
Count rate	Number of decays recorded each second by a Geiger-Muller tube.
Half life	The time it takes for the number of nuclei of the isotope in a sample to halve Or, The time it takes for the count rate (or activity) from a sample containing the isotope to fall to half its initial level .
Contamination	Is when radioactive particles get into objects e.g. within liquids, with the body or on the skin.
Irradiation	When an object is exposed to radiation . The object does not become radioactive itself.
Ionisation	Radiation can ionize by removing electrons from atoms to form ions . If this happens in DNA it could lead to a mutation that causes cancer .
Peer review	The checking of scientific results by other scientific experts .

Section 2: Development of Atomic Model

Plum Pudding		Thompson's plum pudding model shows that the atom is a ball of positive charge with negative electrons embedded in it. Was incorrect .
Nuclear Model		Rutherford's alpha particle scattering experiment found a central area of positive charge . The nuclear model has a positive nucleus and electrons in shells . Later, neutrons were discovered and included in the nucleus.

Energy levels:
Absorption of radiation may lead to electrons moving further from the nucleus (higher energy level).
Emission of radiation may lead to electrons moving closer to the nucleus (lower energy level).

Section 3: Atomic mass number and atomic number

	Atomic number – the number of protons (the number of electrons is the same in an atom)
	Mass number – the total number of protons and neutrons

Section 4: Properties of Sub-Atomic Particles

Sub-atomic particle	Mass	Charge	Position in Atom
Proton	1	+1	Nucleus
Neutron	1	0	Nucleus
Electron	$\frac{1}{2000}$	-1	Orbiting in shells

Section 5: Nuclear Radiation

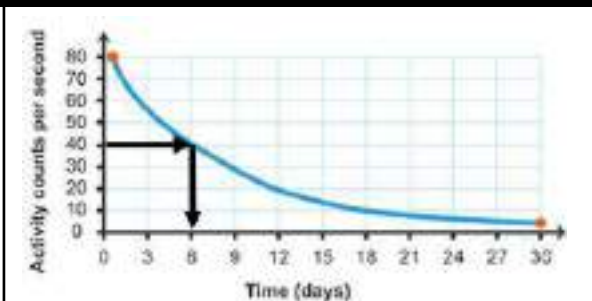
Radiation	Range in air	Absorbed by	Ionizing Power	Product emitted when nuclei decays
Alpha	Short – up to 5cm	Paper and skin	Very High	2 protons and 2 neutrons
Beta	Medium – about 1m	About 5mm of aluminium .	Medium	Electron
Gamma	Unlimited – spreads out	Several centimetres of lead .	Low	Electromagnetic wave

Section 6: Nuclear Decay Equations

Alpha decay	${}^{219}_{86}\text{Rn} \rightarrow {}^{215}_{84}\text{Po} + {}^4_2\text{He}$ In alpha decay a helium nucleus (2 protons and 2 neutrons) is emitted . The new element formed has a mass number that has decreased by 4 and atomic number that has decreased by 2 .
Beta decay	${}^{14}_6\text{C} \rightarrow {}^{14}_7\text{N} + {}^0_{-1}\text{e}$ In beta decay a neutron turns into a proton . An electron is emitted . The new element formed has a mass number that stays the same and an atomic number which increased by 1 .
Gamma ray	There are no changes to the nucleus when gamma rays are emitted.

Section 7: Activity & half-life

Halve the initial activity ($80 \div 2 = 40$)
Draw a line across on the graph until you reach the curve
Draw a line down (half-life = 6 days)
Half life **never** drops to zero.



Section 8: Key Terms

Background radiation	Background radiation is around us all of the time . It comes from: natural sources such as rocks and cosmic rays from space man-made sources such as the fallout from nuclear weapons testing and nuclear accidents.
Radiation dose	A measure of the amount of exposure to radiation , measured in sieverts (Sv) .
Radioactive isotopes	Isotopes used in medicine for medical imaging , treatment of cancer and as tracers to monitor organs.
Radioactive tracers	Trace the flow of a substance through an organ.
Nuclear Fission	Splitting of an atom's nucleus into two smaller nuclei and the release of two or three neutrons and energy.
Nuclear Fusion	is the joining of two light nuclei to form a heavier nucleus . In this process some of the mass may be converted into the energy of radiation .

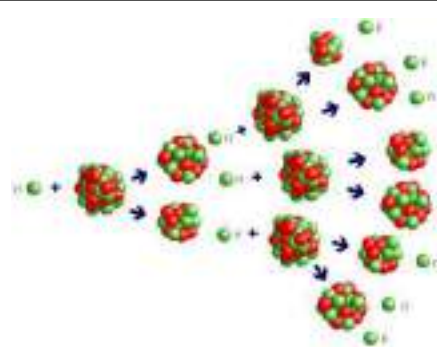
Section 9: Radioactive isotopes and medicine

Used in medicine **for medical imaging**, **treatment of cancer** and **tracers** to monitor/explore internal organs. How useful the radioactive isotope is depends on it's half life and the type of radiation given out.

Radioactive tracers	Radioactive Tracers (like radioactive Iodine) contain a radioactive isotope that emits gamma radiation. Radioactive Iodine is used because: - Half life of 8 days (lasts long enough for test but decays completely after a few weeks). - Emits gamma so can be detected outside the body. - Decays into a stable product.
Gamma Cameras	Take images of internal body organs . Before image is taken, patient is injected with solution containing a gamma-emitting radioactive isotope. The solution is absorbed by the organ and the camera detects the gamma radiation. The half life of the radioactive isotope should not be too long (to avoid unnecessary risks) or too short (so a useful image produced).
Gamma beams	Gamma beams (or radioactive implants) can destroy cancer cells in a tumour.

Section 10: Nuclear Fission

Nuclear fission is the **splitting of a large and unstable atom's nucleus** (e.g. uranium or plutonium) into two smaller nuclei and the release of neutrons and energy.

Induced fission	Energy is released in a nuclear reactor because of nuclear fission. In induced fission, the nucleus of an atom is struck by a neutron, causing the nucleus to split into two smaller fragment nuclei. Energy is also released.	 Induced fission
Nuclear fission in Power Stations	- Unstable nuclei are bombarded with neutrons. - The nuclei undergo fission and split. Two smaller nuclei are formed plus neutrons. Energy is released. - Released neutrons cause more nuclei to split which produces a chain reaction. - The reaction is controlled using control rods which absorb the neutrons (slowing down the chain reaction). - A coolant removes the heat energy, usually to produce steam.	 Chain reaction (extremely dangerous if not controlled). The explosion caused by a nuclear weapon is caused by an uncontrolled chain reaction.

Section 11: Nuclear fusion

Process of forcing the nuclei of two atoms close together forming a single larger nucleus. The two nuclei collide at high speed. Energy is released when the nuclei fuse together. The **suns core releases energy** due to the **nuclear fusion** reaction of **hydrogen nuclei into helium nuclei**.

Nuclear fission

Been used for over 50 years.	Nuclear fusion
Uses uranium (only found in some parts of world)	A developing technology . Needs to be at a high temperature and pressure for reaction take place and generate energy.
Produces radioactive waste which has to be stored safely and securely.	Hydrogen fuel easily available as present in sea water
	Reaction product helium is stable.

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Physics Topic P8 Forces in balance

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Section 1: Key terms

Scalar	A quantity with magnitude (size) only , e.g. speed, distance, time, area, volume.
Vector	A quantity that has both magnitude (size) and direction , e.g. all forces, displacement, velocity, weight, momentum.
Distance	How much ground an object has covered during its motion (scalar).
Displacement	Displacement is distance in a given direction (vector).
Magnitude	The value of a force in newtons.
Friction	The force opposing the relative motion of two solid surfaces in contact .
Contact force	Force between objects that are touching e.g. friction, air resistance.
Non-contact force	Force that acts on things not touching e.g. gravitational force, magnetic force.
Balanced forces	When forces are equal and opposite each other, also known as equilibrium .
Newton	Unit force is measured in.
Weight	The force of gravity acting on an object's mass . Measured using a newtonmeter .
Centre of mass	A point in the middle of an object where all its mass acts .
Resultant force	The overall force once all the forces have been considered.
Work done	Work is done when an object is moved through a distance . When work is done against friction there is a temperature rise .
Newton's first law	If the forces on an object are balanced the object will either: 1. Remain still 2. Keep moving with the same velocity
Newton's third law	When two objects interact they exert an equal and opposite force on each other.
Moment (HT)	Turning effect of a force
Load (HT)	Weight of an object

Section 2: Types of forces

Force	Between	Contact or non-contact	Example
Friction	Two moving surfaces	Contact	Brakes
Upthrust	An object & water	Contact	Boat
Reaction	Two stationary objects	Contact	Book on shelf
Air resistance	A moving object & air	Contact	Plane
Weight	Two masses	Non-contact	You and the earth
Tension	Two ends of an elastic material	Contact	Spring
Magnetic	Magnetic & magnetic materials	Non-contact	Magnet picking up a nail

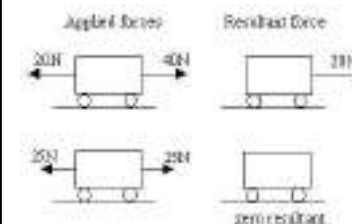
Section 3: Resultant forces

If the resultant force on an object **is zero**, then the object **stays at rest** or at the **same speed and direction**.

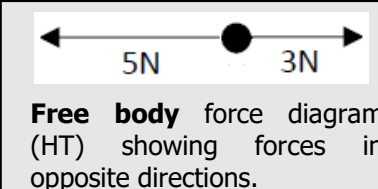
If the resultant force is **greater than zero**, the **speed or direction** of the object **will change**.

If two forces act on an object along the **same line**:

- the resultant force is **their sum** if the **forces act** in the **same direction**.
- the resultant force is their **difference** if the forces **act in opposite directions**.



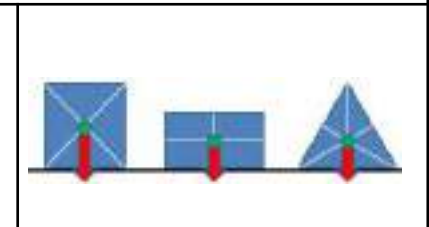
A **free-body** force diagram of an object shows **the forces acting on it**. Each force is shown on the diagram by a **vector** (an arrow pointing in direction of the force.)



Section 4: Centre of mass

Point at which mass of an object appears to be concentrated is known as its **centre of mass**. When an object is freely suspended, it comes to rest with its centre of mass **directly below the point of suspension**.

The centre of mass of a **regular shape** is at the **centre** (where the axes of symmetry meet.)

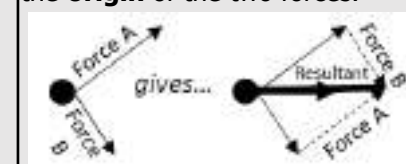


Section 5: The parallelogram of forces (HT)

The parallelogram of forces is a scale diagram of two force vectors which is used to find the **resultant of two forces** that are **not parallel** (don't act along the same line).

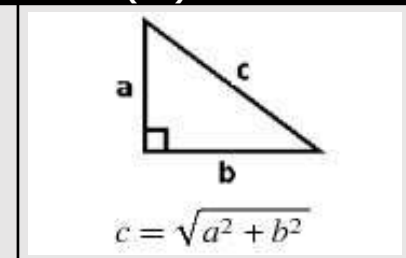
Force A and Force B are two forces that are **not parallel**.

The resultant is the **diagonal** of the parallelogram that **starts** at the **origin** of the two forces.



Resulting displacement (HT)

The resulting displacement (c) is **measured** using a **ruler** on a scale diagram or calculated using **Pythagoras**.



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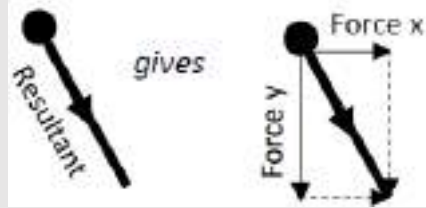
Physics Topic P8 Forces in balance (Triple)

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Section 6: Resolution of forces (HT)

Resolving a force means finding perpendicular components that have a resultant force that is equal to the force.

Drawing two forces at **right angles** to represent a **single resultant force**.



Equilibrium

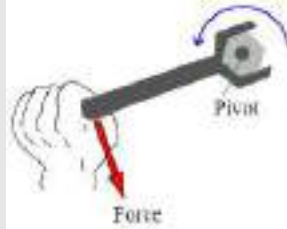
For an object in **equilibrium**, the resultant force is zero. For e.g. an object at rest has a resultant force of zero so is in equilibrium.

Section 7: Moments at work (Triple)

The **moment** of a force is a **measure** of the **turning effect** of the force on an object.

Moment of a force (turning effect) can be **increased** by:

- Increasing the **size** of the force.
- Using a spanner with a **longer** handle (**distance** the force is applied is further from the pivot.)



To calculate a moment you need to know:

- How much **force** is being applied (Newtons, N)
- The **distance** from the pivot that the force is being applied (Meters, m)

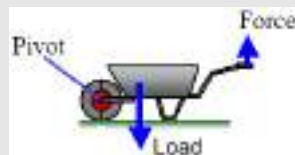
$$\text{Moment} = \text{force} \times \text{distance}$$

Unit for moment

(newton metre Nm)

A **small force** over a **large distance** can generate the **same moment** as a **large force** over a **small distance**.

Examples of levers include **scissors** and **wheelbarrows**.



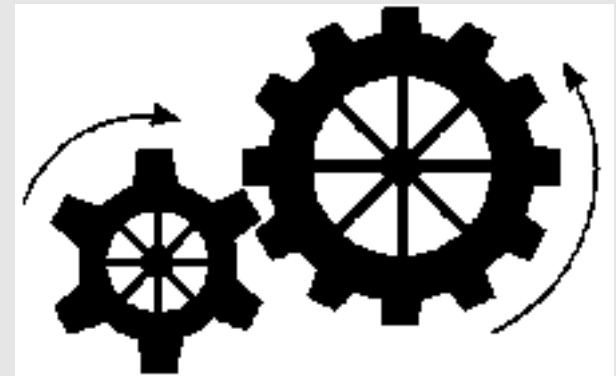
Section 8: Levers and gears (Triple)

Levers use the idea of **balanced moments** to make it **easier** for us to do **work**. Levers **increase the distance** from the **pivot** at which the **force is applied**. Levers act as **force multipliers** as less force is required to get the same moment by increasing the distance.

Gears are like levers because they can **multiply the effect** of a **turning force**.

Gears are wheels with toothed edges that rotate on an axle or shaft. When one gear turns, it causes the other gear to rotate in the opposite direction.

If you want to **increase the moment of a turning force**, you need a **small gear** wheel to **drive a large gear** wheel. We see this in cars.



When a car is in **low gear**, a **small gear wheel** turns (effort) a **large gear wheel** (load.) The load force is larger than the effort force hence it is acting as a **force multiplier**.

Changing gears (Triple)

Low gear to high gear

A low gear ratio gives low speed and a high turning effect. A high gear ratio gives high speed and a low turning effect.

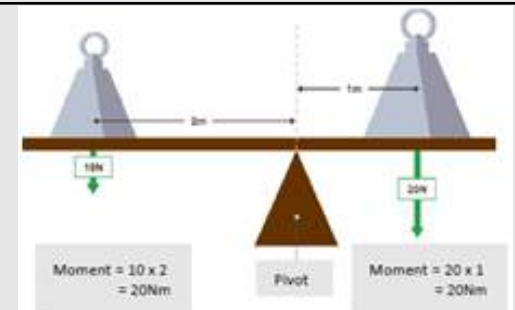
Section 9: Moments and equilibrium (Triple)

If an object at rest doesn't turn, the sum of the anticlockwise moments about any point = the sum of the clockwise moments about any point. This is the **principle of moments**.

Applying the principle of moments gives the equation

$$W_1d_1 = W_2d_2$$

W = Weight in newtons, N
d = distance in metres, m



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Physics Topic P9 Forces in action - Motion

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Section 1: Key terms

Displacement	The distance an object moves in a given direction . A vector quantity.
Velocity	The speed of an object in a given direction . A vector .
Acceleration	The change of an object's velocity per second .
Deceleration	A negative acceleration, the object is slowing down.
Gradient	Change in quantity on the y-axis divided by change in quantity on the x-axis.

Section 2: Distance-time graphs

A distance-time graph **shows** the **distance** of an object from a starting point (plotted on y-axis) **against** the **time** taken (plotted on the x-axis.)

Constant speed - **straight line** that slopes **upwards**.

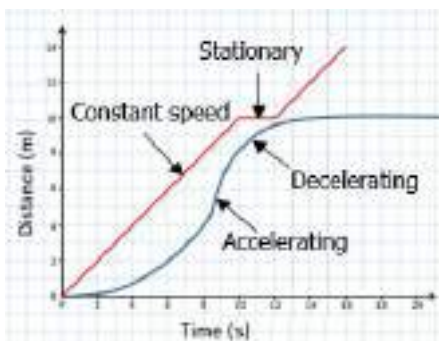
Accelerating - **curved line** getting **steeper**.

Decelerating - curved line getting **less steep**.

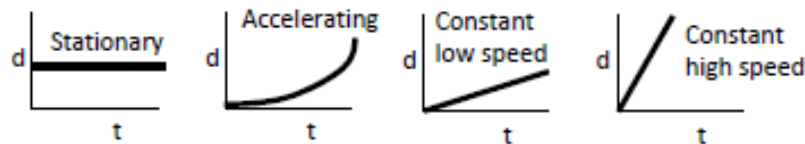
Stationary - **horizontal line**, the **gradient** is **zero**.

The **gradient** represents the object's **speed**.

The **steeper** the gradient, the **greater** the speed.



Slopes of distance-time graphs



Section 3: Velocity-time graphs

A velocity-time graph **shows** the **velocity** of an object (plotted on y-axis) **against** the **time** taken (plotted on the x-axis.) A **motion sensor** linked to a computer can be used to **measure velocity changes**.

Constant velocity (zero acceleration) - **horizontal line**

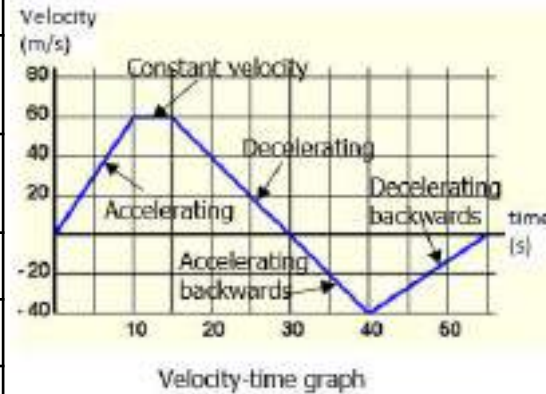
Constant acceleration - **straight line** with velocity **increasing**

Constant deceleration - **straight line** with velocity **decreasing**

Stationary - **horizontal line on x-axis** (velocity = 0)

Moving **backwards** - **below x-axis**

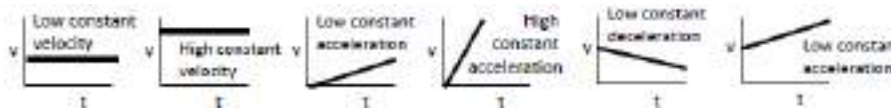
The **steeper** the **gradient** the **greater** the **acceleration**.



A **positive gradient** represents **acceleration**, a negative gradient represents deceleration.

Area under the graph represents **distance** travelled (HT).

Slopes of velocity-time graphs



Section 4: Equations to learn

Distance = speed x time
 $s = v \times t$

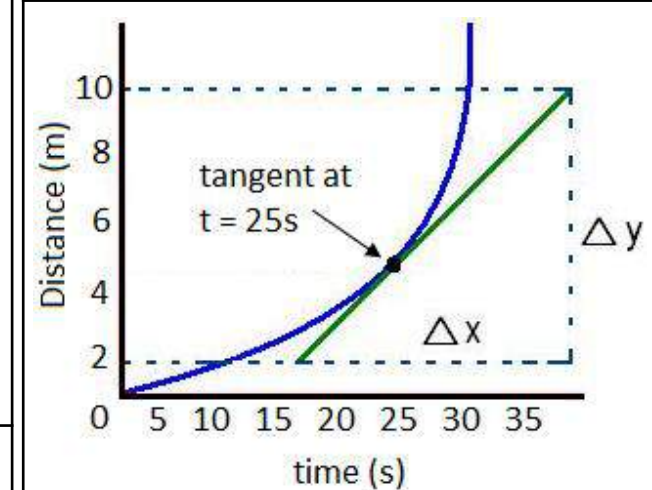
Acceleration = $\frac{\text{change in velocity}}{\text{time taken}}$
 $a = \frac{\Delta v}{t}$

Distance – metres (m)
Speed – metres per second (m/s)
Time – seconds (s)

Acceleration – metres per second (m/s²)
Change in velocity – metres per second (m/s)
Time taken – seconds (s)

Section 5: Calculating the gradient (HT)

The distance-time graph for an object moving at **changing speed** is a **curve**. To find the **speed** at a particular instant in time, draw a **tangent** to the line **at that instant** and determine the **gradient** of the tangent.



Calculating the gradient:

$$\text{slope} = \frac{\Delta y}{\Delta x}$$

or

$$\text{slope} = \frac{y_2 - y_1}{x_2 - x_1}$$

Section 1: Key terms

Displacement	The distance an object moves in a given direction . A vector quantity.
Velocity	The speed of an object in a given direction . A vector .
Acceleration	The change of an object's velocity per second .
Resultant force	The overall force once all the forces have been considered.
Terminal velocity	The velocity an object eventually reaches when it is falling. The weight of the object is then equal to the frictional force on the object.
Stopping distance	The shortest distance a vehicle can safely stop in. It depends on thinking distance and braking distance .
Momentum	A moving object with mass has momentum. Momentum is " mass in motion " It is a vector quantity.
Conservation of momentum (HT)	In a closed system, total momentum before an event is the same as the total momentum after the event.
Closed system (HT & Triple)	A system with no external forces acting on it.

Section 2: Forces and acceleration

Newton's second law of motion	The acceleration of an object is: - Directly proportional to the force - Indirectly proportional to mass	We can investigate the relationship between force and acceleration by using a trolley with constant mass, newton-meter, motion sensor and a computer.
Effect of force	The greater the resultant force on an object, the greater the objects acceleration . If an object is not accelerating then the resultant force on the object must be zero.	
Effect of mass	The greater the mass of an object, the smaller its acceleration for a given force.	
Calculation of resultant force	Resultant force = mass x acceleration $f = m \times a$	Force – newtons (N) Mass – kilograms (kg) Acceleration = metres per second squared (m/s ²)
Inertia (HT)	the inertia of an object is its tendency to stay at rest or in uniform motion (moving at constant speed in a straight line.)	

Section 3: Weight and terminal velocity

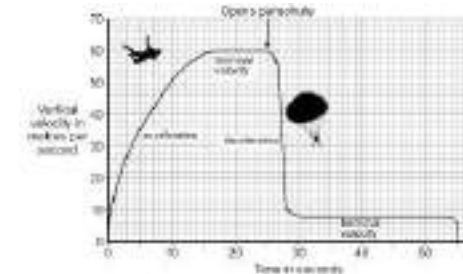
Weight	The weight of an object is the force acting on the object due to gravity . Measured in newtons, N.
Mass	The quantity of matter in it. Measured in Kg.
Gravitational field strength.	The gravitational force on a 1kg object is called the gravitational field strength. An object acted on only by gravity accelerates at about 10m/s ² on the Earth.
Calculating weight	weight = mass x gravitational field strength. $w = m \times g$ Weight – newtons (N) Mass – kilograms (kg) GFS – newtons per kilogram (N/kg)

Terminal velocity

When a parachutist jumps out of a plane, the only force acting is weight (gravity.) As the parachutist falls air resistance acts upwards. The resultant force is downwards as weight is greater than air resistance, hence the parachutist accelerates. As velocity increases, so does air resistance. **Terminal velocity** is reached **when the forces are balanced** (when air resistance = weight.)



The ball bearing reaches its terminal velocity when the **drag is equal to the weight**.



When the parachute opens, the surface area increases hence there's much more air resistance. The weight (downwards force) is still the same, hence the **terminal velocity decreases** allowing the parachutist to hit the ground at a safe speed.

Section 4: Forces and braking

Thinking distance	The distance a car travels while the driver reacts .
Factors affecting thinking distance	1. Tiredness 2. Drugs 3. Alcohol 4. Distractions (e.g. mobile phones)
Braking distance	The distance a car travels while the car is stopped by the brakes .
Factors affecting braking distance	1. How fast you are going 2. Road conditions (weather e.g. Water or ice) 3. Conditions of tyres and brakes. 4. Type of road surface 5. Mass of vehicle
Stopping distance	The sum of the thinking distance and braking distance .


Section 5: Momentum (HT)

All moving objects have momentum. The greater the mass **and** velocity of an object, the greater its momentum. Momentum has size **and** direction so is a vector quantity.

Calculating Momentum	Momentum = mass x velocity $p = m \times v$	Momentum – Kg m/s Mass - Kg Velocity – m/s

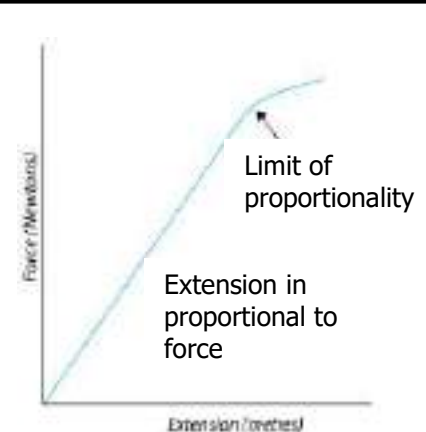
In a **closed** system, **total momentum before** an event is **the same** as the **total momentum after** the event. Momentum is conserved in a collision or an explosion as no external forces act on the objects. After a collision, the colliding objects may move off together or may move apart.


Section 6: Forces and elasticity

Elastic deformation	Occurs when a spring is stretched and can then return to its original length .
Inelastic deformation	Occurs when a spring is stretched and its length is permanently altered .
Limit of proportionality	The length a spring can be stretched before it no longer is able to return to its original length . Beyond the limit of proportionality, a force-extension graph is curved.
Extension	Difference between the length of an object and its original length.

Force extension graph

If you hang small weights from a spring it will stretch. If you plot a graph of the spring's extension against force applied, you get a straight line that passes through the origin. The **extension** is **directly proportional** to the **force** applied.



However if you **apply too much force**, the line begins to **curve** because you have exceeded the **line of proportionality**.

Objects and materials that behave like this are said to obey **Hooke's law**. Hooke's law states that extension is directly proportional to the force applied, provided the limit of proportionality is not exceeded.

Hooke's law	Force applied = spring constant x extension $F = k \times e$	Force – newtons, N Spring constant N/m Extension – metres m

Section 7: Using conservation of momentum (triple only)

When two objects push each other apart, they move with **different speeds** if they have **unequal masses** and with equal and opposite momentum, so their **total momentum is zero**. This means that the **momentum lost** by one of the objects will be **gained** by the other object. Hence whenever two objects collide or interact, **momentum is conserved**.

Calculating Momentum	Momentum = mass x velocity $p = m \times v$	Momentum – Kg m/s Mass - Kg Velocity – m/s

Two roller skaters, a girl and a boy stand facing each other on flat level ground. When one of the roller skaters pushes the other one away, they **move away in opposite directions at different velocities** because they have **different masses**.

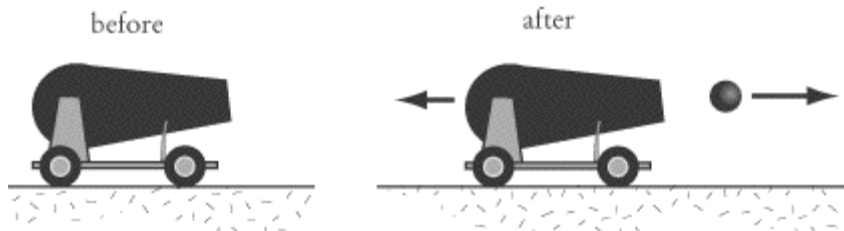


Momentum of boy = $60 \times 2 = 120 \text{ Kg m/s}$
Momentum of girl = $-40 \times 3 = -120 \text{ Kg m/s}$
Total momentum = $120 - 120 = 0 \text{ Kg m/s}$

The **minus sign** tells you that the momentum of the girl is in **the opposite direction** to the momentum of the boy.

Explosions

Total momentum after an explosion is the same as before the explosion. The total momentum **after** the explosion is **zero**.
Momentum before = Momentum after



Section 8: Impact forces (HT triple only)

Collisions When two vehicles collide, the **force of the impact depends** on the **mass, change of velocity** and **length of the impact time**.
• They exert **equal and opposite forces** on each other
• Their **total momentum is unchanged**.

Length of impact time **Longer the impact time, the more the impact force is reduced.**

Impact force	Impact force = $\frac{\text{change in momentum}}{\text{time taken}}$ $F = \frac{m\Delta v}{\Delta t}$		
	Force	F	Newtons, N
	$m\Delta v$	Change in momentum	Kg m/s
	Δt	Time taken	s

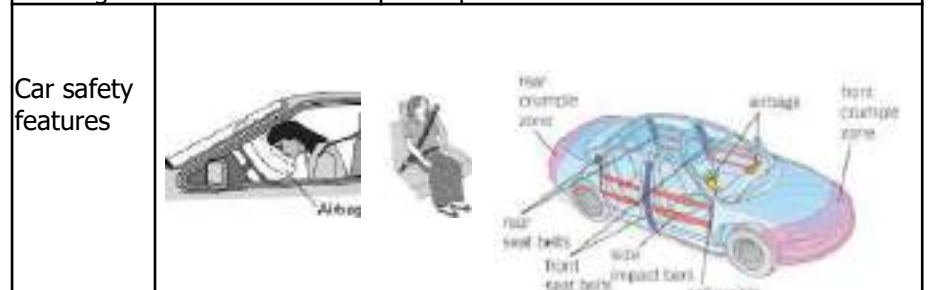
Section 9: Safety first (HT triple only)

When you are driving in a car or riding a bike you want to feel safe if you crash. Different safety features have been designed to **increase the impact time** and hence **decrease the rate of change in momentum**.

Cycle helmets & cushioned surfaces in playgrounds/gyms Reduce impact forces by increasing impact time.

Seat belts & air bags Spread force across chest and increase impact time. Hence reduces impact force on head.

Crumple zones & collapsible steering wheels. Give way in an impact and hence increase the impact time.



Section 1: Key terms

Pressure	The force per unit area , measured in Pa (which is equal to 1N/m^2).
Density	Mass per unit volume of a substance.
Fluid	A liquid or a gas .
Earth's atmosphere	Relatively thin layer of gases that surround planet Earth .
Atmospheric pressure	The pressure exerted by the weight of the atmosphere .
altitude	The height of an object in relation to sea level .
Upthrust (HT)	The upward force that acts on a body partly or completely submerged in a fluid .
Flotation (HT)	The action of floating in a liquid or a gas .

Section 2: Pressure and surfaces

Pressure is caused when **objects exert forces** on each other, or when a **fluid exerts a force** on an object in contact with the fluid.

Pressure depends on	Area of contact on which the force acts Size of the force	
Calculating pressure	$\text{Pressure} = \frac{\text{force}}{\text{area}}$ $p = F/A$	Pressure – pascals, Pa Force – newtons, N Area – metres squared m^2
Effect of area on pressure	Caterpillar tracks fitted to vehicles increases the contact area that the tracks have to the ground. This reduces the pressure of the vehicle on the ground because its weight is spread over a larger contact area . Useful for driving on sandy, muddy or snow covered ground .	

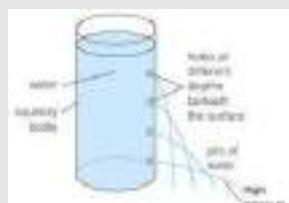
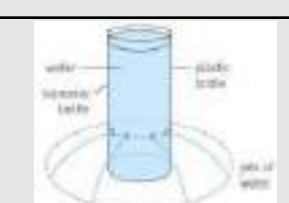
Section 3: Pressure in a liquid at rest (HT)

The pressure at the bottom of a column of liquid depends upon:

- Height of the column (higher the column, the greater the pressure.)
- Density of the liquid (greater the density, the greater the pressure.)

Calculating pressure due to column height of a liquid of given density.	$\text{Pressure} = \text{height} \times \text{density} \times \text{gravitational field strength}$ $P = h \times \rho \times g$	Pressure – Pa Height – m Density – m^3 Gravity – N/Kg

Section 3: Pressure in a liquid at rest continued (HT)

Pressure increases with depth	The further the hole is below the level of water in the bottle, the greater the force which the jet leaves the bottle	
Same pressure at same depth	The pressure along the horizontal line is constant (the jets from these holes are at the same pressure).	

Section 4: Atmospheric pressure

Air molecules colliding with a surface create atmospheric pressure.	
Atmospheric pressure	At sea level 100kPa Mount Everest 30kPa
Altitude	Atmospheric pressure decreases with higher altitude as the number of air molecules (& hence the weight of air) above a surface decreases as the height above ground level increases.
Density of atmosphere	The atmosphere gets less dense with increasing altitude.

Section 5: Upthrust and flotation. (HT)

When an object floats, it experiences a greater pressure on its base, compared to the top surface. This creates a resultant force upwards called **upthrust**.

The upthrust on an object in a fluid:

- Is an upward force on the object due to the fluid
- Is caused by the pressure of the fluid

The pressure at a point in a fluid depends on the density of the fluid and the depth of the fluid at that point.

An object sinks if its weight is greater than the upthrust on it when it is fully immersed. A ship floats because it displaces more water than the weight of the ship hence its weight is equal to the upthrust.

Section 1: Key terms

Amplitude	The maximum displacement of a point on a wave away from its undisturbed (rest) position .
Wavelength	The distance from a point on one wave to the equivalent point on the next wave . E.g. crest to crest. Measured in metres .
Frequency	The number of waves passing a certain point each second . Measured in hertz (Hz) .
Longitudinal	Oscillations are along the same direction as the direction of travel e.g. sound waves .
Transverse	Oscillations are at right angles to the direction of travel e.g. water waves , all electromagnetic waves .
Period	The time needed for one wave to pass a given point .
Compression	Stretched out region of a longitudinal wave where the particles are closest together .
Rarefaction	Region in a longitudinal wave where the particles are furthest apart . (The stretched out section.)
Oscillate	Swing back and forth in a regular rhythm.
Absorb	When the energy of an EM wave is taken up by an object .
Transmit	When a wave is able to pass through a material.
Reflect (HT)	The wave bounces off a surface ; the angle of incidence is equal to the angle of reflection .
Refract (HT)	The wave changes direction when it enters a medium of different density where it has a different speed .
Medium	The substance that carries a wave (or disturbance) from one location to another.
Vacuum	A space entirely devoid of matter .

Section 2: The nature of waves

Waves **transfer energy** not matter. Waves can be used to transfer energy and information. **Mechanical waves** travel through a medium, for example light waves and radio waves, they can be **transverse** or **longitudinal**. **Electromagnetic waves** can travel through a vacuum and are **transverse**.

Transverse waves

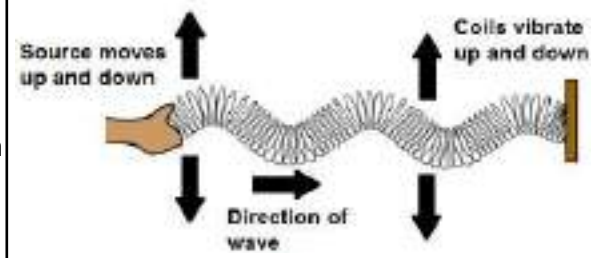
All electromagnetic waves (visible light, IR, Ultraviolet etc.) S waves.
Ripples on the surface of water.

Longitudinal waves

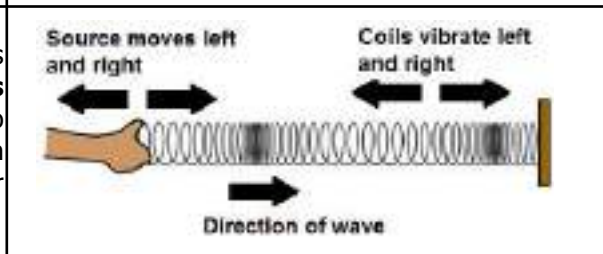
Sound waves.
P waves.

Section 2: The nature of waves (continued)

Transverse waves have **oscillations** that are **perpendicular** to the direction in which the waves transfer energy.

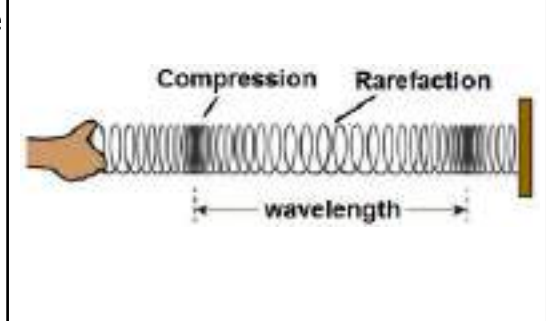


Longitudinal waves have **oscillations** that are **parallel** to the direction in which the waves transfer energy.

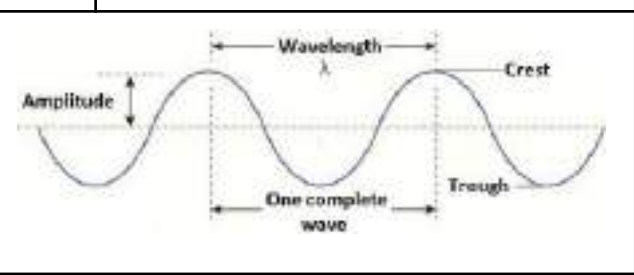


Section 3: The properties of waves

Longitudinal waves are made up of **compressions** and **rarefactions**. The **wavelength** is the **distance** from the **middle of one compression** to the **middle of the next compression**.



Distance from one crest to the next crest is the **wavelength**. The **amplitude** is the height of the wave crest.



Section 3: The properties of waves (continued)

Period of a wave	period of a wave = $\frac{1}{\text{frequency}}$	
Calculating wave speed	Wave speed = frequency x wavelength $v = f\lambda$	Wave speed - m/s Frequency – hertz, Hz Wavelength – metres, m

Section 4: Investigating waves

Measuring the Speed of Sound

- **Measure** the **distance** to a **building**.
- **Fire a starting pistol** and **start a timer**.
- **Stop the timer** when the **echo** is heard.
- **Half** your value for **time**.
- Work out the **speed** using **distance divided by time**.

Measuring the Speed of ripples in a water tank

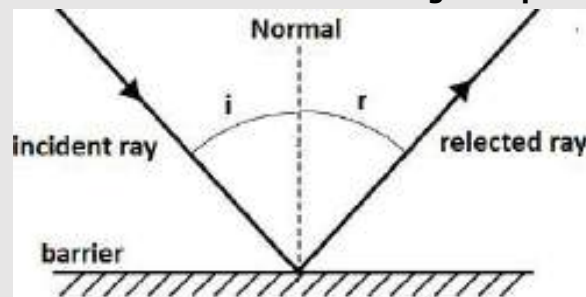
- Use a **ruler** to create **plane waves**.
- **Measure time** taken for a **wave** to travel from one end of tank to the other.
- **Measure distance** travelled.
- Work out the **speed** using **distance divided by time**.

Section 5: Reflection and refraction (HT)

The behaviour of waves can be investigated with water waves in a ripple tank. Waves travelling towards a barrier of a boundary are called **incident** waves.

Reflection

Takes place at the barrier in a tank. The **Reflected wavefront** moves away from barrier at **same angle** to the barrier as the **incident wavefront** because there is **no change** in **speed** or **wavelength**.

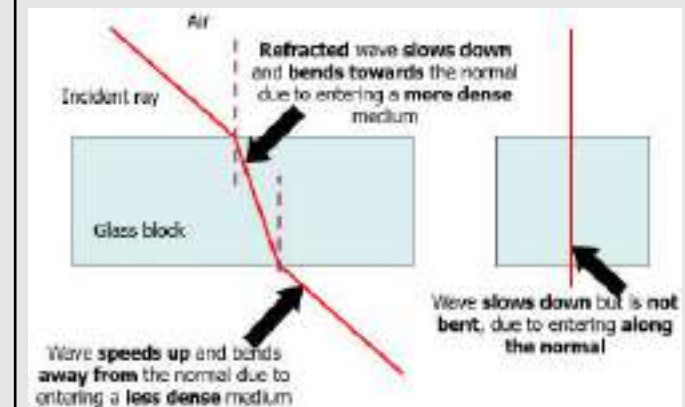
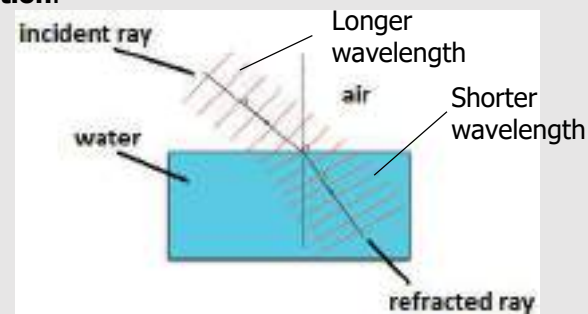


Angle of incidence (i) = angle of reflection (r)

Section 5: Reflection and refraction continued (HT)

Refraction

Waves **change speed** and **wavelength** when they **cross** a **boundary** between **different substances**. This can be seen in a ripple tank at the boundary between deep and shallow water. Unless the waves meet the boundary at right angles, the **change in speed** **causes a change in direction**. This effect is called **refraction**.



Waves and substances (HT)

When waves meet a boundary with a different substance they may be:

- **Totally or partially reflected**
- **Transmitted** through the substance
- **Absorbed** by the substance.

Section 6: Key terms (Triple)

Ultrasound	Frequencies of sound above 20kHz (20000 Hz.)
Sonar	A system for the detection of objects under water by emitting sound pulses and detecting or measuring their return after being reflected.
Seismic waves	Produced by earthquakes. P waves are longitudinal and S waves are transverse (cannot travel through a liquid.)
Epicentre	The point where an earthquake occurs is called its focus. The nearest point on the Earth's surface to the focus is the epicentre.

Section 6: Sound waves (Triple)

Sound waves are caused by vibrating objects. Sound can travel through media like solids, liquids or gases but it can't travel through a vacuum (there are no particles.)

Investigating sound waves	To investigate sound waves use a signal generator and a loudspeaker . The loudspeaker produces sound waves as it pushes the surrounding air backwards and forwards. Sound waves cannot pass through a vacuum , this can be investigated using a electric bell in a bell jar. As the air is pumped out of the bell jar, the ringing sound fades away .
Amplitude	The loudness of a note increases if the amplitude of the sound waves increases .
Frequency	The pitch of a note increases if the frequency of the sound wave increases .
The ear	When sound reaches your ear, air particles in your ear canal vibrate against your ear drum , which vibrates against three tiny bones . These set inner-ear fluid moving which moves thousands of delicate cells which send signals to the brain causing the sensation of sound. The conversion of sound waves to vibrations of solids works over a limited frequency range , restricting the range of human hearing from 20Hz to about 20 kHz.
Echo sounding (Sonar)	Uses pulses of high-frequency sound waves to: • detect objects in deep water and • to measure water depth below a ship

Section 7: The uses of ultrasound (Triple HT)

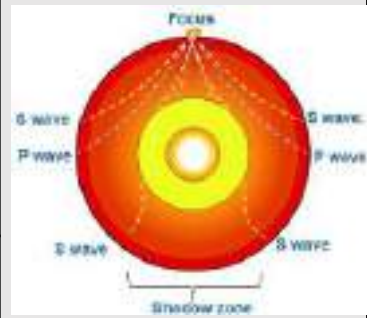
Ultrasound waves have a **frequency higher** than the **upper limit of hearing** for humans.

Ultrasound waves are **partially reflected** when they **meet a boundary** between two different media (e.g. two different types of body tissue.) The **time taken** for the **reflections to reach a detector** can be used to **determine how far** away such a boundary is.

Ultrasound scanners	Used for prenatal scans of a baby in the womb. Also used to obtain images of organs in the body (e.g. kidney). It is non-ionising so is harmless.
Industrial imaging	Detecting flaws in metal casting (e.g. internal cracking) as they are partially reflected by cracks.

Section 8: Seismic waves (Triple HT)

Seismic waves are waves produced in an earthquake (sudden release of energy caused by the movement of tectonic plates) and travel through the Earth. They spread out from an **epicentre**.

P-waves	• Primary waves. • Travel through both solids and liquids • Longitudinal waves that push and pull on material as they move through the Earth.	
S-Waves	• Secondary waves • Slower; they arrive a few minutes after P-waves. • Cannot travel through liquids. • Transverse waves shake the material they pass through from side to side.	

The paths of these seismic waves are curved because the density is gradually changing.

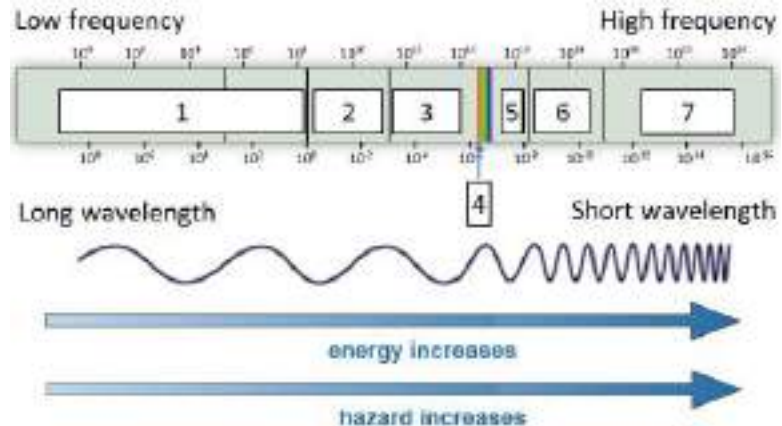
The study of seismic waves have provided new evidence that led to discoveries about parts of the Earth which are not directly observable (e.g. the structure and size of the Earth's core.)

Section 1: Key terms

Electromagnetic Spectrum	The collective name for all types of EM radiation . They are all transverse waves that travel at 300,000,000 m/s (speed of light).
Wavelength	The distance from one wave crest to the next.
Frequency	The number of wave crests passing a fixed point every second.
Carrier wave (HT)	Waves used to carry information. They do this by varying their amplitude.
Ionising radiation	High energy radiation which can remove electrons leaving ions . If this happens in DNA it can cause a mutation that could lead to cancer .
Radiation dose	A measure of the risk of harm resulting from exposure of the body to ionising radiation . Measured in Sieverts .

Section 2: The electromagnetic spectrum

The waves in the electromagnetic spectrum are grouped together according to their wavelength and frequency. They are **transverse waves that transfer energy** (not matter) from a source to an absorber. The **human eye** can only **detect visible light**.



1.	Radio	5.	Ultraviolet
2.	Microwaves	6.	X-rays
3.	Infrared	7.	Gamma
4.	Visible		

Section 3: Uses and Risks of EM Radiation

EM Wave	Use	Why it's suitable (HT)	Risks
Radio	Television and radio	Reflected by ionosphere so can broadcast over long distances. Is a carrier wave.	
Microwaves	Satellite communications, cooking food	Able to pass through the atmosphere to satellites. Has a heating effect. Is a carrier wave.	Internal heating of the body (cooked from the inside.)
Infrared	Electrical heaters, cooking food, infrared cameras	Has a heating effect. Emitted by objects so can be detected.	Skin burns
Visible Light	Fibre optic communications	Able to pass along a cable by total internal reflection.	Blindness from bright light.
Ultraviolet	Energy efficient lamps, sun tanning, checking bank notes.	Increases amount of melanin (brown pigment) in skin.	Premature skin ageing, increase risk of skin cancer
X-Rays	Medical imaging and treatments	Absorbed by bone but transmitted through soft tissue.	Ionizing mutation of genes and cancer
Gamma	Medical imaging and treatments	Able to pass out of body and be detected by gamma cameras. Can kill cancerous cells.	Ionizing mutation of genes and cancer

Section 4: Production of electromagnetic waves

Radio (HT)	Radio waves are produced by oscillations in electrical circuits. When radio waves are absorbed they may create an alternating current with the same frequency as the radio wave itself, so radio waves can themselves make electrons vibrate in an electrical circuit.
Gamma	Gamma rays are produced from the decay of an unstable nucleus.

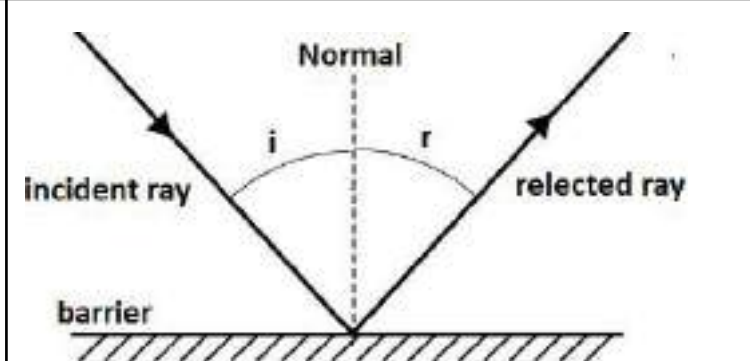
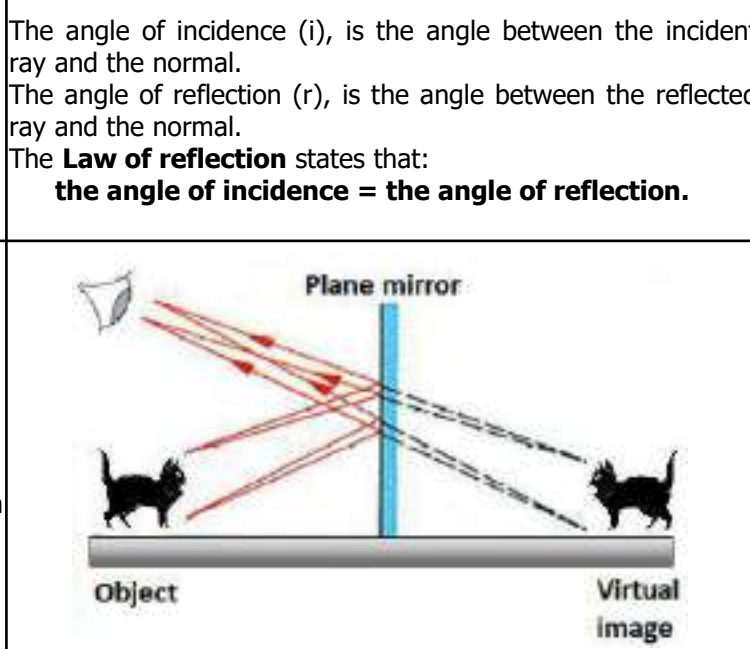
Section 5: Equations to learn

Calculation	Equation	Symbol equation	Units
Wave speed	Wave speed = frequency x wavelength	$v = f \lambda$	Wave speed - metres per second (m/s) Frequency - hertz (Hz) Wavelength - metres (m)

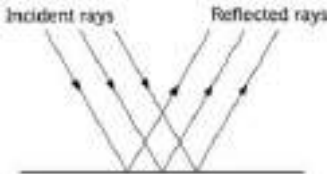
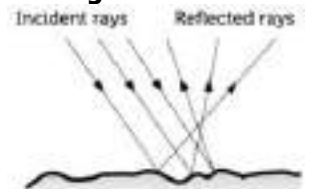
Section 1: Key terms (triple)

Reflect	The wave bounces off a surface ; the angle of incidence is equal to the angle of reflection .
Refract	The wave changes direction when it enters a medium of different density where it has a different speed .
Normal	The normal at a point on a mirror is a line drawn perpendicular to the mirror at the point of incidence .
Law of reflection	The law of reflection states that the angle of incidence = the angle of reflection .
Plane mirror	A mirror with a flat (planar) reflective surface .
Real image	An image that can seen on a screen because it is formed by focussing light rays onto the screen.
Virtual image	An image formed at a place where the light rays appear to come from after they've been reflected (or refracted.)
Specular reflection	Reflection from a smooth surface , parallel rays are reflected in a single direction .
Diffuse reflection	Reflection from a rough surface , parallel rays are scattered in different directions .
Transparent	A transparent object lets all light that enters it pass through (and doesn't scatter or refract the light.)
Translucent	A translucent object lets light pass though but it scatters (or refracts) the light inside it.
Convex lens	Focuses parallel rays to a point called the principal focus .
Principal focus	The point where parallel rays are focussed to.
Concave lens	A concave lens (or diverging lens) makes parallel rays spread out as if they had come from a point called the principal focus.
Magnification	The image height $\div$ the object height.
Focal length	Distance from the centre of a lens to the point where light rays parallel to the principal axis are focussed .
Magnifying lens	A convex lens used to form a virtual image of an object .

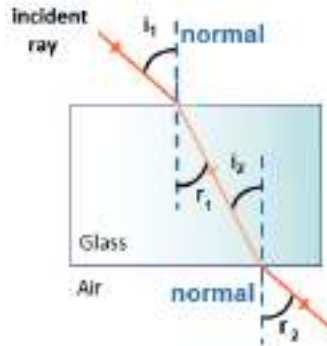
Section 2: Reflection of light (triple)

Law of reflection	 The angle of incidence (i), is the angle between the incident ray and the normal. The angle of reflection (r), is the angle between the reflected ray and the normal. The Law of reflection states that: the angle of incidence = the angle of reflection.
Image formed by a plane mirror	 The image formed by a plane mirror is virtual, upright and laterally inverted (back to front but not upside down.)

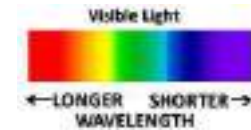
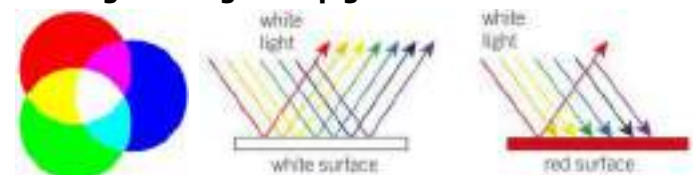
Section 2: Reflection of light (continued)

Specular reflection	Reflection from a smooth surface is called Specular reflection because reflection occurs in a single direction without scattering . 
Diffuse reflection	Reflection from a rough surface is called diffuse reflection because the light is scattered . 

Section 2: Refraction of light (triple)

Refraction	Refraction is a change in direction of waves when they travel across a boundary from one medium to another.  When light enters a more dense medium, the refracted wave slows down and bends towards the normal. When light enters a less dense medium, the refracted wave speeds up and bends away from the normal. When a light enters a more dense medium (air into glass) the angle of refraction r_1 is less than the angle of incidence i_1. When light enters a less dense medium (from glass into air,) the angle of refraction r_2 is more than the angle of incidence i_2.

Section 3: Light and colour (triple)

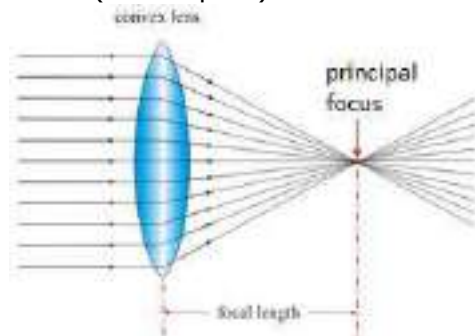
Wavelength	The wavelength of light decreases from red to violet across the visible spectrum. 
Colour of a surface	Depends on the pigments of the surface materials and the wavelengths of light the pigments absorb & transmit.  A white surface has no pigments so it reflects light of any wavelength either partially or totally. The colour of an opaque object is determined by which wavelengths of light are more strongly reflected, wavelengths that are not reflected are absorbed. A book that has a red colour has pigments that absorb all the colours of light except for red. If all wavelengths are absorbed the object appears black.
Translucent	Objects that transmit light are either translucent or transparent. A translucent object lets light pass through it but scatters or refracts the light. This is because the material of the object has lots of internal boundaries that change the direction of light rays repeatedly. You can see light that passes through but you can't see images through it. E.g. bathroom windows are translucent.
Transparent	A transparent object transmit all the incident light (lets all the light that enters it pass through it) and does not scatter or refract the light inside the object. This is why you can clearly see through a transparent object. 

Section 4: Lenses (triple)

Convex
(converging
lens)

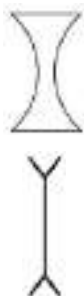


A convex lens **focuses parallel rays** to a point called the **principal focus** (or focal point).

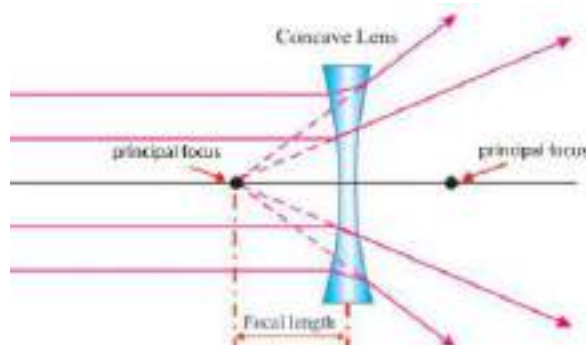


The **distance** from the **centre of the lens** to the **principal focus** is called the **focal length**. The image can be either **real or virtual**. Used as a **magnifying glass** and in a **camera** to form a clear image of a distant object.

Concave
(diverging
lens)



A concave lens **makes parallel rays spread out** as if they had come from a point called the **principal focus** (or focal point). The **image produced** is always **virtual**.



A concave lens is used to **correct short sight**.

Magnification

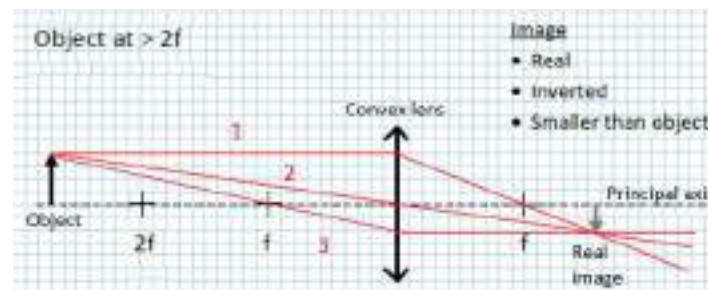
Magnification = $\frac{\text{image height}}{\text{object height}}$

As magnification is a ratio, there are **no units**.

Section 4: Using lenses (triple)

Real
image
(convex
lens)

A real image is formed by a **convex lens** if the object is **further away** than the **principal focus f** of the lens.

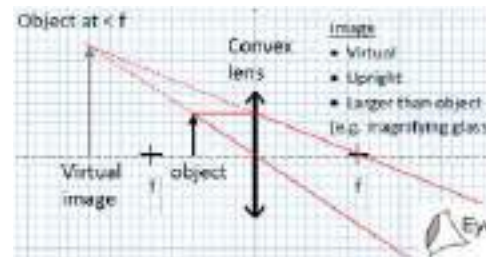


To locate the image and determine its nature:

- Ray **1** is **parallel to axis** and is refracted through f .
- Ray **2** **passes straight through** the **centre** of the lens.
- Ray **3** **passes through f** and is refracted parallel to the axis.

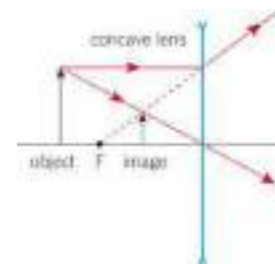
Virtual
image
(convex
lens)

When an object is placed between a convex lens and its principal focus f , the image formed is **virtual, upright, magnified** and on the **same side** of the lens as the **object**.



Virtual
image
(concave
lens)

The image formed by a concave lens is **always virtual, upright** and **smaller than the object**.

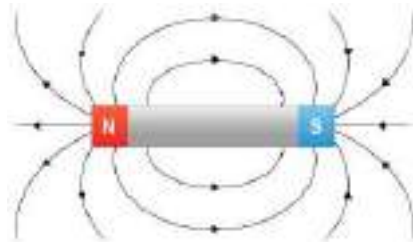


Section 1: Electromagnetism Key Terms

Pole	The places on a magnet where the magnetic forces are strongest .
Magnetic Field	The area around a magnet where a force acts on another magnet or magnetic material.
Repel	Occurs when two like poles are brought close together. The magnets push apart .
Attract	Occurs when two opposite poles are brought close together. The magnets move together .
Permanent magnet	A magnet that produces its own magnetic field .
Induced magnet	A magnetic material that becomes a magnet when it is placed in a magnetic field . When removed from the field it quickly loses its magnetism .
Magnetic material	There are four magnetic materials: iron, steel, cobalt and nickel .
Compass	Compasses contain small bar magnets which points to the north pole of the Earth's magnetic field .
Solenoid	A solenoid is a long coil of wire that produces a controlled magnetic field.
Electromagnet	A solenoid containing an iron core which increases its strength.
Motor effect (HT)	The force produced between a conductor carrying a current within a magnetic field and the magnet producing the field .
Magnetic flux density (HT)	A measure of the strength of a magnetic field.

Section 2: Magnetic fields

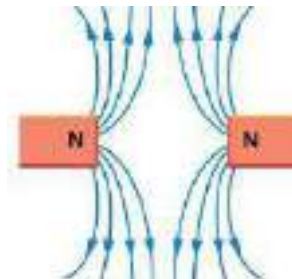
The **magnetic field lines** of a bar magnet curve around from the **north** pole of the bar magnet to the **south pole**.
The **field lines** always go from **north** to **south** and **never touch**.



Section 2: Magnetic fields (continued)

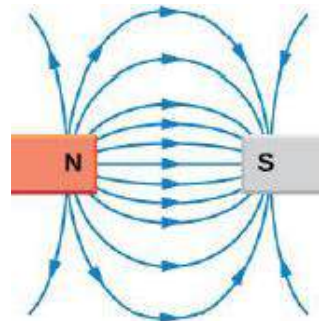
Like poles repel.

When **two north poles** (or two south poles) are placed together, they will **repel** each other.



Unlike poles attract.

When a **north pole** and a **south pole** are placed together, they will **attract**.

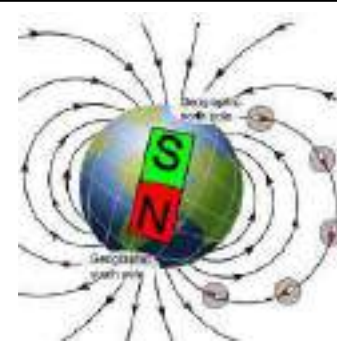


Attraction and repulsion between two magnetic poles are examples of **non-contact forces**.

Induced magnetism is **magnetism** created in an **unmagnetised magnetic material** when the material is **placed in a magnetic field**.

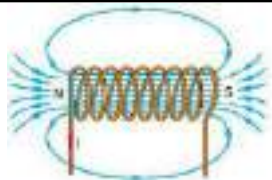
Steel is used **instead of iron** to make **permanent magnets** because steel **does not lose** its **magnetism easily** but **iron does**.

The **Earth** behaves as if there is a **bar magnet** inside it. The geographic north pole is a **magnetic south pole**. A **compass** will point towards **geographical north** and is the **north-seeking pole**.
We know it is the **core** of the Earth that is magnetic(not the whole thing) because a compass at the **north pole** points below your feet.



Section 3: Magnetic fields of electric currents

We can increase the strength of the magnetic field by putting a **magnetic** (e.g. iron) **core** in the **solenoid** (long coil of wire.) The magnetic field in a **solenoid** is concentrated **inside the coil in a uniform direction**, otherwise it acts in the same way as a bar magnet.



Increasing current
Increasing current makes the **magnetic field stronger**.
Reversing the direction of the current **reverses the magnetic field lines**.

Electromagnet
An electromagnet is a **solenoid** that has an **iron core**. It consists of an **insulated wire** wrapped around an iron bar.

Increasing the force of a solenoid

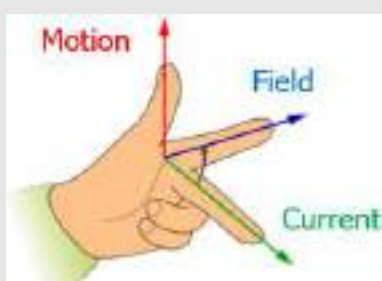
- Add an **iron core**
- Increase the **number of coils** of wire
- Increase the **current**
- Move the magnetic material **closer** to the solenoid.

Section 4: The motor effect (HT)

When a **conductor carrying a current** is placed in a magnetic field, **the magnet producing the field and the conductor exert a force on each other**. This can be used to create a motor.

Fleming's left hand rule

- Fleming's left hand rule shows the various **directions of actions** in an **electric motor**.
- Thumb – direction of the **magnetic force**
- First finger – direction of the **magnetic field**
- Second finger – direction of the **current** in the wire.



Flux density
Magnetic flux density is a **measure** of the **strength** of a **magnetic field**. It is the number of lines of magnetic flux in a given area.
$$F = B \times I \times L$$

Force = magnetic flux density x current x length

Force - newtons, N
Magnetic flux density – tesla, T
Current – amps, A
Length – metres, m

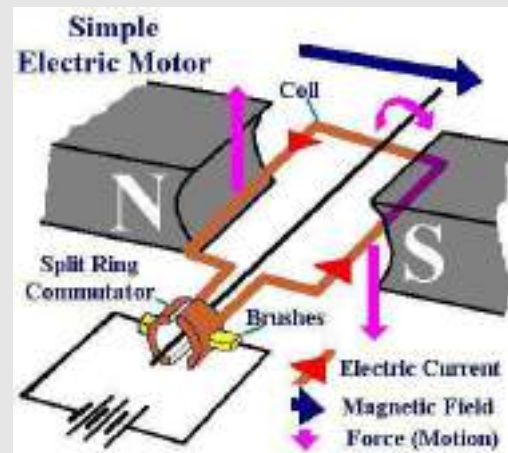
Section 5: An electric motor (HT)

An electric motor is a device that makes use of the **motor effect**.

The following statements explain how the electric motor creates a **turning force**:

- The power supply applies a **potential difference** across the coil
- A **current flows** through the coil
- A **magnetic field** is created around the coil
- The magnetic field **interacts** with the **magnetic field** of the **permanent magnets**
- This creates a force that makes the **coil spin**.

Electric motor



Increasing size of the turning force by:

- Increasing the **current**
- Increasing **strength** of **magnetic field**
- Increase the **number of turns** on the **coil** of wire
- Adding an **iron core** inside the **coil**.

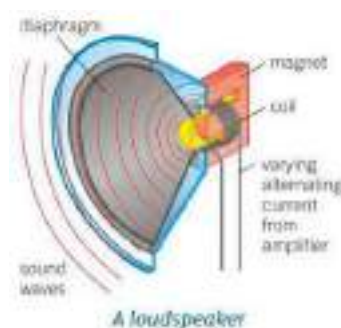
Reverse direction of force by:

- Reverse **poles** of **magnet**
- Reverse **current**

Section 6: Loudspeakers and headphones (triple HT)

Loudspeakers and headphones **use the motor effect** to convert variations in current in electrical circuits to **pressure variations** in **sound waves**. They are known as **moving coil sound devices**.

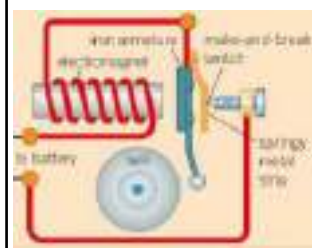
- A coil that experiences a current in a magnetic field experiences a force (**the motor effect**)
- The **current** from the **amplifier varies**, so the **current** in the **coil varies**, and so **the force exerted** on the **coil varies**
- The **force moves the coil**
- The coil moves the **diaphragm** making it vibrate.
- The **vibrating** diaphragm sets up **compressions** and **rarefactions** in the **surrounding air** which **produces sound waves**.



Section 7: Electromagnets in devices (triple)

Electromagnets used in many devices

- Scrapyard crane
- Circuit breaker
- Electric bell (see diagram)
- Relays



An electromagnet works in a circuit breaker, electric bell or relay by attracting an **iron armature** which **opens a switch**.

Section 8: The generator effect (triple HT)

The **generator effect** is the effect of **inducing a potential difference** using a **magnetic field**. When a **conductor** crosses **through the lines of a magnetic field**, a **potential difference** is **induced** across the **ends of the conductor**. If the conductor is part of a complete circuit, **the induced potential difference** makes an **electric current** pass around the circuit.



Section 8: The generator effect (triple HT) continued

The wire and magnetic field must **move perpendicular** to each other to **induce a current**. If they move parallel to each other, **no current** is induced.

Factors **affecting size** of induced potential difference/induced current

- Speed of movement:** Faster the conductor passes through the lines of magnetic field, the bigger the induced potential difference/current.
- Use a **stronger magnet** (Stronger magnet larger induced potential.)

Factors **affecting direction** of induced potential difference/induced current

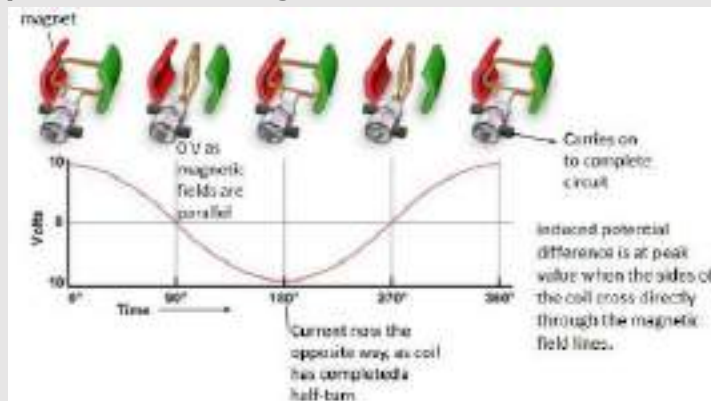
- Reverse magnet**
- Reverse movement**

Section 9: The alternating-current generator (triple HT)

Depending on the set up, the **generator effect** can be used in an **alternator** to **generate ac** and in a **dynamo** to generate **dc**.

ac is generated in an **alternator**. It is made up of a **coil** that **spins** in a **uniform magnetic field**.

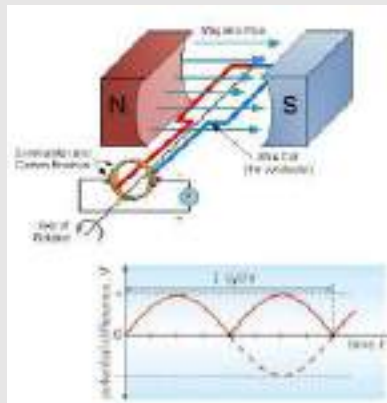
Alternator



Each end of the coil of wire spin inside, and make contact with, a complete loop of conductor that's connected to the rest of the circuit. Since every **180° turn** of the coil the **current flips direction**, you get **ac**.

Section 9: The alternating-current generator (triple HT) cont.'

dc is generated in an **dynamo**. To prevent the current flipping direction every half-turn, a clever **split ring commutator** is used. This ensures that the **current** is **restricted to one direction only in the coil** – direct potential difference.



Dynamo

Section 11: Transformers in action (triple HT)

In transformers, the ratio of the potential difference across the coils is equal to the ratio of the number of turns on each coil. This is the **transformer equation**.

Transformer equation	$V_p = \frac{N_p}{N_s} V_s$	V_p = potential difference across primary coil (V)
		V_s = potential difference across secondary coil (V)
		N_p = number of turns on primary coil
		N_s = number of turns on secondary coil

In a step-up transformer, $V_s > V_p$
In a step-down transformer $V_s < V_p$
In a step-up transformer $N_s > N_p$
In a step-down transformer $N_s < N_p$

Assuming Transformers are 100% efficient, the electrical power input is equal to the electrical power output. This results in a **transformer efficiency** equation.

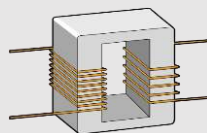
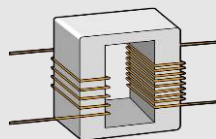
Transformer efficiency	$V_p \times I_p = V_s \times I_s$	V_p = primary potential difference (V)
		I_p = primary current (A)
		V_s = secondary potential difference (V)
		I_s = secondary current (A)

Section 10: Transformers (triple HT)

Transformers are **used to increase or decrease** the **size** of an **alternating potential difference**. It **only works** with **ac** as a **changing magnetic field** is **necessary to induce ac** in the secondary coil. Transformers have a primary coil, a secondary coil and an iron core (iron used as **easily magnetised**.)

Step-up transformer

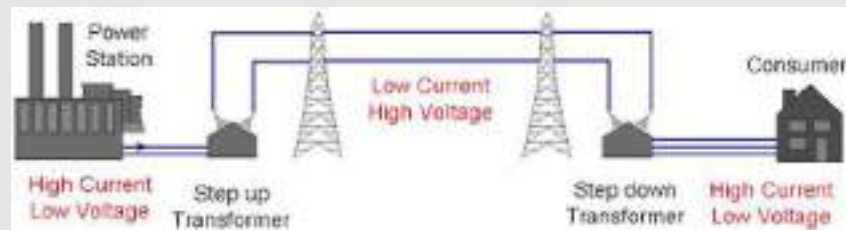
Step-down transformer



More turns on secondary coil than on primary, therefore **increases voltage**. Increasing voltage **decreases the current** in the wires which means **less resistance**. Less resistance means **less energy lost as heat**, therefore it is **more efficient** to transmit electricity at high voltage.

Fewer turns on secondary coil than on primary, therefore **decreases voltage**. Reducing the voltage makes it **safer** to use in the **home**.

The National Grid supplies electricity from power stations via a series of cables and transformers to customers at **high voltages** to **reduce energy loss**. A **high grid potential difference** reduces the **current** that is needed, so it reduces the **heating effect** and hence **reduces power loss** and makes the system more **efficient**.



Section 1: Space Key Terms (triple)

Star	A self luminous gaseous spheroidal celestial body of great mass which produces energy by means of nuclear fusion reactions
Sun	The star around which Earth orbits
Planet	An astronomical object that orbits a star , has enough mass to be round and does not emit its own light . It removes debris from around its orbit. It can be terrestrial (dense and rocky) or Jovian (gas giant)
Dwarf planet	An object which doesn't quite meet the criteria for a planet , it hasn't cleared debris from its orbit path
Universe	All of space and everything in it (including stars, planets and galaxies)
Asteroid	Irregularly shaped rock that orbits the sun
Orbit	A curved path of a planet, satellite or spacecraft around an object such as the sun (due to attraction of gravity)
Comet	A celestial object consisting of a nucleus of ice and dust . When near the sun, a "tail" of gas and dust particles point away from the sun
Natural satellite	Any celestial body in space that orbits about a larger body . Moons are called natural satellites as they orbit planets
Artificial satellite	An object that people have made and launched into orbit using rockets
Galaxy	A system of millions or billions of stars that extends over many billions of light-years . Held together by gravity
Big Bang	The leading explanation about how the universe began
CMBR	Cosmic microwave background radiation , a remnant from the very early stage of the universe which is only explained by the big bang theory
Nuclear fusion	A nuclear reaction in which atomic nuclei of low atomic number fuse to form a heavier nucleus with the release of energy
Protostar	A star-to-be. A concentration of gas and dust that becomes hot enough to cause nuclear fusion
Solar system	Our solar system is made up of the sun and all the objects that orbit around it
Light year	The distance light travels in a year
Dark matter	Matter in a galaxy that cannot be seen
Nebula	Interstellar cloud of dust, hydrogen, helium and other ionised gases

Section 1: Space Key terms (triple) Continued

Supernova	The explosion of a red supergiant after it collapses
White dwarf	A star that has collapsed from the red giant stage to become much more hotter and denser
Black dwarf	A star that has faded out and gone cold
Neutron star	The highly compressed core of a massive star that remains after a supernova explosion
Black hole	An object in space that has so much mass that nothing, not even light can escape its gravitational field
Red giant	A star that has expanded and cooled, resulting in it becoming red and much larger and cooler than it was before it expanded.
Centripetal force	The resultant force towards the centre of a circle acting on an object moving in a circular path
Red shift	Increase in the wavelength of electromagnetic waves emitted by a star or galaxy due its motion away from us

Section 2: Formation of the Solar System (triple)

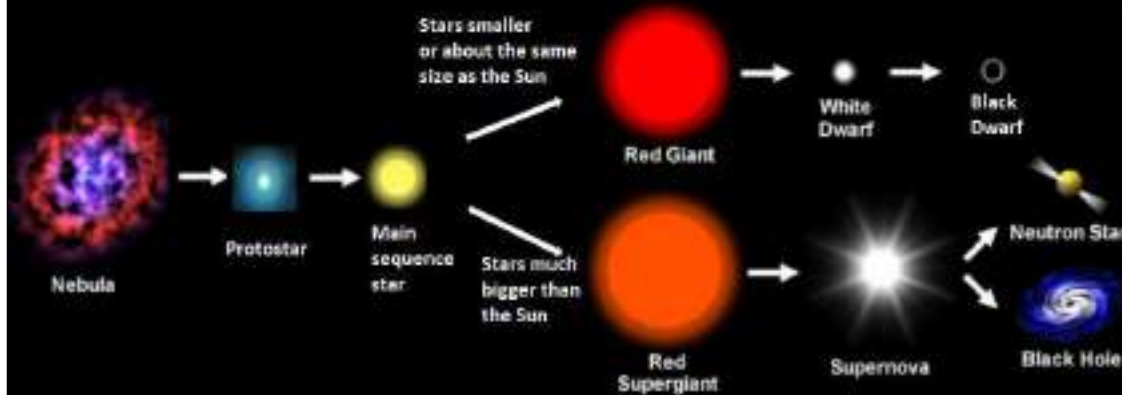
Within our **solar system** there is **one star**, the **Sun**, plus the **eight planets** and the **dwarf planets** that orbit around the Sun. **Natural satellites**, the **moons** that orbit planets, are also part of the solar system.

Our solar system is a small part of the **Milky Way galaxy**.

The Sun, was formed from a cloud of dust and gas (**nebula**) pulled together by **gravitational attraction**. This causes **fusion reactions** which lead to an **equilibrium** between the **gravitational collapse** of a star and the **expansion of a star** due to **fusion energy**.



Section 3: The life history of a star (triple)



1. All stars (including the Sun) form out of clouds of dust and gas called **nebula**
2. The **force of gravity** makes the dust and gas spiral in together to form a **protostar**
3. **Gravitational energy** is converted into **thermal energy** so temperature rises. When temperature gets hot enough, **hydrogen nuclei** undergo **nuclear fusion** to form **helium nuclei** and **give out** massive amounts of **heat and light**. A **star** is born.
4. Eventually the **hydrogen begins to run out**. **Heavier elements** are made by **nuclear fusion of helium**. The star goes from main sequence to **red giant** (if it's a small star) or a **red super giant** (if it's a big star). The **surface temperature decreases** and **relative luminosity decreases**.

Small stars

5. When there is **no more light elements** in the core to use, **fusion stops** and because of its **own gravity**, the **star collapses and shrinks** becoming a **white dwarf**. The surface temperature increases and the relative luminosity decreases.
6. The star then **cools, fades and stops emitting energy & radiation** and becomes a **black dwarf**.

Big stars

5. Big stars undergo **more fusion** and form heavier elements like iron. They swell out to become **red super giants**.
6. Eventually they explode in a cataclysmic explosion called a **supernova**.
7. The exploding supernova throws its outer layers of dust and gas into space leaving a very **dense core** called a **neutron star**.
8. If the star is **big enough** this will become a **black hole**.

Fusion processes in stars produce all the naturally occurring elements. **Elements heavier than Iron are produced in a supernova. Supernova explosions distribute all the elements throughout the known universe.**

Section 4: Planets, satellites and orbits (triple)

A **planet** is an astronomical object that **orbits a star** e.g. The Earth. A natural satellite is any **celestial body** in space that **orbits about a larger body** e.g. the **Moon**. An **artificial satellite** is a **man-made** object that has been **launched into orbit using rockets** e.g. communication satellites.

The **force of gravity** between:

- A **planet** and the **Sun** keeps the **planet moving** along its **orbit**.
- A **satellite (e.g. the Moon)** and the **Earth** keeps the **satellite moving** along its **orbit**.

Circular orbits (HT)

The planets orbit the Sun in a **circular motion**. Each planet orbits at a different speeds and this is **related** to the **distance** from the Sun.

The **further a satellite** is from the **Earth** (or a **planet** is **from the Sun**):

- the **less the speed** needed for it to stay in orbit and
- the **longer** the time taken for **one orbit**.

The **direction of motion** of any planet in a circular orbit is **continually changing** and is **always at right angles** to the **direction of the force of gravity** on it. This is an example of a **centripetal force**.

The **magnitude of velocity (speed)** of a satellite in circular orbit **doesn't change** but its **direction** of its velocity **continually changes**. As velocity is a vector and includes direction, the **satellite must** be constantly **accelerating** in order to change direction.

For a stable orbit, the **radius must change** if the **speed changes**.

Section 5: The expanding universe – red shift (triple)

People can find out lots of things about stars and galaxies by **studying** the **light** from them. In 1929, the astronomer Edwin Hubble observed that the light from galaxies moving away from the Earth had longer wavelengths than expected.

The **wavelength** of **light** increases across the **spectrum** from **blue to red**. You can tell if a star or galaxy is moving towards/away from Earth by observing whether the light is **blue shifted** or **red shifted**.

The **red-shift** of a galaxy is the shift to **longer wavelengths** (and lower frequencies) of the **light from** a **galaxy** because it is **moving away** from you.

Speed	The faster a distant galaxy is moving away from you, the greater its red-shift is.

Distance	The further away a distant galaxy is, the greater its red-shift is. Hence the further away from the Earth, the faster a galaxy is moving.

All the distant galaxies are **moving away** from you because the **universe** is **expanding**. This supports the **big bang theory**.

Section 6: The beginning and future of the Universe (triple)

The **Big Bang theory** was put forward as a model to **explain** the **expansion** of the **universe**. This says that:

- The universe is expanding after **exploding suddenly** (the Big Bang) from a **very small point** and a **extremely hot and dense region**.
- **Space, time and matter** were **created** in the Big Bang.
- The universe has **been expanding ever since** the Big Bang.

The **red shifts** of the **distant galaxies** provide **evidence** that the **universe** is **expanding**.

CMBR	In 1965, Scientists detected Cosmic microwave background radiation (CMBR) coming from every direction in space . The existence of CMBR can only be explained by the Big Bang theory . CMBR was created as high energy gamma radiation just after the big bang . It has been travelling through space since then. As the universe has expanded, the CMBR has stretched out from Gamma into longer wavelengths and is now microwave radiation.

Section 6: The beginning and future of the Universe (triple) cont.'

Will the universe expand forever? Or will the force of gravity between distant galaxies stop them moving away from each other? **The answer depends on the density of the universe** which takes into account:

- Total **mass** of galaxies
- How much **matter** is between them
- How much **space** they take up

Astronomers know that the galaxies would spin much faster if their stars were the only matter in galaxies. The missing matter is called **dark matter**.

Depending on how much dark matter there is, the universe may have different possible futures.

- If **density** of the universe is **less** than a particular amount, it **will expand forever** and the **stars will** eventually **die** out (as will everything else) – **the big yawn**.
- If **density** of the universe is **greater** than a particular amount, it will **stop expanding** and go **into reverse** – **the big crunch**.

Observations that the **distant galaxies are accelerating away** has led astronomers to **conclude** that the **universe is heading for the big yawn**. They think that an **unknown** source of **energy** must be **causing this accelerating** motion – **dark energy**.

There is still a lot about the universe, for e.g. dark mass and dark energy, that astronomers don't understand. New telescopes and technologies will help improve understanding and will allow astronomers to observe the universe in a different way and make new discoveries.

The future of the universe

Key Terms

- Research original contextual detail to develop your own personal response.
- Watch different performances of key scenes to provide you with 'ammunition' when discussing form

Blood Brothers Knowledge Organiser

Genre: Comedy, Tragedy, Musical Theatre

Style: Musical Theatre (singing sections), naturalistic (acting sections) non-naturalistic (narrator sections)

Structure: Cyclical (starts with the ending)

Playwright: Willy Russell **Written:** 1980's **Set:** 1950-80's **Theatrical setting:** Liverpool

Plot/sub plot: Main storyline/other storylines linked throughout the drama

Themes: Social class divide, nature vs nurture, gender and roles, childhood and growing up, fate/destiny

Historical context: Margaret Thatcher, recession, unemployment and strikes, social class divide, family roles/gender stereotypes

Social context: Education, housing conditions, new towns

Cultural context: Popular culture, cinema, dancing, colour television and advertising, Marilyn Monroe, Beatles music

Theatre Roles: Actor, director, designer (set/props, lighting, costume, sound) choreographer, lyricist, understudy, stage manager

Actor: Characterisation, improvisation, blocking – vocal and physical skills

Director: Overall vision of the piece- choice of staging, use of stage space, blocking, lighting intensity, levels, proxemics, use of sound, entrance and exits

Designer: Lighting, sound, set, props, costume

Use of set: Composite or non-naturalistic set (BB uses a composite set)

Staging types: proscenium arch, traverse, thrust, apron, in the round, site specific, promenade, black box

Appropriate Staging: proscenium arch

Stage directions: Exit and entrances, setting of scene/moment, how to deliver lines, positioning on stage, dramatic irony

Mood and atmosphere: staging, space, lighting, acting, music and sound

Relationships: Use of stage space, proxemics, lighting, costume, lines within the text, vocal skills, physical skills

Key Moments:

Act 1:

- Narrators opening speech
- Making the pact
- Handing over the baby
- Mickey monologue- 'I wish I was our Sammy'
- Boys first meeting- BB pact made
- Kids game
- Edward leaves- Locket given by Mrs J
- Moving away- 'Bright new day'

Key Moments:

Act 2:

- School scene
- Bus scene
- Mrs Lyons attacks Mrs Johnstone
- Redundancy's- Write a letter Miss Jones
- New Year's Eve
- Prison and pills' scene
- Edward and Linda start a 'light' romance
- End shooting scene

Features of a performance text:

- Acts and scenes
- Plot and sub plot
- Character
- Protagonist – main, central character
- Antagonist – against the protagonist
- Dialogue
- Monologue
- Duologue
- Flashback
- Stage directions

Exam command words:

Describe	Explain
Justify	Evaluate
Analyse	Conclude
Identify	Define
Discuss	Outline
Compare and contrast	State

Leading characters:

Mrs Johnstone
Mrs Lyons
Mickey
Edward
Linda

Supporting characters:

Narrator
Sammy
Mr Lyons

Minor characters:

Policeman
Milkman
Judge
Teachers

How meaning is communicated:

- The use of performance space and spatial relationships on stage
- The relationship between performers and audience
- The design of: set, props, costume, lighting and sound
- An actor's vocal and physical interpretation of character
- The use of performance conventions

Name:

GCSE Drama Knowledge Organiser

Key roles:

Actor/performer

Director

Designer

Vocal skills:

Tone Pitch

Pause Pace

Accent Volume

Articulation

Physical skills:

Body language

Facial expressions

Gestures

Movement

Stance

Subject specific vocabulary:

Semiotics Proxemics Blocking
Status Levels

Genre: Category it falls under (comedy, tragedy, family drama, musical)

Style: How the piece is performed (naturalistic, non-naturalistic/abstract, physical) Breaking the 4th wall

Intent: What is the drama communicating to the audience? What is the key message of the piece? How do you want the audience to react/feel?

Conventions:

Freeze frame/tableaux

Character matrix

Mime

Choral speaking

Soundscape

Flash forwards/backwards

Thought tap

Multi role

Soliloquy/monologue

Song

Narration

Placards/signs

Characterisation:

The context of the scene

Use vocal and physical skills

Establishing relationships

Consider the given circumstances

Motivation and reacting

Staging types:

Proscenium arch, traverse, thrust, apron, in the round, site specific, promenade, black box

Rehearsal techniques:

Improvisation

Role play

Hot seating

Forum theatre

Park bench

Reduced performance

Role on the wall

Capturing the essence

Devising process:

Stimulus → Research → Planning → Intent/genre/style/target audience →
Improvisation → structure → script → polished improvisation/rehearsal/character
development → design elements → Interim performance → Reflect/gain feedback
→ Improve → Performance → Evaluate

OCR Drama Course structure:

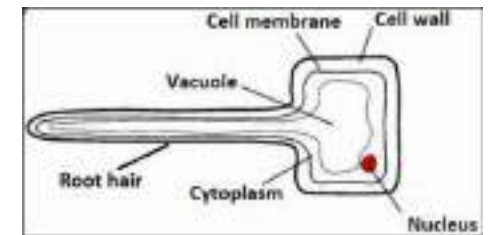
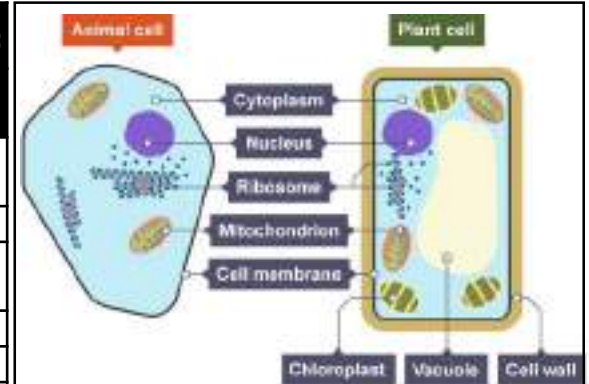
Devising Drama- 30% You will research and explore a stimulus, working collaboratively to create your own devised piece. Alongside the practical element you also write a portfolio reflecting and evaluating on your process and finished piece.

Performance- (Presenting and performing texts) - 30% You will develop and apply theatrical skills in acting by presenting a showcase of two extracts from a scripted piece of text. We are currently using the scripts 'Things I know to be true', 'Girls like That', 'Iron' and 'Curious Incident of the Dog in the Night-time'.

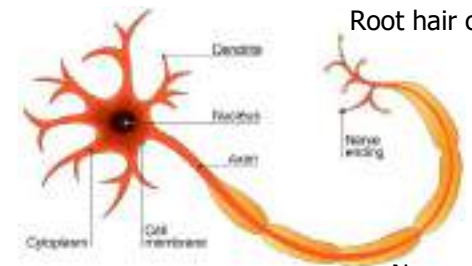
Drama Appreciation- 40% (90 minute written paper) The paper is in two sections- **Section A:** You will explore practically a performance text to demonstrate your knowledge and understanding of Drama. We are currently studying 'Blood Brothers'. **Section B:** A requirement of the course is that we watch a live piece of theatre so that you can analyse and evaluate the performance piece in your exam.

Section 1: Cell Structure

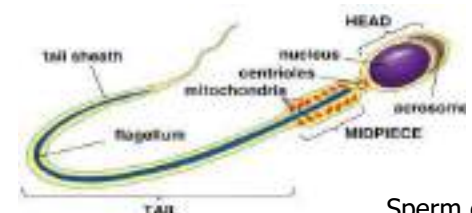
Cell Structure	Function	Eukaryotic		Prokaryotic
		Animal Cells	Plant Cells	Bacterial Cells
Nucleus	Contains genetic information that controls the functions of the cell.	Y	Y	
Cell membrane	Controls what enters and leaves the cell.	Y	Y	Y
Cytoplasm	Where many cell activities and chemical reactions within the cell occur.	Y	Y	Y
Mitochondria	Provides energy from aerobic respiration .	Y	Y	
Ribosome	Synthesises (makes) proteins .	Y	Y	Y
Chloroplast	Where photosynthesis occurs.		Y	
Permanent vacuole	Used to store water and other chemicals as cell sap .		Y	
Cell wall	Strengthens and supports the cell. (Made of cellulose in plants.)		Y	Y
DNA loop	A loop of DNA , not enclosed within a nucleus.			Y
Plasmid	A small circle of DNA , may contain genes associated with antibiotic resistance.			Y



Root hair cell



Nerve cell



Sperm cell

Section 2: Specialised Cells

Specialised Cell	How structure relates to function
Sperm cell	Acrosome contains enzyme to break into egg; tail to swim; many mitochondria to provide energy to swim.
Nerve cell	Long to transmit electrical impulses over a distance.
Muscle cell	Contain protein fibres that can contract when energy is available, making the cells shorter.
Root hair cell	Long extension to increase surface area for water and mineral uptake; thin cell wall .
Xylem cell	Waterproofed cell wall; cells are hollow to allow water to move through.
Phloem cell	Some cells have lots of mitochondria for active transport ; some cells have very little cytoplasm for sugars to move through easily.

KNOWLEDGE



Biology Topic B1 Cell Structure and Transport

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Section 3: Microscopy

Magnification	The degree by which an object is enlarged . Magnification = $\frac{\text{size of image}}{\text{size of real object}}$
Resolution	The ability of a microscope to distinguish detail .
Light microscope	Basic microscope with a maximum magnification of 1500x. Low resolution.
Electron microscope	Microscope with a much higher magnification (up to 500 000x) and resolving power than a light microscope. This means that it can be used to study cells in much finer detail.

Section 4: Orders of Magnitude

Unit Prefix	Size in metres	Standard Form
Centimetre (cm)	0.01m	10^{-2}m
Millimetre (mm)	0.001m	10^{-3}m
Micrometre (μm)	0.000001m	10^{-6}m
Nanometre (nm)	0.000000001m	10^{-9}m

Section 7: Transport Across Membranes

Cell Structure	Definition	Uses
Diffusion	Spreading out of the particles (gas/ solution) resulting in a net movement from an area of higher concentration to an area of lower concentration .	Oxygen and carbon dioxide in gas exchange (leaves and alveoli). Urea from cells into the blood plasma for excretion in the kidney.
Osmosis	The diffusion of water from a dilute solution to a concentrated solution through a partially permeable membrane.	Movement of water into and out of cells.
Active Transport	The movement of substances from a more dilute solution to a more concentrated solution (against a concentration gradient). Requires energy from respiration.	Absorption of mineral ions (low concentration) from soil into plant roots . Absorption of sugar molecules from lower concentrations in the gut into the blood which has a higher sugar concentration.

Section 8: Factors Affecting Diffusion

Factor	Explanation
Difference in concentrations (concentration gradient)	The greater the difference in concentrations, the faster the rate of diffusion.
Temperature	Particles move more quickly at higher temperatures, so rate of diffusion increases.
Surface area of membrane	The greater the surface area the quicker the rate of diffusion.

Section 9: Adaptations of Exchange Surfaces

Large surface area
Thin membrane to provide a short diffusion path
Ventilation (in animals for gas exchange – maintains a concentration gradient)
Efficient blood supply (in animals – maintains a concentration gradient)

Section 3: Microscopy

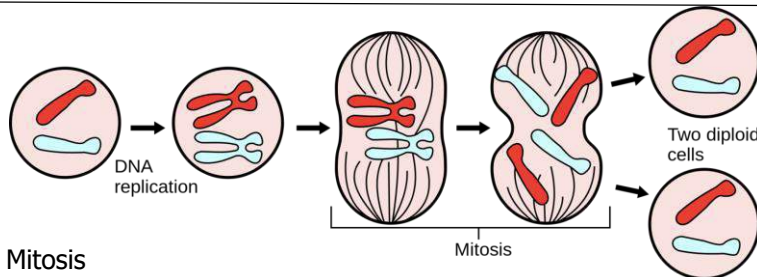
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Section 5: Mitosis and the Cell Cycle

Number of sub-cellular structures (e.g. ribosomes and mitochondria) increase .
Number of chromosomes double .
One set of chromosomes is pulled to each end of the cell.
The nucleus divides .
Cytoplasm and cell membranes divide to form two identical cells

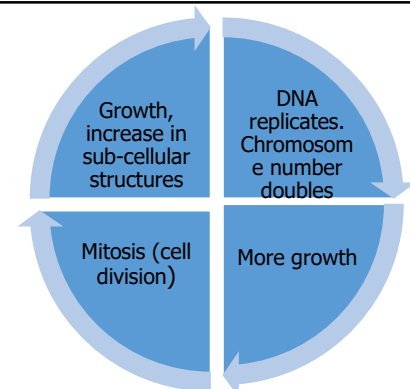


Section 6: Stem Cells

Stem Cell	Properties	Uses
Embryonic stem cell	Can divide into most types of cell.	Therapeutic cloning – embryonic stem cells produced with same genes as patient. No rejection.
Adult stem cell	Can divide into a limited number of cells e.g. bone marrow stem cells can form various blood cells.	
Meristem	Found in plants. Can differentiate (divide) into any type of plant cell.	Clone rare species to prevent extinction . Crops with special features can be clones

Pros and Cons of Using Stem Cells

Pros	Treatment of diseases such as diabetes, dementia and paralysis.
Cons	Ethical and religious objections. Can transfer viruses held within cells.



Cell cycle

KNOWLEDGE



Biology Topic B3 Organisation and the digestive system

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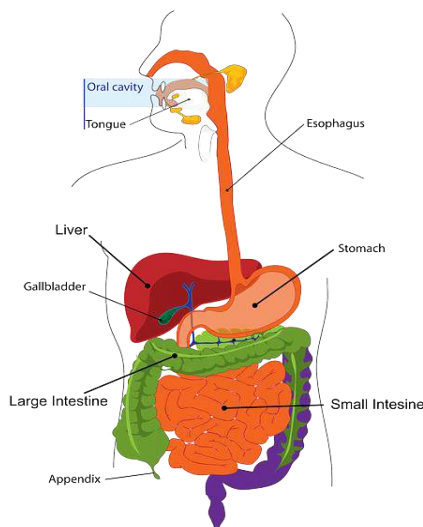
Section 1: Organisation

Tissue	A group of cells with a similar structure and function e.g. muscle tissue
Organ	A group of tissues performing a specific function e.g. heart, leaf
Organ System	A group of organs that perform a specific function e.g. digestive system.

Section 2: Human Digestive System

4 Order of movement of food through the digestive system:

Mouth	Many
Oesophagus	Ordinary
Stomach	Students
Small intestine	Struggle
Large intestine	Learning and
Rectum	Remembering
Anus	Answers



Section 3: Enzymes Key Terms

Enzyme	A biological catalyst that can speed up the rate of reaction without being used itself. Made of a large protein molecule .
Substrate	The chemical that fits into the active site of an enzyme.
Lock and Key Model	Only one type of substrate can fit into the active site of an enzyme, like a key fits into a lock.
Denatured	When the active site of an enzyme changes shape and the substrate can no longer fit in . Can be caused by pH or temperature .

Section 5b: Other Chemicals

Hydrochloric Acid	Acid with pH of 2 produced by the stomach. Unravels proteins .
Bile	Emulsifies fats (turns them into droplets to give a greater surface area). It is alkaline so neutralises acid from the stomach . Produced in liver, stored in gall bladder and is released into the small intestine .

Section 4: Testing for Biological Molecules

Chemical Test

Positive Result

Starch	Add orange/brown iodine solution .	Colour turns to blue/black .
Sugar	Add blue Benedict's solution . Place in a boiling water bath for 5 minutes .	Colour turns green/ yellow/ orange/ brick red .
Protein	Add blue Biuret solution .	Colour turns to lilac/ purple .
Lipid	Add ethanol and decant into water .	Cloudy white emulsion .

Section 5a: Human Digestive Enzymes

Enzyme

Sites of production

Sites of action

Amylase	Breaks starch into sugars .	Salivary glands Pancreas Small intestine	Mouth Small intestine
Protease	Breaks proteins into amino acids .	Stomach Pancreas Small intestine	Stomach Small intestine
Lipase	Breaks lipids (fats) into fatty acids and glycerol .	Pancreas Small intestine	Small intestine

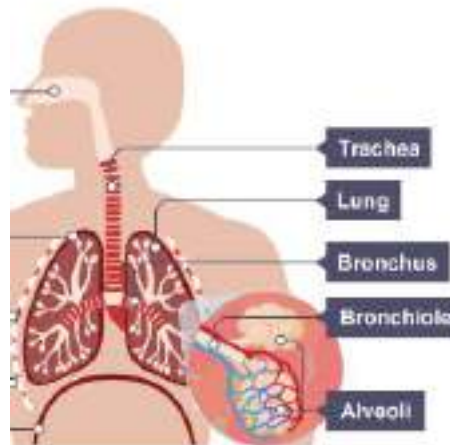
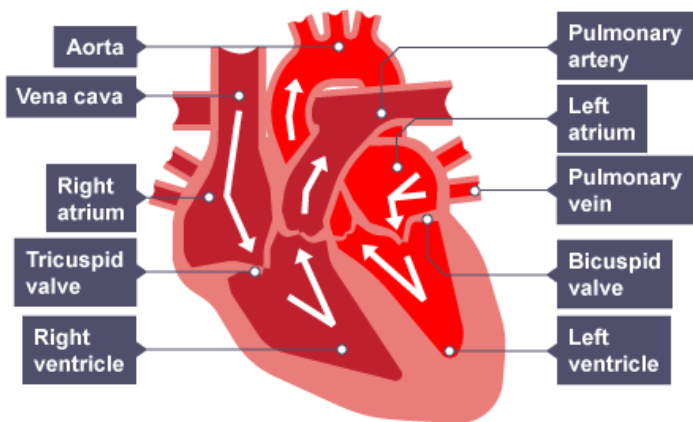
KNOWLEDGE



Biology Topic B4 Organising in Plants and Animals

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Section 6: Heart and Lungs



Section 6a: Structures in the Heart

Pacemaker	Group of cells in the right atrium that controls resting heart rate .
Right ventricle	Pumps deoxygenated blood to the lungs for gas exchange .
Left ventricle	Pumps oxygenated blood to the body . Thick, muscular wall .
Valve	Stops blood flowing the wrong way / leaking.

Section 6b: Structures in the Lungs

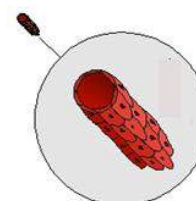
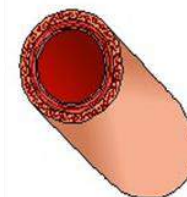
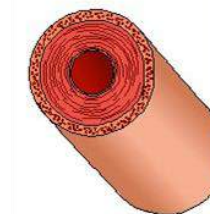
Alveoli	Small sacs where gas exchange occurs. Surrounded by capillaries . Oxygen moves from the alveoli into the capillaries , carbon dioxide moves from the capillaries into the alveoli
Trachea and Bronchi	Tubes through which gases move. Lined with cartilage so they don't collapse.

Section 8: Components of the Blood

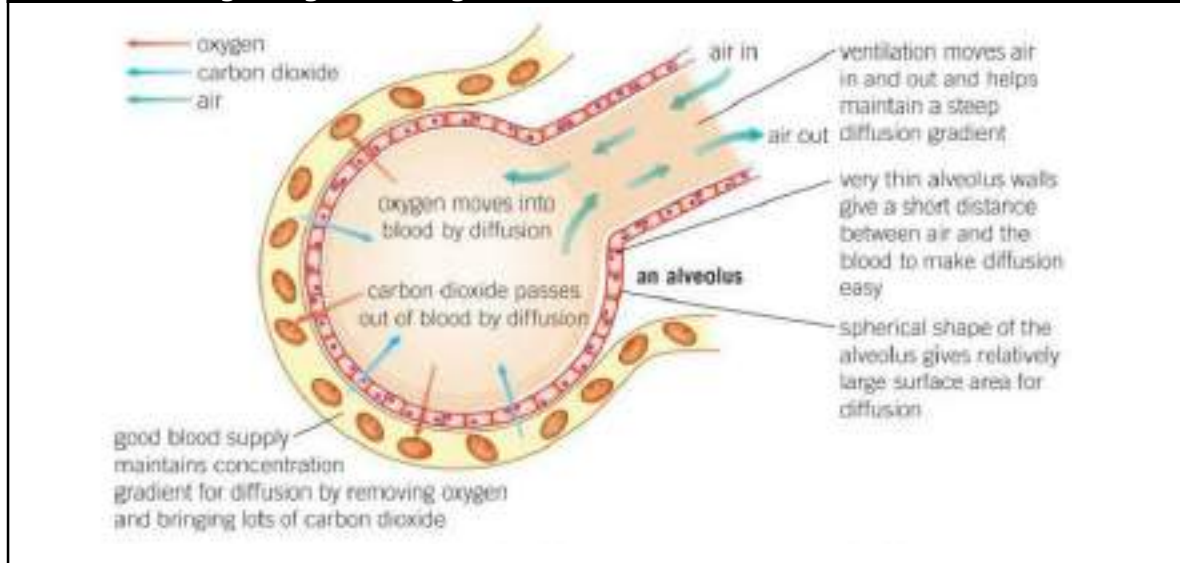
Plasma	Liquid part of the blood. Transports blood cells as well as carbon dioxide, proteins, glucose, hormones and urea .
Red Blood Cells	Carries oxygen . Packed with haemoglobin , a protein that binds to oxygen. No nucleus to create extra space for haemoglobin. Biconcave shape to give a large surface area .
White Blood Cells	Destroy pathogens . Some can produce antibodies .
Platelets	Cell fragments that help to clot wounds .

Section 7: Blood Vessels

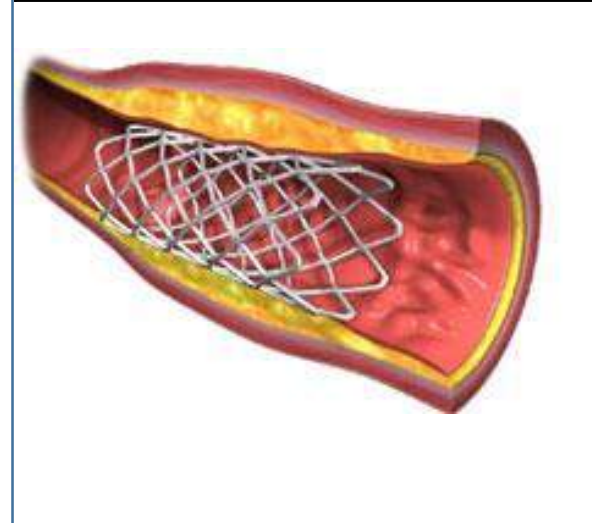
	Artery	Vein	Capillary
Purpose	Takes blood away from the heart .	Takes blood back to the heart .	Exchange of substances between blood and cells .
Adaptations	Thick wall to withstand high pressure	Thin wall. Valves to prevent backflow of blood.	Wall is one cell thick to allow quick diffusion of substances.



Section 9: How gases get exchanged in the alveoli.



Section 11: How a stent is positioned in an artery



Section 10: Heart Disease

Coronary Heart Disease	Build up of fatty material in coronary arteries . Can lead to a blood clot and a heart attack .		
Treatment	What it is	Advantage	Disadvantage
Stent	Wire mesh that opens up a blocked artery .	Keeps artery open. Low-risk surgery.	Fatty material can rebuild.
Statin	Drug that reduces cholesterol .	Reduces fat being deposited in arteries.	Side effects e.g. liver damage.
Heart transplant	Replacement heart from a donor.	Long-term.	Major surgery. Could be rejected.
Artificial heart	Man-made heart used while waiting for a transplant .	Not rejected. Keeps patient alive.	Short life-time. Battery has to be transported. Limited activity.
Mechanical heart valve	Mechanical replacement of faulty heart valve.	Can last a life-time.	Can damage red blood cells.
Biological heart valve	Biological replacement of faulty heart valve.	Don't damage red blood cells.	Valve hardens and may need replacing.

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Biology Topic B4 Organising in Plants and Animals

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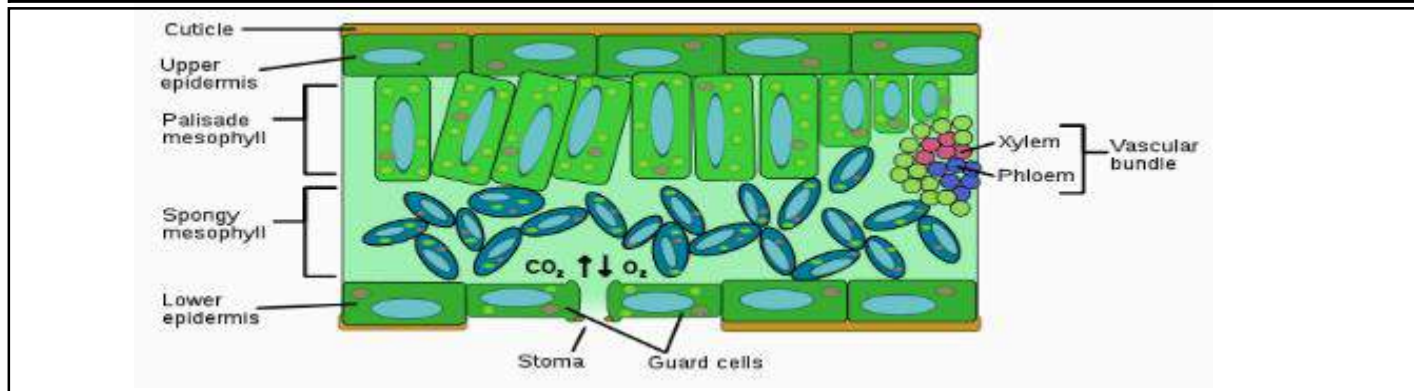
Section 10a: Movement within Plants

Transpiration	The loss of water vapour from the leaves by evaporation from cells and then out through the stomata .
Transpiration Stream	The movement of water from the roots , up the stem to the leaves .
Translocation	The movement of dissolved sugars around the plant.

Section 10b: Factors Affecting Transpiration

Temperature	Increasing temperature increases the transpiration rate as water evaporates quickly.
Humidity	Increasing humidity decreases the rate of transpiration as water evaporates slowly.
Wind speed	Increasing wind speed increases the transpiration rate as water evaporates quickly.
Light	Increasing light increases the rate of transpiration as stomata open .

Section 11: Leaf Structure and Plant Tissues



Epidermis	Cover the surfaces of the leaf; lets light penetrate .59
Xylem	Carries water and minerals from the roots around the plant.
Phloem	Carries dissolved sugars made through photosynthesis around the plant. 6
Palisade mesophyll	Where most photosynthesis takes place. Cells contain many chloroplasts . Absorbs light .
Spongy mesophyll	Some photosynthesis . Has air spaces for diffusion of CO ₂ and O ₂ .
Guard cells	Cells that open and close stomata .
Stoma	Opening that allows CO₂ and O₂ to diffuse in and out of the leaf.

Section 12: Cell Adaptations for Movement Within Plants

Root hair cell Extension gives a large surface area to absorb water and minerals.	
Xylem Vessels are strengthened by lignin to withstand pressure. Cell walls are waterproof.	
Phloem End of cells contain pores to allow dissolved sugars to move between cells.	
Guard Cells and Stoma Guard cells can open the stoma to allow gas exchange or close to prevent water loss.	

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Biology Topic B5 + B6 Communicable Diseases

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Section 1: Pathogens and Diseases

Disease	Pathogen	How it is spread	Effect	Prevention/Control
Measles	Virus	Droplets from sneezes and coughs	Can be fatal	Vaccination of children
HIV	Virus	Sexual contact, needle exchange	Damages some white blood cells	Antiretroviral drugs when infected
Tobacco Mosaic Virus	Virus	Direct contact	Mottling of leaves, reduces photosynthesis	
Salmonella	Bacteria	Infected food	Fever, abdominal cramps, diarrhoea, vomiting	Vaccination of poultry (chickens).
Gonorrhoea	Bacteria	Sexual contact	Discharge from penis/ vagina, pain when urinating	Controlled by antibiotics. Spread prevented by condoms.
Rose Black Spot	Fungus	Spores carried by water or wind	Leaves turn yellow, fall early. Photosynthesis reduced.	Treated by fungicides or destroying affected leaves.
Malaria	Protist	By a vector – mosquito	Fever, can be fatal.	Preventing mosquitos from breeding, using mosquito nets.

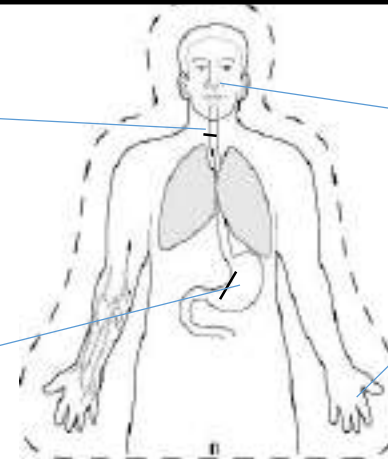
Section 2: Non-Specific Defences

Trachea and Bronchi

Produces **mucus** to **trap pathogens**. Contains **cilia** to **move mucus** for swallowing

Stomach

Contains **hydrochloric acid** to destroy pathogens.



Nose

Contains **hairs** and **mucus** to **trap pathogens**

Skin

A **physical barrier** to pathogens.

Section 3: Key terms

Pathogen	A microorganism that causes disease .
Bacteria	A type of pathogen that produces toxins that damage tissues .
Viruses	A type of pathogen that lives and replicates within cells and causes cell damage . It is difficult to kill viruses without damaging cells .
Antibodies	Some white blood cells (lymphocytes) produce antibodies. These bind to pathogens and destroy them or stick them together .
Antitoxins	Some white blood cells (lymphocytes) produce antitoxins. Antitoxins neutralise toxins .
Antibiotics	Antibiotics kill bacteria . Specific antibiotics should be used for specific bacteria . Some bacteria are resistant to antibiotics. Do not kill viruses .
Painkillers	Painkillers relieve symptoms but don't kill pathogens .
Phagocytosis	Some white blood cells (phagocytes) engulf pathogens .

Section 4: Preventing Infections

Hygiene	Hand washing, disinfectants on work surfaces, keeping raw meat away from food
Isolation of infected individuals	Infected individuals kept separate from healthy individuals
Destroying and controlling vectors	By killing or controlling vectors e.g. mosquitos, aphids, rodents etc the spread of disease is reduced
Vaccination	Body is injected with a small amount of inactive pathogen. If you are infected your body has developed immunity to the pathogen.

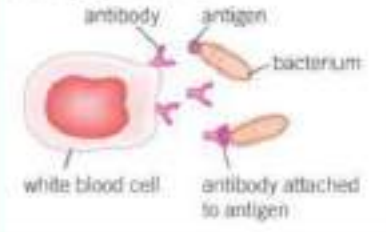
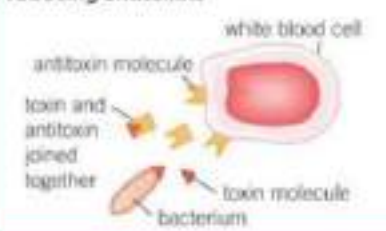
Section 6: Clinical Trials

Trial Stage	Purpose
Preclinical – cells, animals	Test for toxicity and efficacy before testing humans
Healthy volunteers	Very low doses to test for toxicity .
Patients	Larger groups. Test for toxicity , efficacy and dose . Placebos may be used in a double-blind trial .

Clinical Trial Key Terms

Placebo	A drug with no active ingredients , designed to mimic a real drug . Used to test if the effects of a drug on a patient are just psychological .
Double-blind trial	The volunteers do not know which group they are in, and neither do the researchers, until the end of the trial
Toxicity	How harmful the drug is. May have dangerous side effects .
Efficacy	How effective the drug is.
Dose	The amount of the drug given to the patient.

Section 5: Ways in which white blood cells destroy pathogens

Role of white blood cell	How it protects you against disease
Ingesting microorganisms 	Some white blood cells ingest (take in) pathogens, digesting and destroying them so they cannot make you ill.
Producing antibodies 	Some white blood cells produce special chemicals called antibodies. These target particular bacteria or viruses and destroy them. You need a unique antibody for each type of pathogen. When your white blood cells have produced antibodies once against a particular pathogen, they can be made very quickly if that pathogen gets into the body again. This stops you getting the disease twice.
Producing antitoxins 	Some white blood cells produce antitoxins. These counteract (cancel out) the toxins released by pathogens.

Section 7:

Drugs from plants	Traditionally drugs were extracted from plants
Penicillin	Discovered from penicillium mould

Section 1: Monoclonal antibodies

Monoclonal Antibodies

Monoclonal antibodies are identical copies of **one** type of **antibody** produced in a laboratory.

How to produce monoclonal antibodies:

1. A mouse is **injected** with a pathogen
2. White blood cells called **lymphocytes** produce **antibodies**
3. Lymphocytes are removed from the mouse and **fused** with rapidly dividing mouse **tumour cells**
4. The new cells are called **hybridomas**.
5. The hybridomas divide rapidly and release lots of **antibodies** which are then collected

Uses of Monoclonal Antibodies

Used in treatment of diseases and monoclonal antibodies have been developed against the antigens on cancer cells.

Monoclonal antibodies are bound to radioactive substances (or toxic drugs and chemicals) that stop cells growing and dividing.

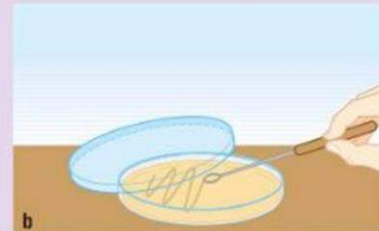
Monoclonal antibodies have side effects and are not as widely used in cancer treatment.

Monoclonal antibodies are used for diagnosis in pregnancy tests, in labs to measure levels of hormones and other chemicals in the blood to detect pathogens and to identify molecules in cells or tissues.

Section 2: Culturing microorganisms in the laboratory



Sterilise the inoculating loop used to transfer microorganisms to the agar by heating it until it is red hot in the flame of a Bunsen and then letting it cool. Do not put the loop down or blow on it as it cools.



Dip the sterilised loop in a suspension of the bacteria you want to grow and use it to make zigzag streaks across the surface of the agar. Replace the lid on the dish as quickly as possible to avoid contamination.



Fix the lid of the Petri dish with adhesive tape to prevent microorganisms from the air contaminating the culture – or microbes from the culture escaping. Do not seal all the way around the edge – as oxygen needs to get into the dish to prevent harmful anaerobic bacteria from growing.



The Petri dish should be labelled and stored upside down to stop condensation falling onto the agar surface.

Section 3: Preventing Bacterial Growth

Bacteria multiply by simple cell division if they have enough nutrients and a suitable temperature

You can investigate the effects of disinfectants and antibiotics on bacterial growth using agar plates and calculating the cross-sectional area of colonies grown or of clear areas of agar

Section 4: More about Plant Diseases

Plants can be infected by a range of viral, bacterial and fungal pathogens as well as insect pests.

We can't detect a plant is diseased by looking for unusual growths, spots or discoloured leaves and malformed leaves and stems.

If a plant disease is suspected then it can be identified by:

Gardening manuals

Gardening websites

Test kits containing monoclonal antibodies

Taking infected plants to a laboratory to identify the pathogen

Monoclonal antibodies are used for diagnosis in pregnancy tests, in labs to measure levels of hormones and other chemicals in the blood to detect pathogens and to identify molecules in cells or tissues.

Section 6: Deficiency of Mineral Ions

Nitrate ions	Needed by plants for protein synthesis and growth. Lack of nitrate ions results in stunted growth of plants.
Magnesium ions	Needed by plants to produce chlorophyll. Lack of magnesium ions results in chlorosis (yellowing of leaves due to lack of chlorophyll)

Section 7: Plant defence responses

Type of plant defence used (mechanical, physical or chemical)	What is the plant being defended against?	Describe the defence being used
Mechanical	Herbivores eating it	Thorns or hairs
Chemical	Pathogens/bacteria Herbivores/animals	The chemical released is antibacterial or poisonous
Physical	Herbivores and pathogen entry	Dead bark coating which falls off
Physical	Insects such as aphids	Waxy cuticle/cellulose cell walls are hard to penetrate



The presence of pests



Stunted growth



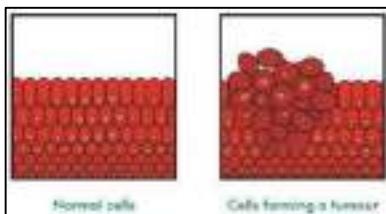
Chlorosis



Thorns

Section 1: Key Definitions

Non-communicable disease	Long term or slow progressing disease not caused by infectious pathogens.
Risk factor	Characteristic or exposure that increases the likelihood of developing a disease.
Correlation	When one thing changes when the other one does. e.g more tomatoes eaten, less heart disease.
Casual Link/Cause:	When one factor changes, the other one changes as well and there is evidence to show that the change of one factor actually causes the other to change
Cancer	Non-communicable disease caused by uncontrolled cell division.
Causes of cancer	Ionizing radiation e.g Gamma Rays, Viral infection, Chemicals in food or cigarette, Inherited mutations in the gene.
Casual Link/Cause:	When one factor changes, the other one changes as well and there is evidence to show that the change of one factor actually causes the other to change
Causes of cancer	Ionizing radiation e.g Gamma Rays, Viral infection, Chemicals in food or cigarette, Inherited mutations in the gene.
Benign tumours	Form in one place and do not spread to other tissues
Malignant tumours	May spread to different tissues and form secondary tumours
Lifestyle risk factors for cancer	Smoking, obesity, common viruses and UV light. Genetic factors are also risks for some cancers.
Carcinogens	Agents that cause cancer or increase the risk of causing cancer
Ionizing radiation	Radiation that penetrates the cells and damages chromosomes, causing mutations in the DNA.
Treating cancer	Radiotherapy – cancer cells are destroyed by targeted doses of radiation Chemotherapy – chemicals are used to stop cancer cells dividing or causing the cancer cells to 'self destruct'.
Smoking	Can cause heart disease and lung cancer Fetus exposed to smoke has restricted oxygen, which can lead to premature birth, low birthweight, and stillbirth Tobacco smoke contains carbon monoxide (a poisonous gas) and nicotine (addictive chemical)
Diet	Affects risk of developing cardiovascular diseases through cholesterol levels and through obesity. Obesity is a risk factor for type 2 diabetes Lack of exercise is a risk factor for type 2 diabetes
Alcohol	Can damage the liver and cause cirrhosis and liver cancer Can cause brain damage and death Alcohol taken by pregnant women can affect the development of the unborn baby



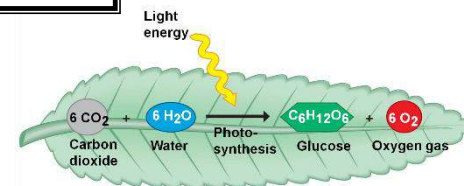
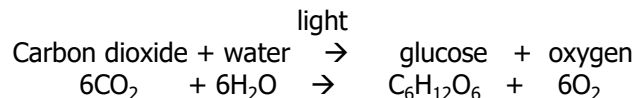
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Biology Topic B8 Photosynthesis

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Section 1: Photosynthesis Equation



Section 2: Key terms

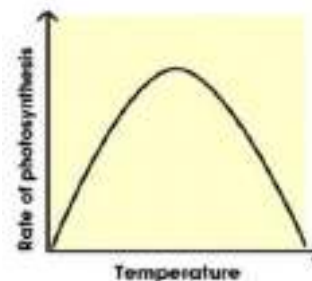
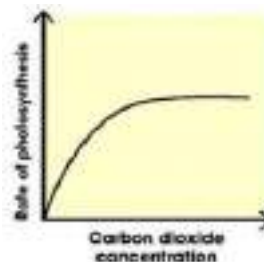
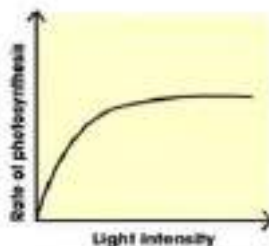
Chloroplast	The plant organelle where photosynthesis takes place.
Chlorophyll	The green pigment that absorbs energy from light .
Endothermic	Photosynthesis takes energy in (in the form of light). It is an endothermic reaction.
Diffusion	The spreading out of particles by random motion from where they are in high concentration to a low concentration. Occurs in gases and liquids.

Section 3: Uses of Glucose

Used in respiration to release energy .
Converted into starch for storage .
Converted into fats and oils for storage .
Produce cellulose to strengthen the cell wall .
Produce amino acids to make proteins (also needs nitrate ions from the soil)

Section 4: Limiting Factors

Limiting Factor	The factor that stops the rate of photosynthesis from increasing; could be light intensity, CO ₂ concentration, temperature or amount of chlorophyll.



Light Intensity

Initially light is the limiting factor. When the graph plateaus something else (e.g. CO₂ concentration, temperature) is limiting the rate.

CO₂ concentration

Initially CO₂ concentration is the limiting factor. When the graph plateaus something else (e.g. light intensity, temperature) is limiting the rate.

Temperature

As temperature increases, the rate of photosynthesis increases. Above the optimum there is a decrease in photosynthesis. Enzymes needed for photosynthesis become denatured.

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Biology Topic B9 Respiration

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Section 5: Respiration

Energy	Energy in organisms is needed for chemical reactions to build larger molecules, movement and keeping warm.
Aerobic Respiration	Aerobic respiration provides energy . It requires oxygen . It is an exothermic reaction (produces heat). In mitochondria . Glucose + oxygen → carbon dioxide + water (+energy) C₆H₁₂O₆ + 6O₂ → 6CO₂ + 6H₂O (+energy)
Anaerobic Respiration (muscles)	No oxygen needed. Provides less energy than aerobic respiration as glucose not fully oxidised . Occurs during intensive exercise . In cytoplasm . Glucose → lactic acid
Lactic Acid	Produced in anaerobic respiration in muscles . Build up of lactic acid causes fatigue . Lactic acid must be taken to the liver by the blood so that it can be oxidised back to glucose .
Oxygen Debt	The amount of extra oxygen the body needs after exercise to react with the lactic acid and remove it.
Anaerobic Respiration (plant and yeast cells)	No oxygen needed. In yeast cells it is called fermentation – economically important for manufacture of bread and alcoholic drinks . In cytoplasm . Glucose → ethanol + carbon dioxide

Section 5: Response to Exercise

Increase in breathing rate	Increases rate at which oxygen is taken into the lungs.
Increase in heart rate	Oxygenated blood is pumped around the body at a faster rate. Carbon dioxide is removed at a faster rate.
Increase in breath volume	A greater volume of oxygen is taken in with each breath.

Section 6a: Metabolism

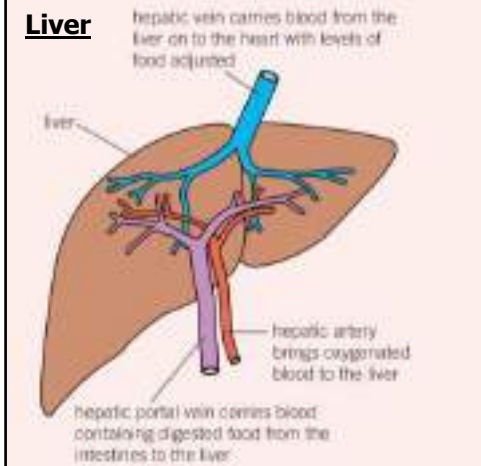
Metabolism	The sum of all the reactions in a cell or body . Some of these reactions require the energy released from respiration .

Section 6b: Metabolic Reactions

Conversion of glucose to starch, cellulose or glycogen.
Formation of lipids from glycerol and fatty acids
Use of glucose and nitrates to make amino acids (plants only)
Respiration
Breakdown of proteins to urea

Section 6a: Metabolism in the liver (Higher)

Liver	Detoxifies poisonous substances such as ethanol; passes broken down products in the blood so they can be excreted in the urine via the kidneys; converts lactic acid back into glucose.



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Biology Topic B10 The human nervous system

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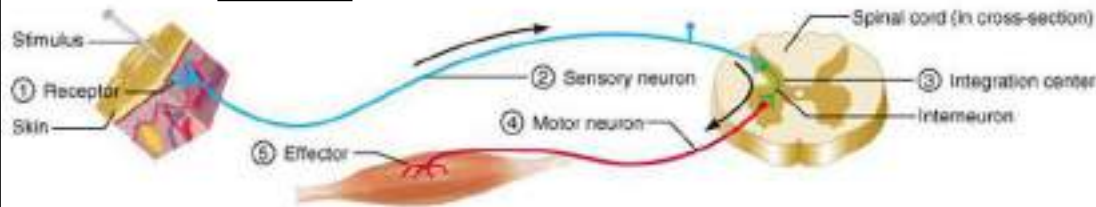
Section 1: Key Terms

Homeostasis	Regulating internal conditions to keep them at an optimum, despite internal and external changes . Maintains optimum conditions for enzymes .
Negative Feedback (HT)	Negative feedback ensures that changes are reversed and returned back to the optimum level .

Section 2a: Nerve Reflexes Key Terms

Central nervous system (CNS)	The brain and spinal cord together. Co-ordinates the response of effectors .
Reflex action	A fast, automatic reaction. Does not involve thinking parts of the brain.
Coordination Centre	Receives and processes information from receptors e.g. CNS, pancreas.
Synapse	The gap between two neurons . Allows many different neurons to connect.
Myelin sheath	Some neurons are surrounded by myelin. Myelin insulates the neuron and speeds up the transmission of electrical impulses .

Reflex arc



Section 2b: The Reflex Arc

Stimulus – a **change** in the **environment**



Receptor – **detects a stimulus**



Sensory neuron – **transmits** electrical impulse travels **to the CNS**



Relay neuron – in the **spinal cord**. Transmits electrical impulses **from the sensory to the motor neuron**



Motor neuron – transmits impulses from **CNS to effector**



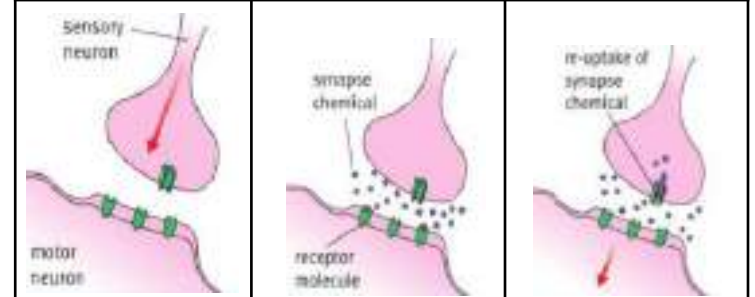
Effector – produces a **response**. Can be a **muscle** or **gland**



Response – the **change** in response to the stimulus



Section 2c: The Synapse

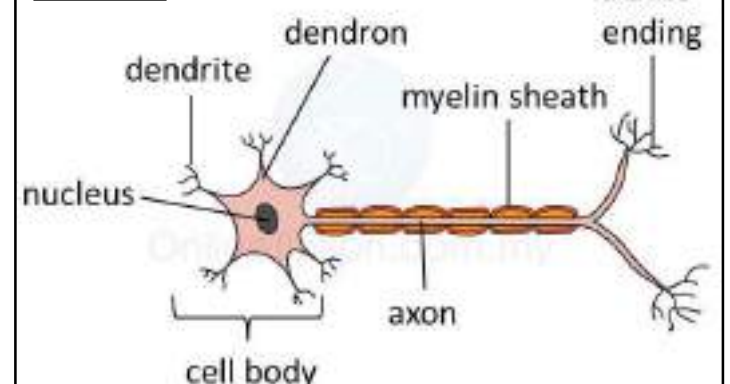


An **electrical impulse** arrives at the synapse.

Neurotransmitter molecules are **released** and **diffuse** across the synapse.

Neurotransmitter molecules fill **receptors** and **cause an electrical impulse** in the next neuron.

Nerve cell



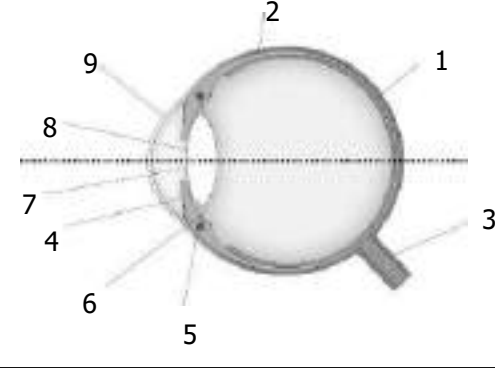
Section 1: The brain

Cerebral cortex	Outer wrinkly part, responsible for consciousness, intelligence, memory and language
Medulla oblongata	Controls unconscious activities e.g. breathing and heartbeat
Cerebellum	Responsible for muscle coordination

Section 2: Studying the brain (HT)

Study people with brain damage	If a part of the brain has been damaged the effect on the patient can tell you what this part does
Electrically stimulate the brain	By observing what stimulating different parts of the brain does its possible to get an idea of what those parts do
MRI scans	MRI scans produce detailed pictures of the brain. Scientists can see which parts are active when people are doing things
The brain is complex and delicate – investigating and treating it is difficult	

The eye



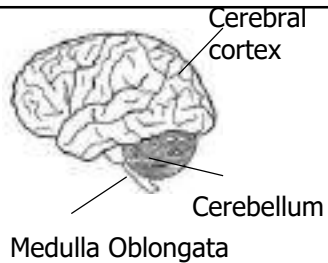
Section 4: Focusing on near and distant objects

- To look at **near** objects – ciliary muscles **contract**, suspensory ligaments **slacken**, lens becomes **fat**, **increasing** amount of refraction
- To look at **distant** objects – ciliary muscles **relax**, suspensory ligaments **tighten**, lens becomes **thin**, **decreasing** amount of refraction

Section 3: The eye key terms and parts

Refraction – the bending of light rays when they pass from one medium to another

Part	Function
1 Retina	Where an image forms at the back of the eye, contains rods and cones
2 Sclera	The white part, protects the eye
3 Optic nerve	Send electrical impulses from the retina to the brain
4 Iris	Coloured muscle controls the size of the pupil
5 Ciliary muscles	Contract and relax to change the shape of the lens
6 Suspensory ligaments	Controls the shape of the lens to focus light rays on the retina
7 Pupil	Hole located in the centre of the iris of the eye that allows light to strike the retina
8 Lens	Refracts light to be focused on the retina
9 Cornea	Refracts light through the pupil
Rods	Light sensitive receptor cells that let you see in low light conditions
Cones	Light sensitive receptor cells that let you see colour



Section 5: Correcting vision problems

	Where the image focuses	How to correct it	Why it occurs
Long sighted (HYPEROPIA)	Behind the retina	Convex lens	The lens is too weak or the eyeball is too short
	Where the image focuses	How to correct it	Why it occurs
Short sighted (MYOPIA)	In front of the retina	Concave lens	The lens is too strong, or the eyeball is too long
Contact lenses	Good for sports/activities, almost invisible. Could cause infection if not sterilised properly		
Laser eye surgery	Permanent correction of vision problems, however, surgery carries risks		
Lens replacement	Permanent solution, risk of vision loss		

Section 1: Hormonal Control Key Terms

Endocrine System	The system of glands that secrete hormones .
Hormone	A chemical secreted by a gland that travels in the blood and has an effect on a target organ . The effects are slower and longer-lasting than responses from the nervous system.
Pituitary Gland	A gland that secretes several hormones into the blood. These hormones in turn act on other glands to stimulate other hormones to be released to bring about effects.
Testosterone	Male hormone produced by testes . Stimulates sperm production .
Adrenaline (HT)	Hormone produced by the adrenal glands in times of fear/ stress . It increases the heart rate and boosts the delivery of oxygen and glucose to the brain and muscles , preparing the body for 'flight or fight'.
Thyroxine (HT)	Hormone produced by the thyroid gland . Thyroxine stimulates the metabolic rate . Important in growth and development .

Section 4: Location of Endocrine Glands

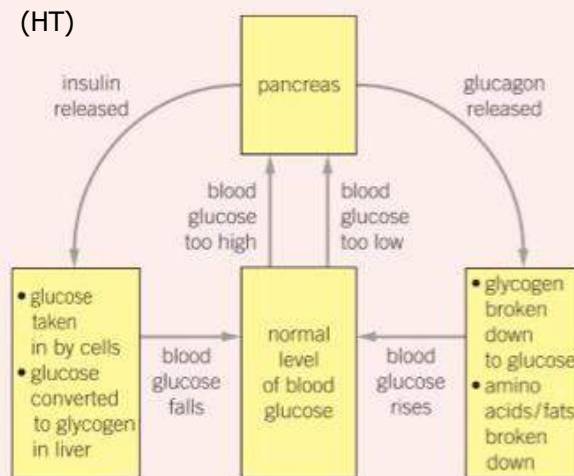


Figure 1 Negative feedback control of blood glucose levels using insulin and glucagon

Section 5: Blood Glucose Control Key Terms

Pancreas	The gland that monitors and controls blood glucose concentration .
Insulin	A hormone produced when blood glucose concentration is too high . Causes glucose to move from the blood into the cells . In liver and muscle cells excess glucose is converted to glycogen .
Glucagon (HT)	A hormone produced when blood glucose concentration is too low . Causes glycogen to be converted into glucose and released into the blood .
Glycogen	A storage molecule made from many glucose molecules bonded together . Found in liver and muscle cells .
Type I Diabetes	Disorder in which the pancreas fails to produce enough insulin . Causes uncontrolled high blood glucose levels. Treated with insulin injections .
Type II Diabetes	Body cells no longer respond to insulin produced by the pancreas . A carbohydrate controlled diet and exercise are common treatments. Obesity is a risk factor .
Negative Feedback (HT)	Negative feedback ensures that changes are reversed and returned back to the optimum level .



Biology Topic B11

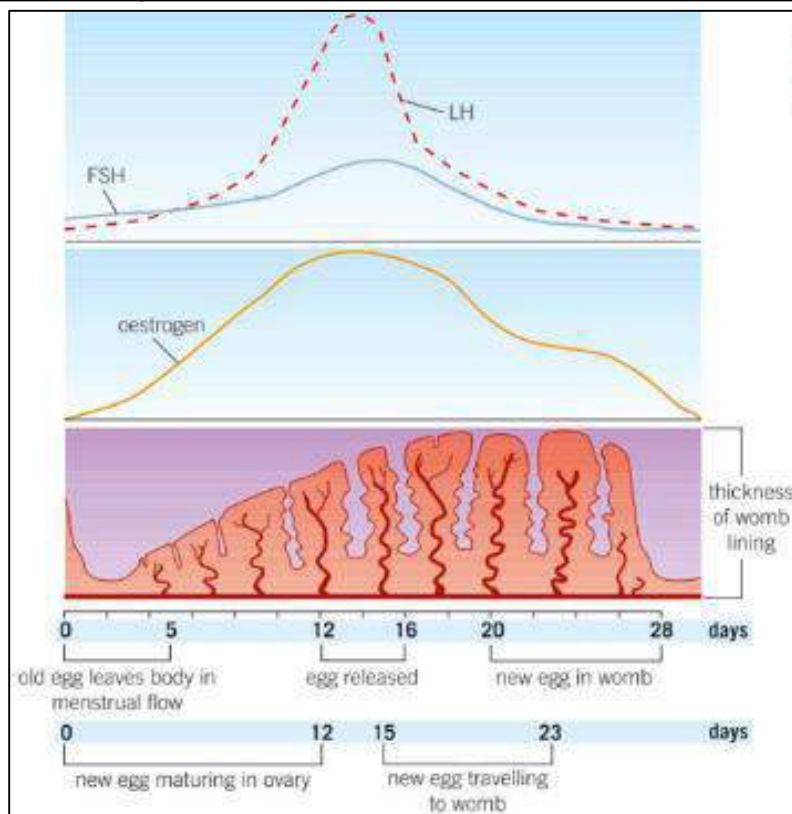
Hormonal Coordination

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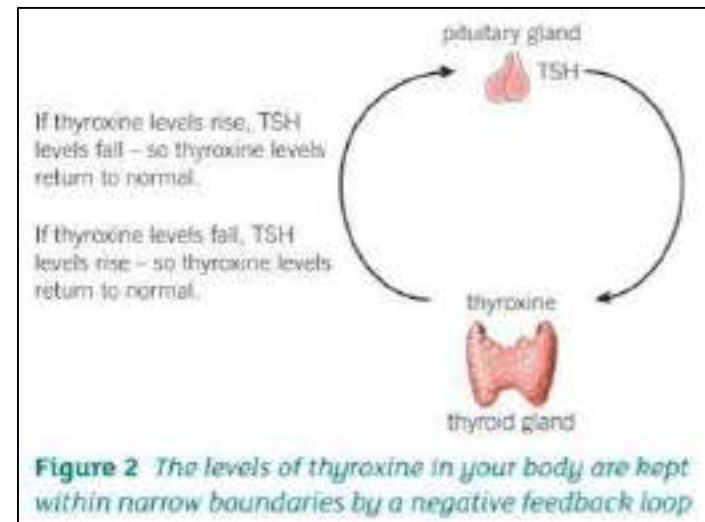
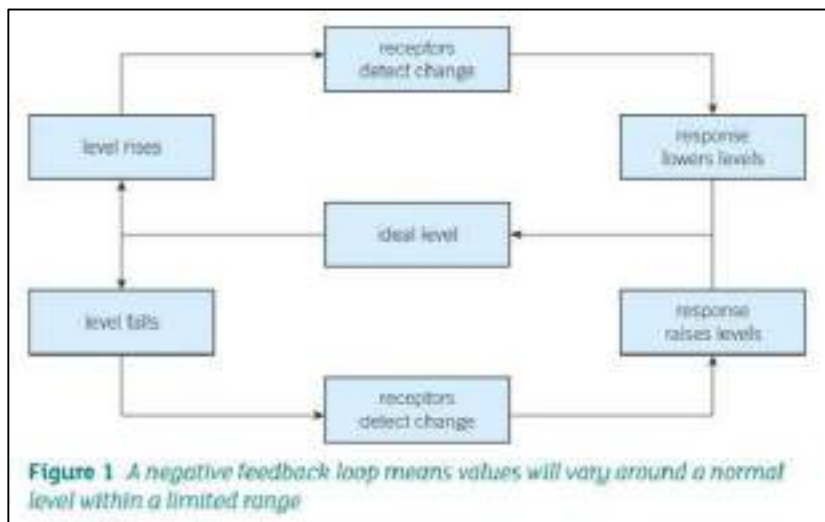
Section 1: Menstrual Cycle (Some HT)

Ovulation	The release of an egg cell . Occurs approximately every 28 days .
FSH	Produced by the pituitary gland . A hormone that causes an egg to mature in the ovary . Causes oestrogen to be produced .
Oestrogen	Produced by the ovaries . Causes blood lining of uterus to develop . Stops FSH being produced . Stimulates release of LH .
LH	Produced by the pituitary gland . A hormone that causes ovulation .
Progesterone	Produced by the ovary . Maintains blood lining in uterus. Stops production of LH and FSH .



Section 2: Methods of Contraception

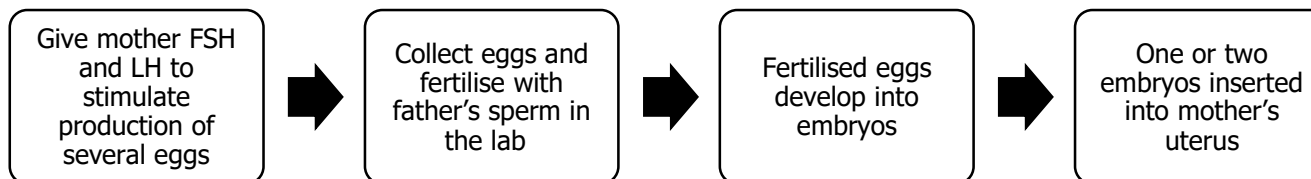
Method	How it works	Pros (+) and Cons (-)
Oral contraceptives	The contraceptive pill. Contain hormones to inhibit FSH production so eggs do not mature .	+ 99% effective + Reduces risk of some cancers - Can cause side effects e.g. nausea
Progesterone	Injection, implant or skin patch of slow-release progesterone to stop eggs maturing and being released .	+ Fewer side effects than pill. + Doesn't need to be taken daily so less likely to be forgotten - Less effective than pill
Barrier methods	Condom or diaphragm. Prevents sperm reaching the egg.	+ 98% effective (when used correctly) + Prevent STIs - Can break or be used incorrectly
Spermicide	Kills or disables sperm . Used with diaphragms to make them more effective.	+ Increases effectiveness of some barriers - Can't be used on its own
Avoiding intercourse	Avoiding intercourse when an egg might be in an oviduct.	- High risk of becoming pregnant
Sterilisation	Undergoing surgery to stop sperm or eggs being able to fertilise.	+ Permanently stops pregnancy - Risks from surgery - Expensive to reverse and may not work
Intra-uterine device (IUD)	An implant into the uterus that prevent fertilised eggs implanting into the wall of the uterus or release hormones .	+ Long lasting but can be reversed - Small risk of infection or uterus damage when IUD is implanted



Section 1: Thyroxine (HT)

Thyroxine (HT)	Hormone produced by the thyroid gland . Thyroxine stimulates the metabolic rate . Important in growth and development .
Thyroxine is controlled by negative feedback (HT)	If levels of thyroxine in blood fall, sensors in the brain detect this and TSH is released from the pituitary gland. TSH stimulates the production of thyroxine by the thyroid gland. As the level of thyroxine goes up, it is detected by the sensors and the level of TSH released falls.

Section 2: IVF (HT)



Section 3: IVF Disadvantages (HT)

- Emotionally and physically stressful.
- Success rates are low.
- Can lead to multiple births which are risky for mother and babies

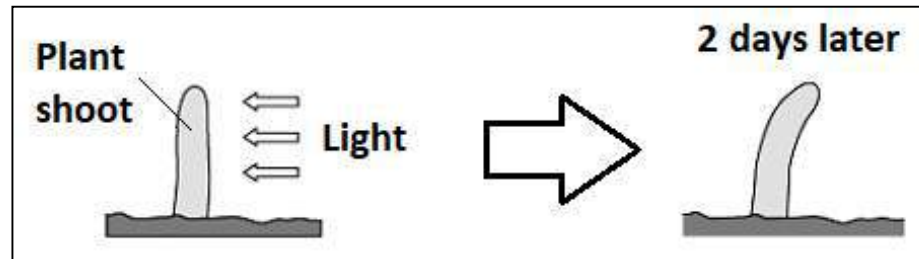


Section 1: Plant hormones

Auxin	A plant hormone responsible for cell elongation/plant growth	Uses – killing weeds, growing cuttings with rooting powder, growing cells in tissue culture
Ethene	A plant hormone responsible for ripening	Uses – speed up ripening of fruit
Gibberellin	A plant hormone responsible for seed germination	Uses – controlling seed dormancy and germination, inducing flowering, growing larger fruit
Tropism	A plant's response to a stimulus	
Phototropism	A plant's response to light	
Gravitropism	A plant's response to gravity	

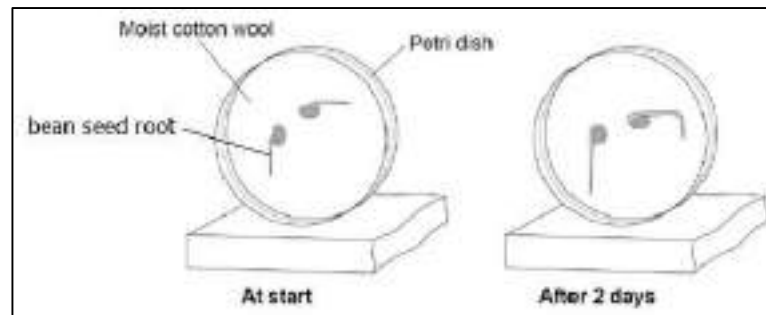
A plant's response to light

- Auxin (a plant hormone) redistributes unequally in the shoot
- More auxin gathers on the dark side of the shoot
- Auxin promotes cell elongation in the shoot
- If the plant cells on the dark side have more auxin they will grow more/faster & longer
- This causes the plant to bend towards the light



A plant's response to gravity

- Gravity produces unequal distribution of auxin
- Auxin is pulled to the lower side of the roots (by gravity)
- In the root auxin inhibits cell growth
- The cells on top elongate faster
- This causes the root to bend downwards





Biology Topic B12

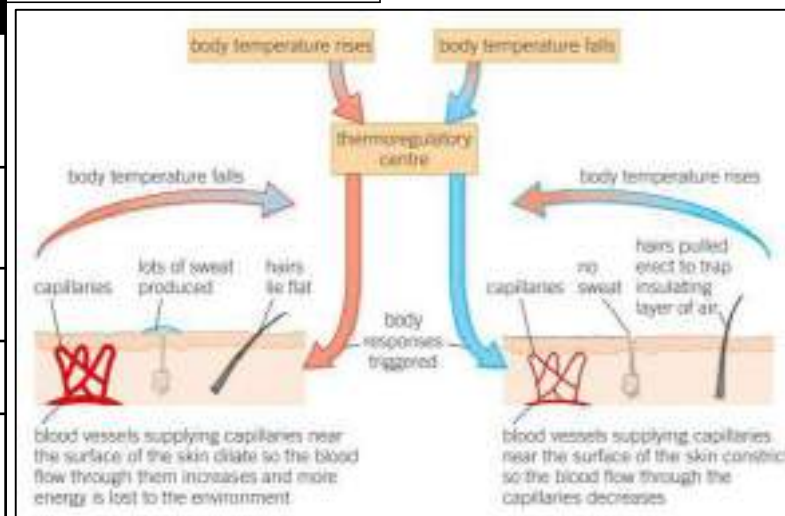
Homeostasis in action (separate)

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Section 1: Temperature control

Vasodilation	Arterioles (blood vessels) supplying skin capillaries dilate so more blood can flow close to the surface of the skin. Helps transfer heat energy from the skin to the environment to cool you down
Vasoconstriction	Arterioles supplying the skin capillaries constrict so less blood flows under the surface of the skin. Reducing heat loss when you are too cold
Sweating	Sweat glands release sweat when you are too hot. When sweat evaporates it transfers energy to the environment
Shivering	Shivering is when muscles contract rapidly, this need respiration which transfers energy to the body to warm you up
Thermoregulatory centre	Found in the hypothalamus in the brain, detects blood temperature changes and receives information about skin temperature too



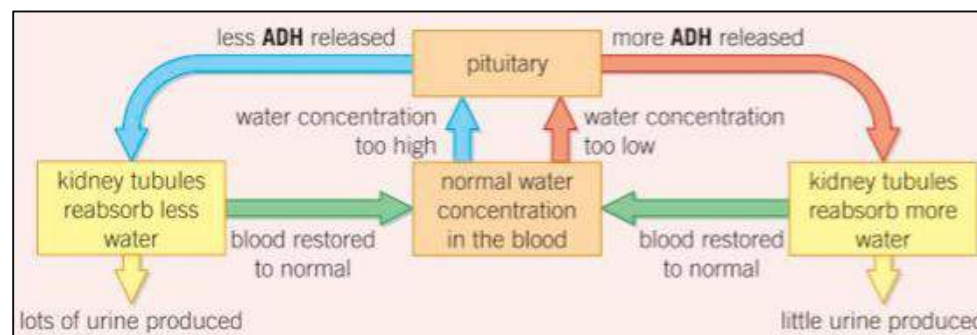
Section 2: Water and nitrogen control

Urine contains.....

Urea	Excess proteins are broken down into amino acids in the liver. These amino acids are turned into ammonia which is toxic so it is quickly turned into urea and excreted from the body in urine
Ions	Excess ions are removed in the urine
Water	Water leaves the body via the lungs during exhalation Water, mineral ions and urea are lost through the skin in sweat Excess water and mineral ions is removed via the kidneys in urine If the body cells lose or gain too much water through osmosis, they do not function efficiently.

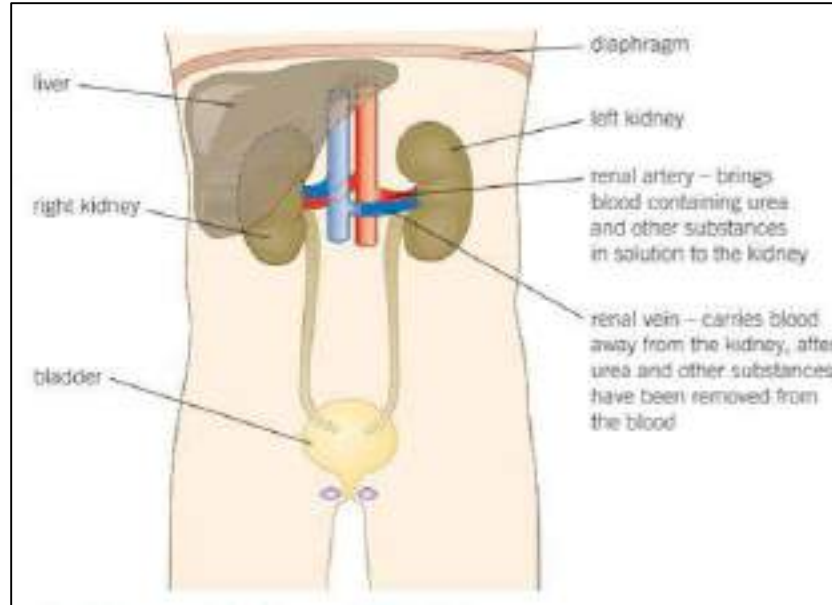
Section 3: Water and nitrogen control - ADH

ADH	Anti-diuretic hormone controls the concentration of the urine
Pituitary gland	Releases more or less ADH depending on how much water is in the body
Negative feedback	Controls water levels in the body



Section 1: The Kidney – removes waste substances

- A kidney produces urine firstly by **filtering** the blood.
- **Selective reabsorption** then occurs. This means that **all** of the **glucose** is reabsorbed back into the blood, along with **some** of the **ions** and **some** of the **water** depending on the concentration of these within the body.
- The kidney **excretes urea** in the urine along with any **excess water and ions**.
- **Protein** molecules are too **large** to pass through the kidney filters so remain in the blood and are not therefore excreted in the urine of a healthy person.



Section 2: Kidney failure Treatments

	Advantages	Disadvantages
Kidney transplants	• Patients can lead a more normal life without having to watch what they eat and drink • Cheaper for the NHS overall	• Organ rejection by the patient's immune system • Must take immune-suppressant drugs which increase the risk of infection • Shortage of organ donors • Kidney only lasts 8-9 years on average • Any operation carries risks
Kidney dialysis	• Available to all kidney patients (no shortage) • Can buy valuable time until a donor is found • No need for immune-suppressant drugs	• Patient must limit their salt and protein intake between dialysis sessions • Expensive for the NHS • Regular dialysis sessions – impacts on the patient's lifestyle • Can cause blood clots or infections

Section 1a: Sexual and Asexual Reproduction

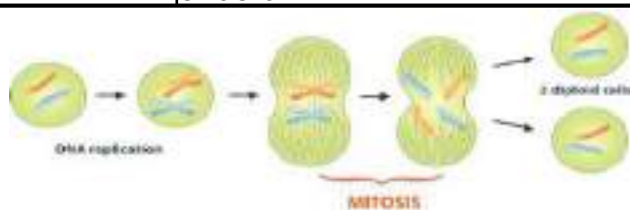
Sexual Reproduction	Reproduction involving the fusion of gametes .
Gamete	A sex cell that contains half the genetic information of a body cell. E.g. sperm and egg in animals, pollen and ovaries in plants.
Meiosis	The type of cell division that produces gametes . Four daughter cells are produced from one original cell. Each cell is genetically different. Each daughter cell has half the genetic information of a body cell.
Fertilisation	Fusion of gametes . Restores the full number of chromosomes.
Asexual Reproduction	Reproduction involving only one parent and no gametes . No mixing of genetic information so genetically identical clones are produced. Only mitosis is involved.
Mitosis	Cell division that produces two identical daughter cells with the full amount of chromosomes.

Section 1b: Mitosis and Meiosis

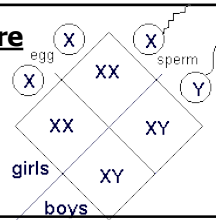
	Mitosis	Meiosis
Number of daughter cells produced	2	4
Variation in cells produced	Genetically identical to each other and parent cell	Different to each other and parent cell
Purpose	Growth, repair, asexual reproduction	Produce gametes for sexual reproduction
Number of chromosomes	Full amount (pairs of chromosomes)	Half (single chromosomes)

Section 1c: Advantages and Disadvantages of Different Types of Reproduction

	Advantages	Disadvantages
Sexual Reproduction	Produces variation . Offspring are more likely to survive changes to the environment and disease.	Requires a mate . Slower way of producing offspring.
Asexual Reproduction	Produce lots of offspring quickly . No mate needed. Time and energy efficient	Offspring are less likely to survive environmental changes or diseases.



Punnet square



Section 2: Genetics Key Terms

DNA	Genetic material . DNA is a polymer made up of two strands forming a double helix . The DNA makes up chromosomes.
Gene	A gene is a small section of DNA on a chromosome. Each gene codes for a particular sequence of amino acids , which make a protein .
Chromosome	A long coil of DNA . Found in the nucleus.
Genome	The entire genetic material of that organism .
Allele	Different versions of the same gene – dominant and recessive.
Dominant	A dominant allele is always expressed . Only one copy is needed.
Recessive	Only expressed if two copies are present .
Homozygous	Both alleles for a gene are the same (i.e. both are dominant or both are recessive).
Heterozygous	Both alleles for a gene are different (i.e. one is dominant, the other is recessive).
Genotype	The alleles present for a particular gene .
Phenotype	The physical feature expressed for a particular gene .
Single gene characteristics	Some characteristics are controlled by only one gene e.g. fur colour in mice, colour blindness in humans.
Multiple gene characteristics	Most characteristics are controlled by many genes e.g. height.

Section 3: Gender Inheritance

Human Chromosomes	Human body cells contain 23 pairs of chromosomes . 22 pairs control characteristics only, one pair controls sex .
Males	Males have two different chromosomes – XY .
Females	Females have two chromosomes that are the same – XX .

Section 4: Genetic Diseases

	Polydactyly	Cystic Fibrosis
Problem	Extra fingers and toes	Disorder of cell membranes. Causes sticky mucus on lungs.
Caused by...	Dominant allele	Recessive allele
Genotype of people with disease	PP or Pp	cc
Genotype of people without disease	pp	CC or Cc
Does the disease have carriers?	No	Yes – genotype Cc

KNOWLEDGE



Biology Topic B13 Reproduction (Separate)

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Section 5: Structure of DNA

DNA strands are **polymers** made up of lots of repeating units called **nucleotides**

Each nucleotide consists of one **sugar** molecule, one **phosphate** molecule and one **base**

The sugar and phosphate molecules in the nucleotides form a **backbone** to the DNA strands. The sugar and phosphate molecules alternate. One of four different bases — **A, T, C or G** — joins to each sugar

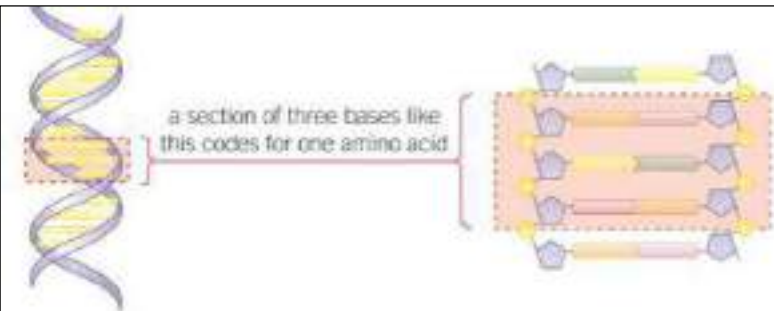
Each base links to a base on the opposite strand in the helix

A always pairs up with T, and C always pairs up with G. This is called **complementary base pairing**.

It's the **order of bases** in a gene that decides the order of amino acids in a protein

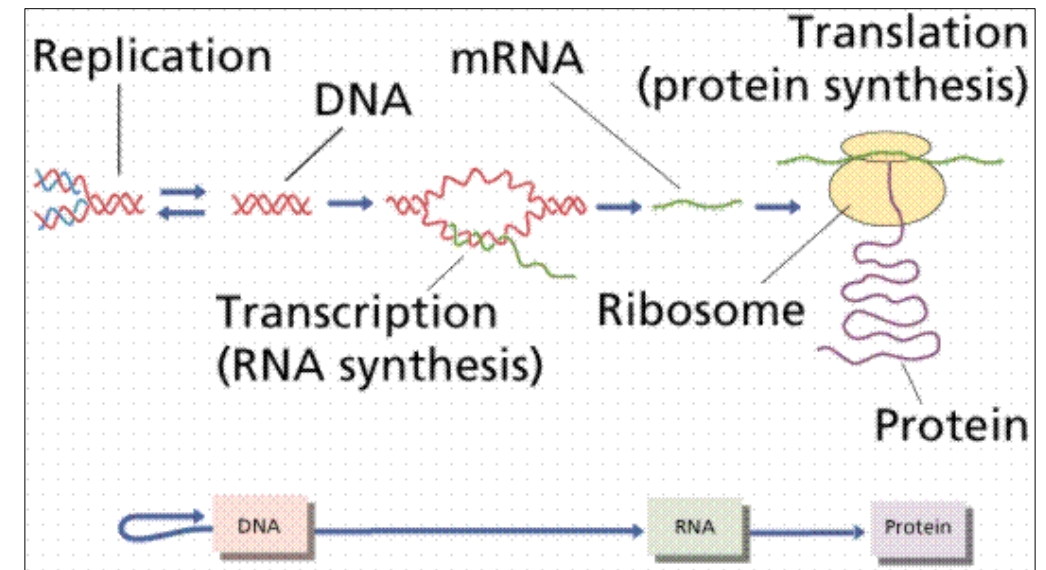
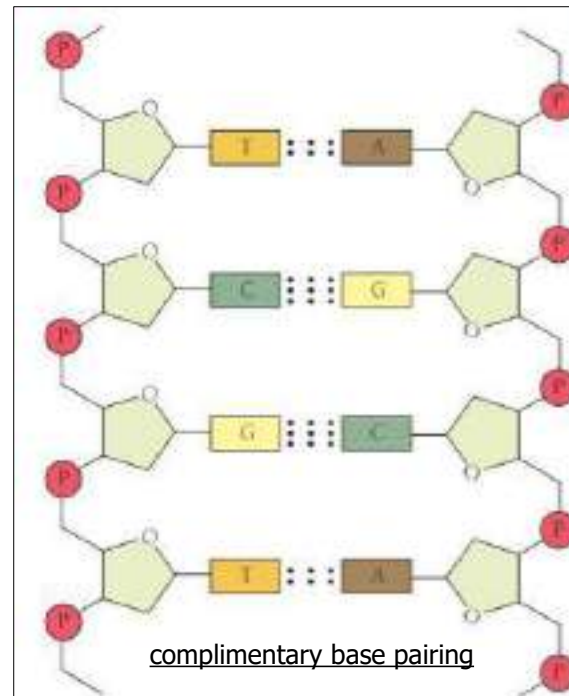
Each amino acid is **coded for** by a sequence of three bases in the gene

The amino acids are joined together to make various proteins, depending on the order of the gene's bases



Section 6: Protein synthesis

Proteins	Examples include enzymes, hormones, structural proteins like collagen
Transcription	The first part of the process of making a protein. It takes place inside the cell nucleus. Transcription involves copying the DNA
Translation	Takes place in the ribosomes that are found in the cytoplasm. This is where the messenger RNA is 'interpreted' and the new protein formed
mRNA	Messenger RNA
tRNA	Transfer RNA



Section 7: Mutations

A mutation	A random change in the DNA
Cause?	Exposure to certain substances/some radiation types
Types?	Insertions, deletions, substitutions

Section 8: Organisms reproducing both sexually and asexually

Malaria parasites reproduce sexually in mosquitoes and asexually in their human hosts
Many fungi reproduce asexually by spores but can also reproduce sexually to give variation
Many plants produce seeds sexually but also reproduce asexually e.g. by runners or bulb division

KNOWLEDGE



Biology Topic B14 Variation and Evolution

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Section 1: Variation and Evolution Key Terms

Variation	The differences between organisms. Can be caused by genes (e.g. eye colour), the environment (e.g. scars) or both the environment and genes (e.g. weight). All variation in genes is caused by mutations .
Mutation	Mutations are changes in genes . Most have no effect on the phenotype. Occasionally mutations have a positive effect on phenotype and organisms with these mutations are more likely to survive.
Evolution	The change in the genes of a population over time . Occurs through natural selection.
Natural selection	The process by which the individuals best adapted to the environment survive and pass on their genes .
Speciation	Occurs when two populations are so different that they can no longer breed to produce fertile offspring . Two new species are formed.

Section 3: Selective Breeding

Selective Breeding (Artificial Selection)	The process by which humans breed plants and animals for particular genetic characteristics .
Inbreeding	Selective breeding can lead to 'inbreeding' where some breeds are particularly prone to disease or inherited defects .

Process of selective breeding:

1. Choose parents with correct characteristics from the population.
2. Breed them together.
3. Choose the offspring with the desired characteristics and breed them together.
4. Continue over many generations.

Examples of desired characteristics:

- Disease resistance in food crops.
- Animals which produce more meat or milk.
- Domestic dogs with a gentle nature.
- Large or unusual flowers.

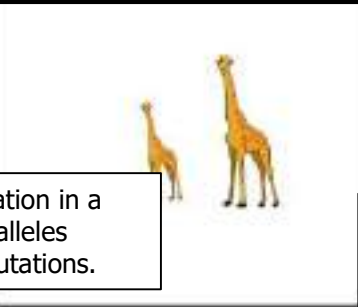
Section 4: Genetic Engineering

Genetic Engineering	A process which involves modifying the genome of an organism by introducing a gene from another organism to give a desired characteristic.
GM Crop	Crops that have been produced by genetic engineering.
Vector	Something that can carry a gene into another organism e.g. bacterial plasmid or virus .

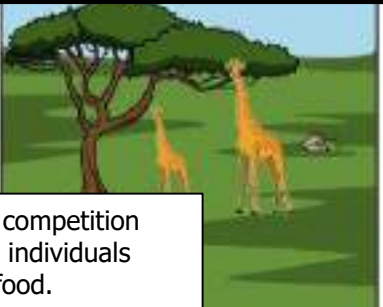
Process of genetic engineering:

1. Genes are cut out by enzymes.
2. The gene is inserted into a vector (either a bacterial plasmid or virus).
3. The vector is used to insert the gene into the required cells
4. Genes are transferred to the cells of animals, plants or microorganisms at an early stage in their development so that they develop with desired characteristics.

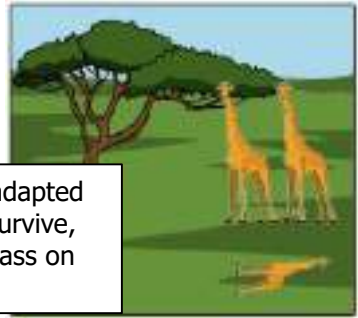
Section 2: Natural Selection



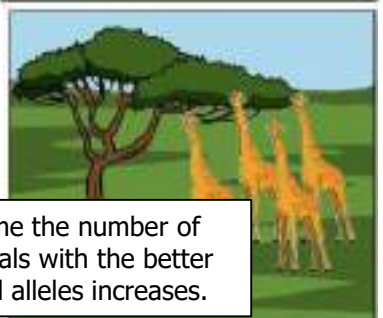
There is variation in a population's alleles caused by mutations.



There is competition between individuals e.g. for food.



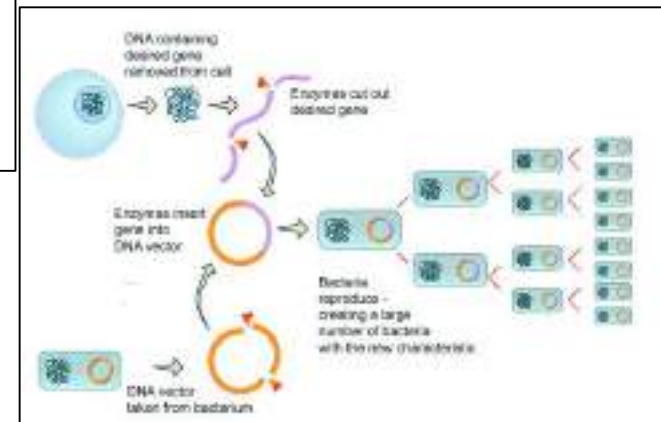
The better adapted organisms survive, breed and pass on their alleles.



Over time the number of individuals with the better adapted alleles increases.

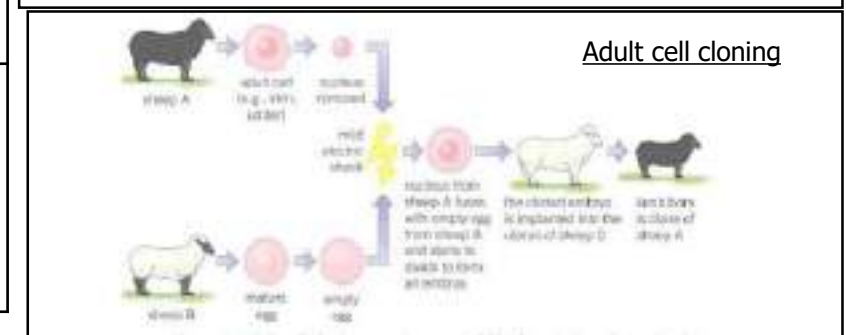
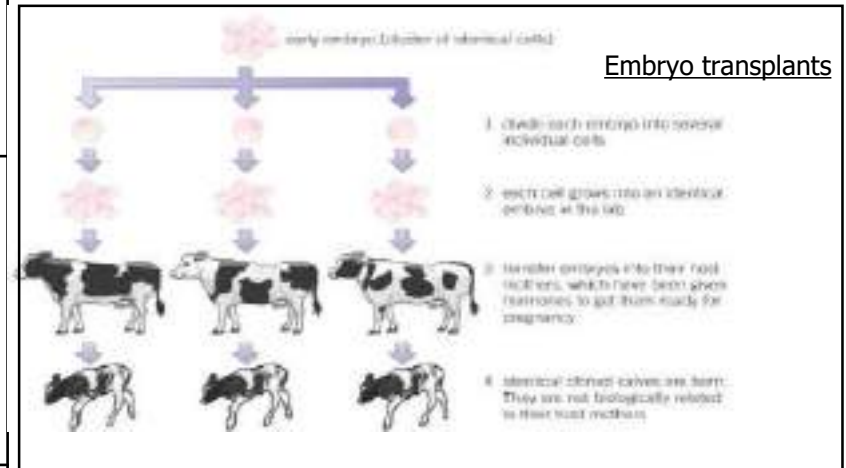
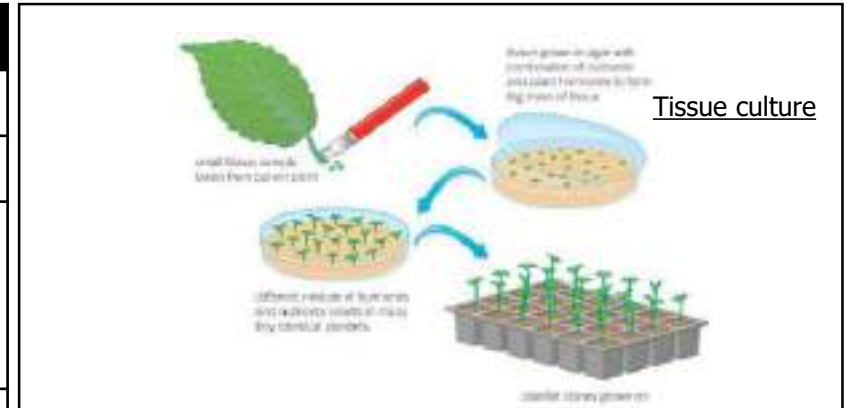
Examples of genetic engineering:

- Bacterial cells have human **insulin gene** inserted into them so that they produce insulin for diabetics.
- Plants that have had genes inserted that make them **resistant to disease, insects or herbicides**.



Section 1: Cloning plants and animals

Clone	A genetically identical (to the parent) organism	
Cuttings	Gardeners take cuttings to clone plants. Quick, cheap but only one clone at a time	
Tissue culture	Scientists clone plants by taking a few plant cells and growing them in a growth medium with hormones. Mass production of clones but quite expensive compared to cuttings	
Embryo transplants	Sperm taken from a 'champion' male animal, used to fertilise a 'champion' egg. An embryo develops and is split many times before any cells become specialised. Cloned embryos are implanted into host mothers resulting in cloned baby animals	
Adult cell cloning	Take an unfertilised egg cell and remove its nucleus. A nucleus from an adult body cell is removed and inserted into this empty egg cell. An electric shock fused the two together and stimulates division. An embryo forms and is implanted into the uterus of a female host. A clone of the original adult cell is produced as it has the same genetic information	
Issues	Negatives	Positives
	- Reduces the gene pool - Animal clones might not be as healthy as the normal ones - Worry of human cloning in the future	- Preserve endangered species - Studying animal clones can lead to better understanding of embryo development





Biology Topic B15

Genetics and Evolution

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Section 1: Evidence for evolution

Fossil	The preserved remains of an organism from many thousands of years ago. Formed by either gradual replacement by minerals, casts/impressions or preservation in places where there is no decay like amber
Resistance bacteria	Bacteria can evolve and become antibiotic resistant. Bacteria sometimes develop random mutations, allowing them to survive an antibiotic, they reproduce increasing the population size of antibiotic resistant bacteria

Section 2: Extinction

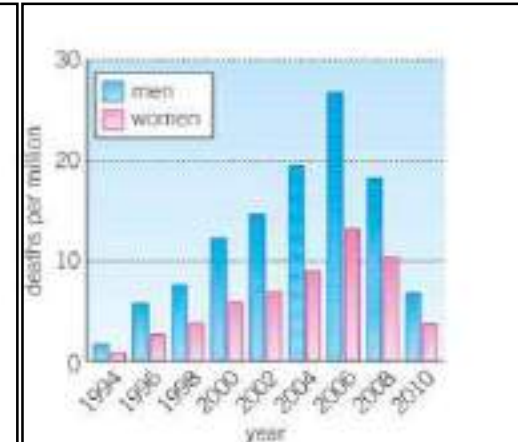
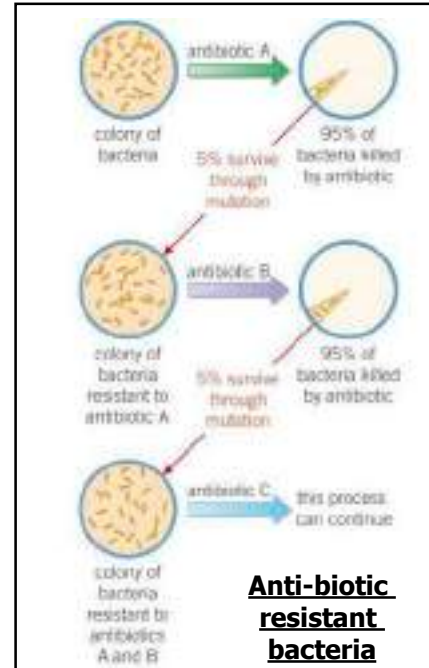
Reasons	Rapid environmental changes, new predators, new diseases, better competitor, catastrophic event e.g. volcanic eruption

Section 3: Classification and evolutionary trees

Classification	Organising living organisms into groups
Carl Linnaeus system	Kingdom → Phylum → Class → Order → Family → Genus → Species
Carl Woese 3 domain system	Archaea, Bacteria, Eukarya are the main large groups which are then divided into smaller groups using the keyterms above (kingdom etc...)
Binomial system	Give a 2 part name in Latin to every organism e.g. <i>Homo sapiens</i>
Evolutionary trees	Show common ancestors and relationships between species

Fossil record of the horse

whole animal	forefoot	
		The modern horse is a fast runner on hard ground with only one toe forming the hoof.
modern horse (<i>Equus</i>) from 2 million years ago 1.6m		
		With a single toe forming the hoof, this looks more like a modern horse.
pleistocene from 5 million years ago 1.0m		
		Bigger again, walking mainly on one enlarged toe for speed.
mesohippus from 25 million years ago 1.0m		
		Bigger, only three toes on the ground for moving fast on drier ground.
mesohippus from 37 million years ago 0.6m		
		Small, swamp-dwelling with four well-spaced toes for walking on soft ground.
hyracotherium from 55 million years ago 0.4m		



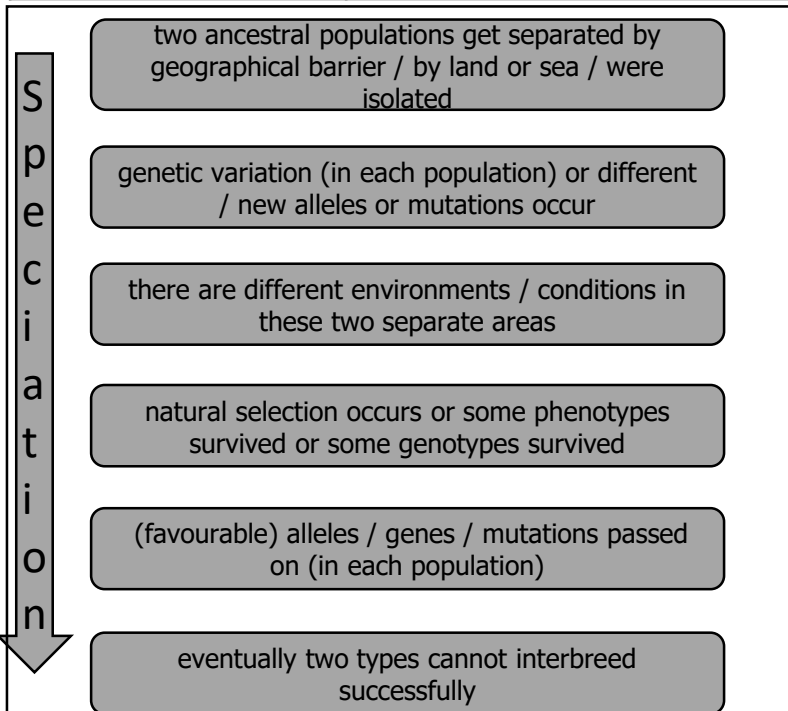
Rise in deaths in the UK for MRSA

Section 1: Darwin V Lamarck

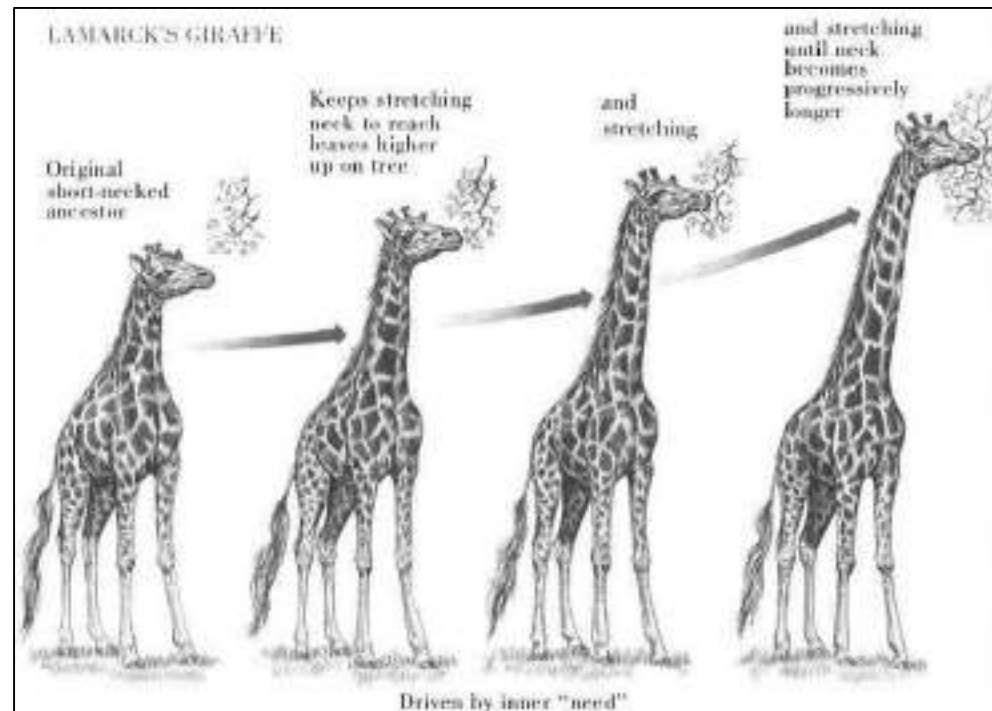
Darwin's idea	Evolution by natural selection
Controversy at the time	People did not believe Darwin at the time because: - It went against religious beliefs - DNA/genes/the mechanism of inheritance was not understood at the time - There was not enough evidence to convince other scientists
Lamarck's idea	Evolution by acquired characteristics - Organisms that use a characteristic a lot during its lifetime would become more developed e.g. a rabbit using its legs a lot to run would become longer - Then the organisms offspring would inherit this characteristic e.g. the rabbits offspring would also have longer legs

Section 2: Speciation

Species	A group of similar organisms that can reproduce to give fertile offspring
Speciation	The development of a new species

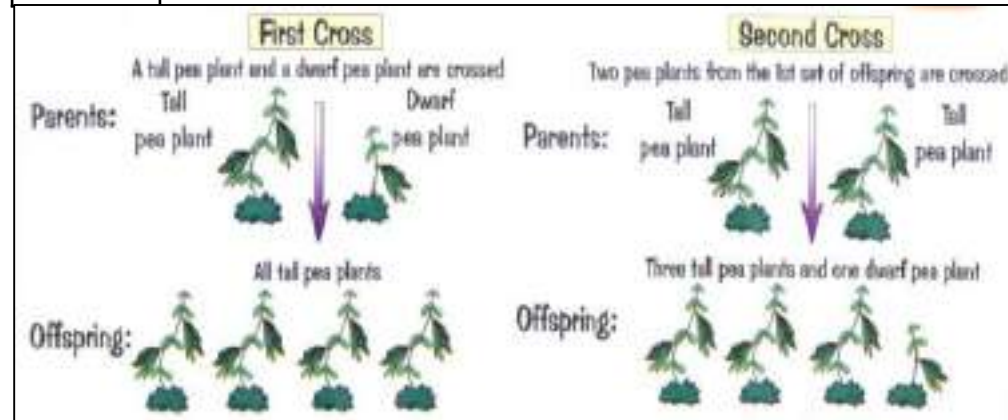


How the Finch has evolved

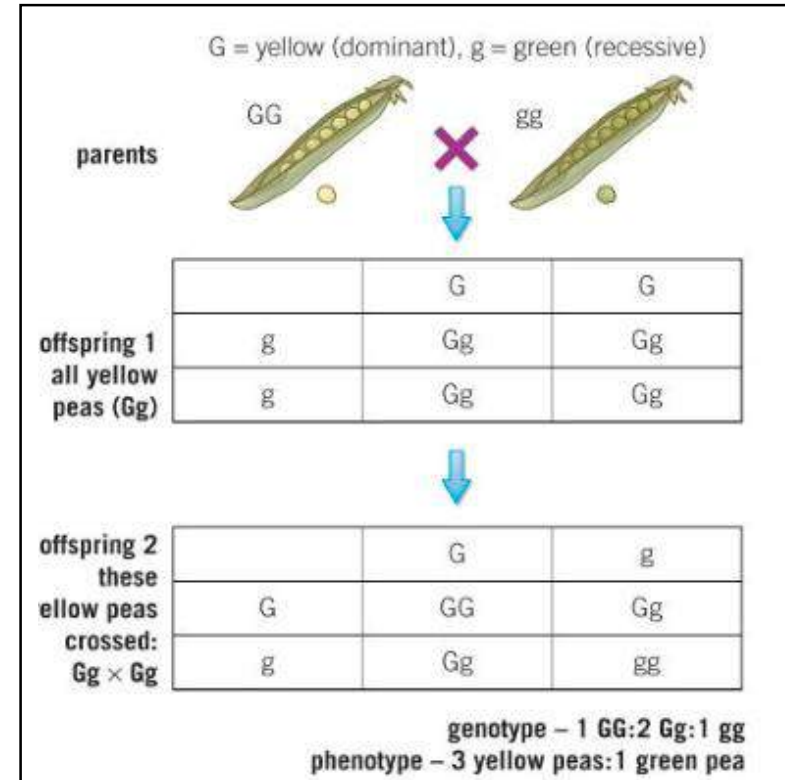


Section 3: Mendel

Mendel | A monk who's research led to the foundation of modern genetics



Experiments	In the mid-19 th century Mendel carried out breeding experiments on pea plants. He observed that the inheritance of each characteristic is determined by 'units' that are passed on from parents to offspring
Rejection	Mendel's work was rejected at the time because: - he was just a monk (not a scientist) - chromosomes / DNA / genes not seen / discovered / known at the time - other theories accepted at the time





Biology Topic B16

Adaptations, Interdependence and competition

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Section 1: Key terms

Ecosystem	The interaction of a community of living organisms (biotic) with the non-living (abiotic) parts of their environment.
Habitat	The area in which an organism lives .
Community	Two or more different species in an ecosystem. A stable community is one where all the species and environmental factors are in balance so that population sizes remain fairly constant .
Population	The total number of organisms of one species in an ecosystem.
Competition	Plants often compete for light, space, water and mineral ions . Animals often compete for food, mates and territory
Interdependence	Within a community each species depends on other species for food, shelter, pollination etc.
Adaptations	A feature that an organism has that allows it to survive in its ecosystem.
Biodiversity	The variety of all the different species of organisms on Earth, or within an ecosystem .

Section 4: Distribution and Abundance

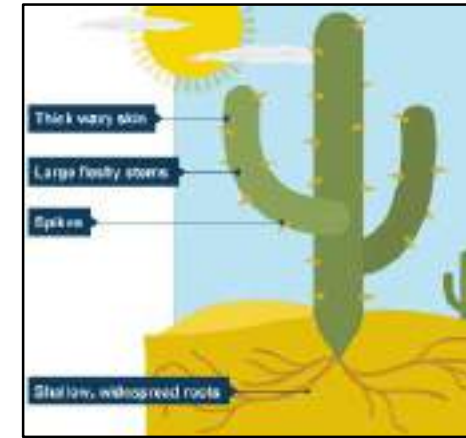
	Random Sampling	Systematic Sampling (transect)
Purpose	Estimate the size of a population in an area.	See how populations and communities change over a distance .
Method	- Use approximately 10 or more quadrats - Place quadrats randomly - Count organisms in each quadrat - Use mean number of organisms and multiply by area of field - Repeat in different areas to compare areas	- Place tape measure across area - Place quadrat(s) next to the tape - Count number of organisms in quadrat - Repeat at regular intervals along tape measure

Section 2: Biotic and Abiotic Factors

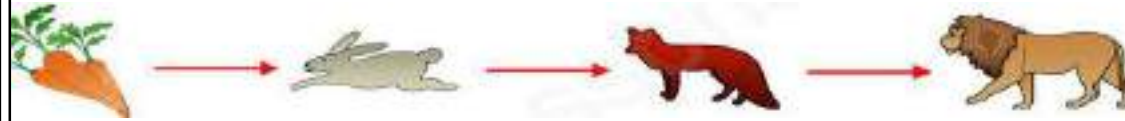
Biotic	Abiotic
Availability of food	Light intensity
New predators arriving	Temperature
New pathogens	Moisture levels
One species outcompeting another	Oxygen levels for aquatic animals
	Wind intensity and direction
	Carbon dioxide levels for plants
	Soil pH and mineral content

Section 3: Adaptations

Structural Adaptations	Part of the body that helps the organism survive. e.g. polar bears have a thick layer of fat for insulation.
Functional Adaptations	How the body operates that helps the organism survive. E.g. camels do not sweat.
Behavioural Adaptations	A behaviour that helps the organism survive. e.g. desert rats stay in their burrows during the hottest parts of the day.
Extremophiles	Organisms that have adapted to live in environments with extreme conditions of salt, temperature or pressure.



Section 1: Food Chains and Predator-Prey Relationships

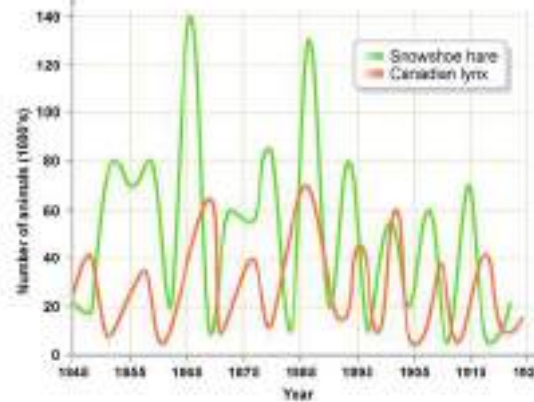


Producer –
Start of a food chain. Produces **glucose** through **photosynthesis**.

Primary Consumer –
Eats a producer. **Prey** of secondary consumer.

Secondary Consumer –
Eats a primary consumer. **Predator** of primary consumer.

Tertiary Consumer –
Predates on **secondary consumer**.



Predator-prey cycles

The population of the **prey increases**. **More food** is available for the **predators**, so their population increases. There are **more predators** so the **population of the prey decreases**. There is **less prey to feed on** so the population of **predators decreases**. The **cycle restarts** from the beginning.

Section 2: Rates of Decomposition (Separate)

Decomposers	Microorganisms that break down waste products and dead bodies
Factors affecting rate of decay	Temperature, oxygen availability and moisture levels
Anaerobic decay	Decay without the presence of oxygen produces methane gas – biogas.

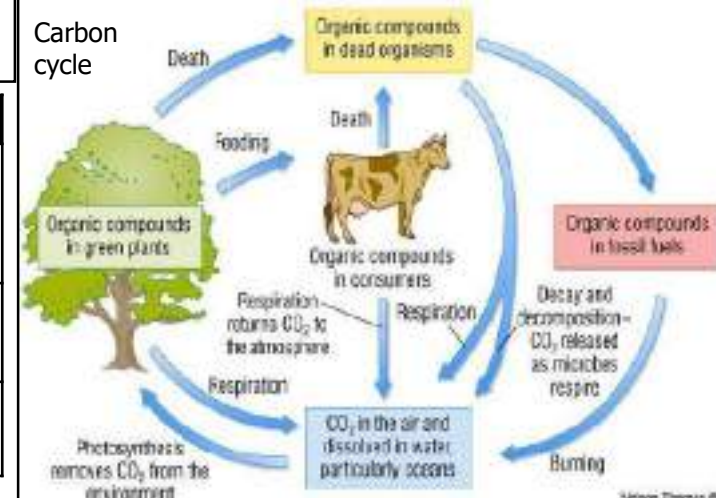
Section 3: Water cycle steps

Evaporation	Liquid water is turned into water vapour in the atmosphere .
Condensation	Water vapour condenses to form clouds .
Precipitation	Water is deposited from clouds as rain .

Section 4: Carbon cycle steps

Photosynthesis	Plants absorb CO₂ from atmosphere.
Respiration	Animals, plants and micro-organisms respire, releasing CO₂ into the atmosphere.
Decay	The carbon in dead organisms is released to the atmosphere by micro-organisms respiring .
Combustion	Carbon locked in fossil fuels is released as CO ₂ when fuels are burned .

Carbon cycle



Section 1: Human effects on biodiversity

Human activity	Why it happens	Effects
Polluting water with fertiliser and sewage	Farmers spread fertiliser on fields. Rain washes fertiliser into rivers and ponds. Sewage is released directly into rivers.	Fertilisers and sewage cause an increase in growth of algae . When the algae die , they are decomposed by bacteria that use oxygen . Other animals die due to a lack of oxygen .
Using land	Humans construct buildings , create quarries and farm .	Habitat for plants and animals is reduced .
Destroying peat bogs	Humans use peat to provide compost to increase food production.	Removes habitat, reducing biodiversity . Decay or burning of peat produces CO₂ .
Deforestation	To provide land for cattle and rice fields . To grow crops for biofuels .	Burning or decomposing trees releases CO₂ . Fewer trees to remove CO₂ from the atmosphere . Loss of biodiversity .
Producing acidic gases	Combustion of fossil fuels releases carbon dioxide, sulfur dioxide and nitrogen oxides . These gases dissolve in water making it acidic .	Acid rain. Damages plants . Can cause rivers and lakes to become acidic, killing animals and plants.
Polluting water with toxic chemicals	Pesticides and other toxic chemicals (e.g. from landfill) are washed into rivers and lakes by rain .	Toxic chemicals accumulate in animals. The further up the food chain , the greater the accumulation . Top predators die or fail to breed.
Increasing temperature of the planet (global warming)	Humans release extra greenhouse gases (CO₂ and methane) into the atmosphere and less CO₂ is absorbed by plants through photosynthesis. Greenhouse gases absorb heat and stop it escaping to space.	Loss of habitat as sea levels rise ; animals and plants can no longer survive in certain areas; reduced biodiversity ; change in migration patterns of animals.
Peat bog destruction	Destruction of peat bogs for land or use as compost	The decay or burning peat releases CO₂ in the atmosphere

Section 2: Maintaining biodiversity

Breeding programmes for **endangered species**.

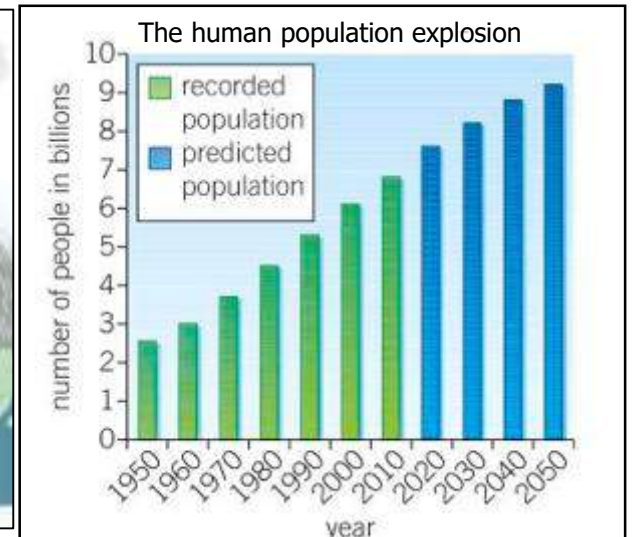
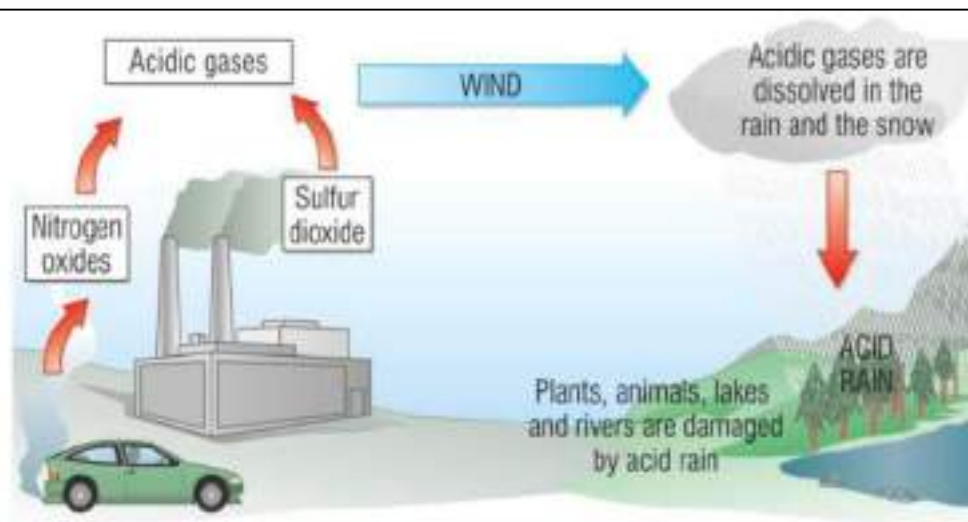
Protection and **regeneration** of **rare habitats**.

Reintroduction of field margins and **hedgerows** in agricultural areas where farmers grow only one type of crop

Reduction of deforestation

Reduction of carbon dioxide emissions by some **governments**

Recycling resources rather than dumping waste in landfill.



KNOWLEDGE



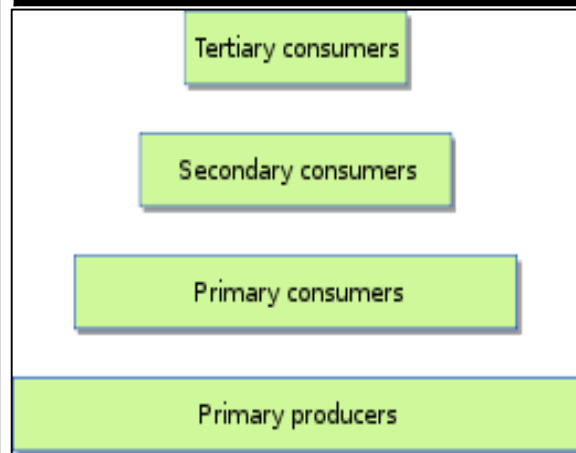
Biology Topic B18 Biodiversity and Ecosystems (Separate)

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Section 1: Decay

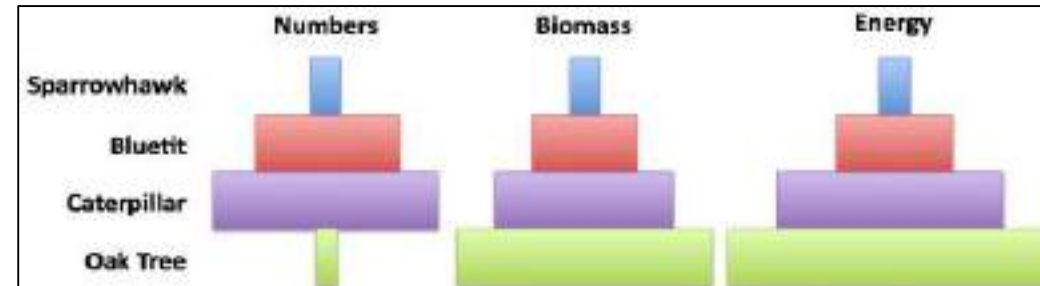
Compost	Decomposed organics matter
Decomposition	The breakdown of organic matter by microbes (bacteria/fungi) or detritus feeders (worms)
Conditions for decay	Warm, plenty of oxygen, moisture, plenty of microbes
Biogas	Methane gas produced by anaerobic decay of waste material, methane is used as a fuel for cooking, heating
Biogas generator	Need constant temperature. 2 types: batch and continuous

Section 2: Tropic levels



Section 3: Pyramids of biomass

Pyramids of biomass	Show the relative mass of each trophic level, must be drawn to scale
Biomass	The total quantity or mass of organisms in a given area or volume



Section 4: Calculating the efficiency of biomass transfer

efficiency = $\frac{\text{biomass transferred to the next level}}{\text{biomass available at the previous level}} \times 100$

example from above:

To calculate the % of the energy in the oak tree that is passed to the sparrow hawk here's what to do:

$$3 \div 100\,000 = 0.00003$$

$$0.0003 \times 100 = 0.003\%$$

Section 5: Transfer of biomass

The amount of energy (in the biomass of organisms) is reduced at each successive stage in a food chain
All of prey organism is not consumed e.g. bones, teeth, hair
Energy is 'lost' as the organisms' waste materials (faeces and urine)
Energy is transferred / lost / released during respiration
energy is transferred / lost as movement (kinetic energy)
energy is transferred / lost as heat (thermal energy)
energy is transferred / lost to the surroundings

Section 6: Food security

Food security	Means having enough food to feed the population
Threats to food security	World population rising too quickly, demand for certain types of food leads to scarcity, loss of crops in farming through new pests and disease, war over food
Fish stocks	Are declining due to over fishing. Fishing quotas and net size help to maintain fish stocks
Efficient food production	Intensive farming uses techniques to increase food production e.g. controlled temperature, restricted movement and continual feeding. Although this is controversial
Using biotechnology	Mycoprotein is a food made from fungi

Organism	Biomass, dry mass (g)
Oak tree	100 000
Caterpillar	5000
Blue tit	30
Sparrow hawk	3

KNOWLEDGE



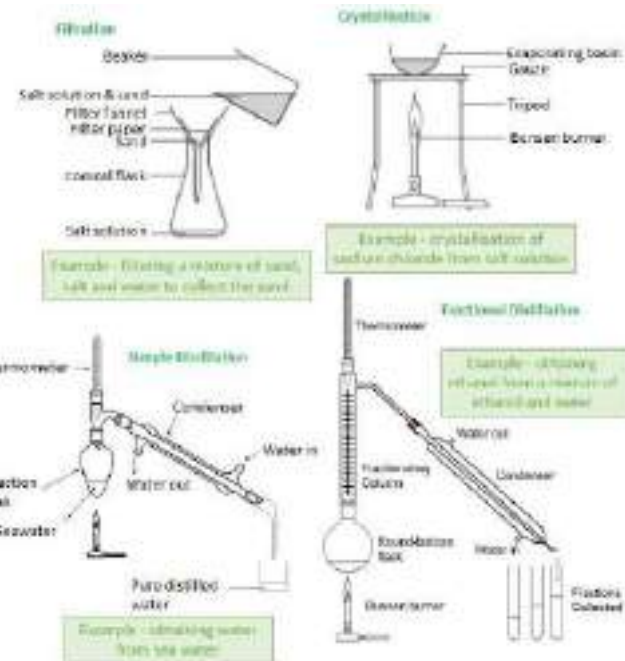
Chemistry Topics 1 & 2

Atomic Structure and Periodic Table

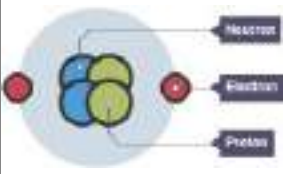
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Section 1: Key Terms

Atom	The smallest part of an element that can still be recognised as that element. No overall electrical charge. Very small , radius of 0.1nm.
Element	An element contains only one type of atom . Found on the Periodic Table. There are about 100 elements.
Compound	Two or more different elements chemically bonded with each other.
Mixture	Contains two or more elements or compounds not chemically bonded . Can be separated using physical methods e.g. by filtration, crystallisation, distillation and chromatography.
Filtration	A process that separates mixtures of insoluble solids and liquids .
Crystallisation	A process that separates a soluble solid from a solvent by evaporating the liquid to leave crystals.
Distillation	A process that separates a mixture of liquids based on their boiling points .
Chromatography	A process that separates mixtures by how quickly they move through a stationary phase (e.g. paper chromatography)
Isotope	An atom of the same element with same number of protons but different numbers of neutrons .
Relative atomic mass	An average value of mass that takes account of the abundance of the isotopes of the element.



Section 2: Development of Atomic Model

Plum Pudding 	Thompson's plum pudding model shows that the atom is a ball of positive charge with negative electrons embedded in it. Was incorrect .
Nuclear Model 	Rutherford's alpha particle scattering experiment found a central area of positive charge. The nuclear model has a positive nucleus and electrons in shells . Chadwick later discovered neutrons . Bohr discovered the arrangement of electrons in shells .

Mass number – the total number of **protons** and **neutrons**

Atomic number – the **number of protons** (the number of electrons is the same in an atom)

Electron configuration– Electrons fill the first energy level (shell) first. Maximum electrons: **2 electrons in first shell, 8 in the 2nd, 8 in the 3rd**.

Section 3: Properties of Sub-Atomic Particles

Sub-atomic particle	Mass	Charge	Position in Atom
Proton	1	+1	Nucleus
Neutron	1	0	Nucleus
Electron	Very small	-1	Orbiting in shells



KNOWLEDGE



Chemistry Topics 1 & 2 Atomic Structure and Periodic Table

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Section 4: Periodic Table

Group	Elements in the same vertical column are in the same group. Elements in the same group have the same number of electrons in their outer shell , and therefore similar properties .
Period	Elements in the same horizontal row . The atomic number increases by one moving across the period from left to right.
Metal	Elements that react to form positive ions (except Hydrogen). Left and centre of periodic table
Non-Metal	Elements that react to form negative ions. Right hand side of periodic table.
Mendeleev	Was able to make a relatively accurate periodic table by leaving gaps for undiscovered elements and re-arranging some elements (Mendeleev could only measure relative atomic mass, not atomic number). Hence he arranged the elements in order of mass number and predicted the properties of the elements in the gaps

Section 5: Groups of the Periodic Table

Sub-atomic particle	Properties	Trends	Reactions
Group 0 (Noble Gases)	Unreactive and do not form diatomic molecules .	Boiling point increases going down the group .	Very unreactive because they have full outer shells .
Group 1 (Alkali Metals)	Reactive because they can easily lose their one outermost electron. Always form ionic compounds Low density	Reactivity increases going down the group . Melting points and boiling point decrease going down the group .	With water: Metal + water → Metal hydroxide + hydrogen With oxygen: Metal + oxygen → Metal oxide With chlorine: Metal + chlorine → Metal chloride
Group 7 (Halogens)	Low melting points and boiling points. Poor conductors of heat and electricity. Form diatomic molecules	Reactivity decreases going down the group . Boiling point and melting point increase going down the group .	A more reactive halogen can displace a less reactive halogen from a solution of its salt. Chlorine + sodium bromide → sodium chloride + bromine

Elements in the modern periodic table are **arranged by atomic (proton) number**.

Group – Vertical column
Period – Horizontal Row
Metals are on the left, non-metals on the right.

KNOWLEDGE



Chemistry Topic 3 Structure and bonding

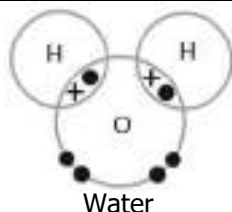
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Section 1: Bonding Key Terms

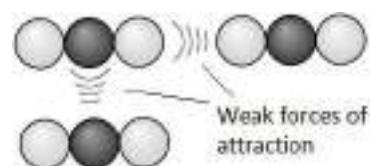
Ion	A charged particle formed when atoms lose or gain electrons .
Ionic bond	An electrostatic attraction between two oppositely charged ions (metal and non-metal) .
Electrostatic attraction	The attraction between a negatively charged particle and a positively charged particle.
Metals	In ionic bonding, metals lose electrons to become positively-charged ions.
Non-metals	In ionic bonding, non-metals gain electrons to become negatively-charged ions. Located on the right hand side of the periodic table.
Giant lattice	A large regular 3D structure that contains millions of bonds .
Covalent bond	A bond formed when non-metals share electrons . An electrostatic attraction between the positively charged nuclei of the bonded atoms and the electrons shared between them.
Molecule	A small group of atoms held together with covalent bonds . Not charged .
Polymer	Very large covalently bonded molecules with many repeating units .
Metallic bonding	The bonding of a metal consists of a lattice of positive ions surrounded by a sea of delocalised electrons . The metallic bond is the Electrostatic attraction between the positive ions and the delocalised electrons.
Alloy	A mixture of two or more elements, at least one of which is a metal . E.g. steel is a mixture of iron and carbon.

Section 2: Simple Covalent Molecules

Property	Reason
Low melting and boiling points (usually gases or liquids)	There are only weak intermolecular forces between the molecules which don't need much energy to overcome these forces.
Do not conduct electricity	Covalent molecules are not charged & have no free moving electrons.



Covalent dot and cross diagrams show which atoms the electrons have come from but don't show relative size of atoms or their arrangement in space.

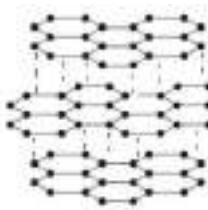


Section 3: Giant Covalent Structures Made of Carbon

In Giant covalent compounds, all the atoms are bonded via strong covalent bonds in a giant lattice structure.



In Diamond, each **C** is bonded to **4 other carbons** in a tetrahedral arrangement.



Graphite contains layers of hexagons with each carbon having 3 bonds. The extra electrons become delocalised between the layers.

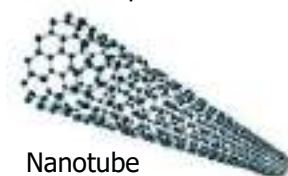
Properties of Diamond

Property	Reason
Doesn't conduct electricity	Diamond doesn't contain delocalised electrons or ions .
Very hard	Each carbon bonds to 4 other carbon atoms with strong covalent bonds to form a lattice .
High melting point	A large amount of energy is needed to overcome all the strong covalent bonds in the lattice.

Properties of Graphite

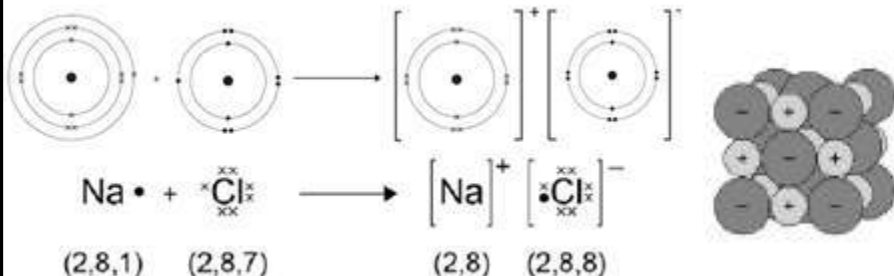
Property	Reason
Conducts electricity	The delocalised electrons are free to move and carry charge through the structure.
Soft and slippery	Only weak intermolecular forces exist between layers , so layers can slide..

Section 4: Small Carbon-Based Structures



	Structure	Properties	Uses
Fullerene	Hollow-shaped , cage like structures and tubes which also contain hexagonal rings. E.g. Buckminsterfullerene (C ₆₀)	Very strong . Hollow so can contain other chemicals within it.	Drug delivery, lubricants, catalysts (large surface to volume ratio) and in electronics
Graphene	A single layer of graphite (one atom thick)	Very strong & light . Has delocalised electrons so it is able to conduct electricity .	Electronics, composites.
Carbon nanotube	Cylindrical tubes of carbon atoms that are very long compared to their diameter.	Very strong, light and flexible . Has delocalised electrons so it is able to conduct electricity .	Nanotechnology, electronics, reinforcing (e.g. tennis rackets).

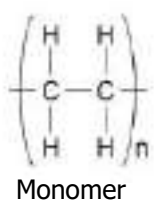
Section 5: Ionic Bonding



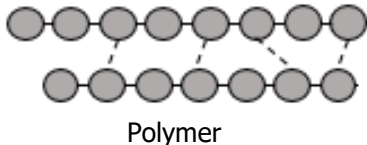
When a metal and a non-metal react together, **the metal atom loses electrons** and becomes a **positive ion**. The **non-metal atom gains electrons** and becomes a **negative ion**. The ionic bond is a **strong electrostatic force of attraction between these oppositely charged ions**.

Property	Reason
High melting point and boiling points	Because it takes a lot of energy to overcome the many strong ionic bonds in the lattice. There is a strong electrostatic force between the positive and negative ions in the giant lattice .
Conduct electricity when liquid/ molten	Ions are able to move so there is a flow of charged ions (current).
Do not conduct electricity when solid	Ions are in fixed positions so cannot flow.

Section 6: Polymers

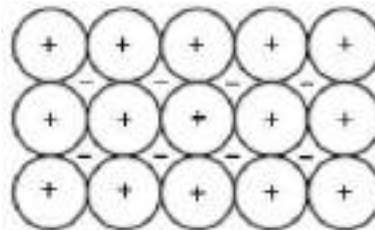


A polymer is a substance made from **very large molecules** made up of many repeating units called **monomers**.



Polymers are usually solid because the **intermolecular forces between polymer molecules are relatively strong**.

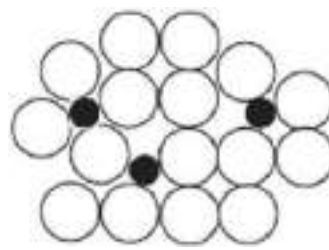
Section 7: Metallic Bonding



A **pure metal** consists of a lattice of **positive ions** surrounded by a **sea of delocalised electrons**.

Properties of Pure Metals

Property	Reason
High melting points	Strong electrostatic forces between the positive ions and delocalised electrons . Requires a large amount of energy to overcome.
Conduct electricity	the delocalised electrons are free to move and carry a charge .
Conduct heat	The delocalised electrons are free to move and transfer thermal energy through the structure.
Malleable	The layers are able to slide over each other so the metal can be bent and shaped. The attraction between the positive ions and delocalised electrons prevents the metal from shattering.



Alloy

Alloys are **harder** than pure metals because the **different sized atoms distort the layers** making it **harder for them to slide**.

Steel is an alloy consisting of **Iron** and **carbon**

Section 8: Nanoparticles (triple only)

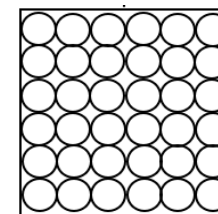
Nanoscience is the study of **small particles** that are between **1 and 100 nanometres** in size.

Nanoparticles may have properties **different** from those for the same materials in bulk because of their **high surface area to volume ratio**.

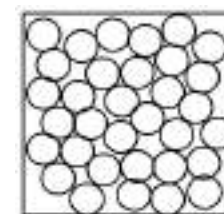
Nanoparticles may result in smaller quantities of materials e.g. catalysts being needed for industry.

Uses	Advantage
Sun cream (Zinc oxide nanoparticles)	Nanoparticles more effective at blocking suns rays.
Silver nanoparticles used in fridges, antimicrobial dressings.	Inhibit growth of microorganisms (protect against bacteria)
	Scientists are also worried about nanoparticles entering the environment and affecting aquatic life

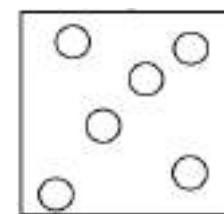
Section 9: States of matter



Solid
State symbol
(s)



Liquid
State symbol
(l)



Gas
State symbol
(g)

KNOWLEDGE



Chemistry Topic 4 Chemical calculations

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Section 1: Chemical calculations Key Terms

Law of conservation of mass	No atoms are destroyed or created during a chemical reaction . The total mass of the products is the same as the total mass of the reactants. Some reactions appear to give a change in mass , but this is because a gas may have escaped from the reaction container.
Relative atomic mass (A_r)	The average mass of an atom of an element compared to Carbon-12.
Relative formula mass (M_r)	The sum of all the atomic masses of the atoms in a formula of a substance (e.g. CO_2).
Uncertainty	The interval within which the true value can be expected to lie . E.g. $25^\circ\text{C} \pm 2^\circ\text{C}$ – the true value lies between 23°C and 27°C .
Mole (HT)	A measurement for the amount of a chemical. It is the amount of substance in the relative atomic or formula mass of a substance in grams. The mass (in grams) of 6.02×10^{23} (the Avogadro constant) atoms of an element . Symbol: mol.
Balanced equation (HT)	Balanced symbol equations show the number of moles that react . e.g. $\text{Ca} + 2\text{HCl} \rightarrow \text{CaCl}_2 + \text{H}_2$ Shows one mole of Calcium reacting with two moles of hydrochloric acid to form one mole of Calcium chloride and one mole of hydrogen.
Limiting reactant (HT)	The reactant that gets used up first in a chemical reaction. It limits the amount of product formed.
Excess reactant (HT)	The reactant that is not completely used up in a chemical reaction. There is some reactant left at the end.
Concentration	A measure of the number of particles of a chemical in a volume . Can be measured in g/dm^3 .
Decimetre ³ (dm^3)	A measurement of volume . Contains 1000cm^3 .

Section 2: Calculating relative formula mass (M_r)

Add up all the atomic masses in a formula.	e.g. CO_2 Mass of C = 12. Mass of oxygen = 16. $12 + (2 \times 16) = 44$

Section 3: Calculating moles and masses (HT)

Number of moles = $\frac{\text{mass (g)}}{M_r}$	1) How many moles are there in 9.8g of sulfuric acid H_2SO_4 ? Number of moles = $\frac{9.8}{98} = 0.1$ moles
	2) What is the mass of 2.5 moles of Carbon dioxide? Mass = $2.5 \times 44 = 88\text{g}$

Section 4: Equations and calculations (HT)

Number of moles = $\frac{\text{mass (g)}}{M_r}$	1) What masses of reactants and products are involved in the balanced symbol equation $\text{H}_2 + \text{Cl}_2 \rightarrow 2\text{HCl}$ Reactants: $(2 \times 1) + (2 \times 35.5) = 73$ Products: $2 \times 36.5 = 73$
	2) What mass of oxygen will react with 72.0g of magnesium? $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$ Moles Mg = $72/12 = 3$ moles Molar ratio Mg:O_2 is 2:1 Moles $\text{O}_2 = 3/2 = 1.5$ moles Mass $\text{O}_2 = 1.5 \times 32 = 48\text{g}$

KNOWLEDGE



Chemistry Topic 4 Chemical calculations

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Section 5: From masses to balanced equations (HT)

$$\text{Number of moles} = \frac{\text{mass (g)}}{M_r}$$

1) 8.08g of Potassium nitrate KNO_3 was decomposed on heating to form 6.8g of potassium nitrite KNO_2 and 1.28g of oxygen.

a) Calculate the number of moles of KNO_3 , KNO_2 and O_2 and hence

$$\text{Moles } \text{KNO}_3 = 8.08/101 = 0.08$$

$$\text{Moles } \text{KNO}_2 = 6.8/85 = 0.08$$

$$\text{Moles } \text{O}_2 = 1.28/32 = 0.04$$

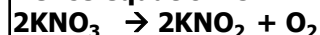
b) Use your answers to a) to work out the simplest whole number ratio of these values and use this to write a balanced equation for the reaction.

$$\text{Moles } \text{KNO}_3 : \text{KNO}_2 : \text{O}_2$$

$$0.08 : 0.08 : 0.04$$

$$2 : 2 : 1$$

Hence equation is



Section 7: Expressing concentrations (in g/dm^3)

If you are working in decimetres cubed (dm^3)

$$\text{Concentration (g/dm}^3\text{)} = \frac{\text{mass of solute (g)}}{\text{volume (dm}^3\text{)}}$$

If you are working in centimetres cubed (cm^3)

$$\text{Concentration (g/dm}^3\text{)} = \frac{\text{mass of solute (g)} \times 1000}{\text{volume (cm}^3\text{)}}$$

1) Calculate the concentration in g/dm^3 of 6g of magnesium chloride dissolved in 1.5 dm^3 of solution

$$\text{Concentration} = 6/1.5 = 4 \text{ g/dm}^3$$

2) Calculate the concentration in g/dm^3 of 40g of sodium hydroxide dissolved in 500 cm^3 of solution

$$\text{Concentration} = 40/500 \times 1000 = 80 \text{ g/dm}^3$$

Section 6: Limiting reactants (HT)

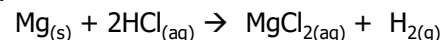
$$\text{Number of moles} = \frac{\text{mass (g)}}{M_r}$$

Remember:

A **limiting reactant** is the **reactant** that **gets used up first** in a chemical reaction. It **limits the amount of product** formed.

Excess reactant is the **reactant** that is **not completely used up** in a chemical reaction. There is some reactant left at the end.

1) If you have 7.2g of magnesium reacting with 10.95g of dilute hydrochloric acid, which reactant is in excess?



$$\text{Moles Mg} = 7.2/24 = 0.3 \text{ mol}$$

$$\text{Moles HCl} = 10.95/36.5 = 0.3 \text{ mol}$$

From the balanced equation you see that 1 mole of Mg reacts with 2 moles of HCl.

Hence 0.3 mol of Mg requires 0.6 mol of HCl to react completely. We only have 0.3 mol of HCl so dilute hydrochloric acid is the limiting reactant.

KNOWLEDGE



Chemistry Topic 4 Chemical calculations (Triple)

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Section 8: Chemical calculations Key Terms (Triple)

Yield of a chemical reaction	Describes how much product is made
Percentage yield	Tells you how much product is made compared with the maximum amount that could be made.
Atom Economy	A measure of the amount of starting materials that end up as useful products
Titration	Used to measure accurately what volumes of acid and alkali react together completely.
Standard solution	A solution of known concentration.

Section 9: The yield of a chemical reaction (Triple)

Number of moles = $\frac{\text{mass (g)}}{M_r}$

Percentage yield = $\frac{\text{actual yield of product produced}}{\text{theoretical yield of product}} \times 100$

1) A gas fired kiln produced 100g of calcium oxide (CaO) from 200g of Limestone (CaCO₃). What is the percentage yield of calcium oxide produced? $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$

Moles of CaCO₃ = 200/100 = 2 mol

For every 1 mol of CaCO₃ we make 1 mol of CaO

Hence theoretical yield of CaO = 2 x 56g = 112g

Actual yield of CaO = 100g

Percentage yield = 100/112 x 100 = 89.3%

Factors affecting percentage yield

- Reaction may be reversible
- Some unwanted products may be formed
- Some of the desired product lost in handling/left on apparatus
- Reactants may be impure

Section 10: Atom economy (Triple)

Percentage atom economy = $\frac{\text{relative formula mass of desired product} \times 100}{\text{sum of the relative formula masses of the reactants}}$

1) Calculate the atom economy for the production of dichloromethane CH₂Cl₂.
 $\text{CH}_4 + 2\text{Cl}_2 \rightarrow \text{CH}_2\text{Cl}_2 + 2\text{HCl}$

Relative formula mass desired product CH₂Cl₂ = 12 + 2 + (2x35.5) = 85

Sum of relative formula mass of all reactants = 12 + 4 + (2 x 71) = 158

Percentage atom economy = 85/158 x 100 = 53.8%

Section 11: Titrations (Triple)

A **Volumetric pipette** is used to measure out a fixed volume of solution

A **burette** is used to measure the volume of the solution added

Steps for carrying out a titration

- Wash a **volumetric pipette** with distilled water followed by some of the **alkali**
- Measure a known volume of alkali into a **conical flask** using the pipette
- Add a few drops of **indicator** to the solution in the conical flask and **swirl**
- Place a **white tile** under the flask
- Rinse a burette with distilled water followed by some of the acid, allowing some of the acid to pass through the tap (filling the jet)
- Fill the burette up to the mark using the acid
- Record initial reading on the burette
- Open tap to **slowly** release acid into the conical flask whilst **swirling**
- Keep on repeating this until the **indicator changes colour** (end point)
- Record final **volume reading** on the burette by reading the **bottom of the meniscus**.
- Work out the volume of acid (**titre**) that was run into the flask
- Repeat the whole process at least three times until you get **concordant titres**
- Calculate the **mean** titre
- Use results to calculate concentration of the alkali in mol/dm³

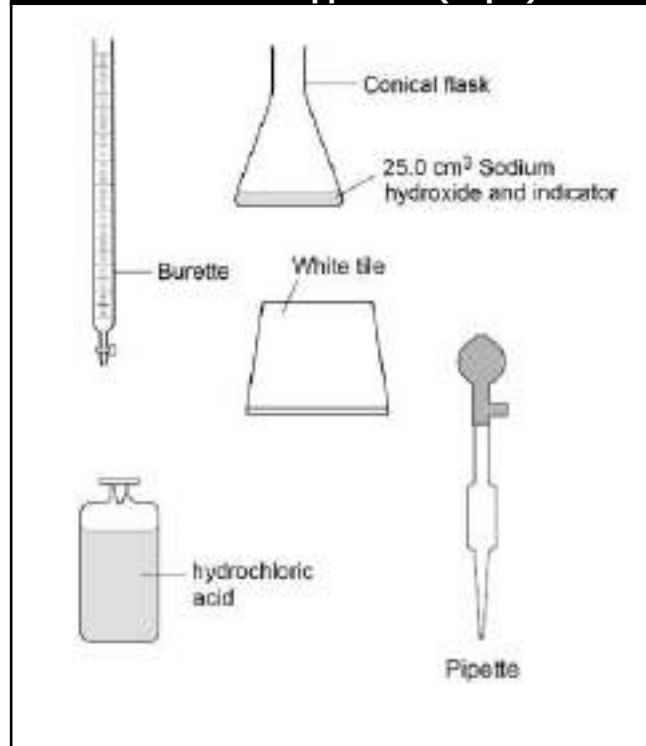
KNOWLEDGE



Chemistry Topic 4 Chemical calculations (Triple)

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Section 12: Titration apparatus (Triple)



Section 13 (cont): Titration calculations (Triple & HT)

A student titrated hydrochloric acid with 0.10 mol/dm³ sodium hydroxide solution. The method used is shown below:

- Pipette 25.0 cm³ of sodium hydroxide solution into a conical flask.
- Add a few drops of Phenolphthalein indicator to the sodium hydroxide solution.
- Add hydrochloric acid solution from a burette until the end-point is reached.

The table below shows the students results:

	Titre 1	Titre 2	Titre 3	Titre 4	Titre 5
Volume HCl cm ³	13.60	12.10	11.10	12.15	12.15

The equation for the titration is: $\text{HCl}_{(\text{aq})} + \text{NaOH}_{(\text{aq})} \rightarrow \text{NaCl}_{(\text{aq})} + \text{H}_2\text{O}_{(\text{l})}$

- Use concordant results in the table to calculate:
 - The mean titre
 - Concentration of the hydrochloric acid solution

a) Concordant results are those within 0.10 cm³ of each other.

$$\text{Mean titre} = \frac{12.10 + 12.15 + 12.15}{3} = 12.13$$

b) Moles NaOH = 0.1 x 25/1000 = 0.0025

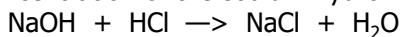
Moles HCl = Moles NaOH = 0.0025

Concentration HCl = 0.0025 x 1000/12.13 = 0.206 mol/dm³

Section 13: Titration calculations (Triple & HT)

Concentration (mol/dm³) = $\frac{\text{number of moles} \times 1000}{\text{volume (cm}^3\text{)}}$

1) In a titration, 20cm³ of 0.2 mol/dm³ HCl reacted with 50cm³ of NaOH. Calculate the concentration of the sodium hydroxide.



Moles = Conc x vol/1000

hence moles HCl = 0.2 x 20/1000 = 0.004 mol

Ratio of HCl: NaOH 1:1 hence moles of NaOH is 0.004 mol

Concentration NaOH = 0.004 x 1000/50 = 0.08 mol/dm³

Section 14: Volume of gases (Triple & HT)

Number of moles of gas = $\frac{\text{volume of gas (dm}^3\text{)}}{24 \text{ dm}^3}$ or $\frac{\text{volume of gas (cm}^3\text{)}}{24000 \text{ cm}^3}$

2) How many moles of gas are present in 48 dm³ of CO_{2(g)}

Moles = 48/24 = 2 moles

2) Calculate the volume of gas (in cm³) in 1.5 moles of N₂O₄

Volume = 1.5 x 24000 = 36000cm³

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Chemistry Topic 5 Chemical changes

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Section 1: Key Terms

Displacement reaction	A more reactive metal will displace a less reactive metal from a compound . e.g. Iron is more reactive than copper hence will displace copper from solution. $\text{Fe(s)} + \text{CuSO}_4\text{(aq)} \rightarrow \text{FeSO}_4\text{(aq)} + \text{Cu(s)}$
Oxidation	Two definitions: Chemicals are oxidised if they gain oxygen in a reaction. Chemicals are oxidised if they lose electrons in a reaction. (HT)
Reduction	Two definitions: Chemicals are oxidised if they lose oxygen in a reaction. Chemicals are oxidised if they gain electrons in a reaction. (HT)
Acid	A chemical that dissolves in water to produce H⁺ ions . Acids are proton donors
Base	A chemical that reacts with acids and neutralise them. E.g. metal oxides, metal hydroxides, metal carbonate
Alkali	A soluble base that produces OH⁻ ions in solution.
Neutralisation	When a neutral solution is formed from reacting an acid and alkali . Ionic equation: $\text{H}^+ + \text{OH}^- \rightarrow \text{H}_2\text{O}$
pH	A scale to measure acidity/ alkalinity . A decrease of one pH unit causes a 10x increase in concentration of H⁺ ions . (HT)
Strong acid (HT)	Strong acids completely ionise in solution. E.g. hydrochloric, nitric and sulfuric acids.
Weak acid (HT)	A weak acid is only partially ionised in solution. E.g. ethanoic, citric and carbonic acids.

Section 2: The Reactivity Series

Metals can be placed in order of reactivity by their reactions with water and dilute acid. Hydrogen gas is given off when metals react with acid or water. The gas gives a squeaky pop with a lighted spill.

Element	Reaction with water	Reaction with acid	Reactivity
Potassium	Potassium melts , floats & moves around very quickly. It sets on fire with a lilac flame . Alkaline solution forms.	Explodes	↑
Sodium	Sodium melts to form a ball that moves around on the surface. It fizzes rapidly . Alkaline solution forms.	Explodes	
Lithium	Lithium floats. It fizzes steadily and becomes smaller. Alkaline solution formed.	Explodes	
Calcium	It fizzes steadily leaving an alkaline solution.	Fizzes quickly with dilute acid .	
Magnesium	Very slow reaction	Fizzes quickly with dilute acid .	
(Carbon)			
Zinc	Very slow reaction	Bubbles slowly with dilute acid .	
Iron	Very slow reaction	Very slow reaction with dilute acid .	
(Hydrogen)			
Copper	No reaction	No reaction	
Silver	No reaction	No reaction	
Gold	No reaction	No reaction	

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Chemistry Topic 5 Chemical changes

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Section 3: Extracting Metals

Very unreactive metals e.g. Silver and gold	Found naturally in the ground. Extracted using mining .
Metals less reactive than carbon e.g. Zinc, Iron & Lead	Metals less reactive than carbon can be extracted from their ores by reduction using carbon, coke or charcoal. $2\text{PbO(s)} + \text{C(s)} \rightarrow 2\text{Pb(s)} + \text{CO}_2\text{(g)}$ Carbon has displaced lead from its oxide because carbon is more reactive than lead. This extraction takes place in a blast furnace at high temperature.
Metals less reactive than hydrogen e.g. Tungsten	Metals less reactive than hydrogen can be extracted from their ores by reduction using hydrogen. Tungsten is obtained from its oxide by reduction using hydrogen. $\text{WO}_3\text{(s)} + 3\text{H}_2\text{(g)} \rightarrow \text{W(s)} + 3\text{H}_2\text{O(g)}$
Metals more reactive than carbon e.g. Aluminium	Extracted by electrolysis .

Section 4a: Salts from metals (neutralisation reactions)

With metal	Acid + Metal $\rightarrow$ Salt + Hydrogen $2\text{HCl(aq)} + \text{Fe(s)} \rightarrow \text{FeCl}_2\text{(aq)} + \text{H}_2\text{(g)}$
With alkali	Acid + Metal Hydroxide $\rightarrow$ Salt + Water $\text{HCl(aq)} + \text{NaOH(aq)} \rightarrow \text{NaCl(aq)} + \text{H}_2\text{O(l)}$
With metal oxide	Acid + Metal Oxide $\rightarrow$ Salt + Water $2\text{HCl(aq)} + \text{MgO(s)} \rightarrow \text{MgCl}_2\text{(aq)} + \text{H}_2\text{O(l)}$
With carbonate	Acid + Metal Carbonate $\rightarrow$ Salt + Water + Carbon Dioxide $2\text{HCl(aq)} + \text{CaCO}_3\text{(s)} \rightarrow \text{CaCl}_2\text{(aq)} + \text{H}_2\text{O(l)} + \text{CO}_2\text{(g)}$

Section 4b: Making a Soluble Salt

A salt is a compound formed when the hydrogen in an acid is wholly, or partially, replaced by metal or ammonium ions.

Salts are made when a suitable metal, metal carbonate, metal oxide or metal hydroxide is reacted with acid.

Crystallisation

Pure dry crystals can be obtained from solution by:

- **Add solid** metal, metal carbonate, metal oxide or metal hydroxide **to an acid**.
- Add solid **until no more reacts** (saturated solution).
- **Filter** off excess solid.
- **Evaporate** to remove some of the water.
- Leave to **crystallise**.
- Filter the crystals
- Leave to dry **in air**/in a **desiccator/oven**.

Evaporation

When you react an acid with an alkali, you need to be able to tell when the acid and alkali **have completely reacted**. Then you can collect pure dry crystals of the salt.

- Carry out an **acid/alkali titration** using an indicator to see how much acid **reacts completely** with alkali
- **Run that volume of acid again** into solution of alkali but **without indicator**.
- Pour solution into evaporating basin
- Heat
- **Leave to crystallise** / boil off water

Section 5: Strong and weak acids

Aqueous solutions of **weak acids have higher pH** than solutions of **strong acids with the same concentration**. Strong acids **completely ionise** in solution to produce hydrogen ions. e.g. $\text{HCl(aq)} \rightarrow \text{H}^+\text{(aq)} + \text{Cl}^-\text{(aq)}$

Weak acids **only partially ionise** in solution. The reaction is **reversible** (unlike the ionisation of strong acids.) So as the molecules of the weak acid split up to form its ions, the ions recombine to form the original molecule.

e.g. Ethanoic acid: $\text{CH}_3\text{COOH(aq)} \rightleftharpoons \text{CH}_3\text{COO}^-\text{(aq)} + \text{H}^+\text{(aq)}$

A position of **equilibrium** is reached in which both the original molecule (majority) and its ions (minority) are present.

Measuring acidity or alkalinity

Indicators are substances that change colour when you add an acid or an alkali. Litmus is an indicator that turns red in acid and blue in alkali. You can also use a pH meter which gives a digital reading of pH.



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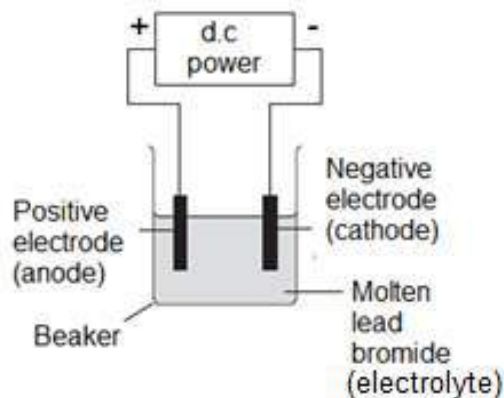


Chemistry Topic 6 Electrolysis

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Section 1 Electrolysis key terms

Electrolysis	The process of splitting an ionic compound by passing electricity through it.
Electrolyte	An ionic compound that is molten (melted) or dissolved in water . The electrolyte is broken down by electricity enabling its ions to and hence carry a charge. move freely
Electrode	An electrical conductor that is placed in the electrolyte and connected to the power supply .
Cathode	The negative electrode . The electrode attached to the negative terminal of the power supply.
Anode	The positive electrode . The electrode attached to the positive terminal of the power supply.
Oxidation	Loss of electrons
Reduction	Gain of electrons



Positive
Anode
Negative
Is
Cathode

Section 2a: Changes at the electrodes – Pure ionic compounds

Electrolyte	Cathode	Anode
Molten Compound	Metal	Non-metal produced.
Molten lead bromide (diagram above)	Lead metal is produced $\text{Pb}^{2+} + 2\text{e}^- \rightarrow \text{Pb}$	Bromine is produced $2\text{Br}^- \rightarrow \text{Br}_2 + 2\text{e}^-$

Section 2b: Changes at the electrodes – Aqueous solutions

Electrolyte	Cathode	Anode
Dissolved compound (aqueous solution)	The metal if the metal is less reactive than hydrogen . Hydrogen is produced if the metal is more reactive than hydrogen .	Oxygen is produced unless the solution contains halide ions (chloride, bromide, iodide) when the halogen (chlorine, bromine, iodine) is produced.

Electrolyte	Cathode	Anode
$\text{CuBr}_{2(\text{aq})}$	Copper	Bromine
$\text{NaCl}_{(\text{aq})}$	Hydrogen	Chlorine
$\text{KI}_{(\text{aq})}$	Hydrogen	Iodine
$\text{Na}_2\text{SO}_{4(\text{aq})}$	Hydrogen	Oxygen

Electrolysis of Brine (concentrated sodium chloride solution)

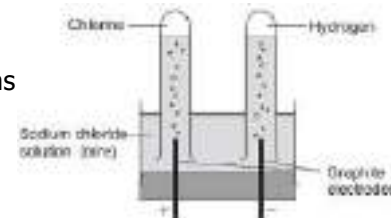
In the electrolysis of brine, **three products** are formed, **hydrogen**, **chlorine** and **sodium hydroxide**.

Sodium chloride → **hydrogen** + **chlorine** + **sodium hydroxide**
solution **gas** **gas** **solution**

At the **cathode** **hydrogen** gas forms
 $2\text{H}^+ + 2\text{e}^- \rightarrow \text{H}_2$ (**reduction**)

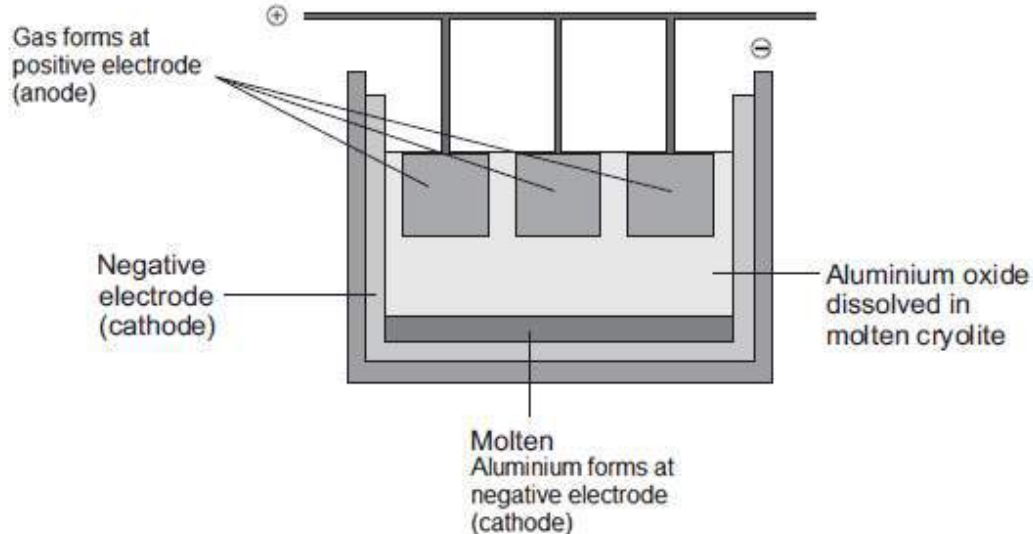
At the **anode**, **chlorine** gas forms
 $2\text{Cl}^- \rightarrow \text{Cl}_2 + 2\text{e}^-$ (**Oxidation**)

Sodium ions stay in solution (as sodium is more reactive than hydrogen) and **combine with hydroxide ions** to form sodium hydroxide.
 $\text{Na}^+ + \text{OH}^- \rightarrow \text{NaOH}$



Section 3a: The extraction of Aluminium by electrolysis

Bauxite	You get aluminium oxide from the ore called Bauxite , the ore is mined by open cast mining .
Cryolite	Aluminium oxide is dissolved in cryolite to lower its melting point . This saves money on energy costs .
Graphite	The electrodes are made from graphite (carbon) as graphite can conduct electricity (due to it having delocalised electrons between it's layers.)
Cathode	Positive Al^{3+} ions move to the cathode . Aluminium is produced (reduction). $\text{Al}^{3+} + 3\text{e}^- \rightarrow \text{Al}$
Anode	Negative O^{2-} ions move to the anode . Oxygen is made (oxidation). $2\text{O}^{2-} \rightarrow \text{O}_2 + 4\text{e}^-$ The anode wears away gradually as the carbon graphite anode reacts with oxygen to form carbon dioxide .



Section 3b: Uses of Aluminium

Aluminium is a very important metal, the uses of its metal or alloys include:

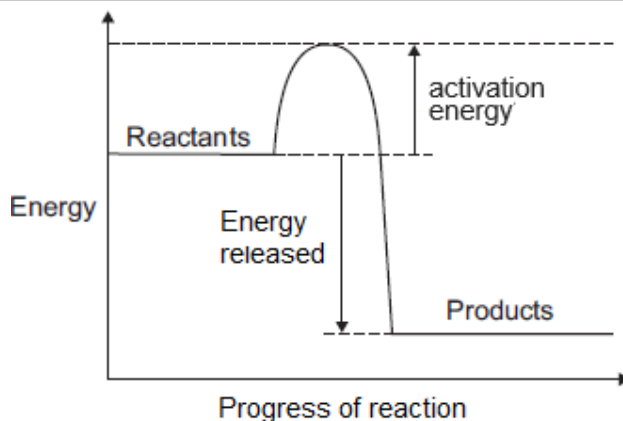
- Pans
- Overhead power cables
- Aeroplanes
- Cooking foil
- Drink cans
- Window and patio door frames
- Bicycle frames and car bodies

Section 1 Energy Changes Key Terms

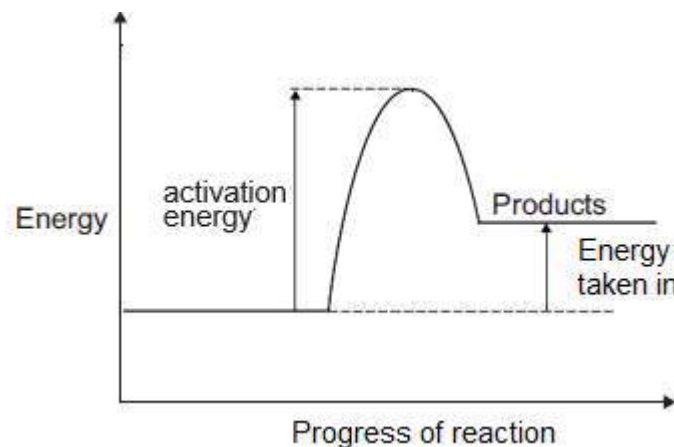
Conservation of energy	Energy is neither created or destroyed , only transferred from one store to another
ΔH	Change in energy of a system in a reaction, its units are KJ/mol
Exothermic	A reaction that transfers energy to the surroundings so the temperature of the surroundings increases , e.g. combustion and neutralisation reactions. Used in self-heating cans and hand warmers . Has a negative value of ΔH
Endothermic	A reaction that takes in energy from the surroundings so the temperature of the surroundings decreases , e.g. thermal decomposition . Used in sports injury packs . Has a positive value of ΔH
Activation energy	The energy needed for particles to successfully react .

Section 2a Reaction profiles – Exothermic reaction

The products are at a **lower energy** than the reactants. This means that energy has been **transferred to the surroundings**. Hence the surroundings gets **hotter** and the temperature **rises**.



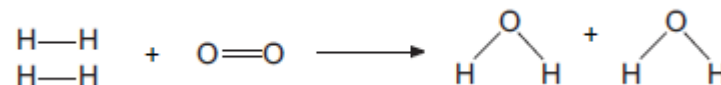
Section 2b Reaction profiles – Endothermic reaction



The products are at a **higher energy** than the reactants. This means that energy has been **transferred from the surroundings**. Hence the surroundings gets **colder** and the temperature **decreases**.

Section 3 Bond breaking and making (HT)

Breaking bonds	Energy is needed to break bonds (Endothermic).
Forming bonds	Energy is released when bonds are formed (Exothermic).



Hydrogen and oxygen react together to make water. The bonds between hydrogen and oxygen have to be broken so that new bonds can form between hydrogen and oxygen.

Section 4 Bond energy calculations (HT)

You can calculate the **overall energy change** in a chemical reaction **using bond energies**. *Bond energy data will be given to you in an exam, hence you don't need to revise the data.*

Equation:

Bond energy = energy required to break bonds in the reactants – energy required to make bonds in the products

- 1) Use bond energies to estimate the overall energy change for the reaction:

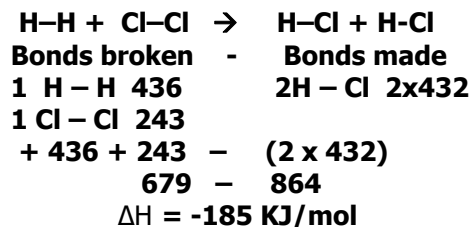
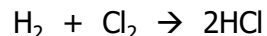


Figure 1

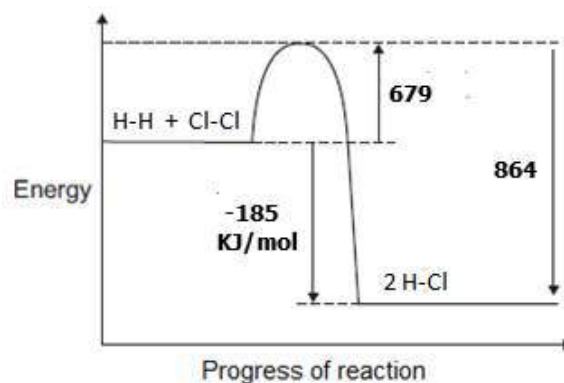


Figure 1 shows the **energy profile diagram** for the reaction between hydrogen and chlorine.

679 KJ/mol of energy was **taken in** when the **reactants bonds** where **broken**, 864 KJ/mol of energy was **released** when the **products bonds** where **formed**, hence the **overall energy of the reaction was -185 KJ/mol**.

Because the energy change ΔH is **negative**, energy was **transferred to the surroundings** in an **exothermic** reaction.

Common Bond energies KJ/mol

C-C	347
C-O	358
C-H	413
C-N	286
C-Cl	346
Cl-Cl	243
H-Cl	432
H-O	464
H-N	391
H-H	436
O=O	498
N≡N	945

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Chemistry Topic 7 Energy changes (Triple)

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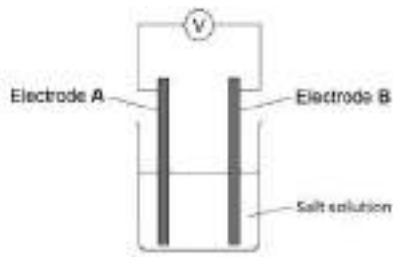
Section 5a Chemical cells and batteries Key points (Triple)

Metals	Metals tend to lose electrons and form positive ions . The greater the tendency to lose electrons , the more reactive the metal.
Electrical cell	When two metals are dipped in a salt solution and joined by a wire, the more reactive metal donates electrons to the less reactive metal forming a simple electrical cell.
Cells with high Voltage	The greater the difference in reactivity between the two metals, the higher the voltage produced by the electrical cell.
Battery	A battery is made up of two or more cells joined together to increase the voltage produced.
Electric current	Electric current is the flow of electrons

Section 5b Using Voltage readings in simple cells to predict reactivity.

A simple experiment investigating the voltage produced by different metals paired with other metals can give you a measure of reactivity.

Electrode A	Electrode B	Voltage in V
Copper	Copper	0.00
Copper	Iron	0.78
Copper	Magnesium	2.71
Copper	Tin	0.48



The results from the experiment can be used to list the metals in **order of reactivity**. The **greater the voltage the more reactive** the metal in electrode B is compared to copper. Hence these results show that the order of reactivity from **least to most reactive** is: **Copper, tin, iron and magnesium**.

Section 5c Batteries

Primary Cells	Cannot be recharged. The dry cells with electrodes made of zinc and carbon are non-rechargeable. Once one of the reactants runs out the cell stops working and should be disposed of in a recycling centre.
Secondary Cells	Are rechargeable, in the recharging process the battery is connected to a power supply that reverses the reactions that occur at each electrode, regenerating the original reactants.

Section 6 Fuel Cells (Triple)

Hydrogen-powered vehicles	Hydrogen can be burned in combustion engines. $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$

Advantages

- Burns well and produces no pollutants.
- Could reduce human impact on global warming as no CO_2 produced

Disadvantages

- Safety and storage
- Supply of hydrogen is an issue as it is made using electrolysis which requires electricity from non-renewable fuels. Hence CO_2 is being released into the atmosphere.

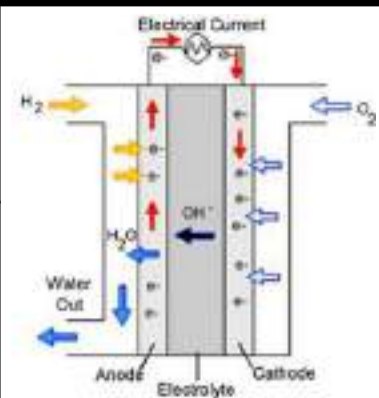
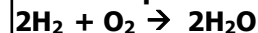
More efficient fuel cells

These cells are fed with hydrogen and oxygen and produce water. The energy released is transferred to electrical energy which powers the vehicle.

At the negative electrode
 $2\text{H}_2 + 4\text{OH}^- \rightarrow 4\text{H}_2\text{O} + 4\text{e}^-$

At the positive electrode
 $\text{O}_2 + 2\text{H}_2\text{O} + 4\text{e}^- \rightarrow 4\text{OH}^-$

Overall equation



Section 1: Rate of reaction Key terms

Rate of reaction	Tells you how fast reactants turn into products
Collision theory	Reactions can only take place when particles collide with enough energy .
Activation energy	The minimum amount of energy particles need in order to react .
Catalyst	A chemical (or enzyme) that increases the rate of reaction without being used up itself . They provide an alternative pathway for the reaction with a lower activation energy .
Concentration	The number of particles in a certain volume .
Surface area	The surface area of a solid is a measure of the total area that the surface of the solid occupies .
Pressure	The pressure of a gas is the force that the gas exerts on the walls of the container .

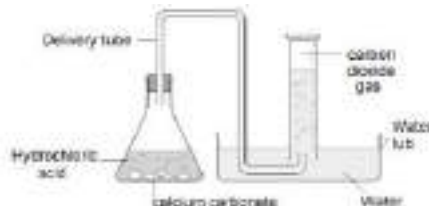
Section 2: How can you find out the rate of reaction

There are two ways you can work out the rate of a chemical reaction. You can find out how quickly:

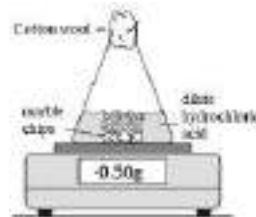
- The reactants are used up
- The products are made

There are **three techniques** that can be used:

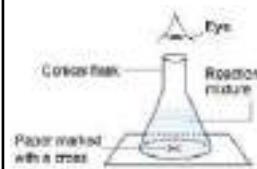
1. Measuring the increasing volume of a gas given off.



2. Measuring the decreasing mass of a reactant mixture.



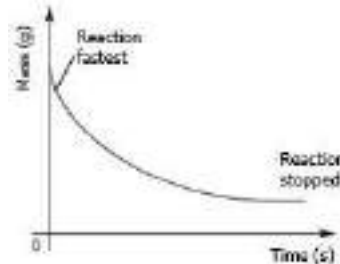
3. Disappearing cross method: measuring the decreasing light passing through a solution.



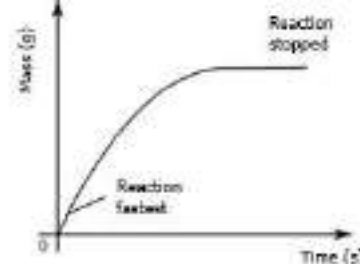
Section 3: Calculating rate of reaction

Mean rate = $\frac{\text{quantity of reactant used}}{\text{time of reaction}}$ or Mean rate = $\frac{\text{quantity of product formed}}{\text{time of reaction}}$

Typical graph when measuring reactants used



Typical graph when measuring products formed

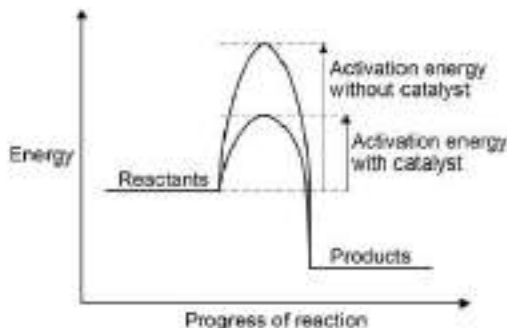


Section 4: Factors Affecting Rate of reaction

Factor	Effect on Rate	Explanation
Concentration of reactants	Increasing the concentration increases the rate of reaction.	Increases the frequency of a collision as particles are closer together .
Pressure of gases	Increasing the pressure increases the rate of reaction.	Increases the frequency of a collision as particles are closer together .
Surface area of solid reactants	Increasing the surface area increases the rate of reaction.	Exposes more of the solid so that there is a greater frequency of collisions occurring.
Temperature	Increasing the temperature increases the rate of reaction.	Particles collide more frequently and with more energy .
Catalyst	Catalysts increase the rate of reaction.	Lowers the activation energy by providing an alternate pathway .

Section 4 (cont): How Catalysts work

The reaction profile diagram of an uncatalysed and a catalysed exothermic reaction is shown below. The catalyst lowers the activation energy of the reaction.



Section 5: Reversible Reactions key terms

Reversible reaction	A reaction in which the products can also form the reactants . Its symbol is $\rightleftharpoons$ Shown as: $A + B \rightleftharpoons C + D$
Exothermic	A reaction that transfers energy to the surroundings
Endothermic	A reaction that takes in energy from the surroundings
Equilibrium (HT)	Equilibrium is reached when the forward and backwards reactions occur at exactly the same rate . The amounts of reactants and products present remain constant . Requires a sealed container .
Le Chatelier's Principle (HT)	When a change in conditions is introduced to a system at equilibrium, the position of equilibrium shifts so as to cancel out the change .

Section 6: Altering conditions (HT)

Changing temperature (HT)	If the forward reaction is exothermic An increase in temperature shifts the equilibrium in the backwards (endothermic) direction . Hence the amount of products decreases . A decrease in temperature shifts the equilibrium in the forwards (exothermic) direction . Hence the amount of products increases .	If the forward reaction is endothermic An increase in temperature shifts the equilibrium in the forwards (endothermic) direction . Hence the amount of products increases . A decrease in temperature shifts the equilibrium in the backwards (exothermic) direction . Hence the amount of products decreases .
	- If we increase the concentration of one of the reactants, Le Chatelier's principle says that the equilibrium will shift in the direction that tends to reduce the concentration of this reactant. $A + B \rightleftharpoons C + D$ - Increasing the concentration of reactant A, the only way the system can reduce the concentration of A, is by some of A reacting with B. Hence the equilibrium moves in the forwards direction and more C & D are made. - If the concentration of a reactant is increased, the equilibrium shifts in the forwards direction to decrease the amount of reactant, hence more products will be formed. - If the concentration of a product is decreased, more products will be formed.	
Changing concentration (HT)		
Changing pressure (HT)	For reactions of gases : - an increase in pressure causes the reaction to favour the side with the smaller number of molecules (as shown by the balanced symbol equation for that reaction). - A decrease in pressure causes the reaction to favour the side with the larger number of molecules (as shown by the balanced symbol equation for that reaction). e.g. $N_2O_{4(g)} \rightleftharpoons 2NO_{2(g)}$ Decreasing the pressure in this reaction shifts the equilibrium to the side with the most gas molecules. Hence the equilibrium shifts in the forwards direction.	

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Chemistry Topic 9 Crude oil and fuels

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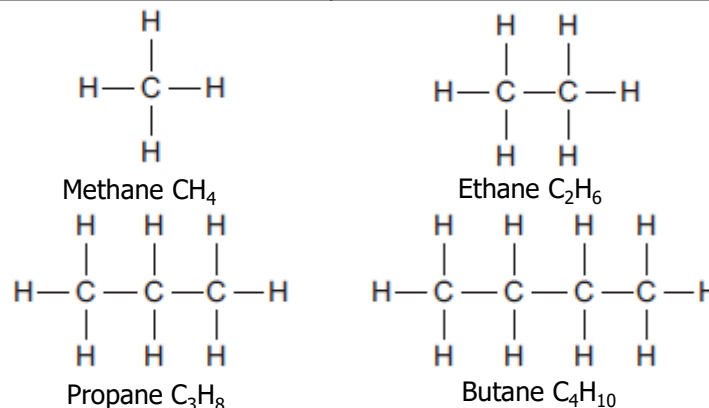
Section 1: Key terms

Crude oil	A mixture of hydrocarbons formed over millions of years from dead plankton subjected to high pressure & temperature .
Hydrocarbon	A molecule containing hydrogen and carbon atoms only .
Alkane	A hydrocarbon containing only single bonds . Follows the formula C_nH_{2n+2} .
Fractional distillation	The method of separating hydrocarbons based on their boiling point .
Fraction	A fraction contains similar length hydrocarbons with a small range of boiling points .
Intermolecular force	Weak forces of attraction that exist between molecules .
Boiling point	The temperature at which a liquid turns into a gas .
Viscosity	The ability of a substance to flow .
Volatility	The tendency to turn into a gas
Flammability	How easily a substance burns or ignites .
Combustion	A reaction between a fuel and oxygen that produces heat .
Complete combustion	Combustion in plenty of oxygen . Complete combustion of a hydrocarbon will produce carbon dioxide and water .
Incomplete combustion	Combustion in inadequate oxygen . Incomplete combustion of a hydrocarbon produces water and carbon monoxide or carbon particulates .
Alkene	A hydrocarbon containing at least one double bond . They follow the formula C_nH_{2n} . Used to make polymers .
Bromine water	A chemical that is brown/orange in colour. If added to an alkene it reacts and changes to colourless . Alkanes do not react hence do not produce a change in colour.
Cracking	The process by which less-useful long-chain hydrocarbons are split to produce an alkane and an alkene .
Catalyst	A chemical that speeds up the rate of reaction without being used up itself.

Section 2: Alkanes

Most of the hydrocarbons in crude oil are alkanes. The general formula of an alkane is **C_nH_{2n+2}**. The alkanes are **saturated hydrocarbons** with all the **carbon-carbon bonds** being **single covalent bonds**.

Prefix	Number of carbon atoms
Meth-	1
Eth-	2
Prop-	3
But-	4



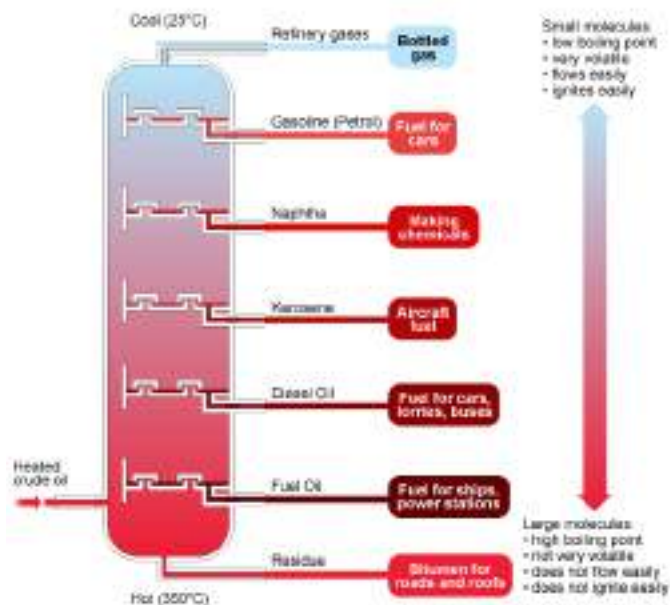
Section 3: The properties of the alkanes

Boiling points	Alkanes have low boiling points (the first four alkanes are gases at room temp.) Between these simple molecules are weak intermolecular forces of attraction which don't require much energy to overcome.
Viscosity	Longer chain alkanes are more viscous because they have stronger intermolecular forces and stick together more making them thicker liquids.
Volatility	Shorter chain alkanes are more volatile than larger chain alkanes because they have weaker forces of attraction between their molecules than longer chain
Flammability	Flammability decreases with chain length because more oxygen is needed for combustion (burning) so they don't burn as well.

Section 4: Fractional distillation of oil

Crude oil is separated into hydrocarbons with similar boiling points. Each hydrocarbon fraction contains molecules with similar numbers of carbons.

- The crude oil is **heated** to about 370°C and fed into bottom of a fractionating column.
- The fractionating column is hottest at the bottom & coolest at the top.
- Most fractions **evaporate** and become **vapours**. The residue (heavier long chain molecules) doesn't boil & flows to the bottom of the column.
- Hot vapours (shorter chain molecules) **rise** up the column & **cool down**.
- When the vapours **cool** to their **boiling point** they **condense** and flow out of the column.
- Those with **lower boiling points rise further** before cooling down.
- Refinery gases do not cool down to their boiling point so **remain as gases**.
- Large chain fractions are cracked producing smaller more useful fuels.



Section 5: Burning hydrocarbon fuels

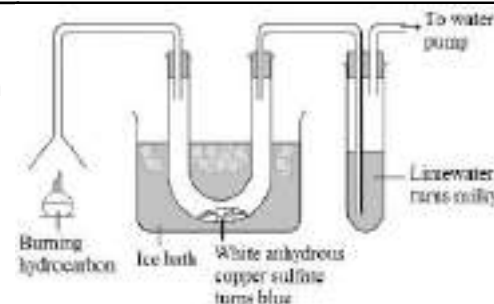
Obtained from the **fractional distillation and cracking** of crude oil. The combustion of hydrocarbon **fuels releases energy**.

During combustion, the carbon and hydrogen in the fuels are **oxidised**.

Complete combustion – alkanes will burn in oxygen to produce carbon dioxide and water. $\text{CH}_4 + 2\text{O}_2 \rightarrow \text{CO}_2 + 2\text{H}_2\text{O}$

Incomplete combustion – when there is **not enough oxygen**, **carbon monoxide and carbon particulates** also form.

You can **test the products** given off when a **hydrocarbon burns** using the apparatus opposite. As well as using anhydrous copper sulfate, you can also use **blue cobalt chloride paper** which turns **pink** when water is present.

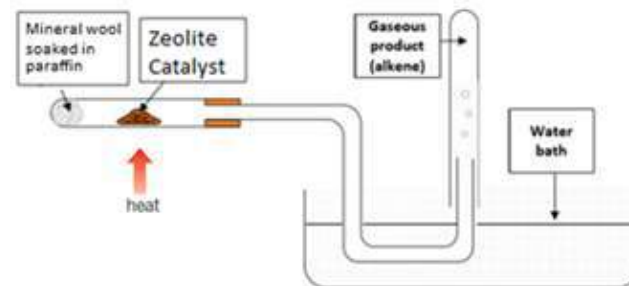


Section 6: Cracking

Cracking – breaks long chain hydrocarbons into more useful shorter chain hydrocarbons. Cracking can be done by either catalytic cracking or steam cracking. Cracking can also be described as a **thermal decomposition**.

Method	Process	Temperature
Catalytic Cracking	passed over a hot zeolite catalyst	500°C.
Steam Cracking	mixed with steam and heated to a very high temperature.	850°C.

e.g. Cracking of Decane. $\text{C}_{10}\text{H}_{22} \rightarrow \text{C}_5\text{H}_{12} + \text{C}_3\text{H}_6 + \text{C}_2\text{H}_4$



KNOWLEDGE



Chemistry Topic 10 Organic reactions (triple)

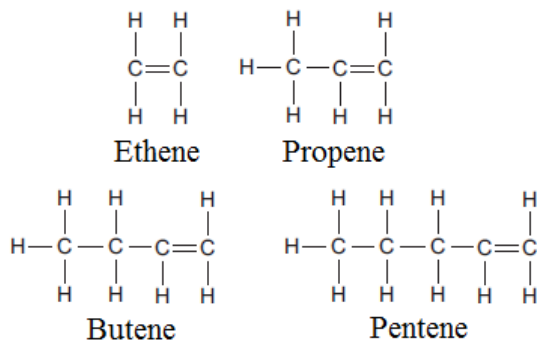
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Section 1: Key terms

Functional group	An atom or group of atoms that give organic compounds their characteristic reactions.
Homologous series	Family of organic compounds with the same functional group.
Double bond	A covalent bond made by the sharing of two pairs of electrons.
Unsaturated hydrocarbon	A hydrocarbon whose molecule contains at least one carbon-carbon double bond.
Alkene	A hydrocarbon containing at least one double bond . They follow the formula C_nH_{2n} . Used to make polymers .
Bromine water	A chemical that is brown/orange in colour. If added to an alkene it reacts and changes to colourless . Alkanes do not produce a change in colour.
Addition	two molecules add together to form a single product with 100% atom economy.
Oxidising agent	A substance that has the ability to oxidise other substances. Its symbol is [O]

Section 2a: Structure of Alkenes

Alkenes are unsaturated hydrocarbons. The general formula of the alkenes containing one double bond is **C_nH_{2n}**

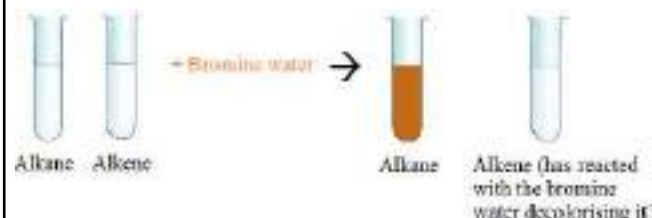


Section 2b: Reactions of the alkenes

It is the **C=C double bond** that makes the **alkenes far more reactive than the alkanes**. Alkenes will react with hydrogen, water (steam) and the halogens, by addition of atoms across the C=C double bond so that the double bond becomes a single carbon-carbon bond.

Combustion Alkenes will burn in oxygen to produce carbon dioxide and water. $\text{C}_2\text{H}_4 + 3\text{O}_2 \rightarrow 2\text{CO}_2 + 2\text{H}_2\text{O}$
Alkenes release less energy per mole in combustion **than alkanes** hence the **alkanes tend to be used as fuels**, whereas the alkenes are not.

Reaction with halogens Ethene reacts with bromine to form dibromoethane in an **addition** reaction. $\text{CH}_2=\text{CH}_2 + \text{Br}_2 \rightarrow \text{CH}_2\text{BrCH}_2\text{Br}$
 When you test ethene with **orange bromine water** it turns the bromine water from orange to colourless.



The alkenes also react in a similar way with the other halogens, chlorine and iodine.

Reaction with hydrogen Alkenes **reacts with hydrogen** in the presence of a **nickel catalyst** at a temperature of about 150°C to **produce an alkane**. $\text{C}_2\text{H}_4 + \text{H}_2 \rightarrow \text{C}_2\text{H}_6$
 This reaction is used to add hydrogen across double bonds in unsaturated oils making margarine.

Reaction with water (steam) Ethene **reacts with steam** in the presence of a **catalyst** to make ethanol. $\text{C}_2\text{H}_4 + \text{H}_2\text{O} \rightleftharpoons \text{C}_2\text{H}_5\text{OH}$
 The reaction also requires heat and high pressure. The reaction is **reversible** so unreacted steam and ethane are recycled over the catalyst.

KNOWLEDGE

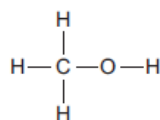


Chemistry Topic 10 Organic reactions (triple)

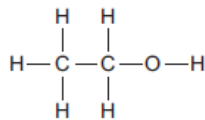
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Section 3a : Structure of Alcohols

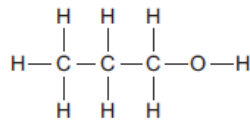
Alcohols contain the -OH functional group.



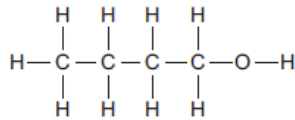
Methanol



Ethanol



Propanol



Butanol

Section 3b: Reactions of the alcohols

Combustion Alcohols are **flammable** and will burn in oxygen with a **clean blue flame** to produce **carbon dioxide** and **water**.
 $\text{C}_2\text{H}_5\text{OH} + 3\text{O}_2 \rightarrow 2\text{CO}_2 + 3\text{H}_2\text{O}$

With sodium React with sodium metal to produce a solution **of sodium alkoxide and hydrogen gas**.
 $2\text{C}_2\text{H}_5\text{OH} + 2\text{Na} \rightarrow 2\text{C}_2\text{H}_5\text{ONa} + \text{H}_2$
 If sodium ethoxide, or any other sodium alkoxide is dissolved in water, **effervescence (bubbles)** are observed and you get a **strongly alkaline solution**.

Oxidation Combustion is one way to oxidise an alcohol, however you can also oxidise an alcohol using an **oxidizing agent** such as **potassium dichromate**. An alcohol is oxidized to a **carboxylic acid** when boiled with **acidified** potassium dichromate. $\text{C}_2\text{H}_5\text{OH} + 2[\text{O}] \rightarrow \text{CH}_3\text{COOH} + \text{H}_2\text{O}$

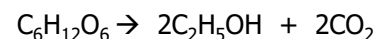
With water Alcohols dissolve many of the same substances as water. They also dissolve some organic compounds that water cannot, making them **excellent solvents**. The first four alcohols dissolve well with water making a neutral solution.

Section 3c: Uses of alcohols

Alcohols are used as solvents in products such as perfumes, aftershaves and mouthwashes. Ethanol is the main alcohol in alcoholic drinks. Ethanol is also used in spirit burners and as a fuel, for e.g. as a biofuel in cars.

Section 3d: Manufacture of ethanol

Fermentation Ethanol is made by **fermenting sugars** from plant material with **yeast**. The reaction is typically carried out between **20-30°C**.

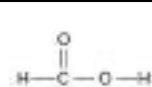


All equipment must be **sterile** at the start. It also has to be carried out under **anaerobic (without air)** conditions, otherwise the ethanol would react with oxygen and turn into vinegar. Ethanol made by fermentation is termed a **biofuel**.

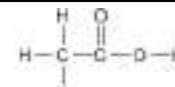
From ethene Ethanol can also be made from reacting ethene (obtained from cracking of crude oil) and steam in the presence of a catalyst. This method uses up crude oil, a non renewable resource.

Section 4a : Structure of Carboxylic acids

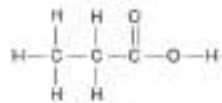
Carboxylic acids contain the -COOH functional group.



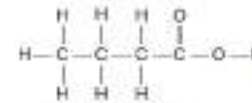
Methanoic acid



Ethanoic acid



Propanoic acid



Butanoic acid

Section 4b : Reactions of Carboxylic acids

With metal carbonates Forms a salt, water and carbon dioxide
 $2\text{CH}_3\text{COOH} + \text{Na}_2\text{CO}_3 \rightleftharpoons 2\text{CH}_3\text{COONa} + \text{H}_2\text{O} + \text{CO}_2$
 Effervescence (bubbles) observed as $\text{CO}_{2(g)}$ forms

In water (HT) Aqueous solutions of carboxylic acids are **weak acids** & only **partially ionise** (have higher pH than strong acids of same concentration). $\text{CH}_3\text{COOH}(\text{aq}) \rightleftharpoons \text{CH}_3\text{COO}^-(\text{aq}) + \text{H}^+(\text{aq})$

With alcohols **Esters** are formed. A **sulfuric acid catalyst** is required.
 $\text{CH}_3\text{COOH} + \text{C}_2\text{H}_5\text{OH} \rightleftharpoons \text{CH}_3\text{COOC}_2\text{H}_5 + \text{H}_2\text{O}$
 In this reaction, the ester **ethyl ethanoate** forms. Esters are **sweet/fruity smelling** & used in perfumes & food flavourings.

KNOWLEDGE



Chemistry Topic 11 Polymers (triple)

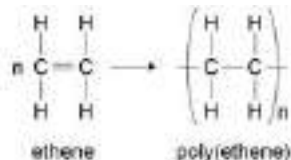
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Section 1: Key terms

Polymer	Very large covalently bonded molecules with many repeating units (poly means many).
Monomer	Small reactive molecules which join together to make a polymer (mono means one).
Plastics	Made of very large covalently bonded molecules called polymers
Addition polymerisation	The reaction between alkene monomers to form a polymer
Condensation polymerisation	Usually involves a small molecule released in the reaction (like water or HCl), as the polymer forms.
Monosaccharide	Simple carbohydrates made from one sugar unit e.g. glucose.
Polysaccharide	A polymer made from monosaccharide monomers e.g. starch or cellulose).
Protein	Polymers of amino acids
DNA	Deoxyribonucleic acid is made up from monomers called nucleotides
Nucleotides	Monomers used to make DNA. There are four different types that can react to form DNA polymers.

Section 2: Addition polymerisation

One of the most important ways that chemicals from crude oil are used is to make polymers. Alkenes can be used to make polymers such as poly(ethene) and poly(propene) by addition polymerisation.



In addition polymers the repeating unit has the **same atoms as the monomer** because when the C=C bond "**opens up**" in polymerisation, **no other molecule** is formed in the reaction.

Uses

Polyethene is very useful as it is strong, transparent and easily shaped. Used to make drinks bottles, washing up bowls, dustbins and cling film.

Polypropene forms a very strong tough plastic. Used to make carpets, milk crates and ropes.

Section 3: Condensation polymerisation (HT)

As well as addition polymerisation (which requires monomers with a C=C), chemists can also make polymers from another type of reaction called **condensation polymerisation**.

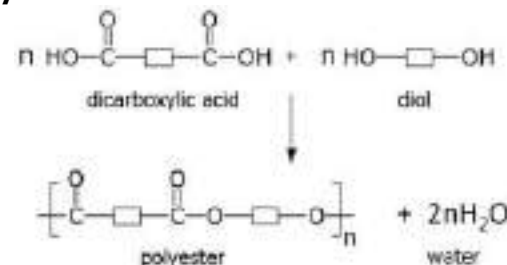
Condensation polymerisation involves monomers with **two functional groups**. When these types of monomers join together, they usually lose small molecules such as water or HCl, and so the reactions are called condensation reactions. Two products are usually formed.

Examples

Polyester (used to make clothing) and nylon (used to make rope and stockings).

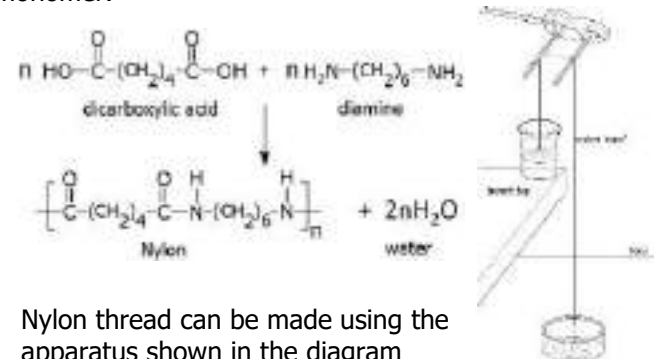
Forming a polyester

Requires an **diol (dialcohol)** monomer and a **dicarboxylic acid** monomer.



Forming nylon

Requires a **diamine** monomer and a **dicarboxylic acid** monomer.



Nylon thread can be made using the apparatus shown in the diagram

Section 4: Natural polymers

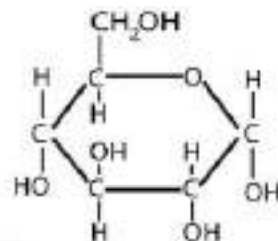
Naturally occurring polymers are found in all living things (e.g. polymers that make up starch, cellulose, proteins and DNA). They are formed during **condensation polymerisation** reactions.

Section 4a: Making polysaccharides from sugars

Simple carbohydrates (monosaccharides) are compounds containing carbon, hydrogen and oxygen e.g. glucose $C_6H_{12}O_6$

Monosaccharides can bond together to make polymers (polysaccharides). **Starch and cellulose are polysaccharides** made from **glucose** monomers. Plants use the starch they make from glucose as energy stores.

Glucose → Starch + water
monomers polymer

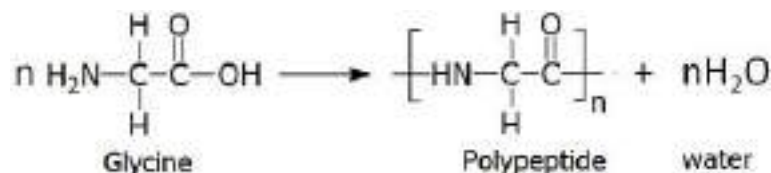
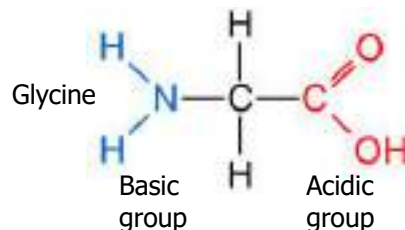


Glucose

Section 4b: Making polypeptides and proteins from amino acids. (HT)

The monomers of proteins are called **amino acids**. Amino acids have **two functional groups**, one basic (the amine group – NH_2) and one acidic (carboxylic acid group – $COOH$). The simplest amino acid is glycine.

Many more glycine monomers can link together form a polypeptide molecule. There are about 20 amino acids that join together in a variety of sequences that make up more than 1000 proteins in your body.



Section 5: DNA

DNA (**deoxyribonucleic acid**) is a natural polymer **essential for life** because it enables living things to develop and function. It is made up from monomers called **nucleotides**. DNA's structure contains a **genetic code** that determines the different **amino acid sequences** of every protein in living organisms and viruses.

Nucleotide

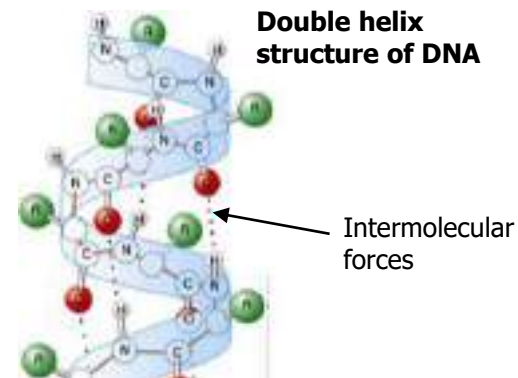
Based on the sugar **deoxyribose**, bonded to a phosphate group and a base.

How is DNA made

By the condensation polymerisation of repeating units of nucleotide monomers. DNA is a **polynucleotide**.

Structure of DNA

Most DNA molecules are **two polymer chains**, made from **four different nucleotide** monomers, in the form of a **double helix**. The two polymer strands run in opposite directions to each other and are held in place by the **intermolecular forces** down the length of each polymer strand.



There are **four different nucleotide** monomers that can react to form DNA polymers.

Section 1: Key terms

Pure	A pure substance is a single element or compound , not mixed with anything else.
Formulation	Useful mixtures that have a precise purpose. The quantity of each component in a formulation has been measured carefully. Formulations include fuels, cleaning agents, paints, medicines, alloys, fertilisers & foods .
Melting point	The temperature at which a substance turns from a solid to a liquid.
Boiling point	The temperature at which a substance turns from a liquid to a gas.
Chromatography	An analytical method used to separate substances in a mixture .
R _f value	Retention factor . A ratio, calculated by dividing the distance moved by a spot up the paper by the distance the solvent front travels.
Solvent	The chemical that dissolves the sample in chromatography.
Solvent front	The maximum distance the solvent moves up the paper.
Stationary phase	The phase where the molecules can't move. The medium (e.g. paper) through which the mobile phase passes in chromatography .
Mobile phase	The phase (in chromatography), where molecules can move . The solvent (e.g. water) that carries the sample (e.g. ink).
Energy levels	Electrons orbit the nucleus in specific energy levels (or shells).

Section 2: Pure substances and mixtures

You can use melting points and boiling points to identify pure substances. The **test for pure water** is that it **melts at exactly 0°C** and **boils at exactly 100°C**. These fixed points can be looked up in data books.

A **mixture does not** have a **sharp melting point or boiling point**, it changes state over a **range of temperatures**.

Impurities will **lower the melting point** of a substance and **increase its boiling point**. The purer the compound is, the narrower the melting point range. Crude aspirin made in the lab has a melting point between 128-132°C, whereas pure aspirin has a sharp melting point of 136°C.

Section 3: Formulations

Formulations are important in the pharmaceutical industry and are made by mixing the components in **carefully measured quantities** to ensure that the product has the **required properties**.

When you buy a product, the ratio or percentage of each component is found on the packaging. This is its formulation.

Depending on the purpose of the product, the amount and type of chemicals used will be changed to make sure it is right for the job. E.g. Pigment of paint.

Section 4: Paper Chromatography

Chromatography is a physical method that is good for **separating and identifying** things. Chromatography always involves two phases, a **mobile phase** and a **stationary phase**.

In **paper chromatography**, the **mobile phase** is the **solvent**, the **stationary phase** is the **paper**.

During chromatography, the substances in the sample constantly move between the mobile and the stationary phase – an **equilibrium is formed between the two phases**.

A substance which has **stronger attraction** to the stationary phase will **not move very far up the paper** in the same time.

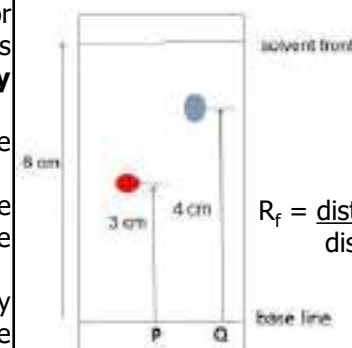
A substance which has **stronger attraction (solubility)** to the **mobile phase** will spend more time in the mobile phase and hence **move further up** the paper.

Different compounds have **different R_f** values in **different solvents**, which can be used to help identify the compounds.

Explaining how different dyes are separated using paper chromatography: Solvent (mobile phase) moves through the paper (stationary phase). Different dyes have different solubilities in solvent and different attractions for the paper and hence are carried different distances.

Section 5: Testing for gases

Gas	Procedure	Positive result
Hydrogen	Hold a lighted splint at the end of a test tube producing the gas.	The lighted splint "pops" .
Oxygen	Hold a glowing splint in a test tube of the gas.	The glowing splint "relights" .
Carbon dioxide	Bubble gas through a solution of limewater .	The limewater turns "milky" .
Chlorine	When damp litmus paper is put into chlorine gas	The litmus paper is "bleached" and turns white .



The R_f value can be calculated using the formula:

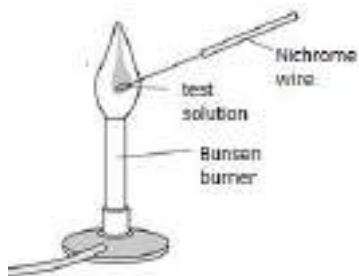
$$R_f = \frac{\text{distance moved by substance}}{\text{distance moved by solvent}}$$

$$\text{For substance P } R_f = \frac{3}{6} = 0.5$$

$$\text{For substance Q } R_f = \frac{4}{6} = 0.67$$

Section 6a: Testing for positive ions : Flame tests

To carry out a flame test:
Dip a **nichrome wire** in **dilute hydrochloric acid**, then **dip it** into the **metal compound** that's being tested. Hold the loop of the wire in the **roaring blue flame** of the **Bunsen burner** and observe the flame colour.



Positive Ion	Flame colour
Lithium Li ⁺	Crimson red
Sodium Na ⁺	Yellow
Potassium K ⁺	Lilac
Calcium Ca ²⁺	Orange red
Copper Cu ²⁺	Green
Magnesium Mg ²⁺	No colour

Section 8: Key terms

Nichrome	An alloy of chromium and nickel.
Precipitate	An insoluble solid.
In excess	When you add something in excess , then you are adding more of it.
Effervesce	Bubbles/fizzing when a gas is produced.
Line spectra	An electromagnetic spectrum consisting of discrete lines , usually characteristic of excited atoms or molecules.
Ionic equation (HT)	An equation that shows only the ions or atoms that change in a reaction

Section 6b: Testing for positive ions: with sodium hydroxide

Dilute **sodium hydroxide** is added, **initially dropwise** and then until **in excess**.

Positive Ion	Test	Observation	Balanced equation examples (HT ionic equations in grey)
Aluminium Al ³⁺	Add dilute sodium hydroxide	A white precipitate forms, the precipitate dissolves in excess sodium hydroxide solution.	$\text{Al}_2(\text{SO}_4)_3(\text{aq}) + 6\text{NaOH}(\text{aq}) \rightarrow \text{Al}(\text{OH})_3(\text{s}) + \text{Na}_2\text{SO}_4(\text{aq})$ $\text{Al}^{3+}(\text{aq}) + 3\text{OH}^{-}(\text{aq}) \rightarrow \text{Al}(\text{OH})_3(\text{s})$
Calcium Ca ²⁺	Add dilute sodium hydroxide	A white precipitate forms, the precipitate does not dissolve in excess sodium hydroxide solution.	$\text{CaSO}_4(\text{aq}) + 2\text{NaOH}(\text{aq}) \rightarrow \text{Ca}(\text{OH})_2(\text{s}) + \text{Na}_2\text{SO}_4(\text{aq})$ $\text{Ca}^{2+}(\text{aq}) + 2\text{OH}^{-}(\text{aq}) \rightarrow \text{Ca}(\text{OH})_2(\text{s})$
Magnesium Mg ²⁺	Add dilute sodium hydroxide	A white precipitate forms, the precipitate does not dissolve in excess sodium hydroxide solution.	$\text{MgCl}_2(\text{aq}) + 2\text{NaOH}(\text{aq}) \rightarrow \text{Mg}(\text{OH})_2(\text{s}) + 2\text{NaCl}(\text{aq})$ $\text{Mg}^{2+}(\text{aq}) + 2\text{OH}^{-}(\text{aq}) \rightarrow \text{Mg}(\text{OH})_2(\text{s})$
Copper(II) Cu ²⁺	Add dilute sodium hydroxide	A light blue precipitate forms	$\text{CuSO}_4(\text{aq}) + 2\text{NaOH}(\text{aq}) \rightarrow \text{Cu}(\text{OH})_2(\text{s}) + \text{Na}_2\text{SO}_4(\text{aq})$ $\text{Cu}^{2+}(\text{aq}) + 2\text{OH}^{-}(\text{aq}) \rightarrow \text{Cu}(\text{OH})_2(\text{s})$
Iron(II) Fe ²⁺	Add dilute sodium hydroxide	A green precipitate forms, the precipitate slowly turns brown .	$\text{FeCl}_2(\text{aq}) + 2\text{NaOH}(\text{aq}) \rightarrow \text{Fe}(\text{OH})_2(\text{s}) + 2\text{NaCl}(\text{aq})$ $\text{Fe}^{2+}(\text{aq}) + 2\text{OH}^{-}(\text{aq}) \rightarrow \text{Fe}(\text{OH})_2(\text{s})$
Iron(III) Fe ³⁺	Add dilute sodium hydroxide	A reddish brown precipitate forms.	$\text{FeCl}_3(\text{aq}) + 3\text{NaOH}(\text{aq}) \rightarrow \text{Fe}(\text{OH})_3(\text{s}) + 3\text{NaCl}(\text{aq})$ $\text{Fe}^{3+}(\text{aq}) + 3\text{OH}^{-}(\text{aq}) \rightarrow \text{Fe}(\text{OH})_3(\text{s})$

Section 7: Testing for negative ions

Negative Ion	Test	Observation	Balanced equation examples (HT ionic equations in grey)
Carbonate CO ₃ ²⁻	Add dilute acid	Solution effervesces (due to carbon dioxide being produced). The gas turns limewater milky.	$\text{MgCO}_3(\text{s}) + 2\text{HCl}(\text{aq}) \rightarrow \text{MgCl}_2(\text{aq}) + \text{H}_2\text{O}(\text{l}) + \text{CO}_2(\text{g})$ $\text{CO}_3^{2-}(\text{s}) + 2\text{H}^{+}(\text{aq}) \rightarrow \text{H}_2\text{O}(\text{l}) + \text{CO}_2(\text{g})$
Sulfate	Add dilute hydrochloric acid followed by barium chloride solution	A white precipitate forms	$\text{BaCl}_2(\text{aq}) + \text{Na}_2\text{SO}_4(\text{aq}) \rightarrow \text{BaSO}_4(\text{s}) + 2\text{NaCl}(\text{aq})$ $\text{Ba}^{2+}(\text{aq}) + \text{SO}_4^{2-}(\text{aq}) \rightarrow \text{BaSO}_4(\text{s})$
Chloride	Add dilute nitric acid followed by silver nitrate solution	A white precipitate forms	$\text{AgNO}_3(\text{aq}) + \text{NaCl}(\text{aq}) \rightarrow \text{AgCl}(\text{s}) + \text{NaNO}_3(\text{aq})$ $\text{Ag}^{+}(\text{aq}) + \text{Cl}^{-}(\text{aq}) \rightarrow \text{AgCl}(\text{s})$
Bromide	Add dilute nitric acid followed by silver nitrate solution	A cream precipitate forms	$\text{AgNO}_3(\text{aq}) + \text{NaBr}(\text{aq}) \rightarrow \text{AgBr}(\text{s}) + \text{NaNO}_3(\text{aq})$ $\text{Ag}^{+}(\text{aq}) + \text{Br}^{-}(\text{aq}) \rightarrow \text{AgBr}(\text{s})$
Iodide	Add dilute nitric acid followed by silver nitrate solution	A yellow precipitate forms	$\text{AgNO}_3(\text{aq}) + \text{NaI}(\text{aq}) \rightarrow \text{AgI}(\text{s}) + \text{NaNO}_3(\text{aq})$ $\text{Ag}^{+}(\text{aq}) + \text{I}^{-}(\text{aq}) \rightarrow \text{AgI}(\text{s})$

Section 9: Instrumental analysis

Many industries require fast and accurate methods for analysis of products and to test emissions produced during the manufacturing process. They use modern instrumental analysis (like **flame emission spectroscopy**) for this task.

Advantages of modern instrumental analysis (compared with traditional chemical tests).	Disadvantages of modern instrumental analysis (compared with traditional chemical tests).
Highly accurate Sensitive Faster Only small amounts need to be tested Fewer people needed to carry out analysis	Expensive Required training to use Results have to be compared with data from known substances

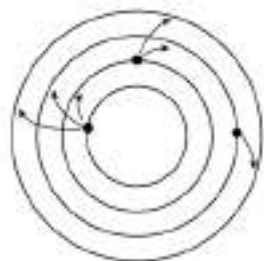
Section 9a: Flame emission spectroscopy

Flame emission spectroscopy is an instrumental method used to tell scientists which **metals ions** are present from their characteristic **line spectra** or the **concentration of metal ions** in a **solution**.

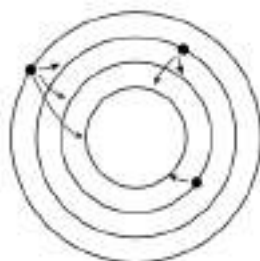
Analysing metal ions from their line spectra

- A sample is **heated in a blue flame**.
- The energy provided (from the flame) **excites electrons** in the metals ions making them **jump into higher energy levels** or shells (excited state).
- When they fall back down (relax) to lower energy levels (shells) energy is released as light energy.

Theory of flame tests (and flame emission spectroscopy)

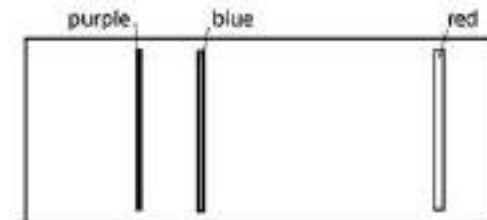


Excited electrons **jumping** into higher energy levels



Electrons **falling back down** into lower energy levels

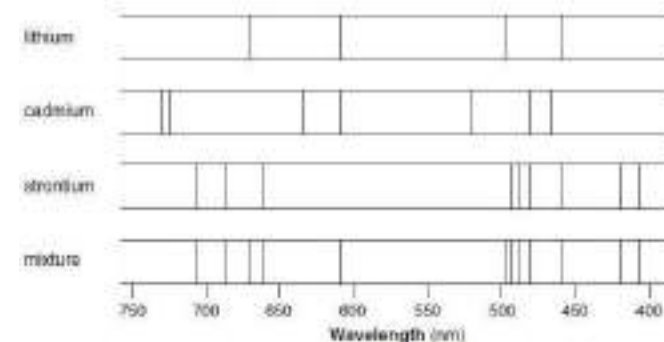
In the spectrometer, the wavelengths of light produced are analysed by passing it through a spectroscope. Each **metal ion** gives a **characteristic line spectrum** which can be used to **identify the metal** by comparing it with data from a **spectral data base**. Below is an example of a line spectrum of hydrogen.



The spectrum of hydrogen.

Analysis

Metal ions in a mixture can also be identified using a spectroscope. The spectrum below illustrates that **Lithium and Strontium are present** in the mixture as the lines match. There is no **cadmium** present in this mixture.



Determining concentration of metal ions

The concentration of metal ions present in a sample can also be determined by the spectrometer. The intensity (or absorbance) of light is measured with a specific wavelength (characteristic of a particular metal ion). The machine can be calibrated using solutions of the metal ion of known concentration and so enabling the unknown concentration to be calculated.

Use

Monitor water for metals ions (like aluminium, calcium, mercury, lead, cadmium etc).

KNOWLEDGE



Chemistry Topic 13 The Earth's atmosphere

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Section 1: Key terms

Acid rain	Rain made so acidic that it causes harm to the environment .
Atmosphere	The thin layer of gases that surround planet Earth .
Biofuels	A source of renewable energy made from plant material that absorbs carbon dioxide during photosynthesis . When it burns it returns the same amount of carbon dioxide into the atmosphere.
Carbon footprint	The carbon footprint of a product, service or event is the total amount of carbon dioxide and other greenhouse gases released over its complete life cycle .
Climate change	The change in global weather patterns that could be caused by excess amounts of greenhouse gases in the atmosphere.
Ecosystems	A large community of living organisms in a particular area.
Fossil fuels	Fuels such as coal, oil or natural gas formed from the remains of decaying plants and animals .
Global dimming	A decrease in the amounts of sunlight reaching the surface of the Earth.
Global warming	Gradual heating of the Earth due to increased levels of greenhouse gases .
Haemoglobin	A red pigment located in red blood cells responsible for transporting oxygen around the body.
Longwave radiation	The radiation emitted from the Earth's surface . Some is absorbed by greenhouse gases and doesn't escape the atmosphere (e.g. IR).
Non-renewable	Something which cannot be replaced once it is used up .
Particulates	Very small particles in the atmosphere given off by incomplete combustion of fuels.
Pollutant	A substance that causes harm to the environment .
Photosynthesis	The process by which plants make food using carbon dioxide, water and sunlight. Releases oxygen as a waste product.
Sedimentary rock	When plants, plankton and marine animals die and fall to the seabed, they get laid down in layers. Over time, these layers are squashed under more layers of sediment (sand, mud and pebbles) forming sedimentary rock. Limestone & coal are example of sedimentary rocks.
Shortwave radiation	The radiation from the Sun . Is able to pass through the Earth's atmosphere and warm the surface of the Earth without being absorbed by greenhouse gases (e.g. Ultraviolet radiation)

Section 2: History of our atmosphere

Early atmosphere is mainly **carbon dioxide** and little or no oxygen gas.



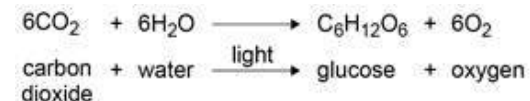
Volcanoes release **nitrogen , water vapour** and small amounts of methane and ammonia.



The Earth begins to cool, **water vapour condenses** and forms the **oceans**. Some **carbon dioxide dissolves in the oceans**. **Carbon dioxide** is also **locked in fossil fuels** and **sedimentary rocks**.



Green **plants & algae evolve** and **release oxygen** through **photosynthesis**.



This process takes in more **carbon dioxide**.

Earth's early atmosphere

Section 3: Formation of coal, oil, gas and limestone

Coal	Plants absorbed CO₂ . They died and decayed . This layer of decaying plants was compressed to form coal .
Oil and natural gas	Plankton absorbed CO₂ . Plankton died and were deposited in muds on the sea floor . They were covered over by sediments and compressed over millions of years .
Limestone	Skeletons & shells (containing calcium carbonate) of dead marine animals build up on seabed. They were covered over by sediments and compressed over millions of years .

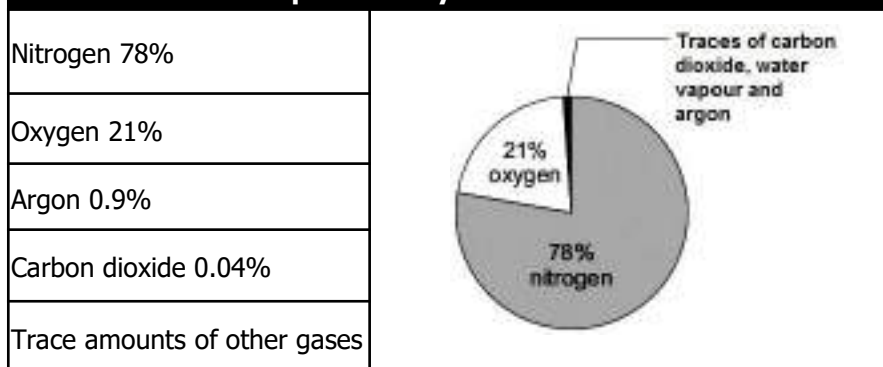
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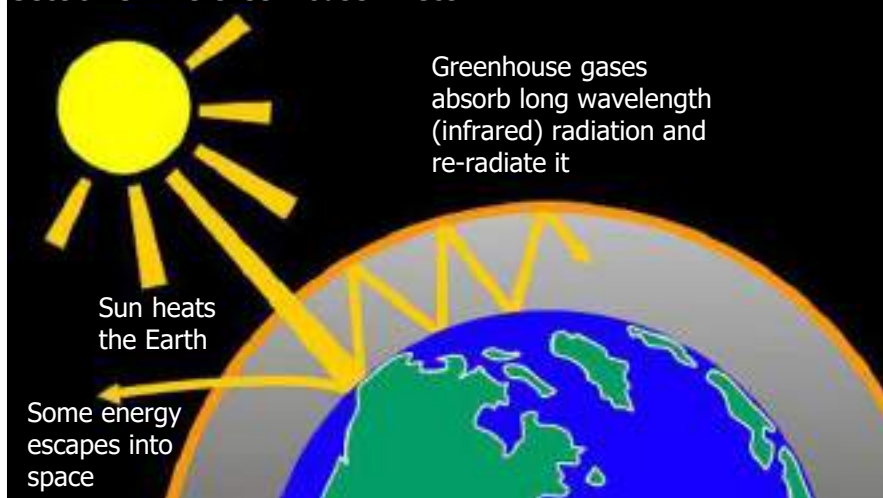
Chemistry Topic 13 The Earth's atmosphere

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Section 4: The atmosphere today



Section 5: The Greenhouse Effect



- Greenhouse gases (like carbon dioxide, methane and water vapour) act like an **insulating layer** in the Earth's atmosphere.
- They keep the Earth **warm enough to support life**.
- Greenhouse gases **don't absorb short wavelength** radiation from the Sun but they **do absorb long wavelength** radiation (infrared or thermal radiation) reflected from the Earth.
- They **re-radiate** it back towards the Earth warming the Earth's surface.

Section 6: Global climate change

How humans increase carbon dioxide in the atmosphere	How humans increase methane in the atmosphere
Combustion of fossil fuels	Increased animal farming
Deforestation	Rice fields
	Decomposition of rubbish in landfill
How humans can decrease carbon dioxide concentration	How humans can decrease methane concentration
Use alternative forms of energy e.g. wind turbines, solar panels	Alternative foods – non-animal based
Energy efficiency e.g. more efficient cars e.g. electric cars	Increased recycling
Carbon capture – capturing CO ₂ from power stations and trapping it underground in porous rocks.	
Carbon off-setting – planting more trees	
Effects of global warming	
Some regions will not be able to produce enough food due to drought .	
Changes to distribution of species and migration patterns put ecosystems under stress.	
Rising sea levels because of melting of polar ice caps.	
Increasing common extreme weather events such as severe storms.	

Section 7: Common Pollutants

Pollutant	Cause	Effect
Carbon monoxide	CO	Incomplete combustion of a hydrocarbon fuel. Toxic gas. Colourless and odourless so hard to detect.
Sulfur dioxide	SO ₂	Burning coal or petrol. Both contain sulfur which reacts with oxygen in air. Cause respiratory problems (e.g. for those with asthma).
Nitrogen oxides	NO _x	In car engines . N₂ and O₂ from air react at high temperatures . Combine with water vapour to cause acid rain .
Particulates	C	Incomplete combustion of a hydrocarbon fuel. Global dimming (reduction in sunlight reaching Earth). Can damage cells in lungs.

Section 1: Key Terms

Finite resource	A non-renewable resource used by humans that has a limited supply e.g. coal.
Renewable resources	A resource used by humans that can be replenished e.g. trees. If not managed correctly, the resource may decrease.
Potable water	Water that is safe to drink . Has low levels of dissolved salts and microbes .
Fresh water	Water that has low levels of dissolved salts . Rain water is an example of fresh water but sea water is not.
Pure water	Only contains water molecules , nothing else.
Desalination	A process that removes salt from sea water to create potable water. Expensive as it requires a lot of energy .
Sewage	Waste water produced by people . Contains potentially dangerous chemicals and large numbers of bacteria .
Reverse osmosis	Uses membranes to separate dissolved salts from salty water .
Natural resource	Natural resources have formed without human input , includes anything that comes from the earth, sea or air (e.g. cotton).
Synthetic resource	Synthetic resources are man made .

Section 2: Natural products that are supplemented or replaced by agricultural and synthetic products

Natural resources	Use	Alternative synthetic product
Wool	Clothing, carpets	Acrylic fibre, polypropene
Cotton	Clothing, textiles	Polyester
Silk	Clothing	Nylon
Wood	Construction	PVC, composites.

Section 3: Finite and renewable resources

Finite resources	Renewable resources
Metal ores	Trees
Crude oil	Fresh water
Limestone	Food

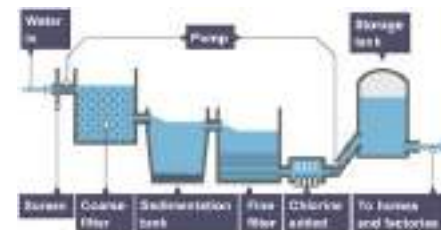
Section 4: Water safe to drink

Section 4a: Potable water

Providing people with potable water (fresh water) is a major issue around the world. The way that potable water is **produced** depends on **where you are**.

Obtaining potable water in countries with plentiful fresh water e.g. the UK

- Find a suitable source of fresh water (e.g. **lakes, reservoirs, rivers or groundwater aquifers**).
- Filtration**: Pass through **filter beds to remove large particles** (leaves, twigs etc).
- Sterilise** to kill microbes (bacteria) e.g. by using **chlorine, ozone** or **ultraviolet light**.



Obtaining potable water in countries with limited fresh water

In **dry countries** (e.g. Spain, Kuwait) there's **not enough surface or ground water**, so **seawater** must be treated by **desalination**. Two processes can be used, **distillation** or **reverse osmosis**. Both processes **needs lots of energy** so are **very expensive**.

Distillation:

- Water is heated to **100°C**.
- It **evaporates**, leaving the salt behind.
- A **condenser cools** the water to return it to the liquid state.

Reverse osmosis:

- Pressure** is applied to the water.
- The **water molecules** move through the **partially-permeable membrane**.
- Other particles are too large** and are not able to move through.

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Chemistry Topic 14

The Earth's resources

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Section 4b: Sewage Treatment

Sewage treatment requires more processes than **desalination** but **uses less energy** so could be used as an alternative in areas with little fresh water.

Screening	Removes rags, paper, plastics and grit that may block pipes.
Sedimentation	Allowed to stand in a sedimentation tank so that suspended particles settle out of the water and fall to the bottom of a sedimentation tank to form the sewage sludge . Lighter effluent floats on top.
Aerobic digestion of effluent	Effluent separated and air pumped through encouraging aerobic bacteria to break down any organic matter including other microbes.
Anaerobic digestion of sewage sludge	Bacteria digest the sludge in the absence of oxygen . This breaks it down. Methane and carbon dioxide are produced by the bacteria.
Sterilisation	If the river is a sensitive ecosystem, then the water is filtered one more time and sterilised by UV light or by chlorine .

Section 5: More Key Terms

Aerobic	With oxygen
Anaerobic	Without oxygen
Sustainable development	Using resources to meet the needs of people today without preventing people in the future from meeting theirs.
Life cycle assessment	A life cycle assessment looks at every stage of a product's life to assess the impact it would have on the environment.
Subjective judgement	Judgement based on a person's opinion and/or values.
Phytomining	Plants are used to absorb metal compounds from the soil as part of the metal's extraction.
Bioleaching	Use of bacterial to convert metal compounds in ores into soluble metal compounds which can then be extracted.
Leachate	A solution produced from bioleaching.

Section 6: Alternative Methods of Metal Extraction (HT)

The Earth's resources of metal ores are limited. Copper ores are becoming scarce and new ways of **extracting copper** from **low-grade ores** include **phytomining**, and **bioleaching**. These methods avoid traditional mining methods of digging, moving and disposing of large amounts of rock.

Bioleaching	Phytomining
Bacteria grow on low-grade copper ores . They produce a leachate (liquid) that contains soluble copper compounds .	Plants are grown on low-grade copper ores . The plants absorb the copper and are then burned . The ash contains soluble copper compounds .

The **soluble copper compounds** produced in both methods above can then be extracted by **electrolysis** or **displacement using scrap iron** (as Iron is more reactive than copper).

Section 7: Life Cycle Assessments LCA

Life Cycle Assessment	Life cycle assessments assess the environmental impact of products . A LCA assesses the use of water, resources, energy sources and production of some wastes during the following stages: • extracting and processing raw materials • manufacturing and packaging • use and operation during its lifetime • disposal at the end of its useful life (recycling, landfill or incineration) including transport & distribution at each stage. However assigning numerical values to the relative effects of pollutants involves subjective judgements and LCA can be biased as they can be written to give them deliberate positive advertising.
Reuse	The environmental impact of products can be reduced by reusing the product. E.g. glass bottles can be crushed and melted to produce different glass products.
Recycling	Some materials can be recycled e.g. metals. Metals can be recycled by melting and recasting or reforming into different products . Recycling uses less energy than mining and extracting.