Knowledge Organiser

Year 11 - CORE

Cycle 1

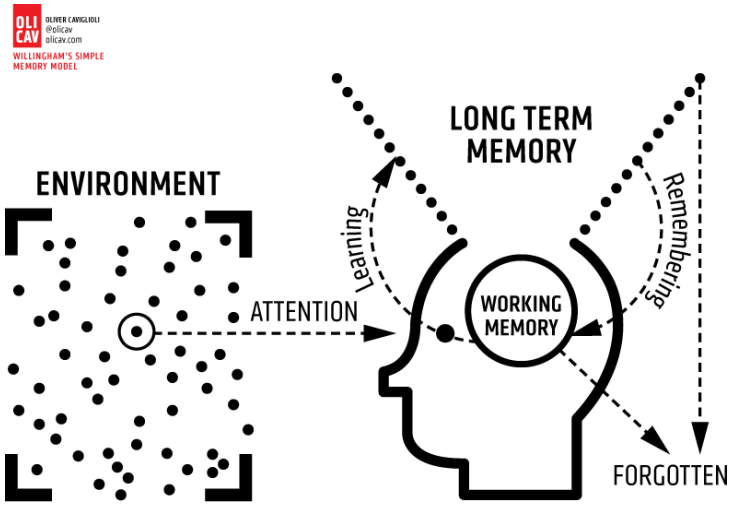
Name:

Inspiring Excellence

Using your Knowledge Organiser for homework

- Your Knowledge Organiser contains the essential knowledge that every student must know.
- Regular use of the Knowledge Organiser helps you to recap, revise and revisit what you have learnt in lessons.
- The aim is to help remember this knowledge in the long term and to help strengthen your memory
- You will use the Knowledge Organiser to help learn during homework.
- You will be assessed on the knowledge from your Knowledge Organiser; the more you revisit information the more likely it will be remembered for lessons, assessments and exams.

- For each homework you will be asked to look at a particular section of your Knowledge Organiser.
- Make sure you follow the homework timetable below so that you do the right homework for the right subjects each day.
- Each day (Monday to Friday) you will study 2 subjects for 30 minutes each.
- All Knowledge Organiser homework is completed in your blue Knowledge Workbooks
- All Maths and English homework is completed on SPARX and must be 100% completed each week.



Homework Timetable Year 11

	Monday	Tuesday	Wednesday	Thursday	Friday
Subject 1	Science	Geog/History	Maths	Option Block F	Maths
Subject 2	English	Option Block E	English	Science	Option Block G

How to use your Knowledge Organiser

In your blue knowledge book you will always write the date, subject heading and ensure that they are underlined with a ruler.

Task 1: Questions

Where a subject includes questions to answer, you must answer these in your blue book. This is the main task to do as a minimum. If you have additional time, or where there are no questions, then do the following Tasks 2-4

Task 2: The Cover – Write – Check method

1. Study the relevant section of your Knowledge Organiser for several minutes.
2. Cover the Knowledge Organiser.
3. In your blue book, write out what you can remember.
4. Check the Knowledge Organiser to see if you got it right.
5. Correct any mistakes in purple pen.
6. Repeat the process – even if you got it 100% correct.
7. Complete sections that you have previously studied using the same process.

Task 3: Free recall

1. Pick a section of the Knowledge Organiser you have studied recently.
2. Without looking at the Knowledge Organiser write down everything you can remember about the topic.
3. Check the Knowledge Organiser to see how much you got right.
4. Correct any mistakes and add any missing parts in purple pen.

Task 4: Elaboration

1. Once you have completed the Cover – Write – Check method, add any additional details you can to your notes.
2. Remember your Knowledge Organiser only contains the core knowledge, there is much to learn beyond it so practise adding more detail when you can.

Year 11 Core Cycle 1

Knowledge Organiser Contents Page

Start with Week 1. Each week, complete the next colour block. Write each word out 3 times and each definition once. Write as much of the theme/character information as you can remember. Check it all with a purple pen. Tick what is correct, fix what is wrong.

Coombeshead Academy *Inspiring Excellence*	English Learning Area	*Much Ado About Nothing* – William Shakespeare

wk	keyword	definition	example
Week 1	**Ostentatious** os-ten-tey-shuh s	Characterised by pretentious or showy display	*When celebrating the engagement, he refers to the port as being the one Gerald's father drinks.*
	Condescending con-de-scend-ing	Having or showing an attitude of patronising superiority	*He informs the inspector 'I was an alderman for years – and Lord Mayor two years ago – and I'm still on the Bench – so I know the Brumley officers pretty well' to show his importance.*
	Belittling	Dismiss (someone or something) as unimportant	*When discussing the possibility of war he says 'Fiddlesticks! The Germans don't want war. Nobody wants war.'*
	Patriarchal Pay-tree-arc-ul	Relating to or denoting a system of society or government controlled by men	*Birling makes references to him having held many positions within society.*
	Obstinate Ob-stin-ut	Stubbornly refusing to change one's opinion or chosen course of action, despite attempts to persuade one to do so	*Sheila points out that Mr and Mrs Birling have learnt nothing from the Inspectors visit: 'The point is that you don't seem to have learnt anything'.*
Week2	**Materialistic**	Excessively concerned with material possessions; money-oriented	*When receiving the ring from Gerald Sheila says 'Now I really feel engaged'*
	Naïve n-eye-eve	Showing a lack of experience, wisdom, or judgement	Sheila is *shocked to discover the reality regarding girls like Eva. Her comment about Eva*

Week 1

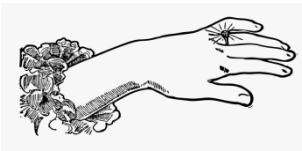
Mr Birling

- He has made himself very wealthy by being a **'hard-headed' business man**.
- He is an active member of the community in Brumley and thinks that he might be in the running for a Knighthood.
- At the start of the play he comes across as being arrogant, making long speeches about his predictions for the future.
- He makes assertions about how a man should look out for number one and not waste time helping others.
- Sybil, his wife, is his 'social superior' and it is hinted that he is self-conscious about being from a more working-class background.
- He is **materialistic and possessive** and also has **old fashioned views about women**.
- He doesn't learn any lessons during the course of the play.
- He is overjoyed at the possibility of the Inspector being a fraud and mocks the others for having been 'tricked'.

Week2

Sheila Birling

- Sheila Birling is Arthur and Sybil's daughter and is in her early twenties.



			shows just how sheltered her life has been: 'She was pretty and looked as if she could take care of herself'.		• At the start of the play she is celebrating her engagement to Gerald Croft and she is **giddy, naïve and childish**. • She is very regretful of her own involvement in the suicide. • She matures, admiring Gerald's honesty, even though he cheated on her. • **She shows an assertive side** by standing up to her mother and father. • She shows that she is **insightful and intelligent** - she can see where the Inspector's investigation is going and tries to warn the others. • By the end of the play she has realised that her actions can have grave consequences.
	Remorseful	Filled with remorse; sorry	*Sheila changes and instantly admits her responsibility: 'I know I'm to blame' and from then on she faces her guilt head on stating 'I'll never do it again to anybody'.*		
	Petulant	Childishly sulky or bad-tempered	*She says Eric is 'squiffy' and is excitable. In addition, her behaviour at Milwards supports how childlike she was. She had Eva sacked because she thought she had laughed at her.*		
	Oppressed	Subject to harsh and authoritarian treatment.	*When the Inspector revealed her part in the death of Eva she left the room. When she returned, it was clear her father had told her it wasn't her fault. She was also ordered to go to her room on occasion.*		
Week 3	**Aristocratic**	Of, belonging to, or typical of the aristocracy /upper classes	e.g. *holds the same view as Mr Birling as to how businesses should be run. He says about Eva's sacking 'You couldn't have done anything else'*	**Week 3**	 •Gerald is described as 'an attractive chap about thirty, rather too manly to be a dandy but very much the easy well-bred young man-about-town'. • Mr Birling is very pleased that Gerald is getting engaged to Sheila because his family are upper-class business owners. • At the beginning of the play, Gerald comes across as being **confident and charming**. • He is revealed to have had an affair with Eva. • Gerald gives himself away when he hears that Eva changed her name to Daisy Renton. • **He initially is evasive** and tries not to talk too much about it but redeems himself in the eyes of the audience by being more open and honest about it as he talks to Sheila. • He lets himself down in the final act by trying to get the family out of trouble; he doesn't seem to have learned from his mistakes.
	Duplicitous doo-plis-i-tuh s	Deceitful	*Gerald lead Daisy on by setting her up in a flat and giving her money, but then dropping her when he realised it couldn't go anywhere 'I didn't feel about her as she felt about me.'*		
	Advantaged	Having a comparatively favourable position in terms of economic or social circumstances.	*Gerald is the perfect son-in-law for the Birlings. Gerald and Sheila's engagement offers the possibility of uniting the families.*		
	Philandering Fil-and-u-ring	(Of a man) readily or frequently enter into casual	*Began a relationship with Daisy despite being in a relationship with Sheila:*		

		sexual relationships with women	*(Sheila to Gerald) 'Except for last summer when you wouldn't come near me.'*			
	Static	Lacking in movement, action, or change, especially in an undesirable or uninteresting way	*He assumed he could pick up his relationship with Sheila once he believes the inspector was a fraud: 'Everything's all right now, Sheila. He has learnt nothing from the inspector.*			

Week 4	**Prejudiced**	Having or showing a dislike or distrust that is derived from a biased opinion	*Mrs Birling taking an instant dislike to Eva because she used her name.*
	Stereotypical	Relating to a widely held but fixed and oversimplified image or idea of a particular type of person or thing	*Mrs Birling making assumptions about Eva because she is working class: 'As if a girl of that sort of class would ever refuse money'*
	Unsympathetic	Not feeling, showing, or expressing sympathy	*Her reaction to her daughter when Sheila discovers Gerald has cheated.*
	Ignorant	Lacking knowledge or awareness in general	*Mrs Birling is unable to learn anything from the Inspector's visit.*
	Conceited Con-see-tid	Excessively proud of oneself.	*Mrs Birling said 'She'd impertinently made use of our name', highlighting how she considers their name to be of great importance.*
Week 5	**Bourgeois** boor-ghwa	Belonging to or characteristic of the middle class, typically with reference to its perceived materialistic values or conventional attitudes	*Eric has been born into a middle class family and has been given a job at his father's company. It is expected he will take over the company in the future.*
	Privileged	Having special rights, advantages, or immunities	*Being a Birling makes Eric appear to be untouchable. He has been given a job at the family factory despite Arthur hinting that he isn't suited to the job.*
	Guilty	Responsible for a specified wrongdoing	*When he describes his encounter with Eva: 'I was in a state when a chap easily turns nasty.'*
	Culpable cul-pa-ble	Deserving blame	*At the beginning of the play, Eric symbolises how those with money get what they want. Therefore, he deserves*

Week 4

Sybil Birling

- Arthur Birling's wife.
- She is **cold-hearted** and **snobbish** despite being a member of a local women's charity.
- Throughout dinner, she tells Sheila and Eric off for things that she considers impolite whilst ignorantly turning a blind eye to her son drinking too much.
- It is clear that, despite Eric being old enough to drink and Sheila getting married, she sees them both as children, not as a young man and woman.
- Her **cold, uncaring nature** leads to her downfall as the Inspector forces her to unknowingly condemn her own son.

Week 5

Eric Birling

- **Eric is the Birlings' son** and is in his early twenties.
- He is described as being 'not quite at ease, half shy, half assertive'. He lacks confidence.
- At points he tries to stand up to his father, but is talked down. It becomes clear that he is drunk at the dinner table and later it is revealed that he has been drinking too much for quite some time.
- Eric had an affair with Eva Smith and she was pregnant with Eric's baby when she committed suicide.
- Eric stole money from his father's business to help Eva.
- In the final act Eric makes an emotional attack on his parents and their values and shows that **he can be assertive**.

			the blame he felt through his abuse of power.			
Week 6	**Omniscient** Om–nis-ee- uhnt	Knowing everything	*The inspector seems to have a deep knowledge of the whole family and uses this when he questions them.*		Week 6	**Inspector Goole**  • The Inspector arrives whilst the Birling family are celebrating the engagement of Sheila and Gerald. • The stage directions state that he 'need not be a big man' but that he must create an '**impression of massiveness, solidity and purposefulness**'. • The Inspector investigates each family member one at a time and in doing so, reveals the consequences of their behaviour. • He drives forward the drama, with his questions creating shocking moments and gripping cliff-hangers for the audience. • By the end of the play it is revealed that he isn't actually an Inspector. • **It is not entirely clear who he is, Priestley leaves it up to the audience to decide.** • His name 'Goole' suggests a supernatural or ghost like element, and he seems to know what the characters will say before they do - is he the conscience of the audience? Is he the voice of Priestley? • He delivers a frightening message when he leaves, that if people do not take responsibility for each other, the world is doomed.
	Solid	Firm and stable	*The Inspector does not get drawn into any petty quarrels, he questions the characters one at a time and remains unfazed by their reactions.*			
	Socialist	One who believes that the means of production should be owned by or regulated by the community as a whole	*The Inspector represents socialism through his actions and being the voice of Eva. He represents Priestley and his view point: people should be more caring towards other and want an equal society to live in.*			
	Antithesis	A person or thing that is the direct opposite of someone or something	*The inspector is a socialist and Mr Birling is a capitalist. Their views and opinions are the antithesis of each other's.*			
	Authoritative	Commanding and self-confident; likely to be respected and obeyed	*In the stage direction he is described as 'He speaks carefully, weightily and has a disconcerting habit of looking hard at the person he addresses before actually speaking.'*			

Week 7	**Stoical** s-tow-icul	Enduring pain and hardship without showing one's feelings and complaining	*The inspector informed the family Eva had ' No work, no money coming in, and living in lodgings with no relatives to help her'*		Week 7	**Eva Smith/ Daisy Renton**  • We never meet Eva Smith. • It is her death that is the cause of the Inspector's investigation. • The audience learns about Eva through the Inspector, who has read a letter and a diary she kept. They also learn about her through the characters she came into contact with. • A lot of the information about her is inferred - from the incident at Mr Birling's factory we can infer that she was **strong willed**. From her interaction with Sheila the audience can see that Eva had a **sense of humour**. Her relationship with Gerald, when she changed her name to Daisy Renton, reveals her sensitivity. By the time she reaches Eric and Sybil, Eva is **desperate and resourceful** in trying to get herself help. • Eva is always referred to in a positive light by the characters that met her but the Inspector never lets the audience or the Birlings and Gerald forget her gruesome death. • The Inspector's final speech reveals Priestley's lesson that there are millions of Eva Smiths being exploited and this must not continue.
	Diligent	Having or showing care and conscientiousness in one's work and duties	*Putting herself in danger of losing her job because she felt passionate about how others were paid as well as herself.*			
	Vulnerable	Exposed to the possibility of being attacked or harmed, either physically or emotionally	*Eva/Daisy has placed herself in many situations where she was vulnerable: Gerald saved her from old man Meggarty and Eric forced himself on her.*			
	Underprivileged	(of a person) not enjoying the same standard of living or rights as the majority of people in a society	*Eva was a working class girl living in 1912 where there was a huge divide between the social classes.*			
	Emblematic em-blem-at-ic	Serving as a symbol of a particular quality or concept; symbolic	*When the inspector says 'One Eva Smith has gone – but there are millions and millions of Eva Smith's and John Smith's still left with their lives, their hopes and fears all intertwined with our lives'*			
Week 8	**Dramatic Irony**	The audience know what the characters don't; makes Mr Birling appear foolish & discredits his ideas	Birling says that the Titanic is '"unsinkable, absolutely unsinkable". The audience knows the ship sank, making him look foolish.		Week 8	**Social Responsibility**  • *An Inspector Calls* was first performed in the UK just after the end of World War Two, in 1946. • It was a time of great change in Britain and many writers were concerned with the welfare of the poor. • There was no assistance for people who could not afford to look after themselves. • Priestley felt that if people were more considerate of one another, it would improve quality of life for all. • Priestley wanted his audience to be responsible for their own behaviour and responsible for the welfare of others.
	Setting and props	Constant throughout but with subtle changes	Lighting: reflects insular and self-centred view point of the Birlings Large suburban house, port and cigars, champagne glasses, the photograph			
	Stage Directions	Set the scene for tension, class and relationships at the beginning	This emphasises the change in Sheila and Eric by the end of the play,			
	Contrasts	The audience are forced to make contrasts between the Birlings' self-interested attitudes and the beliefs of the Inspector.	The Inspector himself -It is especially clear that Priestley is using the Inspector to move the plot along, to control the pace of events and to decide the order in which the characters are questioned.			
	Entrances and Exits	Used to create tension and emphasise key plot points to the audience * Cliff-hangers *	Entrances and Exits are often controlled by Inspector Goole Act 1 ends with the Inspector saying 'Well?' to Gerald. This is the same way that Act 2 begins. This cliff-hanger means the audience have to wait to find out what happens,			

			even though they have already anticipated what will happen.			
Week 9	Exploitative ex-ploit-at-ive	Making use of a situation or treating others unfairly in order to gain an advantage or benefit	Which character does it link to?		Week 9	**Age/ Generation Gap** • Priestley uses it to show how he believed that there was hope in the younger generation's ability to learn and change.  • The older characters' opinions and behaviours are stubbornly fixed. • Mr Birling refuses to learn and Mrs Birling cannot see the obvious about herself and her children. • Eric and Sheila however are younger - they accept their mistakes and offer the chance for a brighter future.
	Boastful	Showing excessive pride and self-satisfaction in one's achievements, possessions, or abilities				
	Grandiose gran-dee-ohs	Extravagantly or pretentiously imposing in appearance or style				
	Imperious im-peer-ee-uhs	Arrogant and domineering				
	Cruel	Wilfully causing pain or suffering to others, or feeling no concern about it				
Week 10	Arrogant	Having or revealing an exaggerated sense of one's own importance or abilities	Which character does it link to?		Week 10	**Gender** • *An Inspector Calls* was written after World War Two. As many British men went away to fight during the war, their positions in work had to be filled by women.  • Men had to acknowledge the fact that women were just as capable as them. As a result of this, many women enjoyed a newfound freedom that working and earning money allowed them. • Not all men saw this change in attitude as a good thing and stayed prejudiced. • Priestley explores the impact of these new gender roles through the independence of Eva Smith and the sexist attitudes of Mr Birling.
	Rapacious ruh-pey-shuhs	Aggressively greedy or grasping				
	Covetous	Having or showing a great desire to possess something belonging to someone else				
	Brazen	Bold and without shame				
	Avaricious av-uh-rish-uh s	Having or showing an extreme greed for wealth or material gain.				

KO Extension/Revision tasks:

Sample Exam Questions

CHARACTER:

How and why does Sheila change in *An Inspector Calls*?
Write about:
• how Sheila responds to her family and to the Inspector
• how Priestley presents Sheila by the ways he writes.

How far does Mr Birling change in *An Inspector Calls*?
Write about:
• how Mr Birling responds to her family and to the Inspector
• how Priestley presents Mr Birling by the ways he writes.

How and why does Eric change in *An Inspector Calls*?
Write about:
• how Eric responds to his family and to the Inspector
• how Priestley presents Eric by the ways he writes.

How does Priestley present the character of Mrs Birling in *An Inspector Calls*?
Write about:
• how Mrs Birling responds to her family and to the Inspector
• how Priestley presents Mrs Birling by the ways he writes.

How does Priestley present the character of Gerald in *An Inspector Calls*?
Write about:
• how Gerald responds to the Birling family and to the Inspector
• how Priestley presents Gerald by the ways he writes.

How does Priestley explore responsibility in *An Inspector Calls*?
Write about:
• the ideas about responsibility in *An Inspector Calls*

THEME

• how Priestley presents these ideas by the ways he writes.

How does Priestley explore the issue of class in *An Inspector Calls*?
Write about:
• the ideas about class in *An Inspector Calls*
• how Priestley presents these ideas by the ways he writes

How does Priestley explore the idea of blame in *An Inspector Calls*?
Write about:
• the ideas about blame in *An Inspector Calls*
• how Priestley presents these ideas by the ways he writes.

How does Priestley explore the ideas of status and power in *An Inspector Calls*?
Write about:
• the ideas about status and power in *An Inspector Calls*
• how Priestley presents these ideas by the ways he writes.

How does Priestley explore the ideas of socialism in *An Inspector Calls*?
Write about:
• the ideas about socialism in *An Inspector Calls*
• how Priestley presents these ideas by the ways he writes.

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Level 6 Convincing critical analysis and exploration 26-30 marks	AO1	Critical, exploratory, conceptualised response to task and whole text Judicious use of precise references to support interpretations
	AO2	Analysis of writer's methods with subject terminology used judiciously Exploration of effects of writer's methods on reader
	AO3	Exploration of ideas/ perspectives/ contextual factors shown by specific, detailed links between context/ text/ task
Level 5 Thoughtful, developed consideration 21-25 marks	AO1	Thoughtful, developed response to task and whole text Apt references integrated into interpretation(s)
	AO2	Examination of writer's methods with subject terminology used effectively to support consideration of methods Examination of effects of writer's methods on reader
	AO3	Thoughtful consideration of ideas/ perspective/ contextual factors shown by examination of detailed links between context/ text/ task
Level 4 Clear understanding 16-20 marks	AO1	Clear, explained response to task and whole text Effective use of reference to support explanation
	AO2	Clear explanation of writer's methods with appropriate use of relevant subject terminology Understanding of effects of writer's methods on reader
	AO3	Clear understanding of ideas/ perspectives/ contextual factors shown by specific links between context/ text/ task
Level 3 Explained, structured comments 11-15 marks	AO1	Some explained response to task and whole text Reference used to support a range of relevant comments
	AO2	Explained/ relevant comments on writer's methods with some relevant use of subject terminology Identification of effect of writer's methods on reader
	AO3	Some understanding of implicit ideas/ perspectives/ contextual factors shown by links between context/ text/ task
Level 2 Supported, relevant comments 6-10 marks	AO1	Supported responses to task and text Comments on reference
	AO2	Identification of writer's methods Some reference to subject terminology
	AO3	Some awareness of implicit ideas/ contextual factors
Level 1 Simple, explicit comments 1-5 marks	AO1	Simple comment relevant to task and text Reference to relevant details
	AO2	Awareness of writers making deliberate choices Possible reference to subject terminology
	AO3	Simple comment on explicit ideas/ contextual factors
Level 0		No rewardable material

Vocab and Scholarly Expressions:

The writer explores the idea of…

Alternatively, the writer could be suggesting…

Here, the writer conveys…

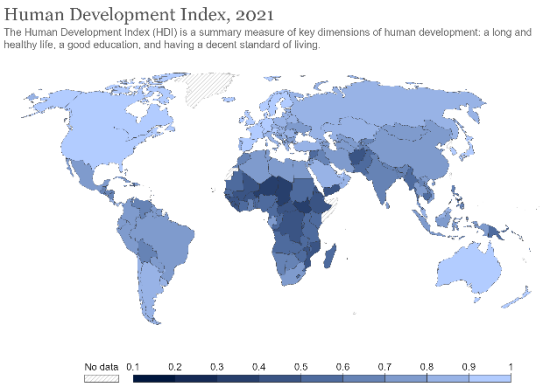
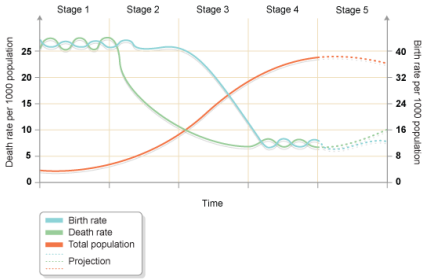
The reader is left to consider…

Perhaps this could connote…

We could also argue that…

Conversely…

Year 11 Cycle 1 Geography Knowledge Organiser – The Changing Economic World

Week 1 – Tuesday 10th September 2024		
Lesson 1 – What is development & how it's measured?	**Lesson 2 – Limitations of development indicators & HDI**	**Lesson 3 –Demographic Transition Model (DTM)**
Key Terms: **Development:** The progress of a country in terms of economic growth, the use of technology and human welfare. **Development Gap:** The difference in the standard of living and wellbeing between the world's richest (HICs) and poorest (LICs) countries.	**Key Terms:** **Human Development Index (HDI):** A statistical tool used to measure a country's overall achievement in its social and economic dimensions.	**Key Terms:** **Demographic Transition Model (DTM):** A diagram that shows how a population changes over time in response to changing birth and death rates. **Population pyramid:** The breakdown of a population by gender and age at a given point in time.
Content: There are several ways to measure the development of a country. These are called development indicators. **Examples of development indicators:** • **Birth rate:** The number of births per 1000 people. • **Death rate:** The number of deaths per 1000 people. • **Life expectancy:** The age you are expected to live until. • **Infant mortality:** The number of children who die before their 1st birthday. • **Literacy rate:** The percentage of people who can read and write within a country. • **Gross National Income (GNI):** The total value of goods and services produced by a country, plus money earned from, and paid to, other countries. • **Gross Domestic Product (GDP):** The total value of goods produced and services provided in a country during one year.	**Content:** The problem with any development indicator is that it is an average figure for the whole country, and often hides huge differences in the standard of living within a country. Human Development Index uses social (life expectancy, years at school) and economic (GNI per head) measures to give each country a score between 0.1 and 1. 	**Content:** **Reasons for changing birth rates:** Religion, tradition, family planning, contraception, education, status of women. **Reasons for changing death rates:** Food availability, sanitation levels, living conditions, healthcare availability. The population of a country changes as it develops and passes through the stages of the Demographic Transition Model. 
Questions: 1. What is development? 2. What is the development gap? 3. What is birth and death rate? 4. What is literacy rate and Gross National income?	5. What is the Human Development Index (HDI)? 6. What is the problem with development indicators? 7. What 3 measures does the HDI use to calculate the score? 8. Where are areas of high and low HDI?	9. What is the Demographic Transition Model (DTM)? 10. What is a population pyramid? 11. State the reasons for a changing birth rate 12. State the reasons for a changing death rate

Year 11 Cycle 1 Geography Knowledge Organiser – The Changing Economic World

Week 2 – Tuesday 17th September 2024		
Lesson 4 – Causes of uneven development	**Lesson 5 – Consequences of uneven development**	**Seneca and Exam Practice**
Key Terms: **Uneven development:** Unequal distribution of people, resources and wealth. **Landlocked:** A country or region almost or entirely surrounded by land. **Colonised:** The sending of settlers to a place and establishing political control over it.	**Key Terms:** **Gini Coefficient:** A measure of wealth or income inequality within a country **Economic migrant:** When people move from one area to another to improve their standard of living.	SENECA **AQA Geography: 5.1.1 – 5.1.4** 1. Give **one** disadvantage of using a single measure of development such as income (2 marks)
Content: There are 3 main reasons for uneven development: **Socio-economic:** War means money is wasted on fighting. There are very few industries meaning goods need importing. Poor countries borrow a lot of money and any money they make goes to paying back the loan. **Environmental:** Some countries have very few natural resources to trade. Climate makes life difficult; unreliable rains or severe flooding. Landlocked countries find it difficult to trade with no access to the oceans. **Historical:** Friendly trading between countries for things like tobacco, timber and spices. One country is taken over by trading partner by force. Trading partner eventually forced out, but leaves the country with little to no industry, education or skills.	**Content:** **Consequence 1 - Inconsistencies in wealth:** As a country develops it gains wealth from trading, but the wealth is not evenly distributed. **Consequence 2 - Inconsistencies in health:** Many LICs are dependent on HICs for aid as they lack healthcare facilities. **Consequence 3 - International migration:** This can be voluntary with people searching for a better life (economic migrants). People are more aware of the development gap due to mobile technologies. **Evidence of development gap narrowing:** Global development particularly in Asia and countries are industrialising. **Evidence of development gap widening:** Development in Africa is lagging behind, worldwide more than one billion live on less than $1 a day.	2. Outline how **one** historical factor can lead to uneven development (2 marks) 3. Explain how physical and economic factors have caused uneven development (4 marks)
Questions: 1. What is uneven development? 2. State 2 socio-economic reasons 3. State 2 environmental reasons 4. What is a historical reason for uneven development?	5. How can inconsistencies in wealth be created? 6. How can inconsistencies in health be created? 7. How does uneven development cause migration? 8. Give evidence for the development gap narrowing and widening	

Year 11 Cycle 1 Geography Knowledge Organiser – The Changing Economic World

Week 3 – Tuesday 24th September 2024		
Lesson 6 – Strategies to reduce the development gap	**Lesson 7 – Tourism in an LIC**	**Lesson 8 – Geography of Nigeria**
Key Terms: **Transnational corporation (TNC):** A large business that operates in a number of countries. **Primary products:** Goods sold for production or consumption in the state they were found in e.g., copper, oil, wheat, or coffee.	**Key Terms:** **Tunisia:** The northernmost country in Africa on the Mediterranean coast, between Algeria to the west and Libya to the east. **Multiplier effect:** This occurs when a positive change happens, which then has a knock-on effect on other businesses or attracts new businesses.	**Key Terms:** **NEE (Newly Emerging Economy):** A country that is experiencing high rates of economic development and rapid industrialisation.
Content: There are 7 strategies to reduce the development gap: 1. **Aid:** A gift of money, goods or services and does not need to be repaid. 2. **Economic investment:** TNCs invest money into countries that produce their goods. Local people employed and triggers further investment. 3. **Industrial development:** Countries invest in factories and sites of industry. Manufactured goods sold at a higher price than primary products. 4. **Debt relief:** When all or some of a country's debt is cancelled. This means they have more money to develop, e.g. Zambia had $4billion cancelled. 5. **Fair trade:** Ensures farmers are guaranteed a fair price for their crops. 6. **Microfinance:** Small loans given to people in LICs to start their own business. 7. **Intermediate technologies:** Technology supplied is appropriate to the needs, skills, knowledge and wealth of local people to improve lives.	**Content:** **Why is Tunisia a popular tourist destination?** • **Climate:** Hot and dry summers (29 - 32°c and 2-10mm) • **Accessibility:** Only 4.5 hours from the UK • **Activities:** 7 UNESCO world heritage sites, beaches, film locations and camel trekking. • **Cost:** Cheaper than other Mediterranean destinations. **Benefits of tourism to Tunisia:** • **Social:** Tunisia connected to other cultures and traditions, literacy rates increased, school compulsory for girls. • **Economic:** $2 billion in 2018, increased GDP to $43b, jobs created. **Is tourism sustainable in Tunisia?** • **Terrorism:** After an attack, big drop in visitor numbers (430,000 to 28,000). • **COVID pandemic:** Visitor numbers fell by 78% and tourism earnings down by 65%. Hotels closed and many lost their jobs.	**Content:** **Location of Nigeria:** • 5°-12°north of the equator in the northern hemisphere • West Africa • Coastline in the south west – Gulf of Guinea in the Atlantic Ocean • Bordered by Benin (W), Niger (N) Chad (N/NE) and Cameroon (E) **Climate and biomes of Nigeria:** • **North Nigeria:** Drier in the north and a savannah grassland biome. Near the arid Sahel region • **South Nigeria:** Hot and humid climate and a tropical rainforest biome. **Capital city:** Abuja which is located in the centre of Nigeria **Population:** 213 million (2021) **Life expectancy:** 52 years (80 years UK)
Questions: 1. How can debt relief reduce the development gap? 2. How can fair trade reduce the development gap? 3. How can fair trade reduce the development gap? 4. How can microfinance reduce the development gap?	5. What is the multiplier effect? 6. State 4 reasons why Tunisia is a popular tourist destination 7. State 5 benefits of tourism to Tunisia 8. State 2 ways that affected tourism in Tunisia	9. Where is Nigeria? 10. What is the climate of Nigeria like? 11. What and where is Nigeria's capital city? 12. What is Nigeria's population and life expectancy?

Year 11 Cycle 1 Geography Knowledge Organiser – The Changing Economic World

Week 4 – Tuesday 1st October 2024

Lesson 9 – What's Nigeria about?

Key Terms:

Civil war: Conflict between citizens of the same country.

Political instability: A natural tendency of a government to collapse either because of conflicts or growing struggles, sometimes violent, between various political parties.

Content:

Political context:

- **Berlin conference in 1883:** Powerful European countries meet to divide up Africa and used their resources.
- **Independence:** Became independent from UK in 1960, but caused a civil war (1967-1970) and political instability till 2011 when elections were seen to be fair.

Social context:

- More than 500 different ethnic groups, but there are 3 main ethnic groups.
- South Nigeria is where Igbo and the Yoruba live and are mainly Christian.
- North Nigeria is where Hausa live and are mainly Muslim.

Cultural context:

- **Nollywood:** Nigerian cinema. 2nd largest film industry in the world.
- **Football:** Have won the African Cup of Nations 3 times.

Questions:

1. What is political instability?
2. State 2 political events in Nigeria's history
3. State 3 social facts about Nigeria
4. State 2 cultural facts about Nigeria

Lesson 10 – Why is Nigeria developing?

Key Terms:

Industrial structure: Percentage of people working in each type of job/industry.

Primary industry: Extraction of raw materials e.g. farming, fishing, mining.

Secondary industry: Production and manufacturing of good from raw materials.

Tertiary industry: The service sector.

Content:

Nigeria has the largest economy in Africa and is predicted to be one of the top 20 world economies by 2050.

Nigeria's changing industrial structure:

1991:

- Primary: 58%
- Secondary: 9%
- Tertiary: 33%

2020:

- Primary: 23%
- Secondary: 27%
- Tertiary: 50%

Why has Nigeria's economy developed?

- Rapid advances in technology
- Investment in science and technology training
- Many people speak English giving a possible growth of telecommunications
- Cheap and plentiful labour supply

5. What is an industrial structure?
6. What is primary, secondary and tertiary industry?
7. How has primary, secondary and tertiary sectors changed between 1991 and 2020?
8. State 3 reasons why Nigeria's economy has developed

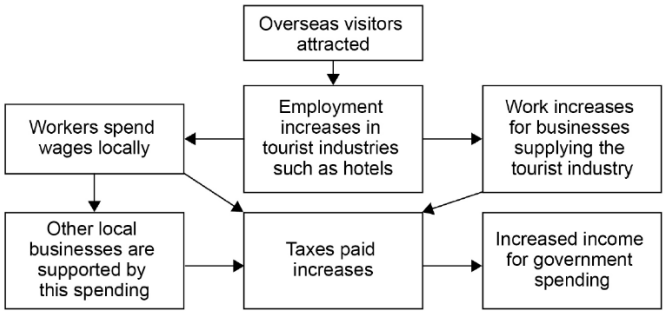
Seneca and Exam Practice

SENECA **AQA Geography: 5.1.4 – 5.1.5 & 5.1.10**

1. Suggest **one** way microfinance loans can help reduce the development gap (1 mark)

2. Outline **one** way that Fairtrade helps to deal with the problems of unequal development (2 marks)

3. Study the figure, a diagram to explain the impact of tourism on a country.



Using **the figure** and your own understanding, suggest how the growth of tourism in a LIC or NEE might help reduce the development gap (4 marks)

Year 11 Cycle 1 Geography Knowledge Organiser – The Changing Economic World

Week 5 – Tuesday 8th October 2024

Lesson 11 – Nigeria and trade

Key Terms:

Export: Goods that are sold abroad.

Import: Goods that are bought from another country.

OPEC: Organisation of Petroleum Exporting Countries.

ECOWAS: Economic Community of West African States.

Content:

Who does Nigeria trade with?

- **Export partners:** USA (17%), India (11%), Spain (7.3%), Brazil (6.3%), South Africa (5.1%) and UK (5%).
- **Import partners:** China (19%), USA (11%), India (6.4%), Netherlands (6.1%), UK (4.9%) and Belgium (4.4%).

What does Nigeria import and export?

- **Import:** Petroleum products (petrol, diesel, kerosene), automobiles, mobile devices and grains like rice and wheat.
- **Export:** Crude oil, natural gas, rubber, cotton and cocoa.

Nigeria's political and trade links:

- **OPEC:** Allows Nigeria to influence the price of oil and the maintenance of a regular supply.
- **ECOWAS:** Develop trade links and gain favourable trade deals.
- **African Union:** Nigeria's is a major contributor and is able to have political influence over other countries in Africa.
- **British commonwealth:** Political link with the UK and other commonwealth countries.

Questions:

1. What does export and import mean?
2. State 5 of Nigeria's export and import partners
3. What does Nigeria import and export?
4. Describe Nigeria's political and trade links

Lesson 12 – Nigeria and TNCs

Key Terms:

Transnational Corporation (TNC): A large business that operates in a number of countries.

Niger Delta: A vast low-lying region through which the waters of the Niger River drain into the Gulf of Guinea.

Multiplier effect: This occurs when a positive change happens, which then has a knock-on effect on other businesses or attracts new businesses.

Content:

Shell in Nigeria:

- Shell is one of the world's largest oil companies with its headquarters in the Netherlands.
- Shell began operating in the Niger Delta in southern Nigeria after oil was discovered in 1958.

Advantages of Shell in Nigeria:

- Direct employment for 65,000 people and 250,000 in related industries.
- Provides school and training for Nigeria's young people.
- 91% of Shell contracts when to Nigerian companies.

Disadvantages of Shell in Nigeria:

- Oil spills cause water and soil pollution – 75% of rural areas have no access to clean water.
- Frequent oil flares send toxic fumes into the air.
- Increase in poverty due to pollution.

5. What is a Transnational Corporation (TNC)?
6. What is Shell doing in Nigeria?
7. State 3 advantages of Shell in Nigeria
8. State 3 disadvantages of Shell in Nigeria

Lesson 13 – Nigeria and Aid

Key Terms:

Aid: Assistance given from one country to another in the form of money, food, technology or advice.

Bilateral aid: Aid given from one country to another, often with specific conditions on how it should be spent.

Multilateral aid: Aid given by countries through international organisations, such as the World Bank.

Content:

Why does Nigeria need aid?

- The benefits of Nigeria being an NEE is not evenly spread across the country.
- Over 60 million people live on less than $1 (76p) per day.
- Nigeria is in debt - $423 billion.

Where does Nigeria aid come from?

Biggest contributors are: International development agency/World bank, USA, UK, Global Fund and EU.

How does Nigeria benefit from the aid given?

- Nets for Life project produces education on Malaria and gives households nets to prevent the spread of the disease.
- World bank-funded loans to businesses to help the economy move away from being dependent on oil.
- UK government funded health and HIV programmes for Nigeria's rural population.

9. What does aid mean?
10. State 3 reasons why Nigeria needs aid
11. State 5 sources of Nigeria's aid
12. State 3 ways Nigeria benefits from the aid given

Year 11 Cycle 1 Geography Knowledge Organiser – The Changing Economic World

<table>
<tr><th colspan="3">Week 6 – Tuesday 15th October 2024</th></tr>
<tr><th>Lesson 14 – Social impacts of development</th><th>Lesson 15 – Environmental impacts of development</th><th>Seneca and Exam Practice</th></tr>
<tr><td>Key Terms:
Quality of life: The standard of health, comfort, and happiness experienced by an individual or group.

Sanitation: Access to facilities for safe disposal of human waste and the ability to maintain hygienic conditions.</td><td>Key Terms:
Unregulated: Not controlled or supervised.

Desertification: The process by which land becomes drier and degraded, as a result of climate change or human activities, or both.

Mangrove: A group of trees and shrubs that live in the coastal intertidal zone.</td><td rowspan="3">SENECA AQA Geography: 5.1.10 – 5.1.11

1. Outline one way in which international aid has had an impact on a named LIC or NEE (2 marks)

2. Suggest two ways that the level of economic development of a country might affect the quality of life of its people (4 marks)</td></tr>
<tr><td>Content:
As a country develops, the quality of life of its people improves.

Key quality of life indicators:
• Life expectancy: 46 in 1990 and 52 in 2013
• Mortality rate (per 1000): 213 in 1990 and 117 in 2013
• Access to sanitation facilities: 37% in 1990 and 28% in 2013
• Access to safe water: 46% in 1990 and 64% in 2013
• Secondary school enrolment: 25% in 1990 and 44% in 2010

Development is not always evenly spread and not everyone will benefit.

60% of the population of Nigeria still live in poverty – less than $1 a day.</td><td>Content:
Fast and unregulated growth of industry in Nigeria has led to following environmental problems:

• 70-80% of Nigeria’s forests have been destroyed.
• Breathing and heart problems caused by poisonous gases industrial chimneys produce.
• Chemical waste can get into water supplies.
• Desertification is now a problem with the construction of dams changing the natural flow of water.

Bodo Oil Spill 2008 and 2009:
• Leaks in a major pipeline in Bodo caused 11 million gallons of oil to spill over a 20km² area.
• Killed fish and the local ecosystem.
• Fishermen unable to earn money.
• Loss of mangrove habitat.
  </td></tr>
<tr><td>Questions:
1. What is quality of life?
2. How has life expectancy and mortality rate changed?
3. How has access to sanitation and clean water changed?
4. What percentage of Nigeria’s population still live in poverty?</td><td>5. What is a mangrove?
6. What does unregulated mean?
7. State 4 environmental problems with unregulated growth of industry
8. State 4 impacts of the Bodo Oil spill in 2008 and 2009</td></tr>
</table>

Year 11 Cycle 1 Geography Knowledge Organiser – The Changing Economic World

Week 7 – Tuesday 22nd October 2024		
Lesson 16 – How has the UK economy changed?	**Lesson 17 – Modern industrial development**	**Lesson 18 – Environmental impacts of modern industry**
Key Terms: **Deindustrialisation:** The reduction of industrial activity in a region or economy. **Globalisation:** The increasing connections between places and people across the planet, established through trade, politics and cultural exchanges, and helped by technology and transport.	**Key Terms:** **Growth corridor:** Industries develop along a major communication route.	**Key Terms:** **Science Park:** A purpose-built cluster of office spaces, labs, workrooms and meeting areas designed to support research and development in science and tech. **Sustainability:** Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
Content: **UK's changing industrial structure:** **1800:** Primary: 58%, Secondary: 9%, Tertiary: 33% **1990:** Primary: 23%, Secondary: 27%, Tertiary: 50% **2016:** Primary: 2%, Secondary: 10%, Tertiary: 79%, Quaternary: 10% **Why has the UK economy changed?** **Deindustrialisation:** **Advantages of deindustrialisation:** Less environmental pollution, brownfield sites for new housing. **Disadvantages of deindustrialisation:** Loss of jobs, disused buildings, clean up to stop pollution. **Globalisation:** **Benefits of globalisation:** More trade with the world, items become cheaper, new ideas, technology and jobs. **Problems with globalisation:** Jobs moved out of the country, lower wages and less manufacturing.	**Content:** **Which types of industries are growing in the UK?** A post-industrial economy is one that replaces manufacturing with tertiary (service) industries. The quaternary industry is now developing in the UK, which includes IT, new creative industries and biotechnology. **Information Technology (IT) Industries:** • 1.3 million people employed in IT. • UK viewed as one of the top IT countries, totally £6.3bn in 2018. • Digital technology companies grew by 4.5% in 2017. **Service industries:** • Financial services employ 2 million people and contribute 10% of UK's GP • Accounts for 18% of the UK's workforce growth **Research (biomedical, AI, Cyber, cleantech) industries:** • Contributes £3 billion to UK economy and employs 60,000 • Attract investment and generates future jobs.	**Content:** **Cambridge Science Park:** • Located north of Cambridge between the A14 and A10. • Built on farmland on the edge of the city. • 65 companies employing over 2000 people. **How is Cambridge Science Park sustainable?** • Buildings designed to maximise the use of natural light and reduce electricity use. • 20 acres of landscaping provides natural habitat and building is not allowed in these areas. • 132 cycle spaces and 9 showers to encourage people to cycle to work. **How is Cambridge Science Park not sustainable?** • Only high skilled jobs re now suitable for the entire population. • 3800 workers travelling by car has led to massive traffic congestion – 60mins to leave the area. • 11% of commuters currently car share.
Questions: 1. What is globalisation? 2. Describe the UK's changing industrial structure 3. State 2 advantages and disadvantages of deindustrialisation 4. State 2 advantages and disadvantages of globalisation	5. Which industries are growing in the UK? 6. State 3 facts about the UK's IT industries 7. State 2 facts about the UK's service industries 8. State 2 facts about the UK's research industries	9. What is a science park? 10. State 3 facts about the Cambridge Science Park 11. State 3 ways Cambridge Science Park is sustainable 12. State 3 ways Cambridge Science Park is not sustainable

Year 11 Cycle 1 Geography Knowledge Organiser – The Changing Economic World

Week 8 – Tuesday 5th November 2024

Lesson 19 – Areas of economic growth in the UK

Key Terms:

East Hertfordshire: One of 10 district in Hertfordshire. It is the east of the county and borders the county of Essex.

Content:

Bishop Stortford:

- Historic market town in East Hertfordshire, England.
- Just west of the M11 and 27 miles north of central London.
- Population of 41,000 in 2020.
- Majority of the population aged between 30-60 years.
- 85% of the population have very good or good health.
- 1.6% are unemployed and 70% own their homes.

Why are people moving to Bishop Stortford?

- Stansted airport around 10mins away.
- M11 on the outskirts with good links to the M25.
- 30mins by train to Liverpool Street station, central London.
- Private and public schools with good results.
- Development of Jackson Square indoor shopping centre.
- Lots of independent shops that have been there for decades.

Questions:

1. Where is Bishop Stortford?
2. State 4 facts about Bishop Stortford
3. State 4 reasons why people are moving to Bishop Stortford
4. What impacts can an increasing population have on an area?

Lesson 20 – Areas of economic decline in the UK

Key Terms:

Outer Hebrides: A chain of 65 small islands in close together in the North West of Scotland.

Ageing population: The increase in the proportion of people who are 65 or older.

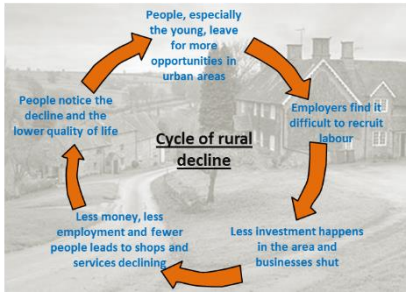
Content:

Outer Hebrides:

- Most people live in the Isle of Lewis
- Declining population – 50% less than 1901.
- Large decrease in people aged between 0-44 years.
- Small increase in people aged 65+ years.

Why is the Outer Hebrides population declining?

- Local economy reliant on farming and young people leave for more work and opportunities
- Employers find it difficult to find employees and close down, leading to fewer and fewer opportunities.
- Pressure on housing and healthcare due to an ageing population.
- School closures due to falling number of school aged children.



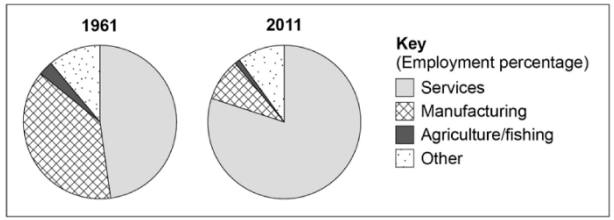
Questions:

5. Where are the Outer Hebrides?
6. State 4 facts about the Outer Hebrides
7. What is an ageing population?
8. State 4 reasons why the population in the Outer Hebrides is declining

Seneca and Exam Practice

SENECA **AQA Geography: 5.1.12 – 5.1.13**

1. Study **the figure**, pie charts showing information about the changing industrial structure of the United Kingdom.



Suggest reasons for the changes shown in **the figure** (4 marks)

2. Give **two** reasons why there has been a growth in the number of science parks in the UK (2 marks)

Year 11 Cycle 1 Geography Knowledge Organiser – The Changing Economic World

Week 9 – Tuesday 12th November 2024

Lesson 21 – Regional differences in the UK

Key Terms:

North South Divide: A term used to describe the social, economic and cultural differences between the London and the south-east of England and the rest of England.

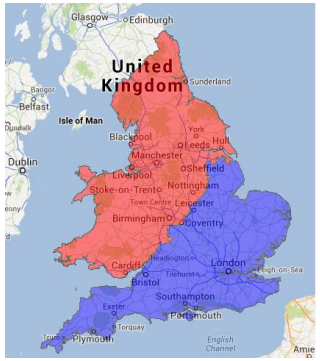
Content:

Why is there a north south divide?

- **North of England:** Work centred around manufacturing. Many of these have closed leading to higher unemployment (deindustrialisation).
- **South of England:** Centre of trade and business, and still is today. This attracts many new businesses.

Evidence of a north south divide:

- **Income:** £13,560 in the north and £20,509 in the south.
- **Unemployment:** 7.7% in the north and 4.4% in the south.
- **House prices:** £154,000 in the north and £305,000 in the south
- **Life expectancy:** 74 in the north and 84 in the south.



Questions:

1. What is the north south divide?
2. Why is there a divide for the north?
3. Describe the location of the north south divide
4. State 4 pieces of evidence that shows there is a north south divide

Lesson 22 – Strategies to reduce UK regional differences

Key Terms:

Northern Powerhouse: The government's vision for a super-connected, globally-competitive northern economy.

Devolution: The transfer of power to a lower level, from central government to local or regional administration.

Multiplier effect: This occurs when a positive change happens, which then has a knock-on effect on other businesses or attracts new businesses.

Content:

Northern Powerhouse:

More investment in transport infrastructure to improve connections to and within the north. Raise education and skill levels across the north and ensure the north is an excellent place to start and grow a business.

Devolution:

The election of the Mayor for Greater Manchester, given £1 billion of devolved funds to spend on improving the city and attracting new businesses. Fewer decisions about the city are made in London and more decisions are made by the people of Manchester.

Attracting professional jobs:

Popularity of Manchester and Leeds have encouraged professionals to settle in the north and business to relocate to the north. For example, the BBC moved many of its offices to MediaCityUK in Salford in 2011. This has led to the multiplier effect.

5. What is the Northern Powerhouse?
6. How is the Northern Powerhouse reducing regional differences?
7. How is devolution reducing regional differences?
8. How does attracting professional jobs reduce regional differences?

Lesson 23 – UK road and rail improvements

Key Terms:

Commercial: The activity of buying and selling, especially on a large scale.

Stakeholder: A person with an interest or concern with something.

Content:

Cross rail (Elizabeth Line):

- Elizabeth line between Reading and Heathrow (60miles).
- 41 stations and serves 200 million people a year.
- Link London's major commercial and business districts.

HS2 (High Speed Railway):

- New 170-mile-long high-speed rail line being built from London to the North west, linking London, Birmingham, Manchester with Scotland.
- Estimated total cost of between £72-98 billion.
- 34,000 jobs created during construction.

South West Super Highway (A303):

- Links the M3 in the south east to the M5 in the south west.
- £2 billion road widening project to improve journey times.
- Involves digging a 3km tunnel under Stonehenge.

9. What is a stakeholder?
10. State 3 facts about the cross rail
11. State 3 facts about HS2
12. State 3 facts about the South West Super Highway

Year 11 Cycle 1 Geography Knowledge Organiser – The Changing Economic World

Week 10 – Tuesday 19th November 2024

Lesson 24 – UK port and airport improvements

Key Terms:

Port: A landing place for ships to load and unload their cargo and passengers.

Markets: Where buyers and sellers come together to buy and sell goods and services.

Content:

Liverpool 2

- £300 million investment to expand the UK's largest deep-water transatlantic container terminal at the Port of Liverpool.
- Allow the biggest container ships in the world access to the UK.
- More central location within the UK and closer to import and export markets – reducing cost, carbon and congestion.

Heathrow Expansion (3rd Runway):

- A new full-length runway that would allow 50 million more passengers a year.
- 40 new destinations and connecting to new markets, increasing international connectivity.
- Generate up to £211 billion economic benefits.

Questions:

1. What is a port?
2. State 3 facts about Liverpool2
3. What are markets?
4. State 3 facts about Heathrow's expansion

Lesson 25 – UK in the wider world

Key Terms:

European Union (EU): An economic and political Partnership between 27 European countries.

Referendum: A public vote on a single political question for a direct decision.

Commonwealth: Voluntary association of 56 independent and equal countries. Almost all were formally under British rule.

Content:

Why did the UK leave the European Union (EU)?

The UK had a referendum on Thursday 23rd June 2016, where the UK public voted to leave the EU (52% 17.4 million votes). The UK officially left the EU on 31st January 2020. Many people voted for the following reasons:

- Reduce immigration
- Take control over UK law
- Create new trade partnerships
- Reduce money being sent to the EU
- Managing our own economy

UK and the Commonwealth:

The UK works with the Commonwealth to ensure that:

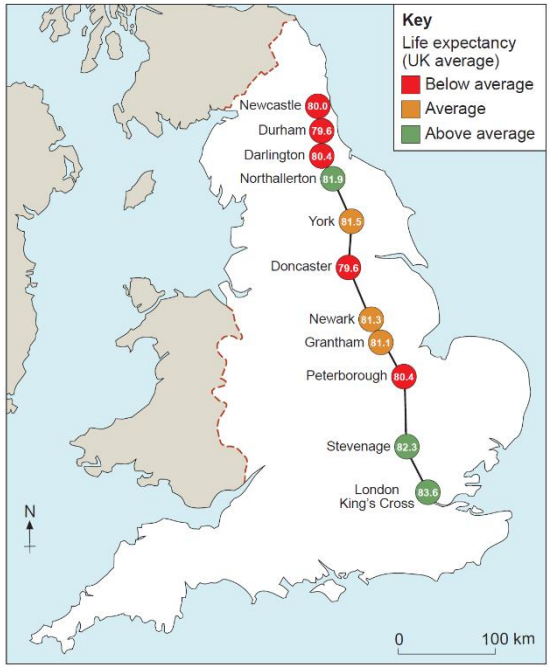
- Democratic principles are promoted
- Human rights are upheld
- Support economic development
- Provide a voice to some of the world's smallest countries

5. What is the EU?
6. State 5 reasons why the UK chose to leave the EU
7. What is the Commonwealth?
8. State 4 ways the UK works with the Commonwealth

Seneca and Exam Practice

SENECA **AQA Geography: 5.1.14 – 5.1.15**

1. Study **the figure**, showing life expectancy at selected places along the East Coast main railway.



1a. Calculate the median life expectancy shown in **the figure.** Show your working (2 marks)

1b. How might the data in **the figure** suggest a north-south divide in the UK? (2 marks)

Buckland Abbey (Monastery) Knowledge Organiser

1	Who founded Buckland Abbey in 1273?	Amicia, Countess of Devon
2	What order of monks were at Buckland Abbey?	Cistercian
3	What was a 'lay brother'?	A monk who mostly did manual labour rather than mostly religious duties
4	Which end of a church is most holy?	East End – it faces Jerusalem
5	In what shape were churches built in medieval times?	A cross (Cruciform)
6	Name 5 buildings that existed in the monastic era.	The abbey, the Great Barn, an infirmary, dormitories, Cloisters, north and south transepts
7	What is the Rule of St Benedict?	Collection of religious texts read by the Choir monks
8	What would have been produced on site as a Monastery?	Beer, bread, agricultural produce, wool.
9	What feature dominated the abbey building?	The crossing tower
10	Name 2 reasons the monks picked such an isolated place in Dartmoor to build an abbey.	To avoid distractions (better for religious reflection). Good water supply. Building materials.
11	Why might an artist's modern day reconstruction of what Buckland looked like as a monastery not be accurate?	Lack of sources and lots of changes made over the years (particularly by Richard Grenville).
12	How might an artist overcome the problem of not knowing what Buckland used to look like?	There are some remains of the original monastery. Comparison to other monasteries like Fountains Abbey.
13	What are the architectural features of the monastic buildings?	Buttresses, slit windows, bar tracery (stonework that supports glass in a stained glass windows), arched windows, made of stone.
14	What is a bar tracery?	Stonework that supports glass in a stained glass window

Key Terms

Abbot	a man who is the head of an abbey of monks
Abbey	the building or buildings occupied by a community of monks or nuns, also known as a monastery
Dormitories	the building in which the monks sleep
Chapter House	the building where monks hold meetings and where a chapter of the Rule of St Benedict would be read to them every morning
Buttress	a structure of stone or brick built against a wall to strengthen or support it.

Buckland Abbey (Tudor Home) Knowledge Organiser

1	Which King dissolved the monasteries by 1539?	Henry VIII
2	Who bought Buckland from Henry VIII?	Richard Grenville the Elder
3	Why did Henry Break from Rome? (To leave the Catholic church and create the Church of England)	To get a divorce from Catherine of Aragon and to gain the wealth of England's monasteries.
4	In what decade does Richard Grenville (the grandson) make alterations?	1570s
5	What kind of changes did Richard Grenville the Grandson make?	Removed North and South transepts; demolished cloisters and dormitories; Created a second floor in the Nave; Changed the Chancel into a service wing for servants + kitchen.
6	Why did Grenville make the changes?	Changed the building to take away its Catholic roots. Complex and solid build of the abbey meant to was too difficult and costly to change much.
7	What did MOST Tudor gentlemen do when buying an old monastery?	Demolish it and build a new home from scratch.
8	What other general features of Buckland show that it was a Tudor manor?	Rectangle/square windows (a design popular in the Tudor era. These did not exist in the monastic era.
9	How can we prove that the Grenville family had the fireplaces built in Drake's Chamber?	They have the family device or logo on them.
10	Who did Grenville sell Buckland to in 1580?	Sir Francis Drake
11	When the Drakes took over Buckland, did they invest heavily in it between 1590-1740?	No because their main property became Nutwell Lodge in Exeter from 1699 onwards and Buckland became a second home, visited irregularly.

Key Terms

Break From Rome	When Henry VIII broke away from the Catholic Faith and replaced the Pope as the Head of the Church in England. This occurred in 1533-4 and he dissolved the Catholic monasteries in England by 1539.
Tudor Era	A period in History with Tudor monarchs (like Henry VIII and Elizabeth I)
Catholic	A Christian who follows the Catholic faith and who follows the words of the Pope
Protestant	A Christian who does not follow the words of the Pope. They are 'protesting' against Catholicism.
Dissolution	The process of closing (dissolving) the monasteries in England. It happened from 1536. Buckland was

Buckland Abbey (Agricultural Revolution) Knowledge Organiser

1	Name two ways that the Agricultural Revolution made farming more productive	Enclosure meant more food could be grown. New machinery like the Seed Drill. Selective breeding to improve the quality of sheep, cows, pigs.
2	Which agricultural reformer visited Buckland in the late 18th century (late 1700s)?	William Marshall
3	How was the Great Barn amended?	3 new doors added, allowing carts to be driven the whole length of the barn.
4	Who owned Buckland when changes were made during this era?	Lord Francis Augustus Heathfield
5	Which extra buildings were built during this time?	The Ox Sheds and The Linhay
6	What animal was used to plough the fields?	Oxen
7	A diary was kept by Marshall, telling us about daily life. How many days per week did agricultural labourers work?	6
8	Did just men work at Buckland?	No – oxen and children too.
9	Name different tradesmen named in Marshall's diary	Mason, wheelwright, blacksmith, miller, cooper, harness-maker and a Mole Catcher.
10	Name types of crops grown at Buckland	Wheat, barley, oats, turnips, potatoes, cabbages, peas, dairy produce, honey and cider.
11	What did the owner of Buckland do with the wealth generated by improved farming?	Built the impressive wooden Georgian staircase.
12	Did the Drake's live Permanently at Buckland Abbey?	No, they were based at Nutwell Lodge near Exeter
13	What did the area which is now the Education Centre used to be	The Milking yard for dairy cows.

Key Terms

Agricultural Revolution	a period of technological improvement and increased crop productivity that occurred during the 18th and early 19th centuries in England and Europe
Linhay	A type of farm building found in Devon and Somerset. It has two storeys – the hay loft at the top and bottom storey is for keeping cattle in during winter. The hay at the top acted as insulation for the cows to keep warm
An estate (noun)	an extensive area of land in the country, usually with a large house, owned by one person or family
Georgian period	The **Georgian era** is a period in British history from 1714 to c. 1830–37, named after the kings George I, George II, George III and George IV.

Buckland Abbey (National Trust) Knowledge Organiser

1	Which resident of Buckland does the National Trust celebrate the most?	Sir Francis Drake
2	Name ways in which Drake is commemorated	There is a sundial to commemorate 400th anniversary of his death. A Drake statue in the Lifetimes gallery. Drake's Drum on display. Paintings and artefacts. Stag horns in kitchen.
3	What have the Ox Sheds been converted into?	Shops, galleries, toilets, video presentation room..
4	Name some changes the National Trust has made to make it attractive for tourists	Access made easier (e.g. for wheelchair users); Information signs ; Restaurants, toilets to ensure people are relaxed; opportunity to spend money (e.g. Gift Shop)
5	What has been done to attract children to Buckland?	The upstairs of the main house is modelled as a ship with entertainment for children, like being able to dress up. Ice cream!
6	What is the Linhay now used for?	To display agricultural machinery such as different types of ploughs
7	What is the Great Barn used for now?	It has a Victorian Cider Press (simply because it is interesting to tourists) and sometimes art exhibitions
8	What is the Guest House now used for?	The building tourists walk into to pay for entry/present their membership card of the National Trust. Another part of the Guest House is the gift shop. The Restaurant/Café.
9	What is the significance of Education Room?	Provides a base for visiting schools – shows the National Trust care about education

Key Terms

National Trust	**UK conservation charity, protecting historic places and green spaces**
English Heritage	Another charity, founded by the government to preserve historic sites.

Buckland Abbey (Compared with Fountains Abbey) Knowledge Organiser

1	What was Fountains Abbey built from?	Sandstone
2	Was the abbey bigger or smaller than Buckland?	Bigger
3	How many people worked at Fountains when the abbey was at the height of its wealth?	200
4	What ornamentation was there on Fountains Abbey?	The Green Man (like a gargoyle) and carving of the Abbot's face.
5	How were choir monks and laybrothers kept separate in terms of the abbey buildings at Fountains?	Stairs and dormitories were separate
6	Name additional buildings at Fountains Abbey other than the abbey	Dormitories, Refectory, library, Chapter House, Kitchen
7	Name three ways Fountains abbey is DIFFERENT to Buckland Abbey	Had a library and separate place for lay brothers The burial ground at Fountains Abbey is much more understood – as there are gravestones which mark the burials of 19 Abbots The cloisters are on the south side of the monastery (like nearly all monasteries) whereas Buckland was on the North (due to draining issues).
8	Fountains Abbey was dissolved in 1539 like Buckland was. In the 1600s ,Stephen Proctor decided to make a Tudor Home on the site. Did he convert the abbey or use the stone from the Abbey ruins to build a new house?	Used the stone from the ruins to build a new house.
9	When was Fountains Abbey at its wealthiest?	1200s
10	Why did Fountains Abbey face financial troubles in the 1300s?	It experienced sheep disease. The Black Death killed many of its inhabitants. Famine in Scotland meant Scots came from the north to steal from Fountains Abbey

Key Terms

Fountains Abbey	The ruins of an Abbey in North Yorkshire

Medieval C&P Knowledge Organiser

Medieval Britain

Society: 'Hierarchical' with the king at the top and peasants at the bottom. Everyone knew their place in society

Food and famine: Farming was important for food and work - if the harvest failed there would be famine
1348 Black Death disrupted farming as millions died and the land was left unfarmed.

Life and leisure: Church calendar dictated way of life – Sundays were rest days, also Saints' days.
fairs and sports on feast days and holidays.
people drank beer as water unsafe.
most people were illiterate

Landownership: Land was the basis of power – provided food and wealth. England divided into 'counties' or 'shires' – each shire ruled by a sheriff – shires divided into 'hundreds' - hundreds then divided into parishes. communities were small and everyone knew each other, strangers were easily spotted

Technology: Most work done by hand with tools such as axes, hammers and spades. Communication by word of mouth - priest could read and write so kept records. 1476 – England's first printing press in London

War and rebellion: A peaceful society depended on each person or group showing loyalty to those above. Occasional rebellion from lords against king - 1381 Peasants' Revolt and 1455-1487 Wars of Roses meant people were familiar with bloodshed and violence.

The church: Catholic country and many churches were richly decorated Church taught that God cared about his people on earth - God would forgive people their sins if they followed honest lives - sinners would be punished in hell - not all priests led holy lives.

Homes and possessions: Peasants' houses were simple wooden structures with walls of hardened mud, no glass windows but wooden shutters - wealthier homes in the towns were similar - people had few belongings.

Crime

The majority of crimes in this period were non-violent, theft being the most common crime. 1315-1321 was the great famine, following a succession of bad harvests. The crime rate increased due to debt and hunger, this was reflected in the changing nature of crimes towards the end of the medieval period.

Serious Crime	Petty Crime
• Murder • Stealing expensive goods (12d.+) • Suicide – the church taught that only God could decide when a person's life should end	• Stealing goods worth less than 12d • Getting into debt • Limited harm to person or property

Treason	Crime of plotting against your monarch or country was defined, included a woman killing her husband. Counterfeiting coins.
Vagrancy	When people wandered from place to place in search of work.
Scolding	Using offensive or abusive speech in public - 1350 onwards became a crime applied mainly to women.
Outlaw gangs	Gangs of robbers were most feared, as travellers were ambushed, houses robbed and villages threatened with burning if valuables not given Gang members were often outlaws, on the run after being accused of committing crimes in own villages.
Heresy	Spreading beliefs not allowed by the church became a crime.
Immoral behaviour and beliefs	Laws passed against dice, football and other games, church believed they encouraged idleness. Moral crimes included shaving beards on Sundays and committing acts of homosexuality.

Medieval C&P Knowledge Organiser

Law Enforcement

King: in overall charge – kept the 'king's peace'

Sheriff: King's chief law enforcer in each county. Had an armed posse to help him. Often took a share of property of convicted.

Chief constable of the hundred: Supervised law and order in their area. Made sure every free man aged 15-60 was ready to take up arms to support the king.

Parish constable: Ensured his parish could supply armed men when needed. Powers to arrest suspicious strangers.

People/Hue and cry: Adult men were grouped into 'tithings.' If one broke the law the others had to bring him to court. Victims of crime called the 'hue and cry' – all those within earshot had to stop what they were doing and help.

Towns: Watchmen patrolled the town streets at night - suspicious individuals were arrested and handed over to constables, it was an unpopular job

Royal Courts: Heard the most serious criminal cases - overseen by a judge - jurors were drawn from criminal's own area

Justices of the Peace (JPs): Existed from 1361 and an important change as took over the hundred courts (courts run by the county sheriff) - appointed by the king (2 or 3 in each county) - 1388 onwards quarter sessions were held every 3 months (4 times a year)

Manor Courts: From 1250, took over work of the hundred courts - dealt with most crimes in England – petty crimes, thefts, land disputes, fights and debts - run by the lord or his steward and wealthy villagers made up the jury - each manor had their own local laws - began to lose influence 1500 onwards

Church Courts: Dealt with crimes that were considered un-Christian – immoral priests, homosexuality, swearing, gambling and failure to attend church - priests heard the evidence and passed judgement- no juries

Medieval Juries: Selected from the same parish or hundred - used prior knowledge of accused to reach their verdict - judge followed juries' verdicts - trials usually lasted about 20 minutes	**Verdicts:** 'Guilty' or 'Not Guilty' - many juries were lenient - often let the accused go free, especially women

Punishments

Serious Crimes	
Hanging	Rope placed around the neck and criminal slowly strangled Punishment for murder, rape, theft of goods 12d.+, burglary and robbery
Hanging, drawing and quartering	Criminal hanged then taken down whilst still alive - intestines cut out and/or genitals - quartered – body cut into pieces Punishment for high treason (plotting to kill the king) and counterfeiting
Burning	Criminal usually tied to a wooden post surrounded by wood - bonfire then lit Punishment for petty treason (wife killing husband or servant their master) and heresy

Petty Crimes	
Fines	Payment of money - those who oversaw each level of court kept the financial proceeds
Public humiliation	Cucking stool –forced to sit on a wooden seat in public Stocks (sitting) and pillories (standing) – criminals would have rotten fruit and vegetables thrown at them
Imprisonment	Those awaiting trial would be imprisoned - used to punish debtors and forgers

Avoiding punishment

1. Run away
2. Seek sanctuary in a church
3. Powerful friends
4. Refuse to plead
5. Hope for a friendly jury
6. Buy a pardon from the king
7. Join the king's army
8. Be pregnant (women)
9. Claim benefit of clergy
10. Become a king's approver

Early Modern C&P Knowledge Organiser

Early Modern Britain

Growing population and urbanisation: 1550-1650 population doubled from 2.4 million to 4.1 million. Most people continued to live and work in the countryside. 1750 – 20% of population lived in towns. London = largest and busiest city in Europe.

Growing inequalities between rich and poor: More prosperous but still inequality. Population growth: food prices increased, wages fell and unemployment.1590s = harvest failure so people moved to towns for work.

Travel: People began to move in search of work - drovers herded cattle and sheep - carriers to cloth to the towns. 1600s – start of road-building, used by stagecoaches to transport goods and people - normal for people to travel with valuables

Technological change – the printing press: transformed people's lives and multiple copies of books and pamphlets could be made quickly and cheaply. growth in literacy – people could read local and national news and be more informed. 1641 onwards – broadsheets first emerged 1750 = 4 daily newspapers in London and 30 in different towns across the country.

Religious changes and Puritans: 1530s onwards = Protestant Reformation brought religious change . people had to follow official state religion chosen by the monarch (Protestantism). late 1500s Puritans emerged – tried to enforce higher standards of behaviour sinful acts condemned - drinking, gambling, dancing, swearing.

Growing power of the state (government): Under Tudor monarchs (1485-1603) the power of the state grew - Henry VIII insisted on "Your Majesty". Parliament introduced new laws - people's lives more closely controlled by the government.

Power of the landowners in the countryside: Landowners played important part running the country - in each county landowners were MPs, JPs and enforced the law. 1660 onwards as king had limited power, large landowners more powerful.

Civil War 1642-1648 King vs Parliament: disagreement over ruling of England, King defeated and executed January 1649 people suffered as battles fought across the country – thousands killed. England a republic, Oliver Cromwell and Puritans governed

Crime

Crime dramatically increased mid-16th-mid 17th centuries, particularly amongst the poor. Vagrancy, witchcraft, smuggling and highway robbery emerged as new crimes. In Elizabethan England (1558-1603) printed pamphlets and leaflets sensationalised crime and gangs.

Vagrancy	Caused by failed harvests and fall in demand for cloth. Those living in poverty = no choice - leave their village and become vagrants. Sensationalised by printed press – accused of committing thefts, assaults and murders. Reality – few vagrants were criminals; many travelled alone or in twos or threes, desperate for work.
Moral Crime	Growing Puritan beliefs - moral crimes: drinking, swearing, sexual immorality, not attending church, scolding in public
Witchcraft	Medieval times = few cases of witchcraft. 1500-1650 widespread belief in magic and the devil giving powers to witches through familiars (spirits in the form of small animals which fed on witch's blood.) Usually single elderly women who quarrelled with a rich villager. Accusations of causing harm – death of animal or sickness of a child. C16th / 17th harsh new laws against witchcraft introduced. Witchcraft trials increased: famines of 1580's and 1590s; chaos of Civil War – Puritan areas. Early 18th century – witchcraft trials decreased - new scientific ideas about the world emerged.
Smuggling	Smugglers secretly brought goods into the country without paying high taxes. Smuggling gangs would bring these goods across the Channel and landers would bring them ashore on small boats - included respectable people who disliked paying taxes and poor people who could earn money through smuggling.
Highway Robbery	C17th / 18th roads were built and travel increased. Wealthy were targets as they often carried their money and jewellery with them as no banks. Highway robbers later portrayed as romantic gentlemen thieves, in reality they were often brutal thugs.

Early Modern C&P Knowledge Organiser

Law Enforcement

Continuity from the Medieval period	Change from the Medieval period
- No police force – communities continued to police themselves. - Prosecutions – decision to prosecute someone was made by individuals. - Hue and Cry – continued to be raised by the local constables and the people were expected to join in. - Law enforcement – administered by unpaid and amateur officials such as JPs, constables and churchwardens.	- Watchmen – patrolled the streets and arrested drunks, vagabonds and criminals. - JPs role extended – an important change – dealt with criminals at petty sessions. - Decline of office of sheriff, manorial courts and church courts.

	Type of offences	Organised/administered
Assizes	- Serious crimes/capital offences - murder, manslaughter, highways robbery, burglary, grand larceny (stealing goods 12d.+), witchcraft and rape.	- Country divided into 6 circuits - Each circuit visited by 2 judges twice a year. - Dealt with 'capital offences' which carried the death penalty
Quarter Sessions	- Less serious crimes – petty theft - Extra powers – licensing ale houses, regulating local sports and arresting vagrants.	- Administered by JPs - Visited each county every four times a year.
Petty Sessions	- Drunkenness and minor violence	- JPs met regularly in local areas to cope with the increased amount of work.
Manorial Courts	- Played an important role in controlling behaviour of tenants on individual manors: - Let their animals stray - Stole wood from the common - argued with neighbours	- 17th century = became less important as the Petty Sessions gradually took over their work.
Church Courts	- Played an important role monitoring Christian behaviour: - church attendance - sexual offences - drunk on Sunday - swearing at neighbours	- Survived the Reformation - Active late 16th and early 17th centuries.

Punishments

There was some continuity in the use of punishments between Medieval and Early Modern periods, such as execution. New types of punishment were introduced to deal with the changing nature of crime and the lack of police force.

Public Humiliation: Became widespread as crimes such a vagrancy increased.
Pillory: offender's head and arms were put in wooden frame and they were pelted with rotten food, stones and excrement - used for those who traded unfairly or committed sexual offences
Stocks: arms and feet were placed in heavy pieces of wood and locked in position - people were pelted with rotten food, spat on, insulted or kicked
Scold's bridle: a heavy iron frame locked onto a woman's head, a projecting spike pressed down on the tongue
Cucking stool: disorderly women, scolds and dishonest tradesmen were paraded around on a cucking stool
Ducking stool: offender tied to a chair and repeatedly lowered into a river or pond, used on suspected witches

Prisons: Less common form of punishment
Still mainly used to hold those in debt or awaiting execution
1531 Gaol Act – forced JPs to build prisons where needed
Bridewells (houses of correction) a new form of punishment - introduced to help tackle the vagrancy problem - prisoners were forced to work or were punished if they refused to do so
1609 Vagabond Act forced JPs in every county to build a bridewell

Bloody Code: Increased capital offences as people were hanged for minor crimes
Introduced 1688 to 1820 – the threat of hanging was intended to be a strong deterrent
No police force to protect property so MPs used their parliamentary power to pass to frighten people into obeying the law
1723 Black Act made poaching deer, rabbit and fish a capital offence
By 1820 = 200 capital offences (compared to 50 in 1688), most were for crimes against property
However, number of hanging decreased; assize judges often unwilling to pass a sentence of hanging for minor crimes

Industrial C&P Knowledge Organiser

Industrial Britain

Growing population and Industrialisation: From 1750, population rocketed: 1750 = 6 million 1850 = 21 million 1900 = 37 million. Mass migration of people from the countryside to towns in search of jobs

Urbanisation: Growth of cities – Birmingham, Bradford, Leeds and Manchester - by 1850, more people lived in towns and cities than rural areas - lodging houses provided temporary accommodation for families moving to cities

Growing inequalities between rich and poor: industrialisation brought wealth to some but poverty to others - upper and Middle classes moved out of town centres to suburbs - working classes crowded into terraced houses and back-to-backs near the factories

Poverty – rural and urban: life was grim for the urban poor; families lived in back-to-back houses that were overcrowded and insanitary - rural labourers continued to live in poverty; often forced to eat turnips from the fields, unemployment forced many to the towns in search of work - no government benefits at this time so people struggled to survive.

Railways: network of railways built across Britain during 1830s and 1840s. navvies (mostly Irish) blasted the tunnels, laid the lines and moved the earth. By 1850, most major towns and cities were connected by rail. People and goods were moved quickly and cheaply across the country. Coach and canals companies went into decline

Growing literacy: churches and charities schooled the poor. 1870 Forster's Education Act made schooling compulsory for all to age 10. Demand for newspapers grew as more people could read and write. Newspapers vital for growth of working class political consciousness - people demanded reform to living and working conditions

Growth of Democracy: until 1832, 5% of the population could vote. 1832 Great Reform Act enfranchised middle class men and larger towns had MPs. 1867 Second Reform Act enfranchised skilled working class men. 1884 Third Reform Act enfranchised more working class men; 2/3 could not vote

Alcohol: During the 19th century, pubs played a major part in the lives of the working class - scape from the despair of the slums - drunkenness led to violence and caused misery in many working class families. Temperance Movement formed to persuade people to stop drinking alcohol.

Crime

Industrial Revolution had a huge impact on types of crime – many of which were new. 1750-1850 – crime rates increased, 1850 onwards – crime rates fell. New ideas emerged about the causes of crime, such as poverty, bad moral habits or physical features.

Why did crime increase?	How did crime change?
- 1750 → effects of industrial revolution - increase in population, growth in trade and urbanisation led to a rise in crime - 1815 → end of Napoleonic Wars saw a sharp increase in crime as thousands of soldiers returned home to face rising prices. - Urbanisation - overcrowded lodging houses (often temporary accommodation) and crowded alleyways contributed to increasing crime rates. - Therefore, most crime was opportunistic (unplanned)	- Petty theft remained the most common crime – from factories and houses – much of this was opportunistic - Prostitution remained the most common crime for women New crimes: - Fare-dodging on the railways - Vandalism (on the railways) - Failing to send children to school 1870 - Stealing water from standpipes (in many cities, water was owned by private companies) - Violent crimes and murder rates remained low – around 10%

Causes of Crime

Radical thinkers	Conservative/traditional thinkers
- John Glyde – genuine concern for the poor - blamed poverty - poor environment the poor lived in - slum children had little education	- Blamed crime on the bad moral habits of the poor - drunkenness and gambling - dismayed at number of pubs and alehouses in working class areas
Biological/physical causes - New theories emerged in the 19th century: - Children born to criminal parents inherited criminal tendencies – that 'bad genes' were passed from parents to children. - Criminals had different physical features such a different shaped heads, hands, colour of skin	**Temperance Movement** Became popular at this time - favoured complete abstinence from drinking alcohol - belief that the pubs and alehouses left the poor without money or food - poverty led to gambling, violence and prostitution.

Industrial C&P Knowledge Organiser

Law Enforcement

John Fielding	Robert Peel
- First experiments in professional policing - 1754-1780 a magistrate at Bow Street Court, London - 1750s – organised groups of part-time constables who were paid to patrol London's main streets and roads until midnight. - 1800 – 68 Bow Street runners - 1773 - Hue and Cry published – weekly newspaper that detailed criminals and stolen property.	- Due to rising crime rates 1800 → Bow Street Runners, constables and watchmen couldn't cope. - 1829 Sir Robert Peel (Home Secretary) set up first Metropolitan Police force of 3000 men - 'Peelers' or 'bobbies' were armed with a truncheon and wore a uniform of dark blue tall hat and coat. - Initially, people were opposed to the idea of a police force paid for out of public money.

Developments in Policing after 1829

1835 Municipal Corporation Act - Allowed towns to set up a police force
- Slow to effect change as only 100/178 towns had a police force by 1838

1839 Rural Constabulary Act - Allowed county magistrates to set up a police force
- Slow progress because of the cost, 2/3 of counties had a police force by 1855

1856 County and Borough Police Act - Created a national police force
- 3 new Inspectors of Constabulary ensured local forces met national standards.
- Government met 25% of funding for forces

Changing role of Police Officers	Changing role of Courts
- Preventing crime – most important role: - Removing drunks, vagrants and prostitutes from the streets - Dealt with pubs that allowed Sunday drinking, gambling and illegal sports - Prevent theft and violence - CID (Criminal Investigation Department) founded 1878 - New technology helped crime detection: - photographing crime scenes 1880s - use of telegraph to relay information 1867 - use of fingerprinting 1897	- Small developments - Assizes and quarter sessions tried felons - Petty session and magistrates continued to deal with minor offences - Lawyers acted for both the prosecution and defence - Trials were longer and more formal

Punishments

Capital Punishment
- Changes meant more humane forms of hanging and fewer executions: 1800-1809 = 871 people : 1830-1839 = 297 people
- 1780s 'new drop' - execution by hanging brought inside the prison walls due to concern over rowdy behaviour prisoner died more quickly by being dropped through a trap door. However, hanging took place on the roof so people could still witness them.
- 1872 'long drop' calculated how much rope was needed to break the neck instantly, so death quick and painless

Peel's reforms:
Reduced the number of capital crimes; only murder and attempted murder punished by hanging.
1868 public executions made illegal

Transportation
- 1780s – Australia chosen: it was unknown - crime would be reduced - convicts provided labour
- May 1787 - first convicts transported

Who – thieves and political prisoners (Tolpuddle Martyrs who wanted to form a trade union)
Sentences = 7 or 14 years, or lifetime

The Convict Colony
harsh conditions – convicts shackled
hard labour – digging ditches, felling trees, planting crops, construction
harsh punishment – lashes with whip

Change – arguments against transportation
Harsh journey/working/living conditions
Taxpayers supported convict's family
resented by Australia
ended 1868

Prisons
After campaigns for change, the modern prison system was formed.

John Howard 'The State of Prisons'
prisons be built near water supply
prisoners have own cell
adequate food and 2 clean shirts a week
gaolers be paid

Elizabeth Fry
reformed Newgate prison for women:
education and readings from the Bible
encouraged sewing and knitting
1811 Millbank Prison built – failed
1823 Gaols Act – separate cells
1842 Pentonville Prison built

Separate system
prisoners kept apart from each other
led to loneliness and mental breakdown

Silent system
prisoners not allowed to speak
1865 Prisons Act – hard labour, fare and board

Since 1900 C&P Knowledge Organiser

Britain Since 1900

Continued growth of cities and towns: 20th century – the poor lived in large estates in town centres or conurbations (cities merging with outlying towns), the rich and middle classes lived in the suburbs. Few people live and work on the land. By 2011, over 80% of the population lived in cities or large towns.

Changing work and increased wealth: Following economic struggles of early 20th century, Britain prospered. Britain no longer a manufacturing society - making goods from scratch, but became a 'consumer society' – buying and selling goods. Many people own their own homes

Government control/intervention: Welfare State 1906-1914 – Liberal welfare reforms to tackle poverty – start of state intervention. 1928 – all men and women enfranchised. Governments had to care about social issues. 1945-1951 – welfare state fully established. More state intervention in people's lives

Society and family/migration and diversity: Educational changes – more people go to university, but still difficult for poor and poorly qualified young men to find jobs. Women have more rights – build own careers and not have to stay at home. Children of single/unmarried parents no longer stigmatised. Same sex relationships more accepted. Immigration led to greater diversity but increased tensions.

Transport and communication: Cars and aeroplanes allow people to travel further and more speedily. 1901 – first telegraph signal. 1985 – first mobile phones – now prolific use across society – mobile technology now allows people to communicate, take photos/videos, access e-mails etc. Computers and tablets – now widespread in the workplace and in homes

Science and technology: Developments in science and technology transformed many aspects of our lives. Research - antibiotics and DNA research eradicated fatal infections and diseases. 1950s – extension of national grid to provide electricity to people's homes.

Leisure and entertainment: 1930s = television broadcasting began, by the 1970s, most homes had a TV. Most homes can access films, programmes etc. via online streaming. Computer games became an enormous industry 1970s onwards.

Religion/beliefs and attitudes: Fewer people attended church as century progressed, only 10% of population by 2000. Less reliance on the Bible; psychologists and sociologists offer explanations for human behaviour.

Crime

Changing nature of crime

Crime was not always reported to the police: Before 1980, young troublemakers were dealt with by adults and some police constables by a 'clip round the ear'.

Spike in some crimes: The number of reported burglaries rose once insurance companies refused to pay out if the police had not been informed.

No longer crimes: 1961 → suicide; 1967 → abortion; 1967 → homosexual acts

New crimes have been created: 2007 smoking in enclosed spaced
2015 smoking in cars with young children

Recording crime: 1998-2002 changes made to the way police record crimes

Changes in crime rates 1900-1955

- 1920s and 1930s = severe economic problems and widespread poverty, so crime rose as the police had to deal with strikes and public protests.
- WW2 – as people sheltered during the Blitz, opportunistic thieves looted houses and even stole jewellery and cash from bodies.
- 1945-1954 – stolen goods often sold on the black market - rationing continued.

Changes in crime rates 1955-present day

Car crime	1967 → drink driving limits imposed, police used breathalysers 1983 → drivers had to wear seat belts 1992 → roadside speed cameras captured images of speeding cars
Football hooliganism	Reached a peak in the 1970s and 1980s 1985 - Liverpool fans rioted before the match with Juventus fans; a wall collapsed and 39, mostly Italians, died. CCTV within grounds to identify dangerous fans; stadiums are fitted with seats and fan movement is controlled.
Race, religion and hate crimes	1998 and 2003 'hate crime' became a new category of offence. Gave greater protection to victims of crime based on their race, gender, religion or disability with Race Relations Act of 1965, 1968 and 1976
Illegal drugs	1971 Misuse of Drugs act restricted availability of drugs. 1985 – supplying drugs carries a 14 year sentence.
Cyber crime	1990s emergence of internet led to new types of crime: illegal downloading, phishing (emails that trick people into revealing financial details) and cyber criminals who hack big businesses. 2015 – cyber crime included in Britain's national crime statistics

Medieval C&P Knowledge Organiser

Law Enforcement

POLICE

Changing attitudes -1900-1970 – police were respected
1970 → public trust eroded: Fewer police on foot/'the beat', resent punishment of traffic offences, criticised for using force in crowd control, police corruption
Recruitment, training and pay: 1900 –police were often poor, working class white males with little education
1939 only 226 female officers, 2008 there were 37,000
1947 → police receive specific training
Community policing: Police Liaison Officers visit schools; schemes such as Neighbourhood Watch are encouraged.
Weapons: 1900-2000 truncheons only
2000 → weapons, pepper sprays, tasers
Range of work: 1993 survey – only 18% calls were crime-related

NEW TECHNOLOGY

Identification of criminals: 1901 - discovery of blood groups allowed police to narrow down suspects.
1902 – fingerprints first used to identify suspects
1984 – discovery that each person's DNA is unique is used as key evidence in court
Communication and data storage: Mid 1960s → radios installed in patrol cars and portable radios used
Computers store huge amounts of data – DNA tests, fingerprinting and crime reports.
ANPR quickly checks a car's registration
Surveillance: CCTV and cameras are central to police investigations; cameras on streets, in patrol cars and on officers' uniforms.
Monitoring emails, text messages and internet searches has also increased.

COURTS

1971 Courts Act – the Crown Court replaced the assizes and quarter sessions.
Magistrates Courts try less serious cases
Ministry of Justice is in overall control of courts in England and Wales.
Crown Prosecution Service (CPS): From 1986, the CPS took on the responsibility of bringing trials to court, rather than the police.
Women's roles: 1919 → women allowed to serve on juries
1920 – Ada Summers became the first JP
Juvenile Courts: Introduced from 1908 – for criminal cases of children aged 7-16.
Juries: Since 1974, juries reflect breadth of society

Punishments

Corporal Punishment - continued alongside prisons, eventually abolished.
- 1900 – whipping and beating was widely used as it was a quick, cheap and effective deterrent - More liberal-minded people argued that it was preferable to a brutal prison sentence.
- 1933 – corporal punishment ended for young offenders
- 1948 – ended as a punishment for all offenders
- 1962 – ended as a punishment for prisoners who misbehaved whilst in prison.

Capital Punishment - was abolished, in stages, as ideas became more liberal.
- 1908- no one under the age of 16 could be executed
- 1953 – public outcry when 19 year old Derek Bentley, mental age 10, was hanged
- 1957- death penalty ended for all murders except where a police officer was the victim, a gun was used or the person was resisting arrest.
- 1965- Parliament passed the Abolition of the Death Penalty Act.
- 1969 – Parliament permanently abolished the death penalty for all murders.
- Debate over the death penalty continues, particularly when grim murders occur.

Prisons - By 1900, reformers believed rehabilitation and education were the keys to improving society.

Imprisonment of young offenders
- 1902 –borstals set up for young offenders under the age of 21; emphasis on education, and skills that might lead to jobs
- 1988 – borstals replaced with young offender institutions.
- 1908 – criminal age of responsibility set at 7; now 10 years and over.

Prison reform
- 1896 Broadmoor Hospital set up for prisoners who were mentally ill.
- 1922-1947 Alexander Paterson's reforms: relaxation of silent system, education, paid, meaningful work.

Prison problems
- Since 1940, prison population continues to rise, as many prisoners receive short sentences, can't pay fines or await trial.
- Prisons are overcrowded and many prisoners suffer with mental health issues.

Alternative to Prisons
- 1907 – Probation Service introduced for minor offenders
- 1967- parole system introduced to supervise prisoners released early
- 1972 - Community Service Orders introduced where offenders do a number of hours unpaid work for the community rather than go to prison.
- 1990 – digital tags introduced; these send signals to show where they are.

Victims
Since 1990, the government introduced direct support for victims.
- Victim's Charter sets out victim's rights on support they should receive.
- Victim's Personal Statement – victims now have the right to make a VPS explaining how the crime has affected them. Read aloud once a guilty victim has been reached.

Year 11 Life Skills- Relationships

Lesson 1- Consent and online relationships

Sexual Consent- The giving of permission by a person to engage in any form of sexual activity including penetrative and oral sex.

When can consent not be given?

1.When a person is drunk or high, to the point that they are unable to speak or look after themselves.

2.Asleep or Passed Out – if they are not conscious they are unable to agree to any sexual activity. If someone passes out whilst engaging in sexual activity – STOP!

3.They are Underage – Legally a person under the age of 16 cannot give consent to any sexual activity.

4. Mental disability or learning difficulties which mean they are unable to fully understand what they are consenting to.

Sexting is when someone sends or receives a sexually explicit text, image or video. This includes sending 'nude pics', 'rude pics', or 'nude selfies'. Taking, possessing or sharing a sexually explicit picture or video of someone under 18 is **against the law**. It doesn't matter if they gave you permission, someone else sent it to you, you've never met them before, you are under 18 too or it's a selfie. **You and anyone else involved could be investigated by the police, and this could even affect your future education and employment.**

Lesson 2- The impact of drugs and alcohol on sexual behaviour

How alcohol affects you drink by drink

Based on a standard (175ml) 13% volume glass of white wine or 4% strength pint of lager

1 glass of white wine or a pint of lager (just over 2 units):

-You're talkative and feel relaxed.

Your self-confidence increases.

Driving ability is already impaired, which is why it's best to drink no alcohol if you're driving.

2 glasses of white wine or 2 pints of lager (just over 4 units):

-Your blood flow increases.

-You feel less inhibited and your attention span is shorter.

-You start dehydrating, one of the causes of a hangover.

3 glasses of white wine or 3 pints of lager (just under 7 units):

-Your reaction time is slower.

-Your liver has to work harder.

-Your sex drive may increase, while your judgement may decrease.

4 glasses of white wine or 4 pints of lager (just over 9 units):

-You're easily confused.

-You're noticeably emotional.

-Your sex drive could now decrease, and you may become less capable.

Lesson 3- Domestic Abuse

Domestic Abuse: Violence or other abuse by one person against another in a domestic setting, such as in marriage or cohabitation or between siblings.

Physical Abuse: Hitting, slapping, shoving, grabbing, pinching, biting, hair pulling, etc. are types of physical abuse. This type of abuse also includes denying a partner medical care or forcing alcohol and/or drug use upon him or her.

Sexual Abuse: Coercing or attempting to coerce any sexual contact or behaviour without consent. Includes, but is certainly not limited to, marital rape, attacks on sexual parts of the body, forcing sex after physical violence has occurred, or treating one in a sexually demeaning manner.

Emotional Abuse: Undermining an individual's sense of self-worth and/or self-esteem is abusive. May include, but is not limited to constant criticism, diminishing one's abilities, name-calling, or damaging one's relationship with his or her children

Economic Abuse: Making or attempting to make an individual financially dependent by maintaining total control over financial resources, withholding one's access to money, or forbidding one's attendance at school or employment.

Psychological Abuse: Elements include causing fear by intimidation; threatening physical harm to self, partner, children, or partner's family or friends; destruction of pets and property; and forcing isolation from family, friends, or school and/or work.

Lesson 4- Forced marriage	Lesson 5- Choices in Pregnancy	Lesson 6- Fertility and Menopause
Forced Marriage: A forced marriage is when either one or both of the people getting married are being coerced into the marriage. This means that they do not give their full consent to be getting married, and they aren't given the right to refuse the marriage. Forced marriage is considered to be a violation of Article 12 of the European Convention on Human Rights. **Arranged Marriage**: An arranged marriage is not forced. An arranged marriage is when the family of the person getting married take responsibility for finding a suitable match. Both people in an arranged marriage have to consent to the marriage, and are given the right to refuse the match. Parents looking to arrange a marriage for their child might take into consideration factors like the potential partner's religion, finances, family background, career choices, social standing and potentially many other factors. The point of the arranged marriage is to find a partnership that will create happiness for both the people getting married and their families. **Resources:** https://www.supportline.org.uk/problems/forced-marriages/ https://www.refuge.org.uk/our-work/forms-of-violence-and-abuse/forced-marriage/ https://www.childline.org.uk/	Key terms **Conception** The point when the sperm meets the egg and a foetus is conceived. **Embryo** An organism in the early stages of growth and differentiation, from fertilization to the beginning of the third month of pregnancy (in humans) **Fertility** The ability of people to conceive a child. **Pregnancy** The condition or period of being pregnant. **Abortion** An abortion is a procedure to end a pregnancy. It's also sometimes known as a termination of pregnancy. The pregnancy is ended either by taking medicines or having a surgical procedure **Adoption** Legally taking another person's child and bringing it up as one's own. **Resources:** https://www.sexwise.org.uk/unplanned-pregnancy https://www.gov.uk/child-adoption https://www.nhs.uk/	**Fertility** The ability of people to conceive a child. **Infertility** The inability or difficulty to conceive a baby through natural methods **Menstruation**- Also known as a period. The process in a woman of discharging blood and other material from the lining of the uterus at intervals of about one lunar month from puberty until the menopause, except during pregnancy. **Menopause-** The menopause is when a woman stops having periods. It's a natural part of ageing that usually happens between 45 and 55 years old **Symptoms:** Most women will experience menopausal symptoms. Some of these can be quite severe and have a significant impact on everyday activities. Common symptoms include: -hot flushes -night sweats -vaginal dryness and discomfort during sex -difficulty sleeping -low mood or anxiety -reduced sex drive (libido) -problems with memory and concentration https://www.nhs.uk/conditions/menopause/

RPE - Year 11 - Medical Ethics.

Key Words			
Abortion	The deliberate termination of a human pregnancy, most often performed during the first 24 weeks of pregnancy	**Hospice**	Hospice care is a style of care. Hospice teams include doctors, nurses, social workers, therapists, counsellors and trained volunteers. Hospices aim to feel more like a home than hospitals do
Cloning	Cloning is the process of producing genetically identical individuals of an organism either naturally or artificially	**Euthanasia**	The painless killing of a terminally ill patient
Genetic Engineering	The deliberate modification of the characteristics of an organism by manipulating its genetic material	**Quality of Life**	How easy or difficult someone's life is – e.g. some illnesses / injuries can cause a low quality of life
Evolution	Scientific theory of the development of humans from apes	**Sanctity of Life**	The belief that all life is sacred as man is made in God's image

Key Ideas		
Cloning & Genetic Engineering 	**Christian Views** ☐ Each human has been uniquely created by God with a purpose: a human clone is a copy, unnaturally created. ☐ We have a God given responsibility to look after and care for God's creation (**Stewardship**). ☐ Catholics believe human life, which begins at conception, is made in the **image of God** so is sacred: embryo research and high death rates during testing is disrespectful to life. ☐ Cloning separates the procreation of children from sex so therefore is unnatural. ☐ Jesus helped those who suffered, and God loves all of His creations. The Bible teaches us to be loving and compassionate (agape): trying to cure terrible illnesses is a caring thing to do. ☐ God is the creator and science should not attempt to take on this role. - ***'There is a time to live and a time to die.'*** ☐ God gave Adam dominion over all of creation – can use cloning for the benefit of humans.	
When does life begin 	• Most people, whether they hold a religious belief or not, would accept that human life is special and worthy of being preserved. For religious believers, life is special because it comes ultimately from God. Life is a gift and is unique and priceless. • Many Christians believe that all babies have a **sou**l from the moment of **conception** and so are fully human. This is based on the teaching in Genesis 1:27 that people are made in the image of God; that God has a plan for every individual (Jeremiah 1:5) and that God is the creative spark from the moment of conception (Psalm 139:13). This means that they believe the foetus is fully human.	
Abortion 	- **Abortion** is the removal of a foetus from the womb in order to end a pregnancy. - In the UK (except Northern Ireland) it is **legal** during the first 24 weeks of pregnancy unless the mother's life is in danger or the foetus is severely deformed. ☒ The ***Catholic Church*** is strongly against abortion. They believe in **sanctity of life**, the idea that life is a sacred gift from God which only God can take away. They see the foetus as a living thing. ☑ The ***Church of England*** think abortion is sometimes acceptable as a pregnancy as a result of rape or where the child would be very ill would lead to a very poor **quality of life.**	
Euthanasia 	- **Euthanasia** is the painless killing of a patient with a terminal illness. - **Voluntary** euthanasia is where the patient asks for their life to be ended. - **Non-voluntary** euthanasia is where the patient is not capable of asking to die, perhaps in a coma. - All forms of euthanasia are currently **illegal** in the UK. ☒ The ***Catholic Church*** is strongly against euthanasia. They believe that only God can give and take life and that life is sacred (**sanctity of life**) . ☑ Some ***liberal Christians*** think euthanasia can be an act of mercy which Jesus tells them is a good thing to do, this is especially the case when someone's **quality of life** is very poor.	
The Afterlife 	- Christians believe that when you die you will be judged and that those who are found to be good will go to **heaven** but those who have sinned and gone against God's wishes will go to **hell**.	
	Roman Catholics believe that there is a middle stage called **purgatory** where souls go to be purified of sin before they go to heaven	**Some Christians** believe that Jesus will return on a future **Day of Judgement** when all souls will be judged

Science Homework

You are expected to complete **Biology, Chemistry** and **Physics** homework tasks on **Seneca** once **every 2 weeks.**

This will be monitored and checked by your teachers.

If you have any issues with Seneca you must speak to your teacher.

Failure to complete your homework could result in a detention.

Lessons 1& 2 Plant organs and tissues	Lesson 3 Photosynthesis	Lesson 4 Limiting factors of photosynthesis
There are 3 main plant organs: • Leaves: Site of photosynthesis • Roots: Absorb water and minerals from the soil, anchor the plant firmly in to the ground. • Stems: Support the leaves and the flowers, connect roots to the leaves, flowers and fruits The leaf is an organ made up of tissue layers these include: • Waxy cuticle: A waterproof layer to prevent water loss • Epidermis: Protective covering • Palisade mesophyll: Contain cells packed with chloroplasts for photosynthesis • Stomata: Hole in the underside of leaves to allow CO_2 in to the leaf and O_2 out. • Guard cells: Control the stomata by opening or closing them • Spongy mesophyll: cells surrounded by lots of air spaces to allow gases to diffuse in and out. Meristem are found at the tips of roots or shoots. Responsible for growth. A plant in a hot, dry climate will have a lower stomatal density than a colder, wetter environment to help reduce water loss.	Photosynthesis word equation: carbon dioxide + water → (light energy, chlorophyll) glucose + oxygen Photosynthesis symbol equation: $6\ CO_2 + 6\ H_2O \xrightarrow[\text{chlorophyll}]{\text{light energy}} C_6H_{12}O_6 + 6\ O_2$ The reactions for photosynthesis are carbon dioxide and water. The products of photosynthesis are glucose and oxygen. Light energy and chlorophyll are needed to drive the photosynthesis reaction. Photosynthesis takes place in the chloroplast in the palisade mesophyll cells of the leaf. Carbon dioxide enters and oxygen exits the leaf by diffusion through the stomata. The leaf can be tested for starch using iodine. Starch turns blue/black in the presence of iodine.	A limiting factor is something that can affect the rate of a reaction depending on its availability. There are 4 limiting factors of photosynthesis: • **Temperature**: Increasing temperature increases the rate of photosynthesis to a certain point after which any further increase in temperature decreases rate. • **Carbon dioxide concentration:** The higher the concentration of carbon dioxide the faster the rate of photosynthesis to a certain point. Beyond that there are other limiting factors affecting rate. • **Light intensity:** Increasing the light intensity increases rate of photosynthesis to a certain point. Beyond which other limiting factors are affect rate. • **Amount of chlorophyll:** Increasing the amount of chlorophyll increases the rate of photosynthesis to a certain point. Beyond which other limiting factors are affecting rate. A lack of chlorophyll can be caused by disease or lack of nutrients needed to make chlorophyll.

Lesson 5 **Photosynthesis required practical**	**Lessons 6** **Uses of glucose and inverse square law for light intensity**	**Lessons 7** **Plant transport systems**
You will investigate: **The effect of light intensity on the volume of oxygen produced by a plant by photosynthesis** **Independent variable**: light intensity **Dependent variable:** Number of bubbles of oxygen produced in set time **Control variable**: Temperature, pond weed (size, species, piece), light source (type of light), time, concentration of carbon dioxide. The more oxygen produced in a set time period the faster the rate of photosynthesis. We can predict that higher light intensity would result in a greater volume of oxygen due to a faster rate of photosynthesis.	There are 5 uses of glucose: **Starch**: Glucose is converted to starch and stored **Energy**: Glucose is used as a reactant in the respiration reaction to release energy **Amino acids**: Glucose is used to make amino acids, to make proteins. **Fats and oils**: Glucose is converted to fats and oils for storage. **Cellulose**: Glucose is made in to cellulose for cell walls. Inverse square law for light intensity: For each distance of a plant from a lamp, light intensity will be proportional to $\frac{1}{d^2}$ where d= distance	**Xylem**: • Forms part of the vascular bundles in plants. • Transports water and mineral ions in one direction from roots to leaves. • Hollow tubes strengthened with lignin, impermeable to water. **Phloem**: • Forms part of the vascular bundles in plants. • Transports dissolved sugars from leaves all round the plant. **Root Hair cells**: • Absorb water from soil by osmosis • Absorb mineral ions from soil by diffusion and active transport **Transpiration**: The flow of water from roots to leaves Rate of transpiration can be measured using a potometer. There are **4 factors that affect rate of transpiration**: Light intensity, temperature, wind and humidity. **Translocation**: The movement of food through the phloem around the plant.

Lessons 1 & 2 **Aerobic respiration**	**Lesson 3** **Anaerobic respiration**	**Lessons 4 & 5** **Response to exercise and metabolism**
Respiration: The process of releasing energy from food **Energy**: The capacity of a body or a system to do work Respiration is an **exothermic** reaction. All living organisms must respire to release energy for: • Movement • Temperature control • Growth and repair Aerobic respiration word equation: Glucose + Oxygen → Carbon dioxide + water + energy Aerobic respiration symbol equation: $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$ + Energy **Reactants of aerobic respiration** = Glucose and Oxygen **Products of aerobic respiration** = Carbon dioxide, water and energy Aerobic respiration takes place in the **mitochondria**. Aerobic respiration happens all the time in all cells.	**Anaerobic respiration:** Releasing energy from food without oxygen. Anaerobic respiration is <u>the incomplete breakdown</u> of glucose to lactic acid. Takes place in the **cytoplasm** Word equation for anaerobic respiration: Glucose → Lactic acid + Energy Symbol equation for anaerobic respiration: $C_6H_{12}O_6 \rightarrow C_3H_6O_3$ + Energy **Reactants of anaerobic respiration** = Glucose **Products of anaerobic respiration** = lactic acid + energy. Cells will respire anaerobically when energy demand is <u>very high</u> and there isn't enough time to get oxygen to the respiring muscles. Used during high intensity, quick, explosive activities such as 100m sprint. Anaerobic respiration cannot be used for long because lactic acid builds up and it is toxic. This causes muscular fatigue. Fermentation: Anaerobic respiration in yeast and plant cells. Word equation for fermentation: Glucose → ethanol + carbon dioxide Symbol equation for fermentation: $C_6H_{12}O_6 \rightarrow 2C_2H_5OH + 2C0_2$	Rate of respiration **increases** when you exercise. To allow increase in rate of respiration: • Increased breathing rate • Increased depth of breathing • Increased heart rate After resorting to respiring anaerobically, when you stop exercising you will have an **oxygen debt**. <u>Oxygen debt</u> refers to the amount of extra oxygen required to react with the built-up lactic acid. Lactic acid reacts with oxygen to form carbon dioxide and water: Lactic acid → oxygen + water To provide the <u>extra oxygen</u> needed to pay the oxygen debt, heart rate and breathing rate remain elevated after exercise. **Muscular fatigue**: where cells in the muscle are unable to contact properly due to the build up of lactic acid. **Metabolism**: all chemical reactions happening in an organism.

Lessons 1
Sexual and asexual reproduction

Sexual reproduction involves the fusions of male and female gametes

Gametes: sex cells, sperm and eggs in animals, pollen and egg cells in plants

In sexual reproduction genetic information is carried and passed on in genes.

We inherit 1 set of genes from each parent.
The mixing of genetic information leads to variation in the offspring.

	Sexual reproduction	Asexual reproduction
Number of parents?	2 parents (male & female)	1 parent (male or female)
Are offspring called clones?	No offspring are not clones of the parents	Yes offspring is a clone of parent
What happens to make the offspring	Fusion of sperm and eggs	The parent splits (mitosis) or a bud is formed
Is there genetic variation in offspring	Yes offspring is a mix of both father and mother	No offspring are genetically identical to parent
Examples of organisms which reproduce in this way	Dogs, Humans, Hamsters, fish, snakes, birds,	Bacteria, Yeast, daffodils, strawberries

Lessons 2
Meiosis

Gametes are sex cells produced by a special type of cell division called meiosis.

Meiosis is special as the chromosome number reduces by half.

Gametes must have half set of genetic information, 23 chromosomes. This is vital because it ensures fertilisation results in a cell with a full set of genetic information.

Gametes are described as haploid, this means half set of genetic information.

Meiosis occurs in the testes and ovaries.

	Mitosis	Meiosis
Where does it occur	All over the body	Sex organs
Number of divisions	1	2
Creates	All cells apart from gametes	Gametes
Number of chromosomes	46 (diploid)	23 (haploid)
Produces	Two cells	Four cells
Function	Cellular reproduction, growth	Sexual reproduction

Lessons 3
DNA and the genome

DNA is a chemical that all genetic material is made from.

Contains coded information on how to make an organism and how to make it work.

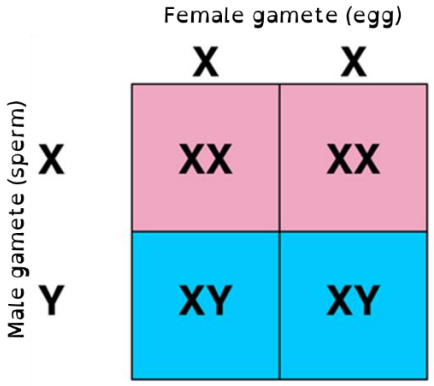
DNA is a polymer, it is made up of two strands, it is twisted to form a double helix.

Chromosomes are made of DNA
Short sections of DNA are called genes
Genes are instructions to make proteins.
Proteins are made from amino acids bonded together.
If you change the order of amino acids, you will change the protein that you make.

Genome: includes all the genetic material in an organism.

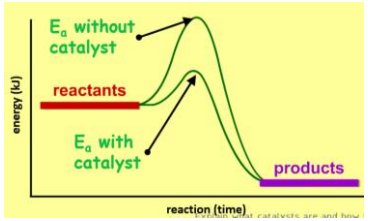
Scientists have worked out the whole of the human genome, this is called the human genome project.

The knowledge of the genome from the Human genome project will help with the identification of genes, understanding the link between genes and disease, aid the development of effective treatments and also helps with developing our understanding of evolution.

Lessons 4 Sex determination	Lessons 5 Genetic inheritance	Lessons 6 Inherited genetic disorders
There are 46 chromosomes in every cell in the human body except gametes. There are 23 pairs of chromosomes. 22 pairs of chromosomes contain genes that control characteristics. 1 pair of chromosomes determine sex. Males have XY sex chromosomes Females have XX sex chromosomes.  Using a punnet square as shown above, it is evident that there is a 50% chance will be female and 50% chance of having a male child.	You have 2 copies of every gene, one inherited from your father and one inherited from your mother. **Allele**: different versions of a gene e.g. hair colour alleles would include blonde, red, black and, brown. **Heterozygous**: When an individuals carries 2 different alleles for a particular gene. **Homozygous**: When an individual carries 2 identical alleles for a particular gene. **Phenotype**: What the organism actually looks like e.g. blue eyes, red flowers **Genotype**: The genetic make up of an organism- refers to the genes the organisms has. **Dominant**: An allele that will show up in the phenotype of an organism. **Recessive**: A characteristic that is masked by a dominant gene.	Polydactyl is an inherited genetic disorder caused by a dominant allele and results in extra fingers or toes. Polydactyl is unusual because it is caused by a dominant allele. Most genetic disorders are caused by inheriting 2 recessive alleles. Cystic fibrosis is an inherited genetic disorder of cell membranes. It results in the body producing lots of thick stick mucus which clogs up the air passages and the passages in the pancreas. Genetic screening: A test to analysis a person's DNA. Antenatal screening: Used to test the DNA of the foetus while it is still in the uterus. Pre-implantation genetic diagnosis: Used to test for genetic disease in an embryo before it is implanted in to the uterus of the female. This forms part of the process of IVF.

Lessons 1 Calculating Rates of Reaction	Lesson 2 Collision Theory & Surface Area	Lessons 3 Required Practical Concentration

• The rate of reaction = How quickly a reaction is happening.
  ○ How quickly reactants are turned into products
• $rate = \frac{amound\ of\ reactant\ lost}{time}\ or\ \frac{amount\ of\ product\ formed}{time}$
• We can record experimental data to allow us to calculate the rate of reaction, these include:
  ○ Measuring the decreasing mass of a reaction mixture.
  ○ Measure the increasing volume of gas given off.
  ○ Measuring the decreasing light passing through a solution
• If you change the temperature or surface area you will still get the same amount of product (you just get them quicker or slower)
• If you change the concentration you will get a different amount of product (and you will get them quicker or slower).
• Gradient of the line gives you the rate of reaction.
• If the gradient increases then the reaction rate is faster.
• If the gradient decreases then the reaction rate is slower.
• To record the gradient of a curve you need to take a tangent.
	• Reactions don't happen unless the substances are in contact.
	• Particles are constantly moving.
	• For a chemical reaction to take place the reactant particles must collide first.
	• For the collision to be effective the particles must have the right amount of energy.
	• The minimum amount of energy required for an effective collision is called the activation energy.
	• The higher the frequency of collision the faster the rate of reaction.
	
	Surface Area/Particle Size
	• The sum of all the areas of each side of a shape
	• Using smaller particles increases surface area
	• Increase in surface area allows more *frequent* collisions at surface
		You will investigate the **Effect of Concentration on Rate of Reaction.**
		
		• **Independent variable**: concentration of hydrochloric acid
		• **Dependent variable**: volume of hydrogen gas produced
		• **Control variable**: amount of magnesium added, temperature of solution
		
		Concentration
		• The number of particles in a given volume.
		• At high concentrations there are more particles.
		• More particles in the same space means more frequent collisions.
		• If we double the concentration we double the frequency of collisions
		• More frequent collisions = faster rate of reaction.
		Pressure
		• Gases only
		• At high pressure, the particles are closer together.
		• This means the particles are more likely to collide more frequently.
		• More frequent collisions = faster rate of reaction.

Lesson 4 Required Practical Temperature	Lessons 5 Catalysts	Lessons 6 & 7 Reversible Reactions & Dynamic Equilibrium
You will investigate the **Effect of temperature on Rate of Reaction.** • **Independent variable**: temperature of sodium thiosulfate • **Dependent variable**: time taken for cross to disappear. • **Control variable**: amount of hydrochloric acid, concentration of solution, concentration of hydrochloric acid Temperature • Particles turn heat energy into kinetic energy • When they get hotter they move faster • When they move faster they collide more *frequently* • Particles have more energy at higher temperatures • More collisions with energy higher than the activation energy (more effective collisions)	• Catalysts speed up the rate of reaction without getting used up (same amount at the start as you have at then end) unlike the reactants. • Catalysts are specific to reactions. • Catalysts lower the reaction's activation energy (E_a). • They do this by providing an alternative pathway • This reduces the energy needed to start a reaction • Lower activation energy means more collisions with energy higher than the activation energy. (more effective collisions)  	• Sometimes reactions can reverse themselves, and the products change back to being reactants again. • RE**ACTANTS ⇌ PRODUCTS** • A **reversible reaction** is a reaction that occurs in both the forward and reverse direction. • It is represented by the symbol ⇌ • The amount of energy released in one direction must be the same as the energy absorbed in the opposite direction. **hydrated copper sulphate** • The forward reaction requires heat – it is endothermic Blue → White • The backwards reaction gives out heat – it is exothermic White → Blue **Equilibrium** is when the rate of the forward reaction is equal to the rate of the backward reaction. There is no observable change For equilibrium to occur: • Closed system • Reversible reaction During equilibrium: • Concentrations of products and reactants stay the same. • But the concentrations are not necessarily equal

Revision Guide: Foundation pages 138-145, Higher pages 142-149

Lesson 8
Le Chatelier's Principle (Higher Tier)

- Describes how the position of equilibria changes to favour the forward or backward reaction
- Equilibrium shifts to reduce change
- When conditions are changed the reaction will do everything it can to counteract the change

Changes:

- If you increase the temperature it will try and reduce it
- If you increase the concentration of the reactants it will try and get rid of some
- If you increase the pressure it will try and reduce it
- If you add a catalyst…
- The position of equilibrium doesn't change (but it will speed up the forward and backward reaction equally)

Revision Guide: Foundation pages 155 -158, Higher pages155-158

Lessons 1 & 2
Early atmosphere and its evolution

The envelope of gases surrounding the earth or another planet is called an atmosphere.
Atmospheres are formed from mixtures of different gases.
Atmospheres can be formed from different combinations of gases.
Different planets have different types of atmospheres.
Scientists predict that the early atmosphere contained :

- a large amount of **carbon dioxide**
- little or no **oxygen**
- **Water** vapour
- small amounts of other gases, such as **ammonia** and **methane**

One theory suggests that the early atmosphere came from intense **volcanic** activity.
Combustion reactions happen in a volcano, where **hydrogen** and **carbon** react with **oxygen** to make **Carbon dioxide** and **water vapour**.
As the Earth cooled the water vapour condensed to form **oceans**.
Nitrogen was also released by volcanoes which gradually built up in the atmosphere because it is unreactive.

Earths atmosphere Today	
Nitrogen	78%
Oxygen	21%
Water	1%
Carbon Dioxide	0.04%

Photosynthesis by primitive plants and algae released oxygen, which gradually built up in the atmosphere.

carbon dioxide + water → glucose + oxygen

Oxygen is a reactive gas, as it built up in the atmosphere it reacted with other gases.

Ammonia + Oxygen → Nitrogen oxide and water

Methane + Oxygen → Carbon Dioxide +Water

Carbon dioxide dissolved in the oceans, formed carbonate compounds and precipitated as limestone.
Carbon dioxide is incorporated into living things which form fossil fuels.

Lessons 3 & 4
Greenhouse effect and global warming

Greenhouse gases are gases that absorb heat radiated from the Earth then release **energy** in all directions, which keeps the Earth warm.
Greenhouse gases present in the atmosphere include:

- water **vapour**
- **carbon dioxide**
- **methane**

Human activities are increasing the amount of some greenhouse gases in the atmosphere. For example:

- farming cattle releases **methane**
- farming rice in **paddy fields** releases methane
- burning **fossil fuels** in vehicles and **power stations** releases carbon dioxide
- **deforestation** releases carbon dioxide and reduces the absorption of carbon dioxide through **photosynthesis**

Greenhouse effect

1. electromagnetic radiation a short wavelength, (e.g. UV) passes through the Earth's atmosphere
2. the Earth absorbs most of the radiation.
3. Some of the radiation is reflected as long wave radiation ,(infrared radiation)
4. some of the infrared radiation is absorbed by the covalent bonds between the atoms in greenhouse gases.
5. The greenhouse gases can then emit the infrared radiation back into the atmosphere.

Global warming is the term used to describe the warming of the climate in the past 200 years
The effects of global warming include:

- **glaciers** and polar ice melting
- **sea levels** rising
- patterns of rainfall changing, producing **floods** or **droughts**
- **habitats** changing

Lessons 5
Atmospheric pollutants

Combustion creates pollutant gases:

Methane + Oxygen -> Carbon dioxide + water

Complete combustion of a **hydrocarbon** fuel occurs when there is a good supply of oxygen. It releases the maximum amount of **energy** and produces carbon dioxide and water.
Incomplete combustion of a hydrocarbon fuel occurs when there is a poor supply of oxygen. Less energy is released.
Water is produced along with carbon monoxide , carbon dioxide and carbon.
Carbon monoxide is a poisonous gas
It binds to **haemoglobin** in your red blood cells, preventing them from carrying oxygen to the cells in your body. Carbon monoxide is colourless and has no smell.
Particulate carbon
Causes health problems for humans because it irritates the lining of the lungs, can make **asthma** worse, and perhaps even cause **cancer**.
Particulate carbon can also cause **global dimming**, which may reduce rainfall.
Sulfur dioxide is caused when sulfur atoms which are present in some fossil fuels are oxidised:
Sulfur dioxide is then further oxidised in the atmosphere to sulfur trioxide, SO_3. This gas dissolves in rainwater to make **acid rain**, which is a dilute solution of sulfuric acid, H_2SO_4.
Acid rain harms and kills plants and animals, especially those that live in aquatic environments. It can also damage man-made objects like statues and buildings
Nitrogen is not present in fuels, but the high temperatures and pressures inside a car engine can cause the nitrogen and oxygen in the air to react together to make oxides of nitrogen.
Nitrogen oxide gases can cause acid rain, and they also react in the atmosphere with other pollutants to make photochemical **smog**.
Smog can have major health effects, causing asthma attacks and even death.

Lesson 1
Finite & Renewable Resources

Finite

- Resources that are being used up faster than they can be replaced.
- There is a limited amount.

Renewable

- Resources that can be replaced at the same rate at which they are used up.

- Humans use the Earth's resources to provide warmth, shelter, food and transport
- Natural resources provide food, timber (wood), clothing and fuels, this is supplemented by agriculture
- Finite resources from the Earth, oceans and atmosphere are processed to provide energy and materials
- Chemists provide new synthetic products which supplement or replace natural products.

Sustainable Development

- Meeting the needs of current generations without compromising the ability of future generations to meet their own needs.

Natural product	Use	Synthetic product that supplements or replaces it
cotton	clothing	polyester
wood	construction material	PVC

Lessons 2 & 3
Pure & Potable Water & Required Practical

Potable Water

- Water that is fit (safe) to drink.

Pure Water

- We get pure water through distillation
- Boil water into steam
- Cool to condense steam and collect water
- Distillation on a large scale would require a lot of energy which would make the process expensive we will look at this in more detail next lesson.
- Pure water only contains H_2O molecules.

Water Treatment

- **Screen** – stops large objects
- **Coarse filter** – large particles removed
- **Sedimentation** –particles fall to bottom, top water drained off
- **Fine filter** – very small particles removed
- **Chlorination** – Chlorine added to sterilise (kill germs)

Chemistry Required Practical: Water Analysis
To analyse the pH and dissolved solid content of 3 water samples

Chemistry Required Practical: Water purification
To obtain pure water from a solution containing water and dissolved solids.

Lesson 4
Treating Waste Water

- Waste water requires treatment before being released into the environment

- Sewage and agricultural waste water require the removal of:
  - Organic matter
  - Harmful microbes

Sewage Treatment

1. Screening removes large solid particles i.e. grit by passing the sewage through a screen.
2. Sedimentation allows the small solid particles (sediment) to sink to the bottom of the tank forming sewage sludge while the liquid (effluent) remains above.
3. The sewage sludge is dried and anaerobically digested (broken down by microorganisms in the absence of oxygen).
4. The effluent is aerobically digested (broken down by microorganisms in the presence of oxygen). This removes organic matter and harmful microbes.

Fresh water / ground water	Desalination	Treatment of waste water
Filtration and sterilisation Requires sterilising agents and filtration equipment	Distillation or using membranes e.g. reverse osmosis Both require lots of energy	Screening, sedimentation, digestion (aerobic and anaerobic) Several steps, requires large treatment plant

Lesson 5 Extracting Metals (Higher Tier)	Lesson 6 Life Cycle Assessments	Lesson 7 Reduce, Reuse & Recycle

Problems with traditional mining:
• Large amounts of waste rock
• Creates large holes in the Earth's crust
• Requires lots of energy
• Only worthwhile extracting high-grade ores
Two alternatives to mining are:
Phytomining:
Advantages
• Uses low grade copper ore
• Requires less energy than smelting
• Produces less air pollution
• Reduces amount of waste rock
Disadvantages
• Can produce toxic chemicals
• Much slower process
• Electrolysis requires large amounts of electricity.
Bioleaching:
Advantages
• Uses low grade copper ore
• Very simple and cheap
• Produces less air pollution
• Reduces amount of waste rock
Disadvantages
• Can produce toxic chemicals
• Much slower process
• Efficiency is very low (lots of waste)
• Electrolysis requires large amounts of electricity.
	• Lifecycle analysis (LCA) is used to work out the **environmental impact** of a product throughout its whole life from extraction of materials through to final disposal.
	• 4 Key Stages:
	  • Raw materials
	  • Manufacture
	  • Use
	  • Disposal
	• 4 Impacts accessed
	  • Water Consumption
	  • Energy used
	  • Carbon Footprint
	  • Natural Resources
	• Life Cycle Assessments are useful for:
	  • Comparing different materials for the same job.
	  • Comparing the same material for different jobs:
		Because both the materials and the energy sources we use are limited/finite, we need to reduce use of these resources.
		• So they don't run out!
		• Also, because obtaining raw materials from the Earth by quarrying and mining causes environmental impacts.
		• The three Rs help to reduce the demand for our limited resources of materials and energy.
		• The three Rs also reduce the amount of waste produced. Landfill takes up space and pollutes the surroundings.
		Glass, Metal and Plastic can be recycled in three steps:
		• Crush
		• Melt
		• Reform

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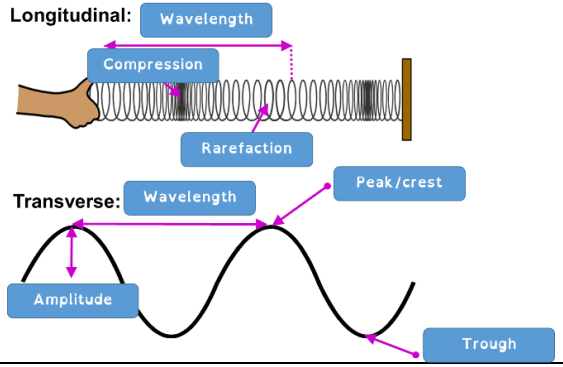
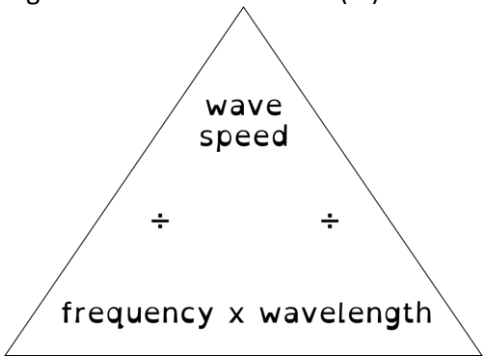
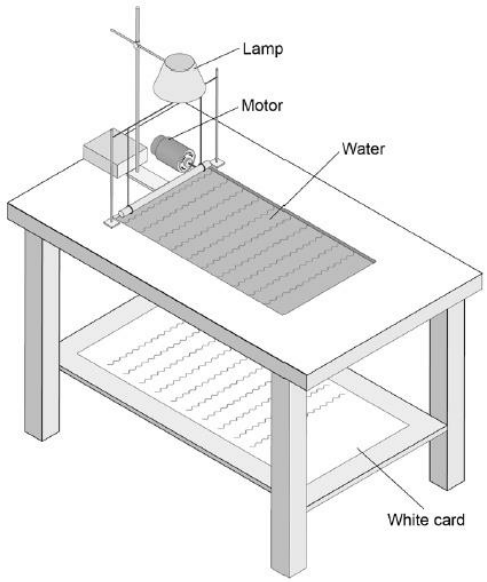
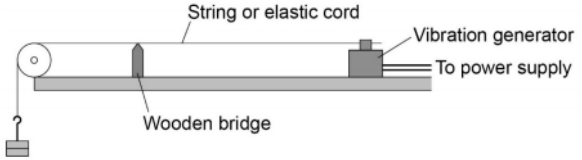
Lesson 1 Introduction to waves	Lesson 2 The Wave Equation	Lesson 3 Required Practical – Properties of waves
• A **wave** is a disturbance that transfers energy without transferring matter. • In a **transverse** wave, the direction of oscillation is perpendicular (at right angles) to the direction of energy transfer. E.g., light, ripples in water. • In a **longitudinal** wave, the direction of oscillation is parallel to the direction of energy transfer. E.g., sound. • The **amplitude** of a wave is the maximum displacement of a point on a wave away from its undisturbed position. For a sound wave, this gives you the volume. • The **wavelength** of a wave is the distance from a point on one wave to the equivalent point on the adjacent wave. • The **frequency** of a wave is the number of waves passing a point each second. For a sound wave, this gives you the pitch. • The **period** of a wave is how long it takes for one wave to pass a point. 	*Period = 1 ÷ frequency* Period in seconds Frequency in Hertz (Hz) You do not need to memorise this equation. • The **speed of sound** can be found by clapping near a wall and listening for the echo. • If you **clap in time with the echo**, the time between claps will be equal to the time taken for the sound to travel from your hands to the wall and back. • You can use **speed = distance ÷ time** • The distance will be **twice** the distance from the person to the wall. • The speed of sound in air is around 300 m/s.# *wave speed = frequency x wavelength* speed of the wave in m/s frequency of the wave in Hertz (Hz) wavelength of the wave in metres (m) 	• You will investigate **the suitability of apparatus to measure the frequency, wavelength and speed of waves in a ripple tank and waves in a solid.** • Waves in water are investigated using a ripple tank:  • Waves in a solid are investigated using a vibration generator and a piece of string. 

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Lesson 4
The electromagnetic spectrum

- The **electromagnetic spectrum** is a **continuous spectrum** of electromagnetic waves that can be grouped together in terms of their wavelength and frequency.
- The **order of the spectrum** from longest to shortest wavelength is:
- Radio, microwave, infrared, visible light (from red to violet), ultraviolet, x-rays and gamma rays.

Part	Use	Why is this type of wave suitable?
Radio waves	Television and radio	Can travel a long distance through the Earth's atmosphere.
Microwave	Satellite communication	Can travel through the Earth's atmosphere.
Infrared	Electrical heaters	Absorbed by the skin as heat.
Visible	Fibre optic communications	Can travel a long distance through glass fibres.
Ultraviolet	Sun tanning	Absorbed by the skin to produce a dark pigment.
X-rays	Medical imaging	Is absorbed by bone but can travel through skin and tissues.
Gamma rays	Irradiation of food	Kills cells, so will kill bacteria/mould.

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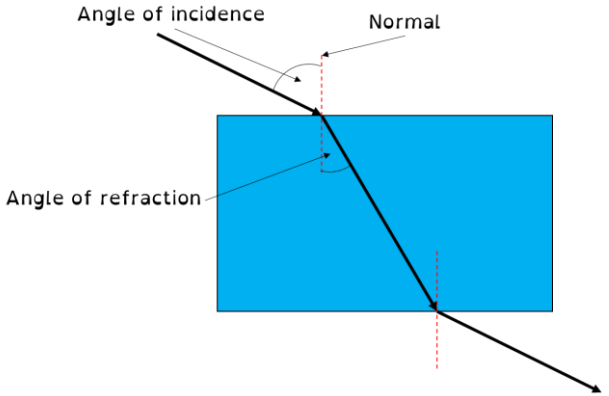
Lesson 5
How electromagnetic waves are generated

- **Changes in atoms or the nuclei of atoms can produce EM waves**.
- When a radio wave is absorbed it causes electrons to move backwards and forwards (oscillate).
- This causes a current that constantly changes direction – an alternating current that has the same frequency as the wave
- **Ultra-violet waves** can cause skin to age prematurely and increase the risk of skin cancer.
- **X-rays and gamma rays** are **ionising radiation** that can cause mutation of genes and cancer.
- Exposure to radiation (called "dose") is measured in **Sieverts** (Sv).
- **Radiation dose** (in Sieverts) is a measure of the damage caused by the radiation in the body.
- **Dose adds up** ("cumulative").

Lesson 6
Refraction

- Different wavelengths of electromagnetic waves are reflected, refracted, absorbed or transmitted differently by different substances and types of surface.
- Refraction is the change in direction that can happen because light travels at different speeds in different materials.
- Light travels more slowly in denser materials, and this means it changes direction towards the normal.
- Refraction won't happen when the light enters a medium at 90° to the surface



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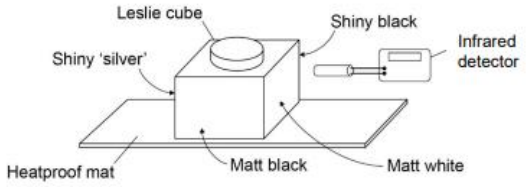
Lesson 7
Required Practical - Radiation

- You will investigate **how the amount of infrared radiation absorbed or radiated by a surface depends on the nature of that surface.**



- **Independent variable** – the colour of the surface.
- **Dependent variable** – the temperature measured with the IR thermometer.
- **Control variable** – the distance between the surface and the detector.

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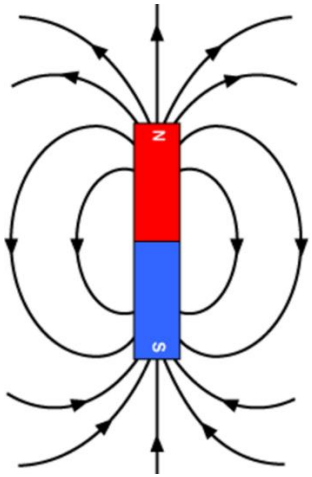
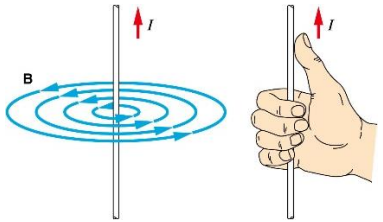
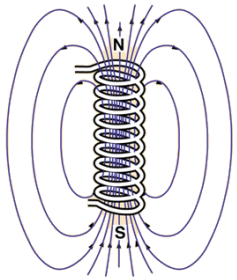
Lesson 1 Magnetic Field Patterns	Lesson 2 Induced Magnetism	Lesson 3 The magnetic effect of a current

• The region around a magnet is called a **magnetic field**. A permanent magnet is an object with a magnetic field.
• The **poles** of a magnet are the areas where the magnetic fields are strongest – usually called North and South. Strictly, we should call these north-seeking and south-seeking.
• Two like poles **repel** each other. Two unlike poles **attract** each other.
• Attraction and repulsion between two magnetic poles are examples of a non-contact force.
• The shape of a magnetic field can be found by placing **iron filings** on paper over a magnet or using a **plotting compass**.
• The magnetic field around a bar magnet is symmetrical:
 
	• An induced magnet is a material that becomes a magnet when it is placed in a magnetic field.
	• **Induced magnetism** always causes a force of attraction.
	• When removed from the magnetic field, an induced magnet loses most/all of its magnetism quickly
	• The strength of an induced magnet will depend on the strength of magnetic field it is placed and the time it is within the field.
	• The strength of a magnet can be simply investigated by seeing how many paperclips it picks up.
	• Smaller paperclips will allow the detection of smaller differences in strength.
		• The **magnetic field around a current-carrying wire is circular**.
		• The strength of the field decreases as you get further from the wire and increases if the current increases.
		 
		• A **solenoid** is a coil of wire with a current flowing through it.
		• Outside the solenoid, the field looks like the field from a bar magnet.
		• Inside the solenoid, the field is strong and uniform.
		 
		• The **strength of a solenoid** can be increased by:
		  • Increasing the current
		  • Increasing the number of loops
		  • Adding an iron core (to make an electromagnet.)

<table>
<tr><th colspan="2">Lesson 4
HT ONLY: The motor effect</th><th>Lesson 5
HT ONLY: Magnetic Flux Density</th></tr>
<tr>
<td>
• The motor effect states that there is a force on a current-carrying conductor in a magnetic field.
• This occurs due to interaction between the magnetic fields.
• Where the fields point in the same direction, the field becomes stronger.
• Where the fields point in the opposite direction, the field becomes weaker.
• There is a force on the wire from where the field is stronger to where it is weaker.

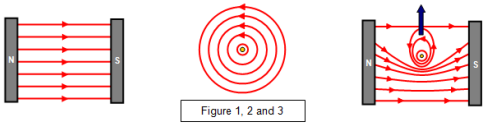



Figure 1, 2 and 3

• The size of the force depends on the strength of the magnetic field, the size of the current and the angle between conductor and field (the largest force is when they are at right angles).
</td>
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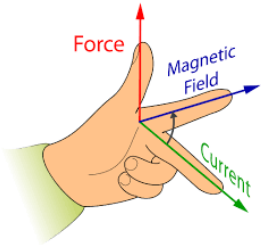
• The direction is found using Fleming's left-hand rule where:
• Thumb, first and second fingers all at right angles.
• First finger is the magnetic field from N→S
• Second finger is the current from + → -
• Thumb is direction of force


• A loop of wire will experience a force in the opposite direction on opposite sides – it is an electric motor.
• A motor can be made to rotate faster by: increasing current, increasing the number of coils, increasing the magnetic field strength, or making sure coil is parallel to field.
• The motor's direction is reversed by: reversing the current or reversing the magnetic field
</td>
<td>
• The size of the force in the motor effect is given by the equation:

Force = magnetic flux density x current x length.
Force in Newtons (N)
Current in Amperes (A)
Length in metres (m)
Magnetic Flux Density, the "strength of the magnetic field" in Tesla (T)

(You do not need to memorise this equation)

• An object can be made to "float" in a magnetic field if its weight downwards is equal to the magnetic force on it upwards.
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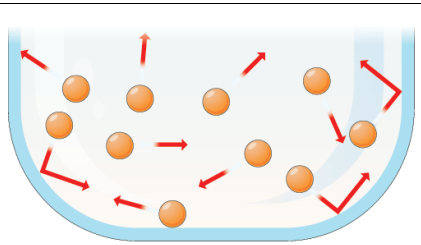
Lesson 7 Specific Latent Heat	Lesson 8 Brownian Motion	Lesson 9 Pressure in gases
• The **specific latent heat** of a substance is the amount of energy required to change the state of one kilogram of the substance with no change in temperature: • **Specific latent heat of fusion** – change of state from solid to liquid. • **Specific latent heat of vaporisation** – change of state from liquid to vapour *Thermal energy for a change of state = mass x specific latent heat* energy in joules , J mass in kilograms, kg specific latent heat in joules per kilogram, J/kg • The larger the value of specific latent heat, the more energy is needed for the change of state. • The specific latent heat of vaporisation of water is nearly 100 times larger than the specific latent heat of fusion of water.	• The motion of particles within a gas is **random**. They have a range of speeds and directions. • As the temperature of a gas increases, the internal energy of the gas increases. • As a gas is heated, the average kinetic energy of the particles within it increases. This means that the average speed of the particles increases. • Larger particles within a fluid (e.g., dust in air) move randomly and seem to "jiggle" about. This is because they are constantly being hit by the particles of the fluid, which move randomly. This is called **Brownian motion**.	 • Pressure in gases is caused because some of the particles collide with the sides of the container. • They change direction, which means (as their velocity changes) they are accelerating. • This means there is a force from the container on the particles. • Newton's 3rd law states that there is a force from the particles on the container. • This force gives rise to pressure. • Gas cylinders can explode in fires, even if they don't contain flammable gases, because the pressure inside the cylinder can rise dramatically.