



Essential Knowledge Book

All Subjects (Maths Higher)

Year 11

Academic Year 2023/24

<u>Contents</u>	<u>Page</u>
Timetable	1
Username/Password Information	2
Home School Agreement	3
Todmorden High School DNA	4
Guide To Knowledge Organisers	5
English	6
Mathematics (Higher)	15
Science (Combined)	34
Art	46
Business Studies	49
Child Development	54
Computer Science	60
Creative iMedia	65
Design And Technology	71
Ethics, Philosophy And Religion	77
Geography	82
Health And Social Care	85
History	90
Hospitality And Catering	96
Music	102
Performing Arts	108
Photography	114
Science (Separate)	117
Spanish	138
Sports Studies	144

P - Write in pen- black ink, in legible handwriting.

R - Use a ruler to draw all straight lines and rule off finished work.

O - Oops! Draw a neat line through mistakes with a ruler.

U - Underline the title and full date.

D - Draw in pencil.

BE P.R.O.U.D OF YOUR WORK!

SPaG for Life

1. Use capital letters correctly: at the start of sentences and for proper nouns.
2. Use punctuation correctly. For example: full stops, question marks and exclamation marks.
3. Spell common words correctly.
4. Use homophones correctly. For example: there/their/they're.
5. Use paragraphs to structure your writing.

My Timetable

Username/Password Information

Platform	Username	Password Reminder
School email		
School PC logon		
Class Charts		
GCSE Pod		
Carousel		
Sparx		
Educake		
Isaac Physics		

Todmorden High School Student ARCH agreement

You and your parents have chosen for you to attend our school. Todmorden High school is a three-time Ofsted judged 'Good' high school. We have four values that create the acronym ARCH. You should use these values to guide you in your decisions in school and in your wider life.



If you follow the expectations in the agreement below you will leave Todmorden High School with the skills, qualifications and confidence required to be successful adults who contribute positively to society.

To achieve our value of **Ambition**:

- I will arrive on time to school and attend all lessons on time.
- I will complete all home learning set on time and to the best of my ability.
- I will have high expectations of myself, now and for the future, so I can unlock my unique potential.
- I will join in with some extra-curricular activities throughout the year to expand my experiences.
- I will celebrate my achievements at home.

To achieve our value of **Respect**

- I will wear **the correct school uniform**, including travelling to and from school.
- I will not wear jewellery to school, other than a pair of plain studs and a watch (optional).
- I will bring the correct equipment each day.
- I will attend detentions if they are set.
- I will speak to all staff members with respect following instructions given by staff without argument or delay.

To achieve our value of **Care**

- I will ensure I behave in a considerate manner not only whilst at school but also on the journey to and from school and within the wider community.
- I will move around the school in a calm manner, following the one-way system and walking on the left.
- I will approach lessons silently ready for silent retrieval.
- I will ensure I do not share actions and thoughts out of line with our values.
- I will ensure my mobile phone and smart watch are not seen or heard on the school site and are placed in the bottom of my school bag when before I arrive in school and until I leave the school site at the end of the day.

To achieve our value of **Honesty**

- I will be honest about my actions.
- I will accept personal responsibility for my mistakes.
- I will ensure all members of our school community feel valued, I will not accept discrimination and bullying in school.
- I will make school aware if members of our school community are not upholding our values.

Signed: _____ Date: _____

Todmorden High School

learning DNA



Silent retrieval

You enter lessons in silence and complete a retrieval activity independently, using your knowledge organiser. You put all your equipment on your desk.



Ambitious content

You work through an ambitious and broad curriculum across all of your subjects. You have high expectations of yourself and you do your best in lessons. Teachers direct your activities and outline whether tasks are collaborative and with discussion or silent independent work.



Assessment and Feedback

Your understanding is checked and teachers' planning is based on assessment of your work. Teachers regularly look at your work. All assessments are carefully planned to support your progress.



Skilful questioning

Teachers use "no hands" strategies to check your understanding and learning. You answer questions to the best of your ability so that teachers have an accurate picture of your understanding.



Oracy and literacy

Your oral responses use formal vocabulary and ambitious academic language. Teachers will do this too. You project your voice so all can hear you. You have high standards of written English, you use SPaG for Life codes to identify errors and proof read your work. You are polite and respectful to staff who are here to help you make progress.



Self-regulated ARCH learners

You watch demonstrations from teachers so you have a clear understanding of what is being taught. Over time you effectively **plan, monitor and evaluate** your work. You understand thinking involves effort. You value and use the feedback teachers give you. You complete home learning because it is a key tool used to support long-term learning.



Responsive teaching

You are honest when answering questions so that teachers can adapt their teaching to help you understand or be more ambitious. You sit in seating plans specifically designed by your teachers to support your learning.



ARCH learners and ARCH teachers

In order to promote our core values of ARCH, your actions and words match the values of Ambition, Respect, Care and Honesty. This will support you to unlock your unique potential.



Orderly dismissal

You stand silently behind your desks and, when dismissed, leave in an orderly fashion. Corridors are calm.



A guide to your Knowledge Organiser

What is a knowledge organiser?

A knowledge organiser is a place where your teachers have put all the **core knowledge** that you need to know for a particular topic. They are designed to support you to become self-regulated learners.

It is your first point of reference in lessons to check your understanding. You can use your knowledge organiser to:

- Check your understanding of key vocabulary in a lesson.
- Check your knowledge of a particular topic.
- Self-check quizzing and revision.

A knowledge organiser is **not** everything you are going to learn about a topic; this information will come from your lessons.

How to use your knowledge organiser

In lesson



Unless told otherwise, have your knowledge organiser on the desk, open at the subject you are currently in. This will make it simpler for you to check your understanding of key vocabulary.

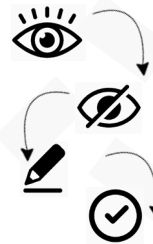


If you are struggling with a knowledge question, refer to your knowledge organiser before asking your teacher. This will also develop your research skills.



When planning your written answers in lessons, refer to your knowledge organiser for that subject to ensure you have correct and detailed knowledge.

As revision



Look-Cover-Write-Check

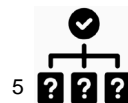
1. Choose one section of your knowledge organiser.
2. Study it carefully. I find that reading it out works to embed it into memory.
3. Cover the section with a paper, or turn the KO over.
4. Write the sentence/information out from memory.
5. Check it against your KO.

Timeline/diagrams



Use the information from your knowledge organiser and transform it into something else. This can be a timeline, storyboard or diagram.

Self-quizzing



Choose a section of the knowledge organiser you want to learn. Create a set of questions to test yourself with. These can be on flashcards, or even Quizlet. Use the sections of your KO to chunk the knowledge together and make it manageable.

Context**Published**

In December, 1843, just in time for Christmas: the novella proved to be extremely popular.

Hungry Forties

In the early 1840s Britain experienced an economic depression, causing much misery among the poor. There was a big divide between the classes and crime rates were high.

Poor Law Amendment Act 1834

Aimed to reduce the cost of looking after the poor and remove beggars from the streets. Those who were desperate could enter a workhouse and receive food, shelter and clothing; children were given some schooling. However, the conditions were deliberately harsh: families were split up, working hours were long and gruelling; many would rather stay on the streets than suffer such treatment.

Thomas Malthus

His theory that population growth will always tend to outrun the food supply and that betterment of humankind is impossible without stern limits on reproduction. This thinking is commonly referred to as Malthusianism.

Christmas

During the Victorian times, people began to celebrate Christmas as we do today, with Christmas trees and Christmas crackers and the giving of Christmas cards.

Ghost Stories

The Victorians enjoyed telling ghost stories on Christmas Eve.

Plot**Stave 1**

It's Christmas Eve in Victorian London. We meet Ebenezer Scrooge, the money lender, and his clerk, Bob Cratchit. Scrooge rejects his nephew's invitation to Christmas dinner and won't give to charity. After returning to his lodgings, Scrooge is visited by Marley's Ghost who warns him that he will be visited by three ghosts.

Stave 2

Scrooge is awoken by The Ghost of Christmas Past, who takes Scrooge is taken on a journey to his past which Scrooge is forced to watch. For the first time, we see Scrooge's warm emotion.

Stave 3

Scrooge discovers The Ghost of Christmas Present in his living room. Scrooge visits the streets of London where everyone is celebrating Christmas; he visits the Cratchits and sees how they make the most of all they have and he watches Fred's party games and is overjoyed. Finally, he meets two ragged children, before the spirit vanishes, replaced by an approaching dark Phantom.

Stave 4

The Ghost of Christmas Yet To Come never speaks and is dressed in black. Scrooge listens to a group of business men discussing a man's death and visits a seedy part of London where some disreputable characters sell off items stolen from a dead man. Scrooge sees the very different effects of two characters' deaths. Finally, Scrooge realises his awful fate. Scrooge promises to change as the Phantom collapses.

Stave 5

Returned to the present Christmas day and his own room, Scrooge awakes a completely changed man. He sets about amending for his previous sins and celebrates Christmas and all that it stands for.⁶

Key characters**Ebenezer Scrooge**

The misery protagonist, who seeks money above love and shows no concern for others, especially the poor and needy. Sceptical towards the supernatural, his haunting by the visiting spirits eventually leads to his redemption.

Bob Cratchit

Scrooge's long suffering, good-natured clerk, father of a large family who cherish one another despite facing extreme hardship.

Fred

Scrooge's warm-hearted, charitable nephew. He never gives up on his uncle, despite facing his constant rejection.

Mr Fezziwig

A kind-hearted, jovial old merchant for whom Scrooge apprenticed as an ambitious, young man.

Ghost of Jacob Marley

The spectral form of Scrooge's seven years dead business partner, forced to wander the earth in heavy chains as punishment for his past sins, warns Scrooge of his fate.

Ghost of Christmas Past

A strange, fluctuating spirit who shows Scrooge his past. A representation of both memory and goodness and strangely, he is both gentle and commanding.

Ghost of Christmas Present

A large, jovial, welcoming spirit who represents goodwill and charity, shows Scrooge how all of London, the Cratchits, Fred and others celebrate Christmas.

Ghost of Christmas Yet To Come

A dark, frightening Spectre, personifies death, shows Scrooge his impending doom, the final warning needed to transform Scrooge.

Belle

Scrooge's former fiancé, chooses happiness rather than riches; she is noble and strong-willed.

Fan

Scrooge's beloved little sister who fetches him home from school one Christmas; she is mother to Fred, Scrooge's only nephew.

Key quotes

Selfish	“Oh! But he was a tight-fisted hand at the grindstone, Scrooge!”
Isolated	“Self-contained, and solitary as an oyster”
Uncharitable (misanthropic)	“Are there no prisons?” [Scrooge questions the charity collectors].
Regret	”Mankind was my business.” [Jacob Marley’s Ghost tells Scrooge]
Greed (avarice)	“There was an eager, greedy, restless motion in the eye” [Scrooge as a young man]
Poverty	“Yellow, meagre, ragged, scowling, wolfish” [Ignorance and Want]
Structure – Scrooge’s transformation	“I am as light as a feather, I am as merry as a schoolboy” [Scrooge in Stave 5]
Generosity (philanthropic)	“I am about to raise your salary!” [Scrooge says to Bob in Stave 5]
Joy	“His own heart laughed...” [Scrooge – Stave 5]

Themes – tick them off when you have seen them in the play

<p>Isolation <i>Where does Scrooge live and how is he described as he walks through the streets of London?</i></p>	<p>Family <i>Think about the different examples of family shown and how they are presented.</i></p>
<p>Christmas <i>How is it presented in different homes and places?</i></p>	<p>Poverty <i>Which characters are poor? What are their lives like?</i></p>
<p>Charity <i>Which characters are charitable, and why, in the 1840s, was charity particularly important?</i></p>	<p>Death <i>Who’s deaths do we see? How does Dickens show us these deaths?</i></p>
<p>Social injustice <i>Was society fair and equal? What does Dickens feel about this?</i></p>	<p>Redemption <i>Is Scrooge saved from sin or evil? When? How?</i></p>
<p>Ghosts / supernatural <i>How many different examples are there and why did this appeal to the Victorians?</i></p>	

Motifs – write down key quotes that match the motifs

Fire
Hands
Cold / Ice
Chains
Light
Dark
Children
Time
Food
Music

Key characters

Romeo Montague Devoted and romantic, Romeo is a young man who is driven by his emotions. He is loyal and committed.

Juliet Capulet Young, sensible, dutiful at the beginning of the play, Juliet becomes conflicted, deceitful and unable to trust anyone except Romeo.

The Nurse The Nurse is a mother figure to Juliet. She is comedic and sometimes inappropriate, but her intentions are usually good.

The Friar Friar Lawrence is a holy man and an apothecary. He has been a father figure to Romeo for some time and he supports Romeo and Juliet’s plan to be together.

Mercutio Mercutio is Romeo’s friend. He often makes long speeches and he is entertaining. Fiercely loyal, he will do anything for his family and friends.

Paris Paris is an honourable gentleman who wants to marry Juliet. He is determined and persistent.

Context

1564 William Shakespeare is born in Stratford-Upon-Avon. When he was 22, he married Anne Hathaway and they had three children together.

Religion was hugely important, and although marriages were arranged for money, weddings took place in churches.

1585 Shakespeare begins a career as an actor. The success of his plays could be attributed to his background as a stage actor.

1589 William Shakespeare begins writing the first of 37 plays. Romeo and Juliet is published in 1597.

The Globe Theatre Theatre audiences included servants and labourers. Members of the audience would often become noisy, shouting comments at the actors and occasionally throwing rotten fruit onto the stage. The poorer people stood on front of the stage, whatever the weather. Richer people sat in covered areas at the sides of the stage.

Plot

Act 1 The play opens with a fight between bitter rival families, the Montagues and the Capulets. Romeo, who has had his heart broken by Rosaline, speaks to his friends, Benvolio and Mercutio, about the fighting.

They decide to ‘gate-crash’ a party at the Capulet mansion. Whilst there, Romeo falls in love with Juliet, who belongs to the rival family.

Act 2 Romeo and Juliet decide to get married and the Friar agrees to help them. The only other character who is aware of the marriage is the Nurse.

Act 3 and 4 Tybalt, Juliet’s cousin, kills Mercutio in a fight. Devastated, Romeo retaliates by killing Tybalt. He is banished and Juliet is left to ‘marry’ Paris. Desperate, Juliet fakes her own death by drinking a sleeping potion and her family bury her in the family tomb. She sends a letter to Romeo, telling him to rescue her before the potion wears off.

Act 5 Romeo doesn’t get the letter. He hears that Juliet is dead and goes to Juliet’s tomb to kill himself. He drinks poison and dies by Juliet’s side. Juliet wakes up, sees that Romeo is dead and kills herself with a dagger.

Literary techniques

Simile Comparing two things using like or as.

Metaphor Stating one thing as though it is something else.

Personification Giving human features/characteristics to a non-human object.

Repetition Where an idea is repeated multiple times throughout a text often to strengthen the idea presented.

Dramatic irony Where the audience knows something that someone on stage doesn’t.

Imperative verb A command verb such as ‘put’ or ‘don’t’.

Blank verse Poetry that doesn’t rhyme and usually has 10 syllables.

Soliloquy A long speech where a character is speaking alone and voicing their emotions.

Sonnet A poem that has 14 lines and a strict rhyme scheme.

Themes – tick them off when you have seen them in the play

- | | | | |
|----------|-----------------------|----------|-----------------------|
| Love | <input type="radio"/> | Marriage | <input type="radio"/> |
| Religion | <input type="radio"/> | Honour | <input type="radio"/> |
| Family | <input type="radio"/> | Fate | <input type="radio"/> |
| Gender | <input type="radio"/> | Conflict | <input type="radio"/> |
| Age | <input type="radio"/> | | |

Context

J. B. Priestley 1914-18: WW1, Aged 20, Priestley serves on the front line in France and is wounded.
1919: awarded place at Trinity Hall, Cambridge to study Literature, History and Politics.
1922: begins to work as a journalist in London.
1934: writes 'English Journey' about the poorer parts on Britain.
1939-45: makes regular wartime radio broadcasts called 'Britain Speaks'.
1945: writes An Inspector Calls.

1912 England Work strikes
Workers' rights
Pre WW1
Suffragette movement
Class system

1945 England Post WW1 and WW2
Social levelling
Women's rights
Workers' rights
Trade unions
National Insurance
Welfare system
NHS

Key concepts and themes

Mystery	Rights and responsibilities
Social responsibility	Public versus private
Truth and lies	Morality versus legality
Hypocrisy	Young versus old
Wealth, power and influence	Capitalisation versus socialism
Individual and collective responsibility	Love, sex and consent

Plot**Act 1**

The Birling family and Gerald Croft are celebrating Sheila's engagement to Gerald.

Mr B makes pompous speeches outlining his political and social views. He says we should ignore the 'cranks' talking about socialism.

The evening is interrupted by the arrive of Inspector Goole making enquiries about the suicide of Eva Smith.

Mr B is questioned and admits sacking her for leading strike action for higher wages.

Sheila is questioned and admits having Eva sacked from Milwards due to her jealousy.

Gerald reacts to the news that she changed her name to Daisy Renton.

Act 2

Gerald is questioned and admits keeping Daisy as his mistress for six months.

Mrs B tries to bully the Inspector and to control events.

Sheila starts to realise that the Inspector's enquiries are well founded, and that her mother might have had some dealings with the girl.

While Eric is out of the room, Mrs B is forced to admit that the girl asked for help from her charity, and she refused help.

It is revealed that the girl was pregnant. Mrs B lays the blame on the father of he unborn child.

Suspicion grows that Eric is the father of the unborn child.

Act 3

Eric returns and confesses that he got a girl pregnant. He also confesses to stealing money from his father's office.

Eric blames his mother for the girl's death.

The Inspector makes a dramatic speech about the consequences of selfish behaviour and social irresponsibility.

The Inspector, having shows that each had a part in ruining the girl's life, leaves.

Between them, Gerald and Mr B gradually prove that the man was not a real police inspector.

A telephone call to the Chief Constable establishes that there is no Inspector Goole on the police force.

A telephone to the Infirmary reveals that there has been no recent suicide.

Eric and Sheila continue to feel guilty about their own, and their family's, behaviour whilst the others shrug it off.

Mr B answers the telephone: a young woman has just died on the way to the Infirmary. An Inspector is on his way to make enquiries.

Key characters

Mr Arthur Birling

Capitalist
Arrogant
Verbose
Stubborn
Industrialist

Heavy looking, rather portentous man” “A hard-headed practical man of business” “Just a knighthood, of course.”

“A man has to mind his own business and look after himself...”

“Look - there’s nothing mysterious – or scandalous – about this business...”

Mrs Sybil Birling

Judgemental
Old money
Traditional
Insincere
Controlling

“Rather cold woman... her husband’s social superior.” “Please don’t contradict me like that”

“It’s disgusting to me.”

“Unlike the other three, I did nothing I’m ashamed of or that won’t bear investigation.”

“He didn’t make me confess – as you call it.”

Miss Sheila Birling

Intelligent
Feminine
Emotional
Transformative
Empowered

“But these girls aren’t cheap labour – they’re people”

“I had her turned out of a job”

“At least I’m trying to tell the truth. I expect you’ve done things you’re ashamed of.”

“Why – you fool – he knows!”

“The point is, you don’t seem to have learnt anything.”

Master Eric Birling

Irresponsible
Spoilt
Reckless
Immature
Transformative

“Not quite at ease half shy, half assertive.”

“I wasn’t in love with her or anything – but I liked her – she was pretty and a good sport –”

“In a way, she treated me – as if I were a kid”

“You’re not the kind of father a chap could go to when he’s in trouble.”

“You’re beginning to pretend that nothing’s really happened at all. And I can’t see it like that.”

Mr Gerald Croft

Aristocratic
Secretive
Traditional
Privileged
Evasive

“Easy, well-bred young man-about-town.” “You seem to be a nice well-behaved family”

“You’re just the kind of son-in-law I always wanted.” “The hero... the wonderful Fairy prince.”

“I’m rather more upset – by this business than I probably appear to be –”

Miss Eva Smith

Working class
Determined
Vulnerable
Emblematic
Allegorical

“A lively good-looking girl – country bred... and a good worker too.”

“She had a lot to say – far too much – so she had to go.”

“She was very pretty and looked as if she could take care of herself.”

“Now she had to try something else.”

She went away “to be alone, to be quiet, to remember all that had happened.”

Inspector Goole

Priestley’s
mouthpiece
Impressive
Commanding
Social justice
Omnipotent

“Massiveness, solidity and purposefulness.”

“But after all it’s better to ask for the earth than to take it.”

“It’s my duty to ask questions.”

“A nice promising life there, I thought, and a nasty mess somebody’s made of it.”

“You see, we have to share something. If there’s nothing else, we’ll have to share our guilt.”

“One Eva Smith has gone – but there are millions and millions and millions of Eva Smiths and John Smiths still left with us.” “Fire and blood and anguish”

Key terms

Stage directions

Dialogue

Monologue

Didactic

Polemic

Dramatic irony

Foreshadowing

Entrances and exits

Props

Sentence moods

Social expectations

Cliff-hanger

Characterisation

Dramatic device

Timings

Interruptions

Tone

Irony

Imagery

Symbolism

Euphemism

Poem and Poet	Key Information	Example of featured poetic device/structure
The Charge of the Light Brigade <i>Tennyson, 1854</i>	A tribute to the British cavalry (soldiers on horseback) who died during the Crimean War. The men were given an incorrect order to charge into battle to meet the Russian enemy, and fought bravely.	Rhetorical question – ‘When can their glory fade?’
Exposure <i>Owen, 1917-18</i>	An authentic poem based on Owens’ own experience on the front line when in the war, he specifically refers to the horrendous winter when living in the trenches.	Alliteration - ‘ <u>f</u> lowing <u>f</u> lakes that <u>f</u> lock’
Bayonet Charge <i>Hughes, 1957</i>	The poem focuses on a single soldier’s experience of a charge towards enemy lines. The soldier fears for his life & the patriotic ideals (love of his country) that encouraged him to fight have gone.	Personification – ‘Bullets smacking the belly out of the air’
Poppies <i>Weir, 2009</i>	The poem is about the mother’s emotional reaction losing her son to the war. She fears for his safety & after he leaves her she goes to a familiar place that reminds her of him.	Simile - ‘the world overflowing, <u>like</u> a treasure chest’
War Photographer <i>Duffy, 1985</i>	A war photographer is in his darkroom, developing pictures that he has taken in different warzones. He recalls the death of a man & remembers the cries of his wife. He focuses on people who do not seem to care about war torn places.	Rhyme - feet-heat, Mass – grass, must – dust, where – care
Remains <i>Armitage, 2008</i>	Based on the account of a British soldier who served in Iraq. A soldier’s mind is haunted by his killing of a man who was running away from a bank raid. The soldier cannot forget about the death.	Colloquial language – ‘His bloody life in my bloody hands’
Kamikaze <i>Garland, 2013</i>	Kamikaze is the unofficial name given to Japanese pilots who were sent on a suicide mission. The mission was considered one of honour but this poem is about a pilot who aborted the mission.	Metaphor – ‘enough fuel for a one way journey into history’
Ozymandias <i>Shelley, 1817</i>	The narrator meets a traveller who tells him about a statue in the desert. The statue is of an ancient, cruel ruler from a past civilisation – Pharaoh Ramesses II. The poem is about the temporary nature of power, and how the power of man can fade.	Biblical allusion – ‘My mane is Ozymandias, king of kings, look on my works ye mighty and despair’
London <i>Blake, 1794</i>	Narrator describes a walk around London, commenting on the despair and misery he sees. Blake was influenced by the French Revolution and wanted social and political equality. He wanted the people to rise up against the powerful.	Anaphora – ‘In every cry of man, in every infants cry of fear’
The Prelude: Stealing the boat <i>Wordsworth, 1850</i>	The Prelude is about an over confident narrator who finds a boat & takes it out on the lake. Although confident to begin with & enjoying the scenery, the narrator sees the mountain appear on the horizon & is overwhelmed with its size & power.	Repetition – ‘the horizons bound, a huge peak, black and huge’
My Last Duchess <i>Browning, 1842</i>	A Duke is showing a visitor a portrait of his Duchess (former wife) who is now dead. Whilst observing the painting he tells the visitor that the Duchess was flirtatious & displeased him. The Duke is insanely jealous and probably had the Duchess killed.	Euphemism - I gave commands; then all smiles stopped together
Storm on the Island <i>Heaney, 1966</i>	The narrator describes how a community are waiting to be hit by a storm. It is obvious that they have been hit before because of the landscape of the island. The narrator starts off confident but as the storm hits the power of the storm creates feelings fear & trepidation. There is a hint of war and conflict with words such as ‘bombardment’.	Collective first person pronoun ‘We are prepared. /we build our houses squat’
Tissue <i>Dharker, 2006</i>	The poet uses tissue as an extended metaphor for life. She describes how life, like tissue, is fragile. She also discusses some of the literal uses of paper that are intertwined with our lives.	Symbolism – ‘Paper thinned by age or touching’
The Emigrée <i>Rumens, 1993</i>	The speaker speaks about a city that she left as a child. The speaker has a purely positive view of the city. The city she recalls has since changed, perhaps it was scene of conflict, however, she still protects the memory of her city. The speaker may be using the imagery of the city to represent memory, emotion or her childhood.	Sensory imagery / synaesthesia – ‘banned by the state but I cant get it off my mind. It tastes of sunlight’
Checking Out Me History <i>Agard, 2007</i>	The narrator discusses his identity & emphasises how identity is closely linked to history & understanding your own history. In school he was taught British history & not about his Caribbean roots. He mocks some of the pointless things he was taught & contrasts the nonsense topics with admirable black figures.	Imagery – ‘Blind me to me own identity’

Question overview:		Useful sentence starters:
Q1 AO1	List four things. Find and list 4 things from the text (4 marks)	Copy FOUR short quotations from the text, or write them in your own words.
Q2 AO2	How does the writer use LANGUAGE? Look at an extract and analyse how the writer uses language for effect (8 marks)	<ul style="list-style-type: none"> The writers uses...(terminology) to show...(link to question) shown by...(evidence from text) This creates the effect of... This makes the reader... This has the impact of...
Q3 AO2	How does the writer use STRUCTURE? Consider the whole text. Analyse how the writer has structured the text and the effects of their choices. (8 marks)	<ul style="list-style-type: none"> At the beginning of the text... The narrative voice is significant as... The use of past / present tense is effective as... The shift to.... The climax of the piece is...
Q4 AO4	To what extent do you agree? Evaluate the extent to which you agree with the statement given in the question and analyse the writer's methods . (20 marks)	<ul style="list-style-type: none"> One of the key ideas to support this interpretation would be... This interpretation could be said to be true because... The writer creates this impression through the use of... One of the key methods used by the writer is...
Q5 AO5 AO6	Writing to DESCRIBE or NARRATE. Select ONE of the writing questions options. Produce a piece of original writing that meets the brief in the question (40 marks = 24 content + 16 technical accuracy)	<p>DESCRIBE:</p> <ul style="list-style-type: none"> Looking into the distance there is... Beyond... The colours of the... Hidden behind... <p>NARRATE:</p> <ul style="list-style-type: none"> The day began with... I looked around... (Name) woke up the sound of... / sat and stared at... / heard the noise of... One fine / gloomy morning / evening

Key Vocabulary:	Juxtaposition
Alliteration	Simile
Antithesis	Simple sentence
Assonance Atmosphere	Minor sentence
Cliché	Metaphor
Colloquialism	Monosyllabic words
Connotation	Narrators (1 st person, limited 3 rd , omniscient 3 rd)
Cyclical structure	Onomatopoeia
Ellipsis	Parallelism
Focus shift	Personification
Foreshadowing	Sarcasm
Figurative language	Word classes e.g. noun, adjective etc.
Idiom	
Imagery	
Imperative	
Irony	

Punctuation (use a variety)
 . , : ; " " ' () ? ! ...

Exam Breakdown:

- 1 hour 45 minutes
- Section A – Reading (60 mins)
- Section B – Writing (45 mins)
- Don't forget to proof read and check

Worth 50% of your GCSE grade

Assessment Objectives: (Same for Language Paper 1 and Language Paper 2)

AO1:

- identify and interpret explicit and implicit information and ideas select and synthesise evidence from different texts

AO2: Explain, comment on and analyse how writers use language and structure to achieve effects and influence readers, using relevant subject terminology to support their views

AO3: Compare writers' ideas and perspectives, as well as how these are conveyed, across two or more texts

AO4: Evaluate texts critically and support this with appropriate textual references **AO5:** Communicate clearly, effectively and imaginatively, selecting and adapting tone, style and register for different forms, purposes and audiences. Organise information and ideas, using structural and grammatical features to support coherence and cohesion of texts

AO6: Candidates must use a range of vocabulary and sentence structures for clarity, purpose and effect, with accurate spelling and punctuation.

Question Overview:		Useful Sentence Starters:
Q1 AO1	Choose FOUR statements that are true. Read a specified section of Source A and select the four true statements from a list of eight. (4 marks)	Follow the instructions carefully. Read the statements, some of them will be there to trick you!
Q2 AO1	Write a SUMMARY of the similarities and differences. Read the whole of Source A and B. Pick out key focus of question. Find relevant textual details (quotes) from both texts. Infer! Compare the two sets of details and implied meanings. No language analysis in Q2! (8 marks)	<ul style="list-style-type: none"> • We learn that... • This implies that... • This suggests that... • We can infer that... • One of the main similarities/differences between... is... • On the other hand...
Q3 AO2	How does the writer use LANGUAGE? Consider a specified section of one source. Analyse how the writer uses language for effect . (12 marks)	<ul style="list-style-type: none"> • The writer uses... for example... to create an image of... i.e. Dickens uses a metaphor...when he is describing the...in order to present the...as... This makes the reader share the sense of...with her. The verb ‘...’ suggests...
Q4 AO3	COMPARE Source A and Source B. Compare how the writers convey different viewpoints and perspectives, commenting on the writers’ attitudes, methods and their effects . (16 marks)	<ul style="list-style-type: none"> • The writer of Source A states “...” showing that they believe / feel... Whereas the writer of Source B states “...”. • Both writers use (method) to express their ideas... • In Source A the writer describes... whereas in Source B, the writer focuses on...
Q5 AO5 AO6	Writing for different viewpoints and perspectives – non-fiction (persuade / argue / advise etc...) Produce a piece of original non-fiction writing that meets the brief in the question (40 marks = 24 content + 16 technical accuracy)	<ul style="list-style-type: none"> • It could be said that... • We need to work together to... • Some people might argue that... • We are often led to believe... However... • I am asking you to consider... • A further aspect to consider is... • We must think about... • Finally, I would like to leave you with the idea that...

Imagery and Language	
Alliteration	Words in a sentence/passage that begin with the same letter or sound.
Plosive alliteration	Repetition of the B or P sound at the beginning of words.
Sibilance	Repetition of the S or SH sound at the beginning of words.
Metaphor	Comparing one thing to another by saying it is something else e.g. ‘the tree was a mountain.
Simile	Comparing one thing to another often using like or as e.g. ‘the tree was like a mountain’, ‘it was hotter than the sun’.
Personification	Giving an inanimate object human qualities.
Onomatopoeia	Words that sound like what they are e.g. bang/crash/drip.
Repetition	Repeating a word or idea more than once.
Adjective	A describing word (which describes a noun).
Verb (dynamic/modal)	A doing word.
Noun (abstract/concrete)	A naming word: concrete nouns can be sensed with one or more of the five senses, abstract nouns cannot (e.g. ideas/emotions).
Pronoun	I/You/He/She/They etc.
Adverb	Describes a verb, often ends in –ly.
Connotation	The associated meanings of a word e.g. the connotations of red might be love/danger/anger etc.
Colloquial language	Informal or slang language.
Semantic field	A group of words suggesting a theme/topic e.g. a semantic field of war – guns/bullets/army/soldier

Exam Breakdown:

- 1 hour 45 minutes
- Section A – Reading (1 hour)
- Section B – Writing (45 mins)
- Don’t forget proof reading and checking! **Worth 50% of your GCSE English Language grade**

Write to explain	Write to argue	Write to persuade	Write to instruct/advise
Explain what you think about...	Argue the case for or against the statement that...	Persuade the reader/audience that...	Advise the reader of the best way to...

Different text types and features (AO5)

SPaG 1-14 <div style="border: 2px solid black; padding: 10px; text-align: center; margin: 10px 0;"> <h2>Don't forget to PLAN</h2> </div>	Speech: to persuade, inform and entertain <ul style="list-style-type: none"> • A clear address to an audience • Effective/fluent linked sections to indicate sequence • Rhetorical indicators that an audience is being addressed throughout • A clear sign off – try to end with a bang!
Formal letters: a letter written to a person you may not know or may know in a formal way. <ul style="list-style-type: none"> • Address and date in the top right of the page • Address of the person you are writing to on the left. • Greeting: e.g. Dear Mrs Fletcher, or Dear Sir/Madam. • Short introductory paragraph • 3/4 middle paragraphs • Closing paragraph to round off the letter • Formal style 	Articles for newspapers and magazines: written to inform, persuade and entertain. <ul style="list-style-type: none"> • Main heading • Introduction that draws the reader's attention • Three to four central paragraphs • A short but effective conclusion • Lively style • Include facts and opinions • Newspaper: Who, what, why, where, when and how at the start.
Leaflets: written to inform, advise and persuade. <ul style="list-style-type: none"> • Present information so it is easy to find. • Heading • Sub-headings • Bullet points • Depending on the audience, the tone can be informal or formal. 	Essay: usually written to argue or explain. <ul style="list-style-type: none"> • An effective introduction and convincing conclusion • Effectively/fluent linked paragraphs to sequence a range of ideas.

Persuasive Devices (AO5)

Anaphora	The repetition of a phrase at the start of successive clauses, sentences or paragraphs.
Modal Verbs	The use of words like 'could', 'should' and 'might' to make suggestions to the audience. Modal verbs make your writing sound more collegiate and inclusive, and less demanding.
Hypophora	A writer raises a question and then immediately provides an answer to that question.
Parallelism	Using elements in sentences that are grammatically similar or identical in structure, sound, meaning, or meter. This technique adds symmetry, effectiveness and balance to the written piece. 'It was the best of times, it was the worst of times.' 'Ask not what your country can do for but what you can do for your country.'
Ethos	Getting the audience to believe you are writing with good intentions and have a strong understanding of the topic you are talking about. This will get them on your side and make your argument more believable. 'Many of you know me, I am a long-standing member of this community.' Alternatively, refer to a known expert in the field. 'David Attenborough cites bats as one of the most...'
Logos	Using rationality and logic to persuade the audience to your point of view. 'In the thousands of years that humans have been on the earth, there have been no recorded sightings of a flying pig. Therefore, it stands to reason that they do not exist.'
Pathos	An appeal to the audience's emotions, usually using emotive language. The opposite of logos as there is no reason involved. 'Thousands of animals die in agony each year, just so we can have the perfect shade of lipstick. Is this fair or right?'
Extras...	Rhetorical questions; personal pronouns; triples/rule of three; alliteration; statistics; facts and opinions; anecdote; short sentences; hyperbole; repetition

MADNESS sentences (SPaG 13)

Minor	Freedom.
Adverb start	Frustratingly, many people believe this to be true.
Double adjective start	Cold and hungry, these people need our help.
Not only..., but...	Not only should you eat plenty of fruit and vegetables, but you should also exercise daily.
Embedded clause	Obama, who was US president for two terms, now campaigns for this cause.
Subordinate clause start	Because of climate change, Iowa winters are now the coldest in several decades.
Simile start	As clear as mud, the plan was laid before them.

Higher – Unit 1 - Number

Integer – a whole number can be positive or negative -4, -3, -2, -1, 0, 1, 2, 3, 4,

Terminating Decimal – a decimal that ends 0.5, 1.2, 1.245, 1.689

Recurring Decimal – the digits after the point continue for ever in some way (sequence or not in a sequence) $0.333\bar{3}$, $0.\dot{3}4\dot{5}$, π , $\sqrt{2}$

Significant figures – the digits that carry meaningful contributions

Decimal places – the digits after the point

Multiplying with Decimal places – ignore the decimal places, do the multiplication then put decimal places back
 $3.\underline{2} \times 2.\underline{4}$ do $32 \times 24 = 768$ put decimals back in $3.\underline{2} \times 2.\underline{4} = 7.\underline{68}$

Dividing with decimal places – write as fraction then multiply top and bottom by 10, 100, 1000 until you get whole numbers – then divide
 $6 \div 0.5 = \frac{6}{0.5} = \frac{60}{5} = 12$

5 > 3 3 < 5 2.01 < 2.1 etc.....

You can use the > and < signs to show which number is bigger

Factors – Numbers that divide into a number exactly.

Multiples – Extended times tables

Number of ways of doing two tasks	m ways of doing one task and n ways of doing a second task, the total number of ways of doing the first task then the second task is m x n.
Dealing with a fraction in BIDMAS	For $\frac{\text{calculation 1}}{\text{calculation 2}}$ treat as brackets work out (calculation 1) then (calculation 2) using the priority of operations (BIDMAS) before dividing.
Cube Root	Cube root is the inverse of cubing. "What number was multiplied by itself, then again to get this?"
Base numbers	This is the number that is too the power
Multiplying powers	Add the indices if base numbers the same
Dividing powers	Subtract the indices if base numbers the same
Power to a power	Multiply the indices
Negative in a power	Means 1 over
Anything to the power zero	Is one
A unit fraction in a power (e.g. $\frac{1}{2}$)	Means a root. A $\frac{1}{2}$ means the square root, $\frac{1}{3}$ means the cube root etc...
A fraction in the power (e.g. $\frac{2}{3}$)	Use the denominator for the root, and then the numerator is a power. E.g. for $\frac{2}{3}$ do the cube root and then square it.
Prefix	Some powers of 10 have a prefix – e.g. 1000 is kilo
Standard form	Used to write big numbers quickly or small numbers quickly.
Not equal sign	The not equal to sign is an equal sign with a line through it.
Surd	A number written as a root.
Rational number	It can be written as a fraction
Rationalising the denominator	Multiply by the denominator over the denominator (in other words by 1)

Higher – Unit 2 - Algebra

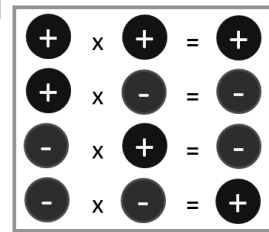
Order of Operations	BIDMAS – The order in which we do calculations. Brackets first then indices. Division and multiplication same time left to right. Finally Addition and subtraction same time left to right.
Base numbers	This is the number that is too the power
Multiplying powers	Add the indices if base numbers the same
Dividing powers	Subtract the indices if base numbers the same
Negative in a power	Means 1 over
Anything to the power zero	Is one
A unit fraction in a power (e.g. 1/2)	Means a root. A 1/2 means the square root, 1/3 means the cube root etc...
A fraction in the power (e.g. 2/3)	Use the denominator for the root, and then the numerator is a power. E.g. for 2/3 do the cube root and then square it.
Expanding double brackets	Multiply each term in the first bracket by each term in the second.
Consecutive Integers	One after the other.
Even Integers	Any even integer is ibn the 2 times table and can be written as 2n.
Substitution	Swapping an algebraic letter for its value.
Standard Form	Used to write big numbers quickly or small numbers quickly.
Linear Sequence	A list of numbers that increases or decreases by the same amount each time.
Geometric Sequence	Terms increase (or decrease) by a constant multiplier.
Arithmetic Sequence	Terms increase (or decrease) by a fixed number (common difference).

Integer – a whole number can be positive or negative

... -4, -3, -2, -1, 0, 1, 2, 3, 4 ...

Negative number: a real **number** that is less than zero.

Negatives: multiplying and dividing:
 1. When the signs are different the answer is **negative**.
 2. When the signs are the same the answer is positive.



BIDMAS – The order in which we do calculations.
Brackets first then **indices**. **Division and multiplication** same time left to right. Finally **Addition and subtraction** same time left to right.

Square root – Finding a number that times itself to given that number. You can have positive and negative square roots.

To simplify a fraction, divide the top and bottom by the highest common factor.

The nth term of an arithmetic sequence is common difference x n + zero term.

Expand brackets: multiply each term inside the bracket by the term outside.

Factorise: divide each term by the highest common factor, writing the HCF outside the bracket.

Higher – Unit 3 – Interpreting and Representing Data

Midpoint of two numbers: add the two values and divide the result by 2.

A tally chart should have titles on columns and clearly drawn tallies.

A year – contains 12 months
A quarter – refers to a 3 month period.

Increase – the values are going up.
Decrease – the values are going down.
Constant rate – going up or down by the same value each time.



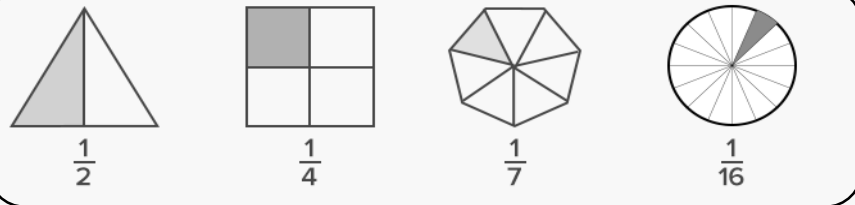
Frequency – The amount of times something occurs

Stem and Leaf Diagram – Splits values by place value. Shows spread. Needs a key.

A bar chart should have a title, titles on both axes, equal scale on the y axis and gaps between the bars.

Mean	Total of the set of values divided by the number of values.
Median	When n data values are written in order, the median is the $\frac{n+1}{2}$ th value.
Line Graphs	Useful for tracking changes over time.
Pie Charts	Useful when comparing parts of a whole.
Bar Charts	Used to compare the frequencies of two sets of data.
Frequency Polygon	You can join the midpoints of the tops of the bars in a frequency diagram with straight lines. OR plot the midpoint for each class against the frequency.
Two Way Table	Divides data into groups in rows across the table and in columns down the table.
Outliers	Individual points which are outside the overall pattern of a scatter graph. If they are likely to be from incorrect readings you can ignore them.
Correlation	A scatter graphs shows a relationship (correlation) between variables.
Positive Correlation	As one value increases, so does the other.
Negative Correlation	As one value increases, the other decreases.
No (or zero) Correlation	No linear relationship between x and y.

A **unit fraction** is a rational number written as a **fraction** where the numerator is one and the denominator is a positive integer.



To get the **reciprocal** of a number, we divide 1 by the number.

The **multiplier** is the **single** decimal value used to multiply the amount you are working with. Firstly, consider what the overall percentage would be after the figure has had its percentage increase or decrease added or subtracted. Then convert this amount to a decimal, before finally multiplying by the number in question.

Ratios can be fully **simplified** just like fractions. To **simplify** a **ratio**, divide all of the numbers in the **ratio** by the highest common factor.

Two **ratios** that have the same value are called **equivalent ratios**. To find an **equivalent ratio**, multiply or divide both quantities by the same number.

Reciprocal	The reciprocal of a number is 1 divided by the number.
Unit Ratios	One part of the ratio is 1. Unit ratios make them easier to compare.
Appreciate	In financial terms means to gain value.
Depreciate	In financial terms means to lose value.
VAT (Value Added Tax)	VAT is tax charged at 20% on most goods and services.
Ratio	A comparison of two or more quantities.
Simplifying Ratios	Divide all of the numbers in the ratio by the highest common factor.
Equivalent Ratios	Multiply or divide both quantities by the same number.
Recurring Decimals	A decimal representation of a number whose digits are periodic (repeating its values at regular intervals).
Direct Proportion	As one amount increases, another amount increases at the same rate.
Inverse Operations	They are the operation that reverses the effect of another operation.
Per Annum	Each year.

Higher – Unit 5 – Angles and Trigonometry

Angles in a triangle add to 180° .

Angles in a quadrilateral add to 360° .

An **Interior Angle** is an angle inside a shape.

The **Exterior Angle** is the angle between any side of a shape, and a line extended from the next side.

Sum of Interior Angles	Total sum of angles inside a polygon (n is the number of sides)
Tessellation	Shapes fit together. The angles where the shapes meet must add up to 360° .
Interior Angle	An angle inside a shape.
Exterior Angle	The angle between any side of a shape, and a line extended from the next side.
Pythagoras' Theorem	Used to find missing lengths in a right-angled triangle. The square of the hypotenuse is equal to the sum of the squares of the other two sides.
Angle of Depression	Angle measured downwards from the horizontal.
Angle of Elevation	Angle measured upwards from the horizontal.
Hypotenuse	The side opposite the right angle.
Opposite	The side opposite the angle θ .
Adjacent	The side next to the angle θ .
Sine	Ratio of the opposite side to the hypotenuse.
Cosine	Ratio of the adjacent side to the hypotenuse.
Tangent	Ratio of the opposite side to the adjacent side.
Sin^{-1}	Inverse sine function, used to find missing angles.
Cos^{-1}	Inverse cosine function, used to find missing angles.
Tan^{-1}	Inverse tangent function, used to find missing angles.

Higher – Unit 6 – Graphs

The equation of a straight line is given by $y=mx+c$.
 Horizontal lines have the equation $y=$ ____
 Vertical lines have the equation $x=$ _____

A quadratic expression is an **expression** that has a variable that's squared and no variables with powers higher than 2 in any of the terms.

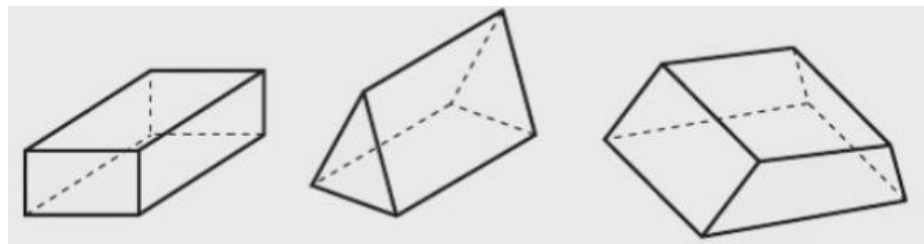
A table of values is used to calculate the y value by substituting the x value into the equation.

Linear Equation	Generates a straight-line (linear) graph. The equation for a straight line graph is written as $y=mx+c$.
Linear Function	Has a graph that is a straight line,
Velocity	Speed in a particular direction.
Velocity-Time Graph	Shows how velocity changes over time.
Line Segment	Section of a line.
Midpoint of a line segment	The point exactly in the middle.
Perpendicular	Lines which cross at 90° The product of the two gradients is -1. When a graph has gradient m , the perpendicular gradient is $-1/m$
Quadratic Equation	Contains a term in x^2 but no higher or negative power of x . The graph is a curve called a parabola.
Quadratic Function	Has a graph which is a parabola.
Minimum / maximum point	A quadratic graph has a point where the graph turns.
Solutions	A quadratic equation can have 0, 1 or 2 solutions. A cubic equation can have 1, 2 or 3 solutions.
Cubic Function	Contains a term in x^3 but no higher power of x . It can also have terms in x^2 and x , and number terms.
Reciprocal Function	In the form k/x (where k is a number). The x and y axes are asymptotes to the curve.
Asymptote	A line that the graph gets very close to but never actually touches.
Equation of a circle	With a centre $(0,0)$ and radius r , the equation of a circle is $x^2 + y^2 = r^2$

Higher – Unit 7 – Area and Volume

A prism is a 3D solid that has the same cross-section all through its length.

Volume is measured in mm^3 , cm^3 or m^3 .
Volume of a prism = area of cross-section x length.



The **circumference** of a circle is its perimeter.

Angles around a point add up to 360° .

The net of a cylinder is made up of 2 circles and a rectangle.

Pythagoras' Theorem:
 $a^2 + b^2 = c^2$ where c is the longest side in a right-angled triangle.

BIDMAS – The order in which we do calculations.
Brackets first then **indices**. **Division and multiplication** same time left to right. Finally **Addition and subtraction** same time left to right.

1 Hectare	The area of a square 100m by 100m. $1 \text{ ha} = 100\text{m} \times 100\text{m} = 10000\text{m}^2$ Areas of land are measured in hectares.
Truncate	To truncate, remove the other digits without rounding.
Error Interval	A measurement could be 10% larger or smaller than the one given.
Dimensions	Length, width, height. Measurements of the object.
Surface area	The total area of all the faces of a 3D solid.
Capacity	The amount of liquid 3D object can hold. Measure in millilitres and litres.
Arc	Part of the circumference of a circle.
Sector	A slice of a circle, between an arc and two radii.
Area conversion	$1\text{m} = 100 \text{ cm}$ $1\text{m} \times 1\text{m} = 1\text{m}^2$ $100\text{cm} \times 100 \text{ cm} = 10000\text{cm}^2$ To convert cm^2 to m^2 , divide by 10000.
Isosceles Trapezium	A trapezium in which the non-parallel sides are equal in measure. The bases are parallel and the non-parallel sides are equal in length.
Spheres	Volume of a sphere = $\frac{4}{3}\pi r^3$

A **graph quadrant** is one of **four** sections on a Cartesian plane. Each of the **four** sections has a specific combination of negative and positive values for x and y.

An **arc** is any smooth curve joining two points.

Parallel lines are always the same distance apart for their entire length. **Perpendicular lines** cross each other at right angles.

In **geometry**, bisection is the division of something into two equal or congruent parts, usually by a line, which is then called a **bisector**.

The graph of a relation of the form $x = 5$ is a line parallel to the y-axis because the x value never changes. A line parallel to the y-axis is called a **vertical line**.

Isometric drawing is way of presenting designs/**drawings** in three dimensions.

The graph of a relation of the form $y = 5$ is a line parallel to the x-axis because the y value never changes. A line parallel to the x-axis is called a **horizontal line**.

Transformation	Move a shape to a different position.
Enlargement	A transformation where all the side lengths of a shape are multiplied by the same scale factor.
Scale factor	Describes the size of an enlargement or reduction.
Fractional Scale Factor	Multiply all the side lengths by the scale factor.
Locus/Loci	A locus is a set of points that all obey a certain rule. Often a locus is a continuous path.
Centre of Enlargement	The position of the enlarged shape is described by the centre of enlargement.
Reflection	A reflection can be thought of as folding or "flipping" an object over the line of reflection.
Rotation	Rotation turns a shape around a fixed point called the centre of rotation.
Object	An original shape.
Image	When the object is transformed, the resulting shape is the image.
Resultant Vector	The vector that moves the original shape to its final position after a number of translations.
Invariant Point	Invariant point on a line or shape is a point that does not vary/move under a single transformation or combined transformation.
Describing an enlargement	State it is an enlargement and give the scale factor and coordinates of the centre of enlargement.
Describing a reflection	State it is a reflection and include the mirror line. The mirror line may require an equation.
Describing a rotation	State it is a rotation, give the coordinate of the centre of rotation, and the angle and direction.

Inequalities are the relationships between two expressions which are not equal to one another.

Factors are numbers that divide exactly into another number.

When a value is square rooted, the answer can be positive or negative.

Factorising is the reverse of expanding bracket. The first step of factorising an expression is to 'take out' any common factors which the terms have.

Solve a quadratic by factorising:
 •**Step 1:** Rearrange the given quadratic so that it is equal to zero
 •**Step 2:** Factorise the quadratic
 •**Step 3:** Form two linear equations and solve each.

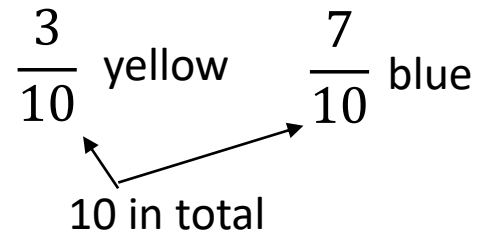
Substitution is the name given to the process of swapping an algebraic letter for its value.

A bracket squared means the bracket times the bracket, and then expand it as you normally word for two brackets.

Solving an equation or inequality	Means find the values for the unknown that fit
Roots of a function	Solution when it is equal to zero.
Quadratic expression	In the form ax^2+bx+c , where a, b and c are numbers.
Quadratic formula	Can be used to find solutions to a quadratic equation $ax^2+bx+c = 0$
Perfect Squares	A number made by squaring a whole number.
Simultaneous Equations	When there are two unknowns, you need two equations to find their values.
Elimination	Solving simultaneous equations – making the coefficients of one variable the same in both equations, and then adding or subtracting to eliminate this variable.
Substitution	Solving simultaneous equations – substituting an expression for x or u from on equation into the other equation.
Surd	When we can't simplify a number to remove a square root (or cube root) then it is a surd.

A **ratio** says how much of one thing there is compared to another thing.

To write a **ratio** as **fractions**, add the total parts in the **ratio** to find the denominators and write each part of the **ratio** as the individual numerators.



You can simplify a fraction if the numerator (top number) and denominator (bottom number) can both be divided by the same number.

To add fractions there are Three Simple Steps: Make sure the bottom numbers (the denominators) are the same. **Add** the top numbers (the numerators), put that answer over the denominator. Simplify the **fraction** (if needed)

Probabilities can be written as fractions, decimals or percentages on a **scale** from 0 to 1.

To **multiply decimals**, first **multiply** as if there is no **decimal**. Next, count the number of digits after the **decimal** in each factor. Finally, put the same number of digits behind the **decimal** in the product.

A **Venn diagram** shows the relationship between a group of different things (a set) in a visual way.

Probability	$\frac{\text{successful outcomes}}{\text{total possible outcomes}}$
Sample Space Diagram	Shows all possible outcomes of two events.
Mutually Exclusive	Two events which cannot happen at the same time.
Experimental Probability	$\frac{\text{frequency of outcome}}{\text{total number of trials}}$
Theoretical Probability	The number of ways the event can occur (favorable outcomes) divided by the number of total outcomes.
Expected Outcomes	Number of trials x probability
Frequency Tree	Shows two or more events and the number of times they occur.
Probability Tree Diagram	Shows two or ore events and their probabilities.
Dependent Events	If one event depends upon the outcome of another.
Conditional Probability	The probability of a dependent even. The probability of the second outcome depends on what has already happened in the first outcome.

Substitution is the name given to the process of swapping an algebraic letter for its value.

Distance = speed x time.
To work out what the units are for speed, you need to know the units for distance and time.

Mass = density x volume.
Density is normally measured using units of g/cm³ for smaller amounts, and kg/m³ for larger amounts.

Area of a circle is $\pi \times \text{radius}^2$.
It is measured in _____².

In a linear equation (equation of a straight line) the gradient is the coefficient of x.

A prism has the cross section the same all along its length, with sides that are all parallelograms (4-sided shape with opposites sides parallel).
Volume = area of cross section x length

To calculate a percentage of an amount, use combinations of simple calculations.

Iteration	Carry out a process repeatedly.
Compound Interest	The interest earned each year is added to money in the account and earns interest the next year.
Growth	Increases in quantity.
Decay	Decreases in quantity.
Density	The mass of a substance contained in a certain volume. It is usually measure in grams per cubic centimetre g/cm ³ .
Pressure	The force of newtons applied over an area in cm ² or m ² . It is usually measure in newtons N per square metre N/m ² or square centimetre N/cm ² .
Kinematic Formulae	The features or properties of motion in an object.
Velocity, v	Speed in a given direction; possible units are m/s.
Initial velocity, u	Speed in a given direction at the start of the motion.
Acceleration, a	Rate of change of velocity, m/s ²

If one shape can become another using Turns, Flips and/or Slides, then the shapes are **Congruent**.

When two objects are similar then the length, area and volume scale factors are related with squaring and cubing.

The *Pythagorean* (or *Pythagoras'*) *Theorem* is $a^2 + b^2 = c^2$ where **c** is the hypotenuse while **a** and **b** are the legs of the triangle.

Angles in a triangle add to 180°.

Lines of equal length are marked with dashes.

An equilateral **triangle** has 3 sides of equal length. The **dashes** on the **lines** show they are equal in length.

An isosceles **triangle** has 2 sides of equal length. The **dashes** on the **lines** show they are equal in length. The angles at the base of the equal sides are equal.

Enlarging a shape changes its size.

When the **scale factor** is fractional and the shape decreases in size, we still call it an enlargement.

Congruent Triangles	Triangles are congruent if they are the same shape and size but reflected, rotated or translated.
SSS	Side, Side, Side: all three sides equal.
SAS	Side, Angle, Side: two sides and the included angle are equal.
AAS	Angle, Angle, Side: two angles and a corresponding side are equal.
RHS	Right angle, Hypotenuse and Side: right angle, hypotenuse and one other side are equal.
Perimeter	When a shape is enlarged by a linear scale factor, k, the perimeter is multiplied by scale factor k.
Alternate angles	Alternate angles are angles that are in opposite positions relative to a transversal intersecting two lines.
Corresponding Angles	When two lines are crossed by another line (which is called the Transversal), the angles in matching corners are called corresponding angles.

The Pythagorean (or **Pythagoras'**) **Theorem** is the statement that the sum of (the areas of) the two small squares equals (the area of) the big one.

The trigonometric ratios are special measurements of a right triangle (a triangle with one angle measuring 90°)

A bearing is the angle in degrees measured clockwise from north. Bearings are usually given as a three-figure bearing.

To calculate the **area** of a **triangle**, multiply the height by the width (this is also known as the 'base') then divide by 2.

The area of a circle is:
 π (Pi) times the Radius squared: $A = \pi r^2$

The trigonometric ratios for the angles 30°, 45° and 60° can be found using two special triangles.

A right-angled isosceles triangle with two sides of length 1 cm can be used to find exact values for the trigonometric ratios of 45°.

An equilateral triangle with side lengths of 2 cm can be used to find exact values for the trigonometric ratios of 30° and 60°.

angle θ	0°	30°	45°	60°	90°
$\sin \theta$	0	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{\sqrt{3}}{2}$	1
$\cos \theta$	1	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{2}$	0
$\tan \theta$	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	not defined

Upper Bound	The upper bound is the smallest value that would round up to the next estimated value.
Lower Bound	The lower bound is the smallest value that would round up to the estimated value.
$Y = f(-x)$	A reflection of $y=f(x)$ in the y-axis.
$Y = -f(x)$	A reflection of $y=f(x)$ in the x-axis.
$Y = -f(-x)$	A reflection of $y=f(x)$ in the x-axis and then the y-axis (or vice versa). These two reflections are equivalent to a rotation of 180° about the origin.
$Y = f(x) + a$	The translation of $y = f(x)$ by $\begin{pmatrix} 0 \\ a \end{pmatrix}$
$Y = f(x + a)$	The translation of $y = f(x)$ by $\begin{pmatrix} -a \\ 0 \end{pmatrix}$
Plane	A flat surface. For example the surface of your desk lies in a horizontal plane.

Discrete Data can only take certain values.

Continuous data is data that can take any value.

There are many methods on how to multiply fractions with whole numbers. One method is:

1. Rewrite the whole number as a fraction.
2. Multiply the numerators of the fraction.
3. Multiply the denominators of the fraction.
4. Reduce/simplify the answer, if possible.

A **Stem and Leaf** Plot is a special table where each data value is split into a "stem" (the first digit or digits) and a "leaf" (usually the last digit).

Inequality tells us about the relative size of two values.

To estimate the mean from grouped frequency: find the midpoint, multiply by the frequency for each class, add the total, divide by the total frequency,

The **modal class** is the group with the highest frequency.

Box Plot (Box and whisker)	Displays data to show the median and quartiles.
Summary Statistics	The averages, range and quartiles.
Cumulative Frequency Table	Show how many data values are less than or equal to the upper class boundary of each data class.
Upper Class Boundary	Highest possible value in each class.
Cumulative Frequency Graph	Data values on the x-axis and cumulative frequency on the y-axis.
Histogram	A type of frequency diagram used for grouped continuous data. For unequal class intervals, the area of the bar represents the frequency,.
Frequency Density	The height of each bar in a histogram.
Comparative Box Plots	For two different sets of data drawn on the same diagram.

To solve a linear equation, use inverse operations.

To solve a quadratic equation, use either factorise, use the quadratic formula, or complete the square.

To solve a linear inequality, use inverse operations.

The y intercept is where a graph crosses the u axis. The x intercept is where a graph crosses the x axis.

When the graph of a circle has the centre at (0,0), the equation of the circle is $x^2+y^2=r^2$ where r is the radius.

To expand double brackets, multiply each term in one brackets by each term in the other bracket. Simplify where you can.

An integer is a whole number.

Turning Point	The lowest of highest point of the parabola where the graph turns. It is either a minimum or a maximum.
Roots	The x-values where the graph intersects the x-axis are the solutions of the equation $y=0$.
No Real Roots	If a graph does not cross the x-axis.
One Repeated Root	If the graph just touches the x-axis.
Cubic Function	Highest power of x is x^3 . It is written in the form $y=ax^3+bx^2+cx+d$. The graph intersects the y-axis at $y=d$. The roots can be found by finding x when $y=0$.
Simultaneous Equations	You can solve a pair of simultaneous equations graphically by plotting the graphs and finding the point(s) of intersection.
Iterative Process	To find an accurate root of a quadratic equation you can use an iterative process. Iterative means carrying out a process repeatedly.
Sketch a quadratic	Calculate the solutions to the equation $y=0$. Find the y-intercept. Find the coordinate of the turning point (maximum or minimum).

Angles in a triangle add to 180°.

To calculate the gradient of a line: $\frac{\text{change in } y}{\text{change in } x}$

The equation of a straight line is in the form $y=mx+c$ where m is the gradient and c is the y -intercept.

You can use substitution to find missing parts of an equation of a straight line.

Perpendicular lines cross at 90°. If two lines are perpendicular, the product of their gradients is -1.

To accurately draw a circle, you will need a pencil, ruler and compass.

Congruent shapes are the same shape and size but reflected, rotated or translated.

Triangles are congruent if 1 of the 4 rules of congruence applies.

Arc	An arc is a part of the circumference.
Sector	When an arc is bounded by two radii, a sector is formed.
Segment	The area between an arc and a chord.
Circumference	The distance around the outside of a circle (perimeter).
Radius	Straight line from the centre to the edge of a circle.
Diameter	Straight line across a circle through the centre.
Cyclic quadrilateral	A quadrilateral with all four vertices on the circumference of a circle.
Subtended	Opposite – and angle subtended by an arc is an angle opposite an arc.
Chord	A straight line connecting two points on a circle.
Tangent	A straight line which touches a circle at one point.

Higher – Unit 17 - More Algebra

Subject of a formulae – is the variable that is being worked out. It can be recognised as the letter on its own on one side of the equals sign.

For example, in the formula for the area of a rectangle $A = L \times W$, the subject of the formula is A.

You can change the subject of a formulae or an equation.

We have changed the subject of the equation from “v” to “u”

Factorising – Is when you put brackets back into your expression.

$$25x^3 + 15x^2 + 20x = 5x(5x^2 + 3x + 4)$$

Factorising a quadratic – Is when you put the expression into 2 brackets.

$$x^2 + 7x - 8 = (x + 8)(x - 1)$$

Dividing Fractions – Dividing by a fraction is the same as multiplying by the reciprocal.

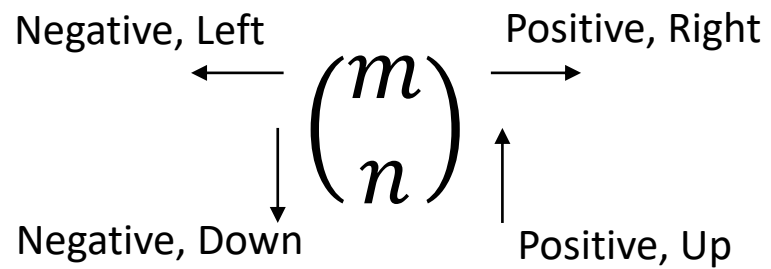
Equation and Identity – In an **identity** the two expressions are equal for *all* values of the variables. An **equation** is only true for certain values of the variable.

Substitution – Substitution is when you replace the letters in an expression with their correct value.

Multiplying algebraic fractions	When multiplying algebraic fractions, cancel common factors in numerators and denominators before multiplying the fractions together.
Simplifying algebraic fractions	To simplify an algebraic fraction, cancel any common factors in the numerator and denominator.
Factorising before simplifying algebraic fractions	You may need to factorise before simplifying an algebraic fraction: - Factorise the numerator and denominator. - Divide the numerator and denominator by any common factors.
Lowest Common Multiple	The lowest common denominator of two algebraic fractions is the lowest common multiple of the two denominators.
Proving and Identity	To show a statement is an identity, expand and simplify the expressions on one or both sides of the equals sign, until the two expressions are the same.
Proof	A proof is a logical argument for a mathematical statement.
Prove something true	To prove a statement is true, you must show that it will be true in all cases.
Dis-prove	To prove a statement is not true you can find a counter-example — an example that does not fit the statement.
Integer in a proof	For an algebraic proof, use n to represent any integer.
Even/odd in a proof	Even numbers = $2n$ Odd numbers = $2n+1$ or $2n-1$
Evens/odds in a proof	Consecutive Even = $2n, 2n+2, 2n+4, ..$ Consecutive Odd = $2n+1, 2n+3, 2n+5, ..$
Solve equations with fractions	To solve an equation involving algebraic fractions, first write one side as a fraction in its simplest form.
Solve quadratic	To solve a quadratic equation, rearrange it into the form $ax^2 + bx + c = 0$.
Function notation	A function is a rule for working out values of y for given values of x. The notation $f(x)$ is read as ‘f of x’. f is the function. $f(x) = 3x$ means the function of x is 3x.
Composite function	fg is a composite function. To work out $fg(x)$, first work out $g(x)$ and then substitute your answer into $f(x)$.
Inverse function	The inverse function reverses the effect of the original function. $f^{-1}(x)$ is the inverse function of $f(x)$.

The midpoint is **the middle point of a line segment**. It is equidistant from both endpoints.

Translation – a type of transformation which moves the object. Usually shown with a vector.



Expand brackets: multiply each term inside the bracket by the term outside.

Simplify algebraic expressions: collect like terms (terms with the same variable).

Surd	A number written as a root.
Displacement Vector	Shows a change in position. From A to B is written as \overrightarrow{AB}
Vectors	Written as bold lowercase letters. When handwriting, underline them.
Magnitude	The size of a vector.
Scalar	A number.
Collinear	Collinear points all lie on the same line.

Higher – Unit 19 – Proportion and Graphs

A velocity-time graph **shows the speed and direction an object travels over a specific period of time**. Velocity-time graphs are also called speed-time graphs.

The slope of a velocity graph represents the acceleration of the object.

The horizontal axis is the time from the start.

The vertical axis of a velocity-time graph is the velocity of the object.

Two quantities are said to be in **direct proportion** if they increase or decrease in the same ratio.

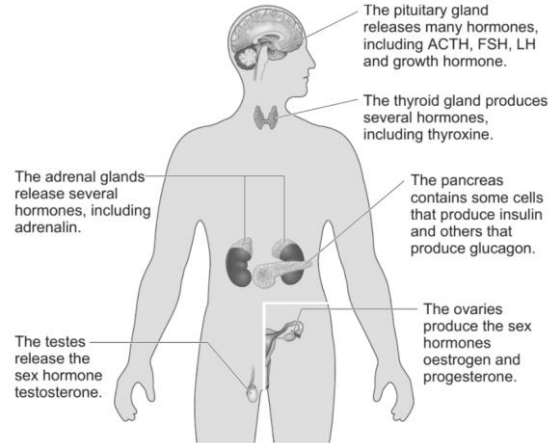
Exponential Function	Expressions in the form a^x or a^{-x} where $a > 1$.
Tangent to a Curve	A straight line that touches the graph at a point. The gradient at a point on a curve is the gradient of the tangent at that point.
Chord	A straight line that connects two points on a curve. The gradient of the chord gives the average rate of change and can be used to find the average rate of change between two points.
Area under a velocity-time graph	The area under a velocity graph represents the displacement of the object.
Area of a trapezium	Used to estimate the area under a curve.
$Y = f(x) + a$	The graph of $y=f(x)$ is transformed by a translation of a units parallel to the y -axis, or by a translation $\begin{pmatrix} 0 \\ a \end{pmatrix}$
$Y = f(x + a)$	The graph of $y=f(x)$ is transformed by a translation of a units parallel to the x -axis, or by a translation $\begin{pmatrix} -a \\ 0 \end{pmatrix}$
$Y = f(-x)$	The graph of $y=f(x)$ is transformed by a reflection in the y -axis.
$Y = -f(x)$	The graph of $y=f(x)$ is transformed by a reflection in the x -axis.
$Y = a f(x)$	The graph of $y=f(x)$ is transformed by a stretch of scale factor a parallel to the y -axis.
$Y = f(ax)$	The graph of $y=f(x)$ is transformed by a stretch of scale factor $\frac{1}{a}$ parallel to the x -axis.

Combined Science – Biology – Topic 7 Animal Coordination, Control and Homeostasis.

Key Terms / Words	Definition
Hormone	Chemical messenger that is released into the blood from an endocrine gland and causes target cells to change how they work.
Endocrine Gland	An organ that makes and releases hormones into the blood.
Target Organ	An organ on which a hormone has an effect.
Homeostasis	Controlling the internal environment of the body at stable levels.
Negative Feedback	A control mechanism in which a change in a condition, such as temperature, causes the opposite change to happen and so brings the condition back to a normal level.
Oestrogen	A hormone produced by the ovaries which is important in the menstrual cycle.
Progesterone	One of the hormones released by the ovaries.
Contraceptive	The prevention of pregnancy.
Ovulation	The release of an egg from an ovary.
Period	The 'bleed' that occurs during menstruation.
Insulin	A hormone that decreases blood glucose concentration by causing cells to take in glucose. It is used in the treatment of type 1 diabetes.
Diabetes	A disease in which the body cannot control blood glucose concentration at the correct level.
Pituitary Gland	An organ just below the brain that controls many activities of the body (e.g. metabolic rate and the menstrual cycle) by the release of hormones into the blood. It can be referred to as the pituitary.
Pancreas	Organ in the body that produces some digestive enzymes, as well as the hormones insulin and glucagon.

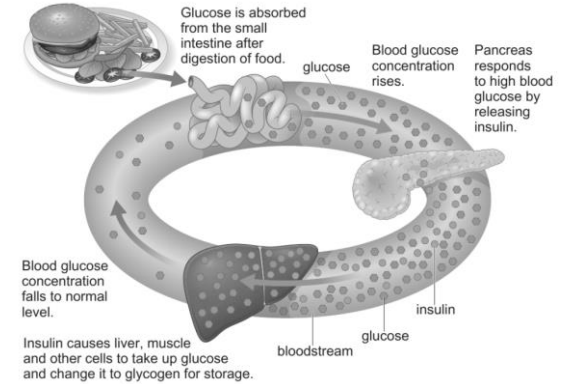
Endocrine Glands

The hormonal system uses chemical messengers called hormones, which are carried by the blood. It is a much slower system than the nervous system.



Blood Glucose Concentration

Insulin is released from the pancreas in response to an increase in blood glucose levels.



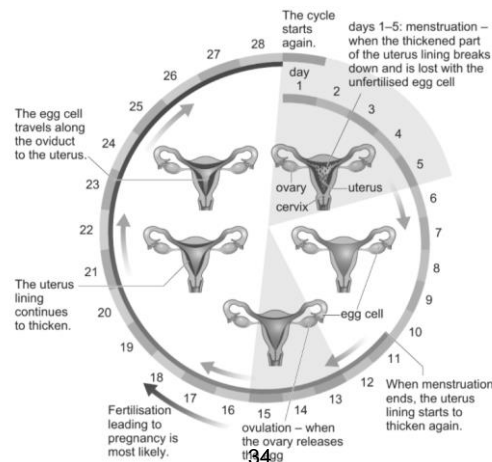
Diabetes

<i>Type 1</i>	<i>Type 2</i>
Pancreas fails to produce sufficient insulin leading to uncontrolled blood glucose levels. Normally treated by insulin injection.	Obesity is a risk factor. Body cells no longer respond to insulin. Common treatments include changing by diet and increasing exercise.

Scientists have found a correlation between type 2 diabetes and high body mass and believe an increase in body fat increases the risk of developing type 2 diabetes. Scientists can check someone's risk by working out the following:

Body Mass Index (BMI)	Waist:Hip Ratio
$BMI = \frac{\text{mass (kg)}}{\text{height (m)}^2}$	

Menstrual Cycle

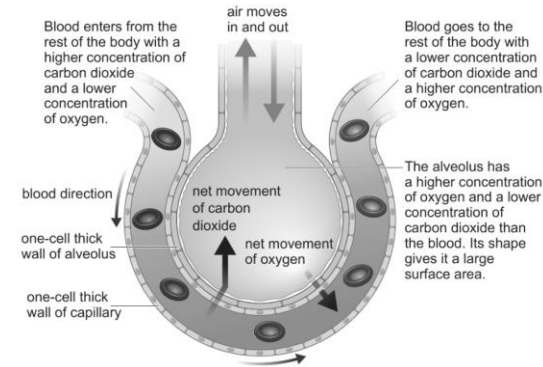


Todmorden High Science K.O.
Combined Science Biology – Topic 8 Exchange and Transport in Animals

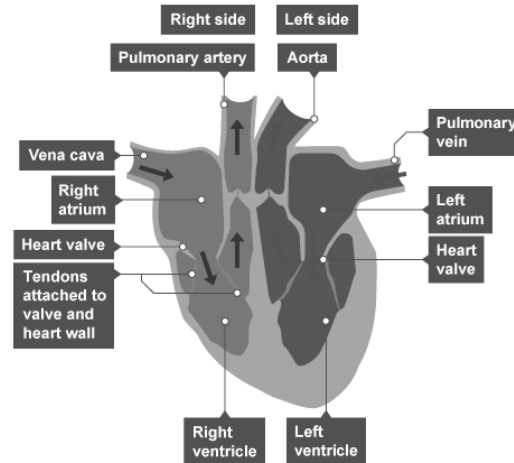
Key term	Definition
Circulatory system	The system that moves blood through the body. It consists of the heart, arteries, veins and capillaries.
Gas Exchange	A process in which one gas diffuses across a membrane and another gas diffuses in the opposite direction.
Alveolus	A small pocket in the lungs in which gases are exchanged between the air and the blood (plural is alveoli).
Diffusion	The random movement and spreading of particles. There is a net (overall) diffusion of particles from a region of higher concentration to a region of lower concentration.
Red blood cell	A biconcave disc containing haemoglobin that gives blood its red colour and carries oxygen around the body to the tissues. Also known as an erythrocyte.
White blood cell	A type of blood cell that forms part of the body's defence system against disease. There are many different types of white blood cell, including lymphocytes and phagocytes.
Atrium	An upper chamber in the heart that receives blood from the veins (plural is atria).
Ventricles	A lower chamber in the heart that pumps blood out into the arteries.
Aerobic Respiration	A type of respiration in which oxygen is used to release energy from substances such as glucose.
Anaerobic Respiration	A type of respiration that does not need oxygen.

Alveoli

Alveoli are found in the lungs. They are adapted to support gas exchange.



The Heart



Cardiac Output

Is the volume of blood pushed into the aorta each minute. It can be calculated using the following equation:

$$\text{cardiac output} = \text{stroke volume} \times \text{heart rate}$$

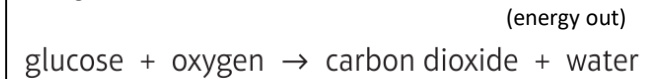
(litres/min) (litres/beat) (beats/min)

Blood Vessels

	Arteries	Capillaries	Veins
Where they carry blood?	Carry blood away from the heart.	Carry blood to tissues in the body.	Carry blood towards the heart.
Structure	Wall is a thick layer of elastic and muscle fibres.	Narrow tube with a wall one cell thick.	Thin, flexible wall.
How are they well adapted to their function?	The walls are thick to withstand the sudden increase in pressure when the heart beats.	Capillary wall is very thin to allow faster diffusion of substances into and out of the capillary.	Valves prevent blood flowing backwards.

Aerobic Respiration

Cellular respiration is a series of reactions which release energy from glucose. This occurs in mitochondria in cells.



It is an exothermic reaction so some of the energy is transferred out of the cells as heat.

Anaerobic Respiration

During strenuous exercise, oxygen is used up faster than we can replace it. Anaerobic respiration will then occur in the cytoplasm in cells which doesn't require oxygen.



It doesn't release as much energy as aerobic respiration and the lactic acid causes muscle fatigue and cramps. It is useful for animals when they need to move fast, suddenly, e.g. to catch prey.

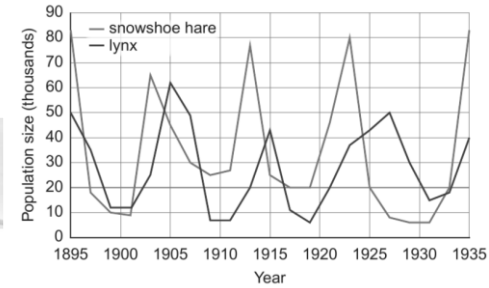
Combined Science – Biology – Topic 9 – Ecosystems and Material Cycles

Key Terms / Words	Definition
Ecosystem	An area in which all the living organisms and all the non-living physical factors in an area form a stable relationship that needs no input from outside the area to remain stable.
Habitat	Place where organisms live e.g. woodland, lake.
Population	A group of one species living in the same area.
Community	All the different organisms living and interacting with one another in a particular area.
Competition	When organisms need the same resources as each other, they struggle against each other to get those resources. We say that they 'compete' for those things.
Quadrat	A square frame of known area, e.g. 1 m ² , that is placed on the ground to get a sample of the organisms living in a small area.
Inter-dependent	When organisms in an area need each other for resources, e.g. for food and shelter.
Mutualism	A relationship between individuals of different species where both individuals benefit, e.g. by getting more food or shelter than if they were on their own.
Biotic	Living components (the organisms) in an ecosystem.
Abiotic	Non-living conditions that can influence where plants or animals live (e.g. temperature, the amount of light).

Parasitism and Mutualism

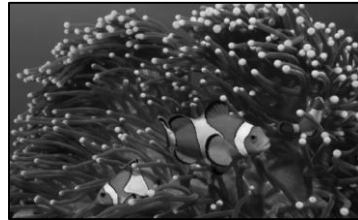
In most feeding relationships, a predator kills and eats its prey then moves on to find more prey. **Parasitism** is a different kind of feeding relationship in which one organism (the **parasite**) benefits by feeding off a **host** organism, causing harm to the host. The parasite lives in or on the host. The host may survive for a long time and continue to provide food for the parasite if the parasite causes limited harm.

Predator:Prey Relationships

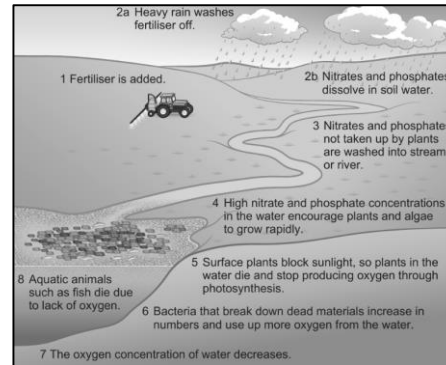


Mutualism

Some organisms that live together both benefit from the relationship. These relationships are said to be **mutualistic**. For example, many flowers depend on insects for pollination. The flower benefits by being able to produce fertilised egg cells, and the insect benefits by collecting nectar or pollen from the flower, which it uses for food.



Eutrophication



Fish farming

About 17 per cent of the protein eaten by people globally comes from fish. As the human population increases, we will need more fish. However, **overfishing** of wild fish stocks has damaged some aquatic (water) ecosystems. **Fish farming** aims to produce more fish and so reduce overfishing of wild fish.

Biodiversity and Humans

Introducing species

Introducing new species to ecosystems can affect the **indigenous**, or **native**, species (organisms that have always been there). For example, sheep, cattle and soybeans are **native** to Asia but are farmed for food in many parts of the world where they are **non-indigenous**.

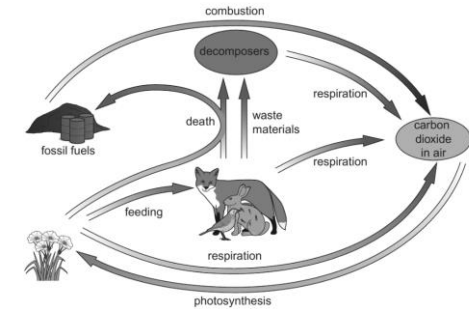


Cane toads eat a wide range of indigenous species.

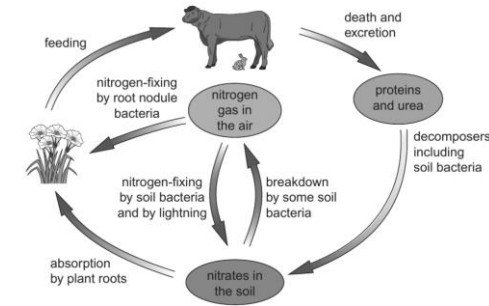


Ring-necked parakeets are escaped pets that are now common in parts of the UK. Some smaller native birds are unable to compete for food with the parakeets.

Carbon cycle



Nitrogen cycle



Todmorden High Combined Science Physics Topic 7 Energy - Forces doing work.

Key Term	Definition
Law of conservation of energy	Energy cannot be created or destroyed, but it can be transferred between stores. (No energy transfer is 100% efficient, some energy is always wasted)
Thermal conductivity	The rate at which heat is transferred through a substance. Low thermal conductivity materials are good insulators.
Main energy Stores	Kinetic, thermal, gravitational, nuclear, elastic electrostatic and magnetic energy stores.
Energy pathways	The ways in which energy is transferred i.e. Mechanically (when a force does work on an object) Electrically when a force does work on an electric charge Radiantly, when a wave (e.g. light or sound) transfers energy from one place to another. Thermally, when a difference in temperature between objects causes a change in temperature of the objects.
dissipated	When energy is transferred to the surroundings and is less concentrated and so less useful.
Efficiency definition	The ratio of useful energy out to total energy in.
Efficiency equation	$Efficiency = (\text{useful energy out}) / (\text{total energy in})$
Closed system (a group of objects)	has no energy transfers in or out of the system so there is no net energy change for the system.

Key term	Equation
Law of conservation equation	Total energy in = useful energy out + wasted energy out
Efficiency equation	$Eff = (\text{useful energy out}) / (\text{total energy in})$ Efficiency is always a decimal less than 1.00 It's only a % when multiplied by 100.
Change in gravitational potential energy store	$\Delta G.P.E = m \times g \times \Delta h$ ΔGPE : change in gravitational potential energy (J) m, mass (kg) g, gravitational field strength (N/kg) Δh , change in vertical height above ground.(m)
Kinetic Energy Store	$K.E. = 0.5 \times m \times (v)^2$ K.E. Kinetic energy store (J) m, mass (kg) v, speed or velocity (m/s)
Work done (= energy transferred)	$E = F \times d$ E, energy or work done (J or NM) F, force (N) d, distance moved in the direction of the force (m)
Power	$p = \frac{E}{t}$ P, power in watts (W) E, energy transferred or work done in joules (J) t, time in seconds (s)

Core Practical

Measuring the power of an athlete.

Get the athlete to run up stairs.

Use the equation $P = E/t$ to calculate their power.

Measure the time taken for them to run up stairs **using a stop watch.**

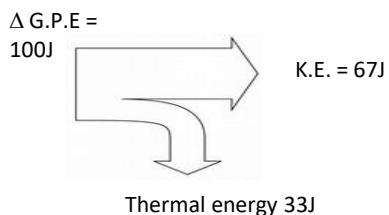
Measure the change in vertical height when they go up stairs **using a metre ruler.**

Measure their mass **using a balance.**

Calculate the change in gravitational potential energy (which is the same as the work they've done) using the equation;

$\Delta G.P.E = m \times g \times \Delta h$

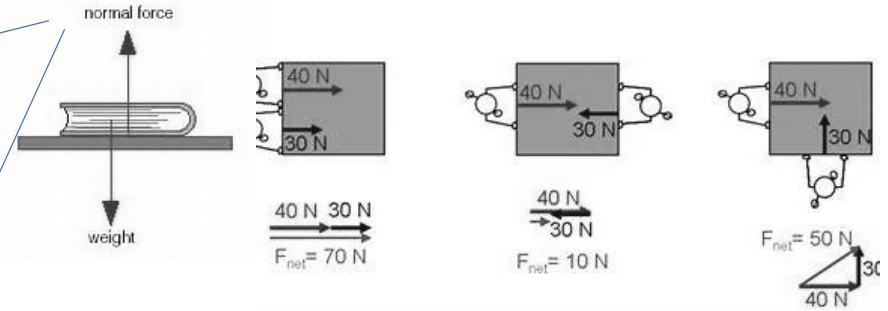
Sankey Diagrams show energy transfers e.g.



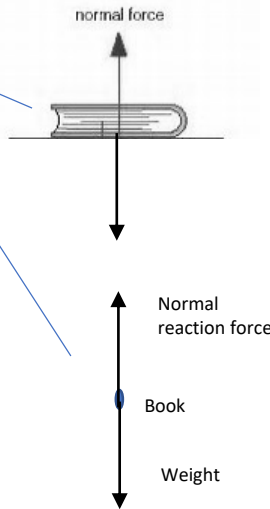
Unwanted energy losses can be reduced by streamlining, lubrication and insulation.

Tadmorden High Combined Science Physics Topic 8 Forces and their effects

Key Term	Definition
Contact force	The force acts only when the two objects are touching e.g. friction and the normal contact force.
Non - contact force	The force acts at a distance even if the two objects are not physically touching e.g. gravitational, electrostatic and magnetic forces.
Vector quantities	Have magnitude and direction e.g. force, velocity, displacement, momentum , weight
Scalar quantities	Have magnitude but no direction e.g. distance, speed mass, energy
Free body diagram	Any object can be drawn as a single point, with all the forces acting on it shown.
Normal contact and normal reaction force)	Normal in physics means perpendicular so when a book is on a table, the book exerts a normal contact force down on the table at 90° to the surface of the table and because of Newton's 3 rd law the table exerts an equal and opposite normal reaction force upwards on the book.
Resultant force	The overall force acting on an object, i.e. the vector sum of all the forces acting on an object. A scaled drawing can be used to determine the resultant force.

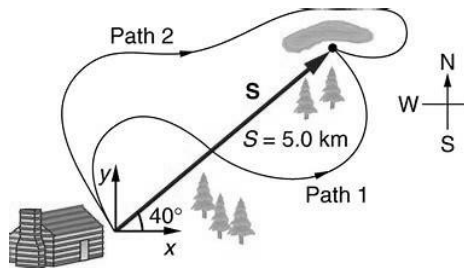
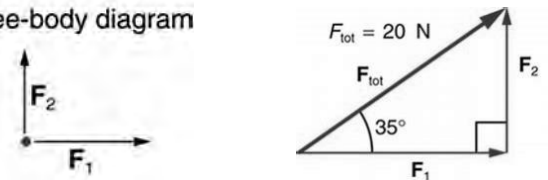


Forces in the same direction are added together.
 Forces in the opposite direction are subtracted.
 Forces at an angle are combined using scaled drawings



In **scaled vector diagrams** the forces are drawn nose to tail to show the **magnitude and direction** of the resultant.

Free-body diagram



The distance of path 1 is a scalar. $S = 5.0 \text{ km}$ at 40° is a vector.

Vectors can be combined using scaled vector diagrams to find the resultant.

Combined science – Chemistry - Topic 6 – Groups in the periodic table

Key information	
alkali metals	Alternative name for group 1 elements
halogen	Alternative name for group 7 elements
noble gases	Alternative name for group 0 elements
trend	A pattern in a property down a group
group	A vertical column of elements in the periodic table. Elements in the same group have similar chemical properties.
displacement reaction	When a more reactive element displaces a less reactive element in a compound.
diatomic	Two atoms covalently bonded together.
hydrogen halide	A compound formed in a reaction between a halogen and hydrogen.
metal halide	A compound formed in a reaction between a halogen and hydrogen.
salt	A compound formed by neutralisation of an acid by a base.
redox	A reaction in which both oxidation and reduction occur.
oxidation	A type of reaction in which a reactant is oxidised.
oxidised	A reactant that has lost electrons or gained oxygen, in a redox reaction.
reduction	A type of reaction in which a reactant is reduced.
reduced	A reactant that has gained electrons or lost oxygen, in a redox reaction.
inert	Unreactive.

Group 1 metals

Unusual properties:

- Soft
- Relatively low melting points

Explaining the reactivity of group 1

- All the group 1 alkali metals have one electron in their outer shell
- The reactivity of the alkali metals increases as we move down group 1.
- As we move down the group, the outer electron gets further away from the nucleus, is less strongly attracted and therefore more easily lost.

Example question:

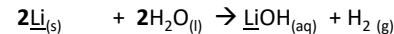
Explain why sodium is more reactive than lithium (2)

Sodium's outer electron is further from its nucleus than lithium's, therefore there is less attraction between the nucleus and outer electron meaning it is more easily lost.

Reaction with water

Alkali metal + water → Metal Hydroxide + Hydrogen

Lithium + Water → Lithium Hydroxide + Hydrogen



All the group 1 metals react in the same way so in a reaction between sodium and water you would simply replace Lithium for Sodium

Yellow gas
Green gas
Brown liquid
Purple/black solid

Explaining the reactivity down group 7

- In order to react the halogens, need to gain one electron.
- As we move down group 7 the atoms get larger and the distance between the positive nucleus and the outer shell increases.
- This means the force of attraction between the nucleus and an incoming electron gets weaker and therefore less reactive.

Group 1 metal	Description of reaction with water	Reactivity increases
Lithium	Fizzing, slow movement on surface of water, gets smaller	
Sodium	Fizzing, movement on surface of water, gets smaller and forms a ball, explodes.	
Potassium	Fizzing, fast movement on surface of water, gets smaller and forms a ball, ignites with a lilac flame.	

Group 0 – Noble gases (non-metals)

All the noble gas atoms exist as single atoms because they are very unreactive, or inert, due to them having full outer electron shells. They do not form bonds easily. They have a very stable electron structure.

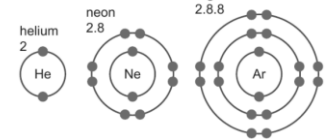
Physical properties -

- Colourless gases
- Very low melting and boiling points
- Poor conductors of heat and electricity.

Trends – Melting/boiling point and density all increase as we move down group 0.

Uses

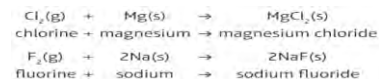
Helium – is used in weather balloon and airships due to its very low density and the fact it is not flammable.
Neon – Produces bright red/orange light when electricity is passed through it making it useful in signs.
Argon – is denser than air and can be used to prevent food spoiling.
Krypton – used in photography lighting as it produces a white light when electricity passes through it.



Reactions with Hydrogen

Hydrogen + Chlorine → Hydrogen Chloride
 $\text{H}_2(g) + \text{Cl}_2(g) \rightarrow 2\text{HCl}(g)$
 The hydrogen halides formed can dissolve in water to form acidic solutions e.g hydrogen chloride dissolves in water to form hydrochloric acid.

Reactions with metals - Halogens react with metals to form ionic compounds called salts. The salt will contain a halide ion (single negative charge) and is referred to as a halide salt.



Displacement reactions – a more reactive element takes the place of a less reactive element in a compound.

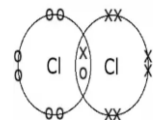
Halogen displacement - A more reactive halogen will **always** displace a **less reactive halide** from its compound, in solution.

Chlorine + Sodium Bromide

↓
Sodium Chloride + Bromine

Group 7 – Halogens (non-metals)

- All the halogens exist as diatomic molecules joined by a single covalent bond.
- They are all non-metals that are simple covalent structures.
- This means they all have low m.p/b.p and are poor conductors of electricity.

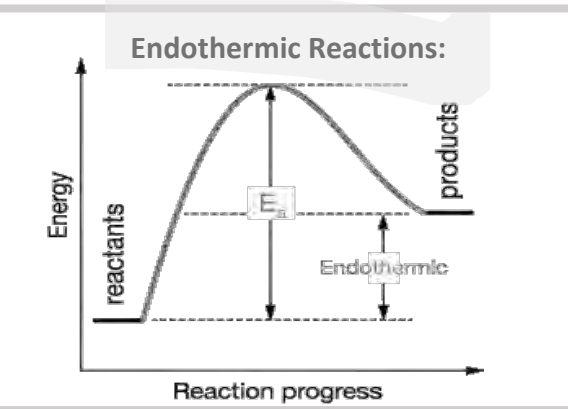
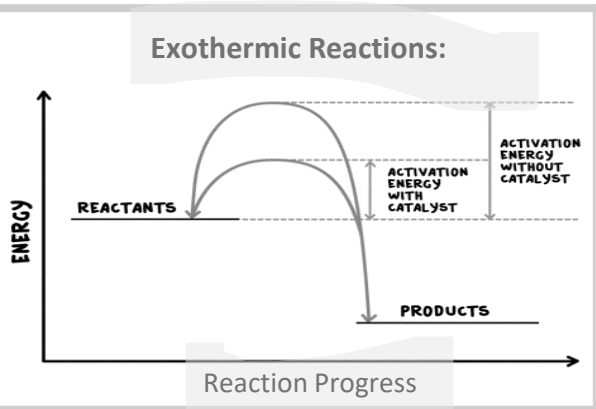


Physical properties

Melting and boiling point, along with density all increase as we move down group 7.

Key information

Collision Theory	Chemical reactions can only occur when i) reacting particles collide with each other, ii) with the activation energy iii) The greater the number of successful collisions per second (frequency) the greater the rate of reaction.
Rate of Reaction	The speed at which a chemical reaction takes place.
Activation Energy (E _a)	The minimum amount of energy colliding particles need in order to react.
Catalyst	<ul style="list-style-type: none"> A substance that increases the rate of a reaction. Catalysts lower the activation energy of a reaction pathway. It is not chemically changed by the reaction. Enzymes are biological catalysts.



Energy changes in reactions

The overall energy change for a reaction can be exothermic or endothermic.

EXOTHERMIC REACTION

- More energy is released when bonds are made in the products than is absorbed to break the bonds in the reactants.
- This releases energy into the surroundings and increases the temperature.
- The products have less energy stored in them than the reactants.

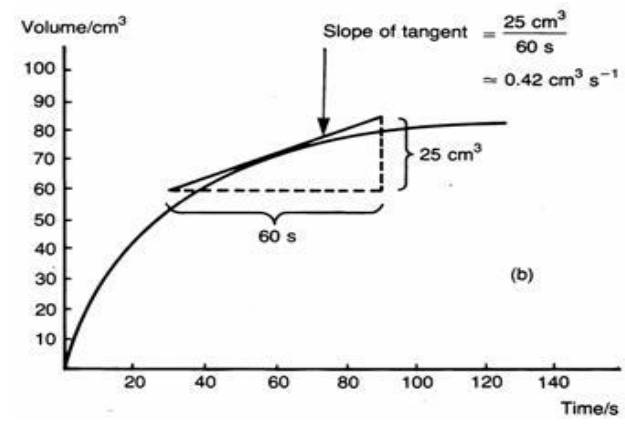
ENDOTHERMIC REACTION

- More energy is absorbed when bonds are broken in the reactants than is released when bonds are formed in the products.
- This absorbs energy from the surroundings and decreases the temperature.
- The products have more energy stored in them than the reactants.

Rate of Reaction

$$Rate = \frac{\text{increase in [product]}}{\text{time}} = \frac{\text{decrease in [reactant]}}{\text{time}}$$

Units: g/s or cm³/s

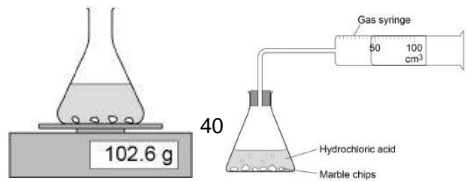
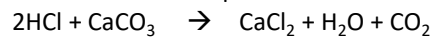


To calculate the rate of reaction, you can calculate the gradient at a point on a rate graph.

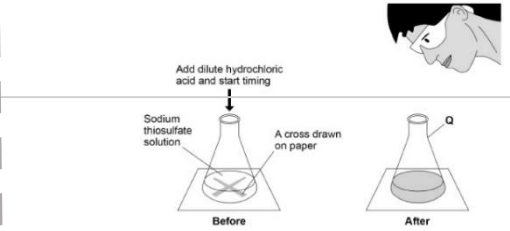
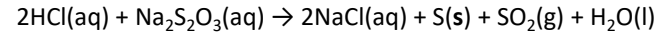
- Factors affecting Rates of Reaction:**
- Temperature
 - Reactant Concentration
 - Surface Area (of a Solid)
 - Pressure (of a gas)
 - Catalyst Use

Core Practicals:

Measuring the rate of reaction from the **gas produced** in the reaction between acid and marble chips.



Measuring the rate of reaction from the **colour change** when sodium thiosulphate reacts with hydrochloric acid to form a precipitate. (Disappearing Cross)



Combined science – Chemistry - Topic 8 - Fuels, Earth and atmospheric science

Key information

Hydrocarbon	A compound that contains hydrogen and carbon atoms only.
Crude oil	A complex mixture of hydrocarbons that contains molecules in which carbon atoms are found in chains or rings. It is an important source of fuels and feedstock for the petrochemical industry.
Feedstock	Raw materials for the petrochemical industry
Petrochemical industry	Industry that produces useful products from crude oil e.g. polymers and fuels
Fractional Distillation	A separation method used to separate two or more liquids with different boiling points.
Fraction	A component of a mixture separated by fractional distillation
Homologous series	A series of compounds that have the same general formula, neighbouring molecules differ by CH_2 , have similar chemical properties and show a gradual variation in physical properties.
Alkane	A saturated hydrocarbon with the formula $\text{C}_n\text{H}_{2n+2}$
Combustion	An exothermic reaction where a fuel reacts with oxygen to make carbon dioxide and water.
Oxidation	When an substance gains oxygen.
Exothermic	A reaction in which energy is released into the surroundings

Early atmosphere

Gases produced by volcanic activity formed the early atmosphere. It was thought to contain:

- Little or no oxygen
- Large amount of carbon dioxide
- Water vapour

Description of change and reason

Increased amount of oxygen and a decreased amount of carbon dioxide – growth of primitive plants resulted in the use of carbon dioxide and production of oxygen as a result of photosynthesis.

Carbon dioxide also decreased as it dissolved in the forming oceans

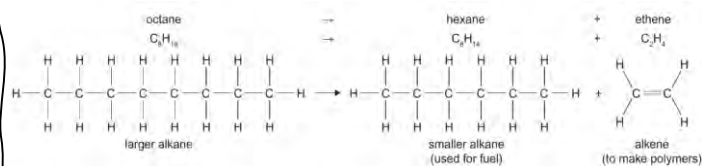
Water vapour condensed to form the oceans

Atmosphere today

- ~ 78% Nitrogen
- Increase to around 21% Oxygen
- Decrease in carbon dioxide
- Less water vapour

Cracking

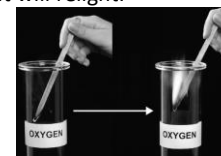
Involves breaking down larger alkanes into smaller more useful alkanes and alkenes.



Cracking is important as it helps to meet the demand for the shorter more useful alkanes/hydrocarbons.

Gas test – OXYGEN

Place a glowing splint into oxygen and it will relight.



Pollutants - Sulphur dioxide

Hydrocarbon fuels, such as petrol and diesel can contain sulphur impurities.

When sulphur is oxidised it can form sulphur dioxide (SO_2) that leads to acid rain.

Acid rain problems:

- Damage crops as a result of acidic soil.
- Prevent fish eggs from hatching due to excess acidity in rivers/lakes
- Cause weathering of buildings made from limestone.

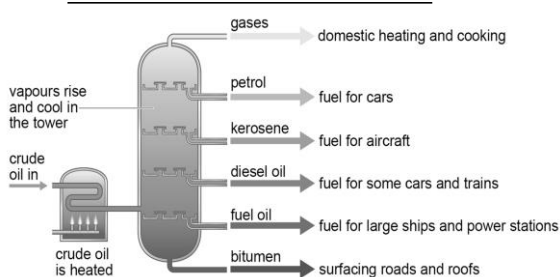
Pollutants – Oxides of Nitrogen

Oxides of nitrogen (NO_x) - formed when oxygen and hydrogen react at high temperatures in a car engine.

Nitrogen dioxide (NO_2), is an example of an oxide of nitrogen that is a brown toxic gas, linked to breathing problems. It can also lead to acid rain.

Catalytic converters can be used to convert oxides of nitrogen back into nitrogen in car exhaust systems.

Fractional distillation of crude oil



Alkanes

The hydrocarbons found in crude oil are mainly alkanes.

Alkanes are an example of a homologous series:

- General formula: $\text{C}_n\text{H}_{2n+2}$
- Neighbouring formula differ by CH_2

Name	Molecular formula	Structural formula
methane	CH_4	
ethane	C_2H_6	
propane	C_3H_8	

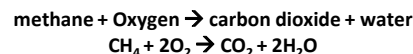
- Show a gradual variation physical properties e.g. *The boiling point increases as the number of carbon atoms in a molecule increases.* 41
- Have similar chemical properties.

Combustion

Hydrocarbon fuels can react with oxygen, from air, when they burn. The carbon and hydrogen atoms undergo **oxidation** in a reaction called combustion.

Complete combustion of a hydrocarbon

- Only produces carbon dioxide and water
- Is exothermic
- Occurs when there is a plentiful supply of oxygen.



Incomplete combustion of a hydrocarbon

- Produces water
- Releases LESS energy than complete combustion.
- Can produce carbon monoxide and carbon

Carbon monoxide – Toxic gas – Combines with haemoglobin, in red blood cells reducing the amount of oxygen carried in the blood stream. This can lead to tiredness, falling unconscious and death.

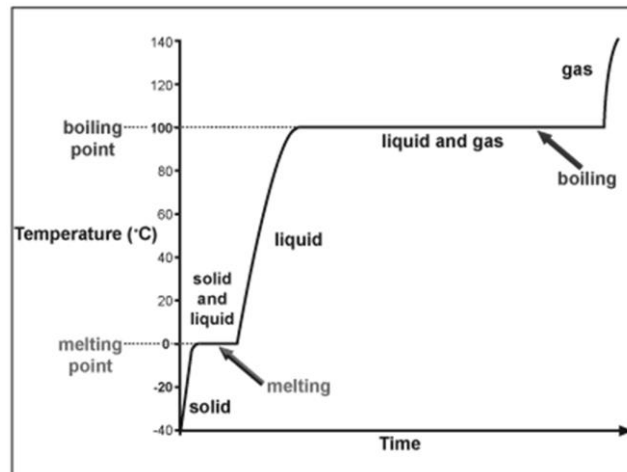
Carbon (soot) – Can block pipes carrying waste gases, dirt buildings and cause breathing problems.

Fraction properties

Fraction	Number of atoms in molecules	Boiling point	Ease of ignition	Viscosity
gases	smallest (1–4 carbon atoms)	lowest (<0 °C)	easy to ignite	lowest (flows most easily)
petrol	↑	↑	↑	
kerosene				
diesel oil				
fuel oil				
bitumen				

Todmorden High Combined Science Physics Topic 12 Particle Model of Matter.

Key Terms / Words	Definition
Specific heat capacity	The heat energy transferred to change the temperature of 1kg of a substance by 1 °C.
Equation for specific heat capacity	$\Delta Q = M \times C \times \Delta\theta$ ΔQ , Change in heat (internal energy) in joules (J) M, mass in kilograms (kg) C specific heat capacity ($J/kg^{\circ}C$) $\Delta\theta$, change in temperature ($^{\circ}C$)
Latent heat of fusion	The heat energy transferred to change the state of 1 kg of a substance from solid to liquid, without a change in temperature.
Latent heat of vaporisation	The heat energy transferred to change the state of 1 kg of a substance from liquid to gas, without a change in temperature.
Latent Heat equation.	$Q = M \times L$ Q energy transferred of a change of state only. M mass in kilograms (kg) L specific latent heat of (fusion or vaporization) joules per kilogram (J/kg)
density	is the mass per unit volume. $\rho = m/v$ P is density in kg/m^3 . M is mass in kg. V is volume in m^3 .
Deposition.	Change of state from gas to solid.
sublimation	Change of state form solid to gas



Key idea.

When energy is transferred to an object, it either increases the kinetic energy of the particles and therefore the temperature or it is used to break the bonds between particles. Bond breaking requires energy, bond making releases energy.

Core Practical 1. Determine the density of solids and liquids

1. Measure the mass of the irregular solid on a **top-pan balance**.
2. Completely submerge the object into a full eureka can and collect the displaced water in a **measuring cylinder**.
3. The volume of water displaced is equal to the volume of the object.
4. Calculate the density using the equation $\rho = m/v$.

Determine the density of a liquid.

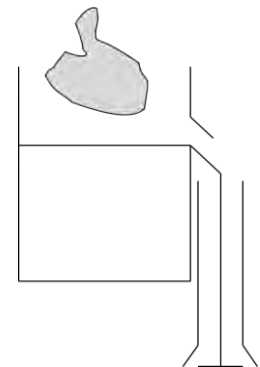
1. Place an empty measuring cylinder on a **top-pan balance** and set the balance to zero!
2. Add liquid to the **measuring cylinder, and measure the volume**.
3. Measure the mass of the liquid using a **top-pan balance**.
4. Calculate the density using the equation $\rho = m/v$.

Core Practical 2 Finding the specific heat capacity of water.

- 1 Measure the mass of 200cm³ of water using a top pan balance. (see above).
2. Place the water in an insulated beaker and submerge an immersion heater.
3. Take the starting temperature.
3. Turn on the immersion heater and measure the energy in using a joule meter for a corresponding temperature change.
- 4 Calculate C using the equation $\Delta Q = M \times C \times \Delta\theta$

Core Practical 3 Plotting a temperature time graph for a change of state.

Place crushed ice from the freezer in a boiling tube and place this in a beaker of water. Gently heat with a Bunsen. Take the temperature using a thermometer, every 30 seconds until the ice has completely melted and reached room temperature. Plot a graph of temperature on the Y axis against time on the X axis. The **plateau** on the graph is the melting point of ice.



Todmorden High Combined Science Physics 13 Forces and Matter

Core Practical 4 Hooke's Law (Force and extension).

V. Set up the equipment as shown in the diagram and vary the force applied to the spring by adding known weights.

I. Use weights from 1N to 8N.

C. Keep the same spring throughout the investigation.

S. Wear safety glasses. Ensure the clamp-stand is secured to the bench.

M. For each force applied determine the extension of the spring. Measure the original length and the loaded length using the ruler. Calculate extension using the equation;
 extension = loaded length – original length

A. For accuracy ensure,

1. the ruler is clamped in a vertical position by using a spirit level or plumb line,
2. a pointer is fixed from the spring to the ruler.

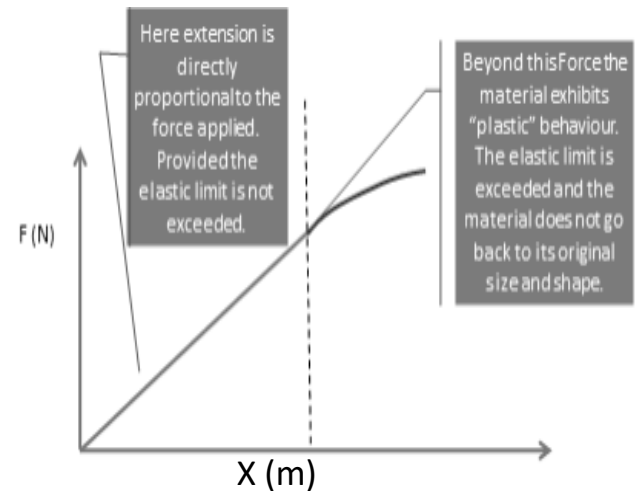
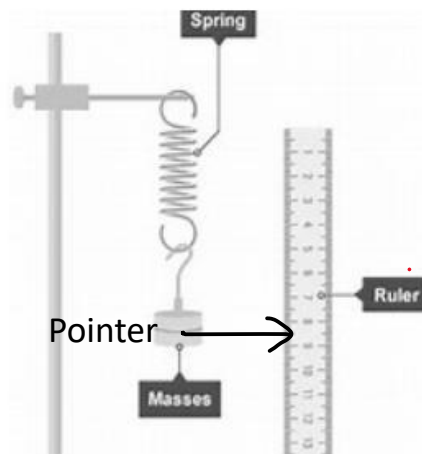
R. Repeat the measurements and take an average value for extension.

G. Plot a graph of Force on the Y axis against extension (X) on the X axis. The gradient of the straight-line portion only is the spring constant.
 a pointer used.

E. $K = F/x$ and extension = loaded length – original length.

Key Terms / Words	Definition
Hooke's Law	The extension of a spring is directly proportional to the force applied, provided the limit of proportionality is not exceeded.
Elastic deformation	The object goes back to its original size and shape when the force is removed.
Plastic deformation	The object does not go back to its original size when the force is removed i.e. it is permanently stretched.

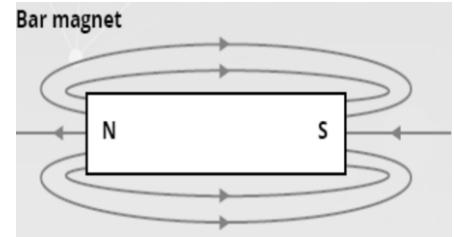
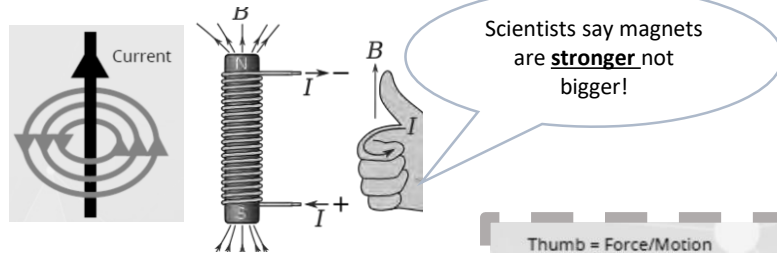
Hooke's Law equation	$F = kx$ F, force applied, (N) K, spring constant (N/kg) X, extension of the spring (m)
Energy in a spring	$E = 0.5 k (x)^2$ E, energy stores in the spring in joules (J) K, spring constant (N/kg) X, extension of the spring (m)



Todmorden High Combined Science Physics: Topic 10....Magnetism

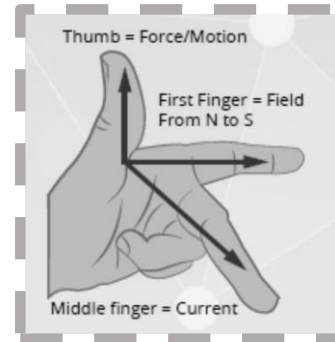
Key term	Definition
Permanent magnets	Produce a magnetic field around them which exerts a non-contact force on a magnetic material (or a moving electrical charge).
Magnetic materials	Can be attracted by permanent magnets, but cannot be repelled by magnets! Iron, nickel and cobalt are the only magnetic elements. Magnetic materials become induced magnets in a magnetic field.
Magnetic field lines.	These are not real but represent the strength and direction of the magnetic force on a North pole of a magnet, they always point from N to S
solenoid	A coil of wire used in an electromagnet.
Soft iron core	readily magnetises and demagnetises.
Magnetic Field lines.	show the direction and strength of a magnetic field. The closer they are the stronger the field. They always point from N to S.
Magnetic flux density (B)	The strength of a magnetic field measured in teslas (T).

The **Right Hand Screw Rule** gives the direction of a magnetic field around a current in a wire.



Field lines run from north to south.

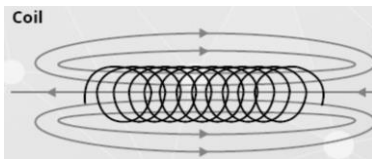
HT only. Fleming's Left Hand Rule predicts the direction of the force on a current in a magnetic field.
F=BIL calculates the magnitude of the force (**F**) on a length of wire (**L**), carrying a current (**I**) at right angles to the magnetic field (**B**).



Core practical. To show the shape and direction of a magnetic field.

- Place a sheet of paper over the bar magnet.
- Sprinkle iron filings over the paper.
- Using a pencil mark the lines where the filings lie, these are the magnetic field lines.
- Remove the iron filings – making sure that the papers stays in the same position over the magnet.
- Place a plotting compass on the field lines to determine the direction of the field. The north pole of the compass will point towards the south pole of the magnet. (Same poles repel, opposite poles attract). **This is how we know that at geographical North there is a magnetic south pole.**

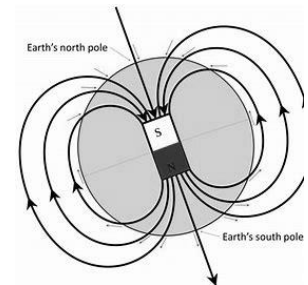
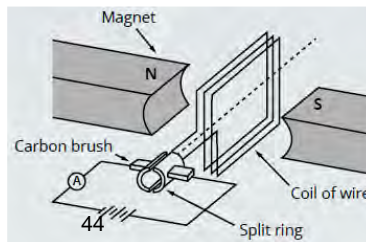
A coil or a **solenoid** produces a **very strong uniform magnetic field** inside the coil. And a much weaker field outside the coil.



The magnetic field strength of the solenoid can be increased by,

- increasing the current
- increasing the number of turns per m
- adding a soft iron core to the centre.

A electric motor uses the fact that magnetic field from the current carrying wire **INTERACTS** with the magnetic field from the magnet and this creates a force on the wire. Each side of the coil carries current in the opposite direction (relative to the magnetic field). Therefore the forces on each side of the coil are in opposite directions, causing the coil to spin. A **split ring commutator** ensures the coil spins in one direction only i.e. rotation does not reverse.



A loudspeaker is an application of the motor effect.

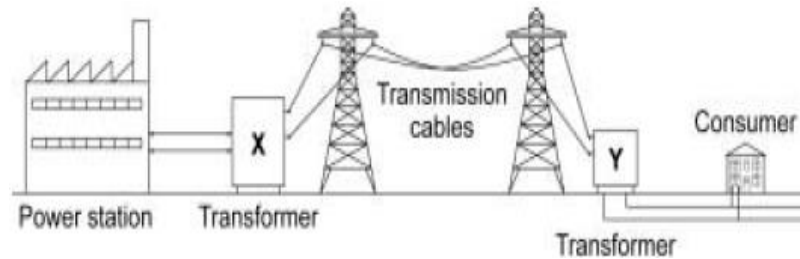
Todmorden High Combined Science Physics

Topic 11....Electromagnetic Induction

Key term	Definition
transformer	Device to change the voltage of an alternating voltage only i.e. will not work with a d.c. supply.
Step-up transformers	More turns on the secondary coil than the primary, increase voltage and decrease current making power transmission safer.
Step down transformers.	Fewer turns on the secondary coil than the primary, decrease voltage to a safer level for consumers.
$V_p \times I_p = V_s \times I_s$	I_p , current through primary coil I_s , current through secondary coil
National Grid	A system of transformers and cables to distribute power from generators to consumers.

Explain how a transformer works (HT)

- An alternating current through a primary coil of wire produces a constantly changing magnetic field around the coil.
- The magnetic field lines from the primary cut across a secondary coil of wire and electromagnetic induction produces a potential difference across the ends of the wire.
- If the ends of the wire are connected in a circuit a current will flow.
- The alternating current will have the same frequency as the alternating current in the primary coil.



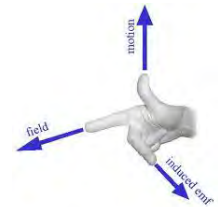
(HT) Factors affecting size and direction of induced potential difference.

1. More turns per m on the output coil,
 2. presence of a soft iron core,
 3. a higher rate of cutting of the magnetic field,
- all **increase** the magnitude of the induced potential difference.

Any reversal of the cutting motion **reverses** the induced potential difference.

The right-hand generator rule can predict the direction of the induced current.

The induced current produces a induced magnetic field which act so as to oppose the first magnetic field.



Explain how electrical power is transferred efficiently and safely to consumers. (FT and HT)

- When an electric current flows through a cable, energy is lost as heat, because electrons collide with ions.
- A step-up transformer (X) increases the output voltage across the overhead cables
- Energy cannot be created or destroyed so the output power from the transformer cannot be greater than the input power

$P_{in} = P_{out}$ i.e. $V_p \times I_p = V_s \times I_s$ and so by increasing the potential difference across the transmission cable, the current through the transmission cable is decreased for the same power transfer.

- Reducing the current through the wire reduces the power loss and increases the efficiency of the power transmission.
- The step up transformer (Y) is needed to decrease the voltage to a safer (not safe) level for the consumer.

Year 11 – Art – TERM 1

This project will be a completely self-led study. Students will be able to have full autonomy over their project and the direction in which they take the work. To begin, students will be asked to research into a specific artist and decide on a theme that their work will be based on (AO2). During this initial research, students will create a digital artist research page and a mood board of their ideas for a theme. Both these pieces of work will contain images for inspiration but also written analysis expresses their ideas and choices (AO3). The next stage of this project will see students develop their understanding of their chosen artist by creating studies of their artist's work (AO1 & AO3) which will help students to improve their understanding of the artist's process and improve their technique and use of materials. Students will need to take a range of photographs in order to advance this project and will then begin to incorporate the artist's style into an image of something more personal to them. During this stage, students will experiment with other materials in order to discover which works best for the style of art they are wanting to create (AO3).

They will then analyse this work in writing: discussing the work they have produced, the intentions behind the work and how these experiments have helped them understand the next steps to be taken. Development of ideas will then show students moving away from a clear use of another artist's style and start to use their gained understanding to create more individualised work. This development will then lead to a final piece, which should be a culmination of all their ideas so far (AO4).

The final piece should be clearly linked to all their work and be an obvious final outcome. The journey of the project should always flow and be clear when looking over it. The final piece needs to be highly refined and show a strong confidence with the subject matter, style and use of materials. This piece will then be evaluated where students will write their feelings towards the piece.

It is important that students create a project that is developed and personal. This can be achieved by the use of own photography. Students are encouraged to take around ten photographs that they can use in order to develop their project. This is preferable to using images found online or through another source as it shows another skill and ability (photography) as well as embedding a more personal element as the photographs are from the student's personal experience.

Each project must have:

- Digital artist research page.
- Copies of artist work.
- Analysis of artist's study.
- Relevant photographs.
- Work inspired by photography.
- Development work.
- Analysis of development work.
- Final piece.
- Evaluation of final piece.

Assessment Objective 1 artist research and showing an understanding and a clear link to other artist's work. This can be shown through artist research pages and copies of the artist's work.

Assessment Objective 2 is your experimentation and ability to use materials. This will be shown through the quality of the work produced and ability to refine those pieces.

Assessment Objective 3 is about annotation and written analysis, this will be shown throughout the project. Annotation must show personal ideas and thoughts rather than facts.

Assessment Objective 4 is the final piece which must show compositional understanding, effective use of materials and a clear link to all previous project work.

Important Vocabulary

Sketch - A rough or unfinished drawing or painting, often made to assist in making a more finished picture.

Proportion - Comparative relation between things or magnitudes as to size.

Refine - To add the finishing touches to something or to improve the quality.

Composition - The considered layout of a piece of work.

Tone - Shade or shadow.

Hatching - Shading with closely drawn parallel lines.

Cross Hatching - A shading technique where lines are over lapped to create the illusion of tone.

Analyse – Examine (something) methodically and in detail, typically in order to explain and interpret it.

Year 11 – Art – TERM 2

This project will be a completely self-led study. Students will be able to have full autonomy over their project and the direction in which they take the work. To begin, students will be asked to research into a specific artist and decide on a theme that their work will be based on (AO2). During this initial research, students will create a digital artist research page and a mood board of their ideas for a theme. Both these pieces of work will contain images for inspiration but also written analysis expresses their ideas and choices (AO3). The next stage of this project will see students develop their understanding of their chosen artist by creating studies of their artist's work (AO1 & AO3) which will help students to improve their understanding of the artist's process and improve their technique and use of materials. Students will need to take a range of photographs in order to advance this project and will then begin to incorporate the artist's style into an image of something more personal to them. During this stage, students will experiment with other materials in order to discover which works best for the style of art they are wanting to create (AO3).

They will then analyse this work in writing: discussing the work they have produced, the intentions behind the work and how these experiments have helped them understand the next steps to be taken. Development of ideas will then show students moving away from a clear use of another artist's style and start to use their gained understanding to create more individualised work. This development will then lead to a final piece, which should be a culmination of all their ideas so far (AO4).

The final piece should be clearly linked to all their work and be an obvious final outcome. The journey of the project should always flow and be clear when looking over it. The final piece needs to be highly refined and show a strong confidence with the subject matter, style and use of materials. This piece will then be evaluated where students will write their feelings towards the piece.

It is important that students create a project that is developed and personal. This can be achieved by the use of own photography. Students are encouraged to take around ten photographs that they can use in order to develop their project. This is preferable to using images found online or through another source as it shows another skill and ability (photography) as well as embedding a more personal element as the photographs are from the student's personal experience.

Each project must have:

- Digital artist research page.
- Copies of artist work.
- Analysis of artist's study.
- Relevant photographs.
- Work inspired by photography.
- Development work.
- Analysis of development work.
- Final piece.
- Evaluation of final piece.

Assessment Objective 1 artist research and showing an understanding and a clear link to other artist's work. This can be shown through artist research pages and copies of the artist's work.

Assessment Objective 2 is your experimentation and ability to use materials. This will be shown through the quality of the work produced and ability to refine those pieces.

Assessment Objective 3 is about annotation and written analysis, this will be shown throughout the project. Annotation must show personal ideas and thoughts rather than facts.

Assessment Objective 4 is the final piece which must show compositional understanding, effective use of materials and a clear link to all previous project work.

Important Vocabulary

Sketch - A rough or unfinished drawing or painting, often made to assist in making a more finished picture.

Proportion - Comparative relation between things or magnitudes as to size.

Refine - To add the finishing touches to something or to improve the quality.

Composition - The considered layout of a piece of work.

Tone - Shade or shadow.

Hatching - Shading with closely drawn parallel lines.

Cross Hatching - A shading technique where lines are over lapped to create the illusion of tone.

Analyse – Examine (something) methodically and in detail, typically in order to explain and interpret it.

Year 11 – Art – TERM 3

This term, students will be given the opportunity to look back over all previous projects in order to finish all work and refine their black boards. During this time students will be able to compose black boards and work back into previous pieces. This time will help students to improve the quality of all the work completed during their GCSE and to help make their projects into full, refined and well rounded artistic journeys.

In conjunction with this, students are also able to complete a final GCSE project if they wish to. During this time, students will be able to have full autonomy over their project and the direction in which they take the work. To begin, students will be asked to research into a specific artist and decide on a theme that their work will be based on (AO2).

The next stage of this project will see students develop their understanding of their chosen artist by creating studies of their artist's work (AO1 & AO3) which will help students to improve their understanding of the artist's process and improve their technique and use of materials. Students will need to take a range of photographs in order to advance this project and will then begin to incorporate the artist's style into an image of something more personal to them. During this stage, students will experiment with other materials in order to discover which works best for the style of art they are wanting to create (AO3).

They will then analyse this work in writing: discussing the work they have produced, the intentions behind the work and how these experiments have helped them understand the next steps to be taken. This development will then lead to a final piece, which should be a culmination of all their ideas so far (AO4).

The final piece should be clearly linked to all their work and be an obvious final outcome. The journey of the project should always flow and be clear when looking over it. The final piece needs to be highly refined and show a strong confidence with the subject matter, style and use of materials. This piece will then be evaluated where students will write their feelings towards the piece.

It is important that students create a project that is developed and personal. Students are encouraged to take around ten photographs that they can use in order to develop their project. This is preferable to using images found online or through another source as it shows another skill and ability (photography).

Each project must have:

- Digital artist research page.
- Copies of artist work.
- Analysis of artist's study.
- Relevant photographs.
- Work inspired by photography.
- Development work.
- Analysis of development work.
- Final piece.
- Evaluation of final piece.

Assessment Objective 1 - artist research and showing an understanding and a clear link to other artist's work. This can be shown through artist research pages and copies of artist's work.

Assessment Objective 2 - experimentation and ability to use materials. This will be shown through quality of work produced and ability to refine those pieces.

Assessment Objective 3 - annotation and written analysis, this is shown throughout project.

Assessment Objective 4 - final piece must show compositional understanding, effective use of materials and a clear link to all previous project work.

Important Vocabulary

Sketch – to press down lightly with your pencil.

Tone – how light or dark something is.

Proportion - the size of something in your piece of work comparison to something else.

Scale - the relative size or extent of something.

Cross Hatching - A shading technique where lines are over lapped to create the illusion of tone.

Hatching - Shading with closely drawn parallel lines.

Composition - The considered layout of a piece of work.

Monochrome - displaying images in black and white or in varying tones of only one colour.

Analyse – to look at or discuss something in great detail.

Complimentary colours – colours that opposite on the colour wheel.

Harmonious colours – colours that are next to each other on the colour wheel and are easily blended.

Refine – to neaten up your work, to add the finishes touches.

Texture – the feel, appearance, or consistency of a surface.

Focal Point - the center of interest or activity.

Business Growth

There are four ways a business can merge or takeover another business:
 Join with a supplier.
 Join with a competitor.
 Join with a customer.
 Join with an unrelated business.

Sources of Finance for Large Businesses

Internal source of finance

Retained Profits.
 Selling Assets.

External Sources of Finance

Loan capital.
 Share capital.

Changing Aims and Objectives

As a business grows, its aims and objectives will change.

They could: Change if they aim to survive (earlier stages) or grow (more established business).
 Change the size of their workforce.
 Enter or exit new markets.
 Change the size of their product range.

Economies of Scale

Larger businesses can buy raw materials in bulk, so get them at a cheaper price per unit.
 Larger firms can afford to operate and purchase advanced machinery that are faster and cheaper to run.
 A factory that is 10x as big won't be 10x as expensive—the law of dimensions.

Key words

Internal growth (organic growth) When a business grows by expanding its own activities. It is low risk, but slow.

External Growth (inorganic growth) When a business merges or takeover another business. This is higher risk, but faster.

Merger When two businesses join together to form a new larger business.

Takeover When an existing form expands by buying more than half the shares in another business.

Retained Profits Profits the owners have put back into the business

Selling Assets Business can sell fixed assets no longer in use. money borrowed from the bank, paid back with interest.

Loan Capital If a business becomes a limited company they can sell shares.

Share Capital Shares in the company are traded on the stock market so they can be bought and sold by anyone. They have limited liability.

Public Limited Company

Economies of Scale When a business expands, its costs may decrease per unit produced. This is called economies of scale.

Diseconomies of Scale. When a business expands, it could cause some costs to increase per unit.

Globalisation When businesses and countries become more connected because of better technology, travel and communication .

Tariffs taxes on goods being exported or imported.

Trade blocs Groups of countries that have little or no trade barriers between them (such as the European Union).

Sustainability Acting in a way that will not harm the earth for the future.

Globalisation

Globalisation can have many impacts on business:
 Imports: businesses have a larger, global, market to buy from. Can buy supplies cheaply.
 Exports: Easy to export so a larger market to sell to.
 Location: easier for businesses to locate and operate abroad
 Multinationals: when a company operates in a new country, businesses already in that country need to make sure they are able to compete.
 There are barriers to international trade:
 Tariffs and Trade Blocs
 How businesses can compete internationally:

- Use e-commerce to sell goods online.
- Adjust the marketing mix to suit a given country.

Environmental Influences

Businesses can be sustainable by:

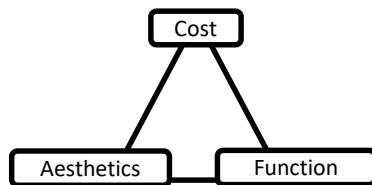
- Using less packaging and recycling.
- Disposing of hazardous waste in the correct way.
- Using efficient machinery.
- Using renewable energy sources such as solar.

Benefits of being environmentally friendly:
 Positive brand image.
 Being “green” can be a USP and give competitive advantage
 However, being environmentally friendly can be expensive, such as buying new energy efficient equipment.

Ethical Considerations

A stakeholder that persuades businesses to be more environmentally friendly are pressure groups. They can run campaigns on businesses that are not environmentally friendly and ruin their brand image.
 Businesses may act unethically by:
 Forcing staff to work excessively long hours.
 Forcing staff to work for low pay.
 Buying raw materials from businesses that exploit staff

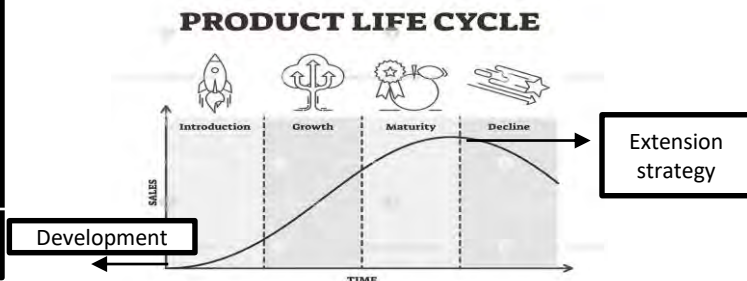
Design mix



Extension Strategies

Repackage/ Rebrand - This might give a fresh appeal to the product.
Advertise- This will attract/ remind the current market or attract a whole new market of customers.
Add Value - Add something to the product or service that makes it more valuable, eg; free delivery or a free 1 year warranty.
Reduce price - Making the product more affordable is likely to mean more customers are willing and able to buy the item.
Target new markets - Targeting new audiences with your product that you previously haven't focused on.

Product life cycle



Pricing Strategies

Penetration Pricing - A business tries to enter (penetrate) the market by selling the product at a low price to begin with. This will generate interest.

Loss Leader Pricing - This is when a business charges less for the product than it actually cost them to buy/ make, with the intention of drawing the customer in to buy other products.

Price Skimming - This is where a businesses charges a high price to begin with when there is a high demand, but then drop the price over time as there is less demand.

Competitive Pricing - This is when a business charges a similar prices to other similar companies.

Cost-Plus Pricing - This is where a business works out their total costs of making each product, then adds an amount on top of this to create a sales price which will make the business profit.

Promotion

As businesses grow, it is important that they change their promotion styles to make sure they target the correct audiences and support the brand image:

Advertising: (communicating with an audience en masse) Advertising can consist of newspaper, TV, billboard, magazines, posters, social media etc
Sponsorship: A business will give money to an event, team or individual in order to build brand awareness.
Product trials: Product trials are methods designed to entice customers to purchase for the first time to see if they like the product and would buy again.
Special offers: Special offers may help when using penetration pricing or price skimming. Also to generate loyalty when competition enter the market.
Social Media: This is the most up-to-date method of promotion, posting adverts to your target audience on social media accounts or persuading your customers to post reviews or images of your product.

Place

As businesses grow, suitable locations should be chosen to sell the products. It is important that you choose the correct 'distribution channel' to get your products to your customers

Retailer

Key words

Retailers are companies which sell directly to consumers. A business may decide to cut out 'the middle man' to maximise their profits by selling directly to retailers OR by opening their own retail stores.

Wholesaler

Wholesalers are businesses which sell to other businesses. You may decide as a business to sell only to wholesalers as you can sell in bulk to them and there is no need for you to open retail stores.

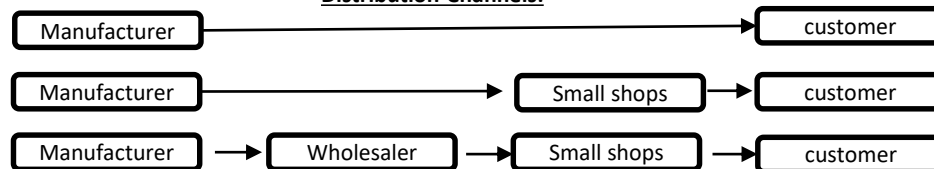
E-tailer

E-tailers are businesses that sell products ONLINE. You may decide to become an e-tailer or to sell to an online e-tailer. E-tailers have fewer overheads as they generally do not have the overheads of a shop to pay for.

Global market

A global market means customers from all around the world. It is great for a business to enter a global market as it increases the target audience therefore the number of potential sales.

Distribution Channels:



Key words

Production Methods	Advantages	Goods	
Job Production	Bespoke, unique, one off, to customer’s measurements or specifications.		‘Tangible’ products that you can touch and the consumer can buy.
	Very motivated workers. Motivated workers are normally more productive and have lower rates of absenteeism.	Services	A service is something that is provided for the customer by the business. The business does something for them.
	Higher prices can be charged.	Job Production	A single product is made at any one time.
	Disadvantages	Batch Production	Small quantities of identical products are made.
	Skilled labour and craftsmen are expensive so will increase the business costs.	Flow Production	Flow production uses production lines with continuous movements of items through the process.
	Wide range of tools may be required to complete the job with it being so specialised.	Productivity	A measure of the efficiency of a person, machine, factory, system.
Batch production	Advantages	Bar Gate Stock graph	A graph used by businesses to show changes in the level of stock over time.
	Flexibility because production can be changed to meet customer needs.	JIT (Just in Time)	Is a method of stock control where materials or parts are delivered just when they are needed which creates less of a need for a warehouse.
	Standard production of items means it can be mechanised so less labour involved. Employees specialise so become good at their job.	Quality Control	A business inspects the products once they have been made to check the quality.
	Disadvantages	Quality Assurance	A business checks the quality of the product at each stage of production.
	Workers may be less motivated with repetitive work.	Competitive Advantage	A superiority gained by an organisation when it can provide the same value as its competitors but at a lower price, or can charge higher prices by providing greater value through differentiation.
	Idle time between batches needs to be managed as this is wastage because work stops while the machines are changed to make the next product. If one batch takes too long the other batches will all be held up.	Procurement:	Obtaining or buying goods and services.
Flow production	Advantages		
	A business can make larger quantities which means they can bulk buy raw materials and save money (economies of scale). Automated and computerised production means improved quality ‘.		
	As production is continuous stocks of parts and raw materials don’t need to be held.		
	Disadvantages		
	High costs to buy the factory and machinery.		
	Low motivation of staff due to repetitive tasks.		

Key words

Gross Profit Margin

Gross profit is the difference between the selling price of the product and what it costs to make. It shows the amount of money that contributes towards paying off fixed costs
Gross profit = Sales Revenue—Cost of Sales

Gross profit margin puts this information into a percentage, showing what percentage of the selling price goes towards paying off fixed costs. It uses the following formula.

$$\text{Gross profit margin} = \text{Gross profit} / \text{Sales revenue} \times 100$$

Net Profit Margin

Net profit is what is left over after all the fixed costs are taken away from the gross profit. It is calculated using the formula:
 Net Profit = Gross Profit—Operating Costs
 The net profit margin will always be lower than the gross profit margin. The higher the net profit margin is, the happier the shareholders of the company will be.

$$\text{Net profit margin} = \text{Net profit} / \text{Sales revenue} \times 100$$

Average rate of return

Businesses will need to make a choice about how they spend their money. In order to make the best decision they can use ARR which shows the average amount of profit a project will make over its lifetime. The formula:

$$\text{Average rate of return} = \text{average yearly profit} / \text{initial investment} \times 100$$

Line Graphs

Data represented as lines, making it easy to identify trends, especially if time is on the horizontal axis. Trends are important for businesses to notice so they can make decisions about the future of the company in the hopes of being successful.

Bar Charts

Data represented so that the height of the bar represents the quantity involved; good for making comparisons. It can be represented horizontally or vertically, and is used to compare different information for groups, good if you want to compare competitors or a market.

Pie Charts

Data presented in a circle, with each slice of the pie representing a proportion of the whole; good for proportions of a total. This is particularly good for comparing market share or sales in a market as it shows which companies have the most sales. when an existing form expands by buying more than half the shares in another business

The Use of Financial Information

Businesses can use financial information to analyse their current position in the market and work out what they are going to do to survive and succeed.

The Limitations of Financial Information

Raw data may be biased or inaccurate. Data is only quantitative and qualitative data can be more insightful. Data doesn't help if businesses don't take the time to analyse it properly - they need to be patient

Fixed Costs

Business costs such as rent which are constant and don't change due to goods produced. When a business expands, it could cause some costs to increase per unit.

Variable Costs

A cost that varies with level of output.

Investment

The distribution of money by a business hoping to eventually gain benefits from it.

Expenses

The costs of operating the business

How to Improve Gross Profit

Increase the price customers have to pay.
 Cut the price paid to the supplier by:
 Negotiating with the existing supplier.
 Get cheaper materials or redesign the product.

Business collect data about:

1. Competitors' finance
2. Customers
3. Sales
4. The market

Financial Data Limitations

Data helps business to make decisions and justify these decisions Types of data – break even point, profit margins etc.
 Marketing data – market research.
 Market data – knowing the competitors.

 Has to be compared against a similar competitor or previous year.

 Lots of different variables as no two business are exactly the same.

 Does not include variable data.

Methods of recruitment
Internal

Advantages

Fast recruitment process
Easy to advertise
Cheaper than advertising and recruiting externally
Could offer the job as a promotion to an existing employee.
The candidates already know the business

Disadvantages

Limited choice of applicants
Unlikely to bring any new ideas to the business

External methods of recruitment

Advantage

Higher number of potential candidates
May bring new skills into the business
May bring new ideas into the business

Disadvantages

May take longer to find the right candidate
Can be expensive (especially if using a recruitment consultant)
The candidate may turn out not to be as good as they seemed in interview.

Written communication

Poor spelling, illegible handwriting, poor font or presentation.

General

Timelines – can be in different time zone or not get back quick enough.
Use of jargon may make it confusing
Cultural differences.

Verbal

Language not understood.
Accent not understood
Speaking too fast or too slow
The names of roles may vary depending on the business but most businesses employ people in the same sorts of roles. These roles that are commonly seen in business's are :

- Director*
- Senior Management*
- Sponsors and team leaders*
- Operational and support staff*

Barriers to effective communication

Key job rolls

Key words

Hierarchical organisation
Centralised organisation

Flat structure

Communication

Barrier to communication

Excessive communication

Flexible hours

Freelance contract

Remote working

Application form

CV

Job description

References

Formal training

Retention

Levels of responsibility in an organisation

An organisation in which most decisions are made at head office
An organisation with few layers of hierarchic
The passing of information from one person or organisation to another

Something that prevents the flow of communication

Too much communication causing overload for staff – a particular problem with e-mail

A contract between a company and an employee that doesn't specify how many hours of work will be provided.

An agreement over one job between a company and self –employed worker.

Working away from the office

The series of questions a job-seeker must fill in when trying to get an employer interested in interviewing them

Sets out the persons qualifications , experience and other relevant facts when applying for a job.

A short account of the main features of the job.

People (such as teachers) who are willing to answer questions about the qualities of a job applicant.

The official training programme

A calculation of how many staff stay loyal rather than leaving. Or example staff staying as a percentage of all staff.

Recruitment Documents

Formal Training methods

Reasons why business train employees

Informal training methods

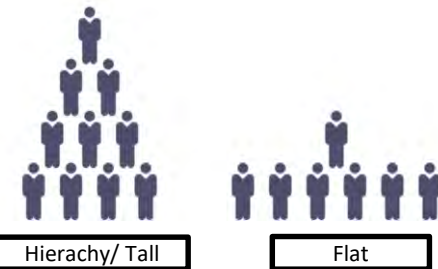
Hierarchical structure

Person specification
Application form
The Curriculum Vitae (CV)

Professional exam or test, online training, workshops, conferences, webinars, qualifications from college/university.

Enable employees to do their jobs
Identify any gaps in ways role are being performed.
Show employees that the business values them

Ensure that employees are up-to-date with any changes in the industry.

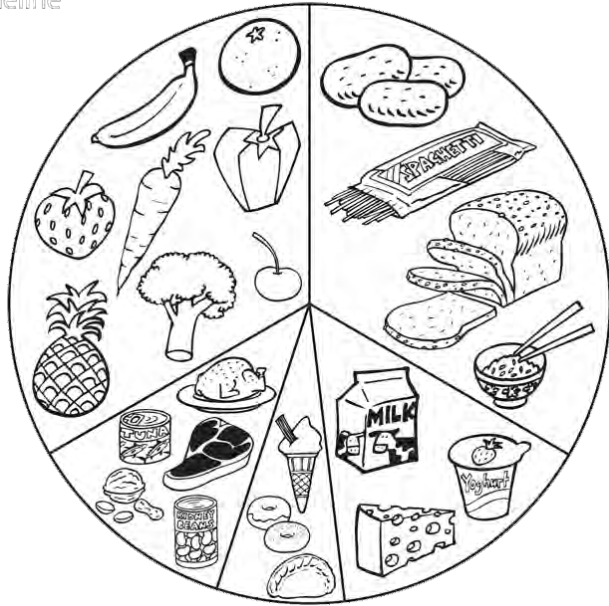


A hierarchical or 'tall' structure has many leaders and layers of management, and businesses with this structure often use a 'top-down' approach with a long chain of command. In a hierarchical structure, managers will have a narrow span of control and a relatively small number of subordinates or staff. The communication pathway within a tall structure is usually long, because communication has to pass through each element in the chain of command

Healthy eating 0-5 years

Timeline

Use your fine motor skills to colour this in!



- Balance
- Portion control
- Limit to processed food
- A range of healthy food and snacks

Weaning

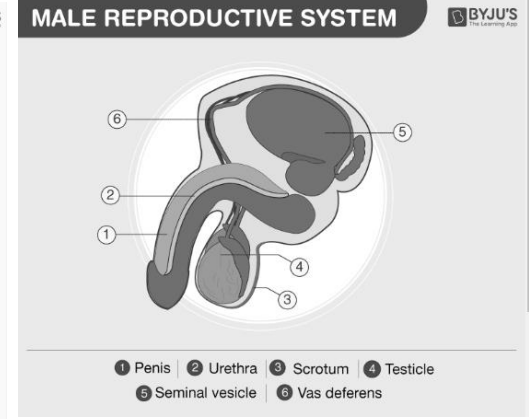
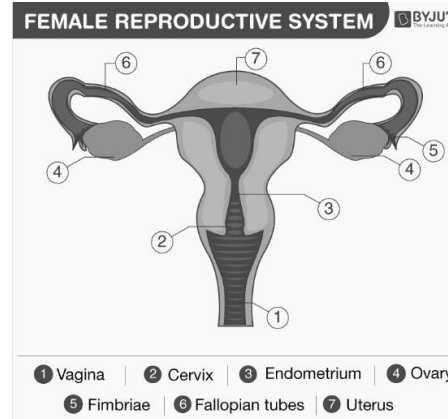
0-6 months	Breast/formula milk
6-12 months	Stage 1&2
1-5 years	Normal

Nutrients

Nutrient	Function	Example
Protein	To aid growth and repair. They make new cells as a babies grow and develop. Also replace damaged cells or tissue caused by injury.	Animal source- Meat, fish, milk, eggs. Vegetable source – soya, tofu, beans, pulses.
Carbohydrate	To produce energy. They are broken down into glucose within a child's body and are absorbed into their bloodstream.	Starches – Bread, pasta, potatoes, rice, cereals, beans Sugars- Fruit, honey, sweets
Fats	To produce warmth and protection. The layer of fat under children's skin provides insulation to keep them warm.	Saturated fats – butter, milk, cheese, meat, palm oil. Unsaturated fats – olive oil and nut oil. Polyunsaturated fats- oily fish, corn oil, sunflower oil.
Vitamins	To promote health and prevention of disease.	A, B group, C, D, E ,K
Minerals	Building strong bones and teeth. Healthy red blood cells, skin and hair. Nerve function. Muscle function.	Calcium, Iron, Zinc, Sodium Chloride (salt)
Fibre	To encourage the body to pass out waste. Prevent constipation. Improve digestive health.	Frit, such as bananas and apples. Peas, carrots, wholemeal pasta, beans and lentils, oats, dried fruit, sweetcorn.
Water	To flush waste products from the kidneys. To lubricate joints.	Tap water (H2O) Fruit juice Milk

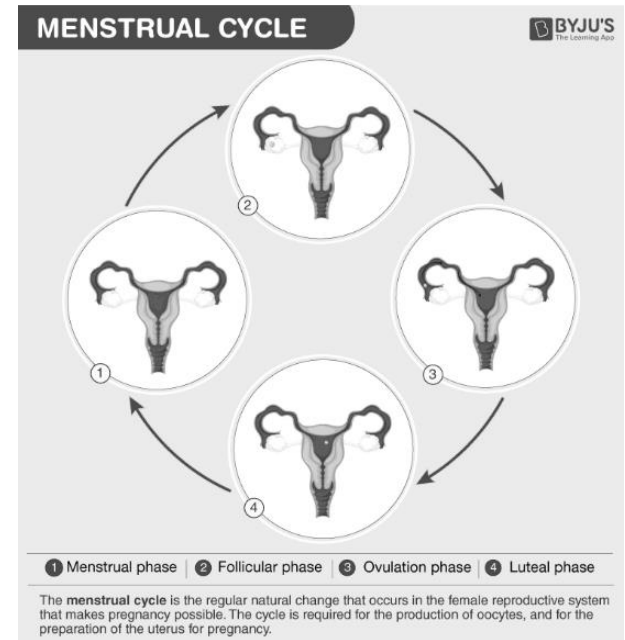
Pre-conception

Decision to have children <i>Timeline</i>	Relationship between partners Finance/money Parental age Social expectations Genetic/hereditary disease
Health issues	Weight Smoking Drinking Alcohol Recreational Drugs Parental age
Other health factors	Folic acid supplements Up-to-date immunisations



Contraception

Barrier methods	Male condom 98% effective, prevents STIs Female condom 95% effective, prevents STIs Diaphragm or cap 92% effective, reusable, inserted a few hours in advance, needs spermicidal gel, can cause cystitis
Hormonal methods 99% effective,	Combined pill 21 days on, 7 days off, contains progesterone and oestrogen Progesterone-only pill taken every day within a 3 hour timeframe Contraceptive injection every 12 weeks from a health professional, Contraceptive implant small tube in the arm with slow release of progesterone, last for 3 years Intrauterine device/system (IUD/IUS) 'the coil' small T shaped device inserted into the uterus by medical professional, releases progesterone Contraceptive patch worn for three weeks, changed each week, week off, contains progesterone and oestrogen Emergency contraceptive pill 'morning after pill' needs to be taken within 72 (Levonelle) or 120 hours (ellaOne),



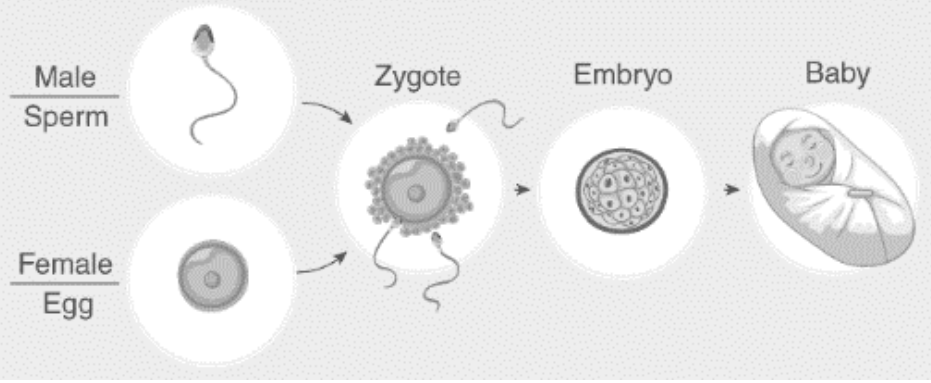
Natural methods	Recording symptoms of fertility (temperature, cervical mucus, menstrual cycle) so that sex can be avoided (or a barrier method used) on fertile days. Does not prevent STIs
-----------------	--

All % effectiveness is based on the contraception being used correctly

Fertility – being able to conceive children

Infertility – not being able to conceive children after 12 months or more of regular unprotected sex

SEXUAL REPRODUCTION



Signs of pregnancy

- Breast changes
- Missed period
- Nausea
- Passing urine frequently
- Tiredness

Key terms

Ovulation: release of eggs from ovaries.

Conception or Fertilisation: the process in which the nucleus of a sperm cell fuses with the nucleus of an egg cell to produce a zygote which will eventually grow into offspring.

Implantation: the fertilised egg attaches itself to the lining of the uterus

Embryo: the combination of cells in a fertilised egg before 8 weeks

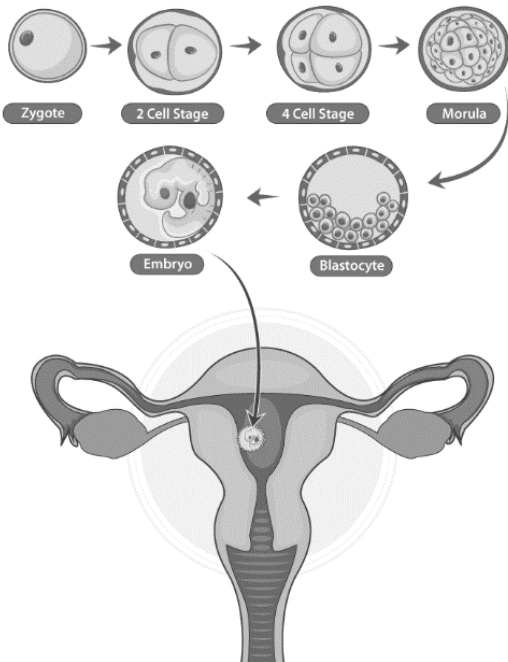
Foetus: the name for the unborn baby after 8 weeks and up to birth

Amniotic fluid: the protective liquid surrounding the baby and containing nutrients and hormones.

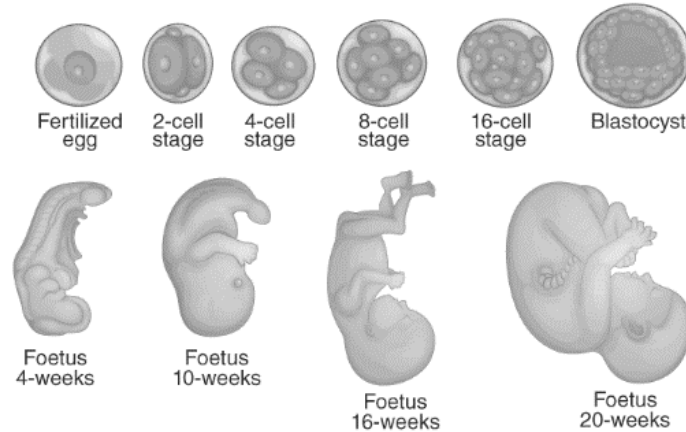
Umbilical cord: tube that connects foetus to the mother. A vein takes food and oxygen to the foetus, two arteries carry waste to the placenta.

Placenta: an organ in the uterus during pregnancy. It supplies oxygen and nutrients to the baby and removes waste products.

DEVELOPMENTAL STAGES OF ZYGOTE



EMBRYO DEVELOPMENT



Ante-natal care – the care given to a pregnant mother and her unborn baby during pregnancy and ahead of the birth.

Health professionals

- GP** (general practitioner)
Midwife (hospital, community, independent)
Obstetrician (specialist doctor for complex pregnancies)

Midwives check

- Baby's heartbeat
- Mother's blood pressure
- Blood tests to check for anaemia, high blood sugar, blood group, German measles, Hepatitis B & C, HIV
- Examination of the uterus
- Urine for protein, glucose, ketones, STIs
- Weight of mother

Diagnostic tests

- Non-invasive pre-natal testing (blood test)
- Chorionic villus sampling – removal of cells from placenta – risk of miscarriage
- Amniocentesis – amniotic fluid is removed for testing

Ante-natal appointments

- 1) 8-12 weeks (booking in)
- 2) 8-14 weeks (dating scan)
- 3) 18-21 weeks (anomaly scan)

Screening tests

Anomaly Scan

Checks: *bones; heart; brain; spinal cord; face; kidneys; abdomen*

The **sonographer** will look for the following 11 conditions:
Anencephaly; open spina bifida; cleft lip; diaphragmatic hernia; Gastroschisis; exomphalos; serious cardiac abnormalities; bilateral renal agenesis; lethal skeletal dysplasia; Edwards' and Patau's syndromes

Nuchal fold translucency test checking for risk of baby having Down's syndrome (Trisomy 21)

Triple test checking for chances of Down's, Edward's and Patau's syndromes

Preparation for birth – ante-natal classes

Ante-natal (parenting) classes

- From 30 weeks
- NHS or Private (NCT)
- Labour and birth
- Parenting and baby care
- Both parents can attend
- Promotes health lifestyle and diet

They cover:

Labour and birth

- What to expect
- Options for where to give birth
- Pain relief options
- Interventions – ventouse or forceps
- Mother's health after birth
- Discuss concerns and emotions

Choices for delivery

Hospital birth

- Consultant-led unit
- Midwife (or GP) led units
- Birthing centres

Home birth

- Midwife attends home of mother

Birthing pools

- Often in birthing centres
- Hired for home births

Parenting and baby care

- Feeding – breast or bottle
- Sleeping – safe sleep routines
- Bathing

Foods to avoid during pregnancy

Unpasteurised milk; mould-ripened soft cheese with a white coating on the outside (e.g. brie); soft blue cheeses e.g. gorgonzola; raw or undercooked meat; liver and liver products; pâté; game meats; raw or partially cooked eggs that are not stamped British Lion duck, goose or quail eggs unless cooked through; swordfish, marlin, shark, raw shellfish; alcohol; liquorice root

There are other foods and drinks that should be **limited in pregnancy**
Oily fish should be limited to two portions per week; no more than two tuna steaks or four medium-sized cans of tuna per week; caffeine should be limited to 200 mg per day; no more than four cups of herbal tea per day; high-dose multivitamin supplements and any supplements with vitamin A in them must be avoided.

Women are advised to be careful to ensure that fruit, vegetables and salad do not have soil on them, which could cause illness.

Labour

Pain relief

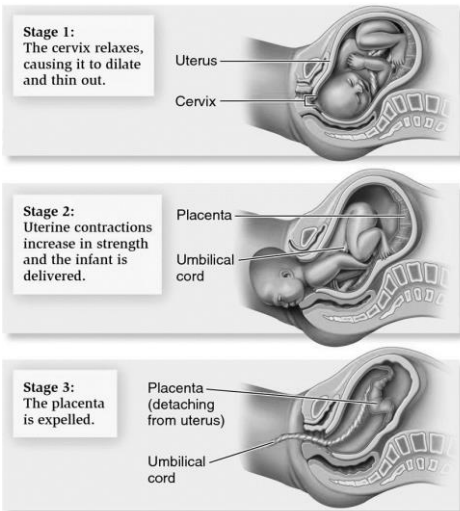
- Epidural anaesthetic
- Entonox (gas & air)
- Pethidine
- TENS machine

Signs labour has started

- A show (plug of mucus)
- Waters break (amniotic fluid)
- Contractions (muscles contract and release)

Stages of labour

- Stage 1 – labour
- *Transition stage*
- Stage 2 – birth
- Stage 3 – delivery of placenta and membranes



Assisted Birth

Sometimes during birth there are complications that mean the mother and baby need medical help. This is called '**assisted birth**'. Assisted birth often has risks of vaginal tearing, blood clots and incontinence.

Forceps – like tongs around baby's head.

Ventouse – vacuum cup which uses suction to attach to baby's head.

For both of these the **obstetrician** gently pulls during a contraction.

Episiotomy – incision in the perineum to enlarge the opening for the baby to pass through.

Caesarean

Elective or emergency Operation to deliver the baby through a cut made in the abdomen or womb Major surgery!

Reasons include:

- Breech baby
- Low-lying placenta
- Pre-eclampsia
- Infections or STI/HIV
- Baby starved of oxygen (urgent)
- Labour not progressing
- Excessive vaginal bleeding

Post-natal checks

Apgar score

Assesses 5 vital signs: heartbeat, breathing, muscle tone, reflex response and colour. Carried out at 1, 5 and 10 minutes after birth.

Skin

- Checked for birth marks
- Salmon patches or stork marks
- Blue-grey spots
- Infantile haemangiomas (strawberry marks)
- Vernix – natural waxy moisturiser
- Lanugo – soft fine hair often still on premature babies

Weight/Length/Head circumference are measured and recorded in the 'red book'.

Days 1-5 Physical examination

Feet, fingers, hips (developmental dysplasia), eyes, heart, testicles, fontanelle

Day 5 Heel Prick – checking for rare but serious diseases.

Apgar score

	Score 2	Score 1	Score 0
A ppearance	Pink	Extremities blue	Pale or blue
P ulse	> 100 bpm	< 100 bpm	No pulse
G rimace	Cries and pulls away	Grimaces or weak cry	No response to stimulation
A ctivity	Active movement	Arms, legs flexed	No movement
R espiration	Strong cry	Slow, irregular	No breathing

Post-natal care

Timeline
Health visitor

Qualified nurse or midwife
Support from pregnancy to 5 years

Midwife finishes working with parents 10 days after birth. They will then have a visit from the health visitor.

Advice is given on:

Feeding; sleeping; health and development; mental health – especially post natal depression.

Developmental needs of children from birth to five years






- Warmth
- Feeding
- Love and emotional security
- Rest/sleep
- Exercise
- Cleanliness/hygiene
- Stimulation
- Routine (feeding, bath time, bed time)
- Shelter/home
- Socialisation/play
- Opportunities for listening and talk
- Acceptable patterns of behaviour
- Boundaries

Needs of the child

Follow the
six steps
to safer sleep

1. Keep baby away from smoke, before or after birth.
2. Put baby in a cot, crib or Moses basket to sleep – never fall asleep with them on a sofa or a chair.
3. Never fall asleep with baby after drinking or taking drugs/medication.
4. Put baby to sleep on their back with their feet to the foot of the cot.
5. Keep baby’s head and face uncovered and make sure they don’t get too hot.
6. Breastfeed your baby – support is available if you need it.

Toy safety symbols

British Lion Mark		Toys have been tested.
BSI Kite mark		Safety requirements have been met.
CE mark		Declaration from the manufacturer that the toy is safe.
Age advice symbol		Not suitable for under 3s.
Fire resistant symbol		Passed a scientific control test showing resistance to fire.

Childhood illnesses

Mumps, measles, tonsillitis, chickenpox, common cold, gastroenteritis, meningitis

Computer Science GCSE J277 1.5 System Software

KEY VOCABULARY (Operating Systems)

Operating systems (OS)	Collections of programs that tell the computer hardware what to do.
User interface	The means of communication between the user and the computer. These are typically either <i>command line</i> or <i>GUI</i> .
Command Line	The most simple form of interface where users type commands into a prompt.
Graphic User Interface (GUI)	Most modern computers have a GUI, which uses icons to represent the programs and files. The user runs the programs through a touch-screen or mouse-controlled pointer.
Voice Command	Increasingly users are able to speak commands to devices such as Google Home and Amazon's Alexa.
Memory management	The OS controls available memory, moving programs to and from secondary storage to RAM.
Multitasking	Often users have more than 1 program running at once. In reality, each CPU core can only carryout 1 task at a time, but the OS alternates between the programs to make it appear that multiple tasks are running simultaneously.
Peripheral management	Computers must communicate with a range of external devices such as printers, monitors and scanners (peripherals). The OS uses <i>drivers</i> to correctly pass data to the device and ensure correct function.
Drivers	A driver is a piece of software which provides communication between the CPU and a peripherals device.
User management	Multiple users can have accounts on the same computer, each with their own files, settings and applications, protected with passwords. The OS will ensure that only users who are granted permissions can use files or programs belonging to other users.
File management	Computers store files and data in hierarchical folder systems. This is efficient and allows for quick navigation.

KNOWLEDGE

Software Utilities

Utility	Description	Benefits
Encryption	Coding data so it can only be read using the correct key.	Secures data when sending across a network.
Defragmentation	Reorganising fragmented data on a drive to store in a contiguous order and group empty space.	Improves system performance by improve disk read/write speeds.
Data Compression	Process of making file size smaller.	Compressed files take up less storage space and are quicker to download.
Back-up	Copy of computers system files and settings store externally.	Protects against data loss, such as: hardware failure, flood, fire and accidental deletion.

Types of Backup

Full	Incremental
This is when a copy of every file on the system is taken. Full back-ups take lots of storage space, take a long time to create but are quicker to restore from.	Is when only files created or edited since the last back-up are backed up. This is quicker and takes less storage. However, restoring is much slower as incremental back-up needs to be restored.

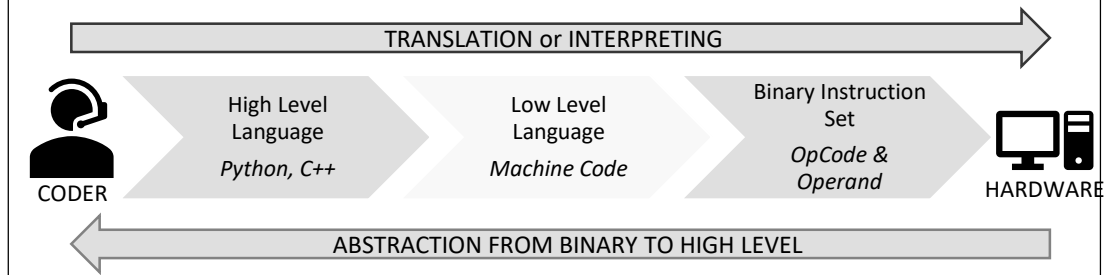
Open Source vs Proprietary Software

Open Source:	Advantages	Disadvantages	Proprietary:	Advantages	Disadvantages
Software than be modified and shared by anyone	Usually Free. Can be adapted to suit user. Made not for profit (benefit the wider good).	Limited documentation and customer support. May not get regular updates and could contain errors.	Software than can only be modified and shared by the creator (e.g. Microsoft).	Well tested and more reliable. Comes with warranties and customer support. Regular patches and updates.	Can be expensive. Companies may longer support older versions. May not fit exact user needs.

KEY VOCABULARY

Low Level Language	A programming language which is closer to binary than English
High Level Language	An abstracted programming language which is closer to English than binary
Instruction Set	Binary code which tells the computer hardware what to do – OpCode and Operand
Machine Code	1 to 1 instructions coded in mnemonics (STO, ADD, MOD, DIV etc) which must be converted to binary to run
Abstraction	Removing a level of detail to allow focus on the problem solving rather than the specifics. <i>Python, and all other High Level languages are abstracted. You do not need to know the machine code to get something to happen</i>
Translator	A utility to convert High Level Code into binary machine code so it can be executed
Interpreter	A utility which translates High Level code on a line by line basis and executes the program as it goes in a special test environment
IDE	Integrated Development Environment
Text Editor	A place to type code, focused on the content of the file, not the look of the file
Error Diagnostics	To test a program and provide feedback to the coder so that errors can be fixed
Run Time Environment	Part of an IDE which allows a piece of code to be tested without installation

Working the Machine:



For coders to be able to write code quickly, high-level coding language have been made which allow the coder to use *almost* natural language (like English) to solve problems. These **ABSTRACTED LANGUAGES** must be converted into binary code instructions that the CPU can execute in order to work. This conversion of instructions is done in 1 of 2 ways. They are either *interpreted*, one line at a time, and executed immediately, or they are *translated* by converting the entire code file in one go, then attempting to run the program only once the converter has finished *compiling*.

Features of an Integrated Development Environment (IDE)

FEATURE	PURPOSE and BENEFITS
Text Editor	An IDE's text editor is where the code is typed. It is not concerned with the look of the code, but usability. Additional features of IDE text editors are: line numbers, code colouring by context, automatic indentation, autocomplete, code-folding, overview 'map', multiple cursors
Error Diagnostics	IDEs will give real-time feedback to the coder to show any obvious errors before compiling. These are often with highlighting or line markers. Additionally, any errors which show up during compiling are flagged with helpful guidance to the coder about the error type and the line number
Compiler	A utility which attempts to turn the program into a runnable program. This will either be a translator/compiler or an interpreter
Run-Time Environment	A 'safe sandbox' where code can be tried out without installing it to the computer. Often ring-fenced from the main machine to prevent accidents.

KEY VOCABULARY

Defensive design	Planning a program from the very beginning to prevent accidental or purposeful misuse
Input sanitization	Removing erroneous data from a system prior to processing
Data validation	Ensuring all data is in the correct format prior to processing
Contingency planning	Having built in checks and outcomes based on what happens when things go wrong
Anticipating misuse	Building programs which do not allow a user to deliberately break the system
Authentication	Having different levels of user, and preventing everyday users from being able to significantly change a system
Maintainability	Building software which is modular to enable sections to be updated and replaced without having to write the whole program again from scratch
Code comments	Annotating code so that the person maintaining or working with your code in the future is able to understand your thought process
Indentation	Making code more readable by laying it out in a manner that keeps sections of code separate
Iterative testing	Step by step testing to ensure that small sections of the code work, before new parts are added and then retested. Important to allow <i>traceback</i> to find what caused any errors
Terminal testing	Significant testing done once a program is complete under a range of conditions and on multiple hardware – often called <i>Alpha Testing</i>
Beta Testing	Making a small release of the software to a group of tech-literate enthusiasts to broaden the usage-testing and get lots of feedback prior to full release.
syntax error	An error in the typing of the code. Missing punctuation, spacing etc
Test data	Data chosen to test the program. Testers use a specific range of data

TESTING DATA

Data Range	The data that will be used to check the code works correctly
Valid Data	Obvious data which should definitely pass
Valid Extreme	Unusual data – the highest and lowest data – on the very edge of what should pass
Invalid Extreme	Data, of correct type, which is on the very edge of what should fail
Invalid Data	Data, of the correct type, that should definitely fail
Erroneous Data	Data that is the wrong type and should fail
Expected Outcome	The data the code should output if it is running correctly

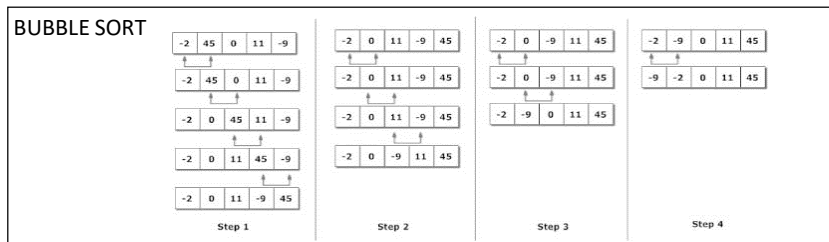
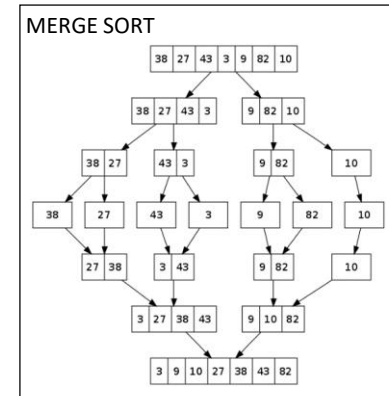
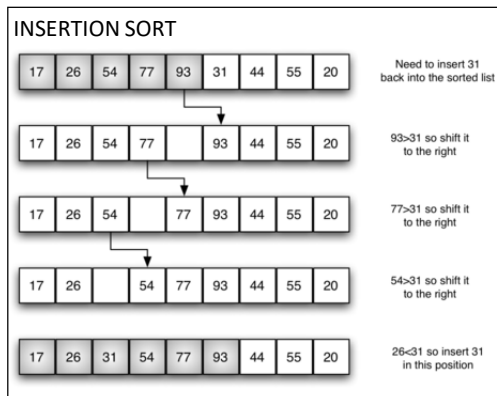
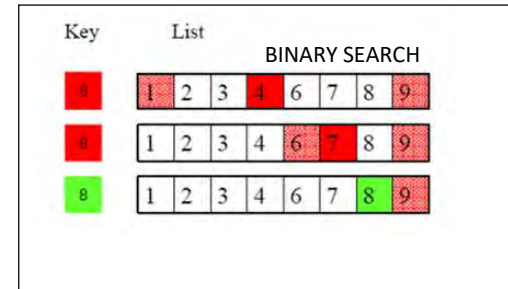
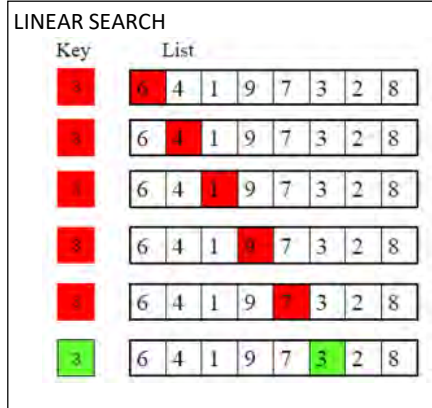
ERROR TYPES

Syntax Error	An error in the code – incorrectly typed, missing punctuation etc
Logical Error	An error which, although allows the code to run, produces incorrect outcomes
EOF Error	The <i>End of File</i> has been reached, whilst the computer is waiting for a snippet to be completed.
Type Error	Attempting to use data incorrectly – adding 1 to a string etc
Name Error	Using a variable before its declaration
Indentation Error	Loops or functions are incorrectly indented

Computer Science GCSE J277 Searching and Sorting Algorithms

KEY VOCABULARY

Algorithm	An abstracted program which completes a given task, whatever the data provided.
Search	Searching is looking through data, making comparisons with a search term, until the algorithm either finds the data, or identifies that it is not present.
Sort	Putting given sets of data into specified order – usually ascending (alphabetical) or descending (reverse alphabetical).
Linear Search	A type of search where the computer checks every variable, in order, until it finds the search term. Potentially very slow.
Binary Search	A search type based on repeatedly halving the searchable data, until the search term is found
Bubble Sort	A method of sorting data which looks at pairs of variable, and swaps them around if out of order. This continues until there are no more swaps to be made.
Merge Sort	Splits the data into increasingly small segments, until single data points are reached, then reassembles the data structure one item at a time.
Insertion Sort	Checks through the data until finding the first incorrectly places item. The algorithm then checks all the previous places to see where the data fits, before inserting it into this slot.



Computing GCSE – 1.8
J277 Ethical, Legal, Cultural & Environmental

KEY VOCABULARY	
Ethical	Relates to <i>right and wrong</i> but in a moral sense than a legal issue. For example, there is nothing to stop you legally from using Facebook to stalk an ex-partner, but whether it is <i>right</i> to do so, is an ethical issue
Legal	There are certain laws set by government that control how computers can be used – see box
Cultural	These issues relate to society and how technology can affect religious, or social ideas. If people spend all their time on their phones rather than talking face to face, this is a cultural issue
Environmental	How computing impacts on the global and local environments. This might be waste production, or mining to gather resources needed to make phones, or using renewable energy to charge phones, or recycling projects. Companies want to be seen to be 'green'.
Privacy	Privacy is a very important issue. A persons right to privacy is very important and there are strong law, alongside ethical guidance that govern how companies can use our data
Stakeholder	Anyone that is impacted on, in any way, by a technology. They have a vested interest
Open source	Software that is created and shared with the source-code able to be seen. Users are free to make alterations to the source-code to meet their own needs, or to improve the system for everyone
Proprietary	Software that is created but the source code is locked. This is often sold and the company wants to protect its intellectual copyright
Legislation	Laws that relate to a certain area

COMPUTING LEGISLATION	
The Data Protection Act (1998)	Sets out how data users who store data about individuals must use that data. It is a set of eight principles which say how personal data must be collected, used and destroyed. See back of sheet.
Computer Misuse Act (1990)	Introduced to deal with the increase in computer hacking in the late 1980s when home PCs started to become popular. It aims to protect computer users against willful attacks and theft of information. The Act makes it illegal to: <ul style="list-style-type: none"> • gain unauthorized access to another person's data • ...with the intention of breaking the law further •to delete, alter or sabotage by introducing viruses
Copyright and Design Patents Act (1988)	Provides the creators of intellectual property (ideas = IP) with proof of ownership, and the exclusive rights to use that idea, and distribute their work. It makes it illegal to copy, modify or distribute IP without permission
Freedom of Information Act (2000)	FOI requires public organisations to publish certain data so the public can access it. It also give individuals the right to request to see all data from over 100,000 public bodies. The act covers all electronic information, such as word docs, emails, digital records. Organisations can withhold certain information if releasing it would affect national security
Creative Commons Licensing	Creative Commons Licensing (CC) is a way that copyright holders can grant certain privileges to publicly use, share, adapt, alter and redistribute IP without written permission.

OPEN SOURCE vs PROPRIETARY SOFTWARE	
Open source software is freely available so others can use it. Users can access and modify the source-code and create their own versions.	Proprietary software is not freely available. The compiled code is secured and user must use the software as provided. Any attempt to modify, copy or redistribute the software is a breach of Copyright.
EXAMPLES: Linux, Firefox, Android OS	EXAMPLES: Microsoft Office, Adobe Photoshop, OSX

The purpose and content of pre-production

Mood Boards	The purpose of a mood board is to assist in the design of a media product by collecting a wide range of materials (images, fonts, colours, etc.) that give an overall feel for what is needed. A mood board, therefore, provides a starting point which can be used for discussion with the client and can also be used to keep the project on track by referring back to it. It is not a representation of what the final product will look like.
Mind Maps/Spider Diagrams	These can be used to quickly generate different ideas or to show links between different concepts. Mind maps will have a central theme with branches springing from it connecting different sub-nodes. They are used at the start of the design process.
Storyboards	Storyboards are used for moving images (animation/film) to help plan what will happen throughout the course of a scene. A storyboard will show images of what is happening in the scene and can also be annotated with a description of the scene and how long it lasts for. Story boards will help people to visualise the camera angles that will be used as well as different aspect of lighting, special effects/sounds and props/costumes. More importantly, a storyboard will show how the different elements of a scene fit together. This can be shared with the client before production begins so that changes can be suggested and agreed. It can also be shared with the cast and crew as a guide to what they should be engaged with at a particular time. Storyboards may also help to build up an idea of the budget that may be required.

Key terms

Script	A written version of a play or movie.
Work plan	A work plan is an important tool that helps a project to assign tasks, manage workflow and track the various components and milestones/deadlines.
Target Audience	A particular group at which a product such as a film or advertisement is aimed.
Resources	The hardware , techniques and software required to complete an activity.
Health and safety	The law based around safe working conditions/practice.
Copyright	Copyright is a legal means of protecting an authors work.
Trademarks	A trademark is a name or symbol that a company uses on its products so that they cannot be used by another company.
File formats	A file format is a standard way that information is encoded for storage in a computer file/ It specifies how bits are used to encode information in a digital storage medium.
Node	A point on the mind ap that has some information or an idea (mind maps).
Branch	A line that joins the node to the sub node (mind maps).
Purpose	Remember that the purpose is what is it going to be used for.
Assets	Images, logo's and text information that is used as part of the graphic.
Resources	The equipment that you will use to create your product (including hardware and software).

The purpose and content of pre-production

Visualization Diagram	Visualization diagrams are used to plan the layout of a static image in a visual manner. This will give an indication to the client of how the final document might look. This will enable them to suggest changes before the image goes into production which will save time in the long run
Scripts	Scripts perform a number of different functions including; identifying the place where an action is to take place, identifying which different characters will be in a particular scene, providing stage directions (movements), and stating what dialogue will be used in a particular scene. Scripts will also contain comments about the particular mood for a scene which the actors can use to take cues from.

File Type	Good Points	Bad Points
JPG	Zooming in is good quality Millions of colours Compresses well	Not good for sharp edges Not great for text Some colour detail is lost when compressed
TIFF	Features millions colours No colours are lost No or little compression	Not compatible with all applications Large file sizes
GIF	Compresses well Very small file size	Only has 256 colours Doesn't show all colours
PNG	Millions of colours Compress well Sharp edges	Not compatible with all applications Can only use in a few particular places
EPS	Doesn't lose colour or detail Scalable to any size	Does not lose any colour quality Can only open in certain software

Purpose of a mind map

- To quickly (1) record ideas (1)
- To generate/gather ideas (1) to share with others (1)
- To allow everyone at the meeting (1) to share their ideas (1)
- Any other suitable response (1)



Contents of a mind map

Branches are the lines that connect the nodes
Central node or **main node** is the main idea and is situated in the centre
Sub-nodes are situated off the central node. May have sub-nodes themselves

Purpose of a mood board

- A visual tool(1) ‘feel’/‘flow’/look(1) assist in generation of ideas(1) collect ideas(1)



Content of a mood board

images, colours, text
 A digital mood board will consist of sound, music and video

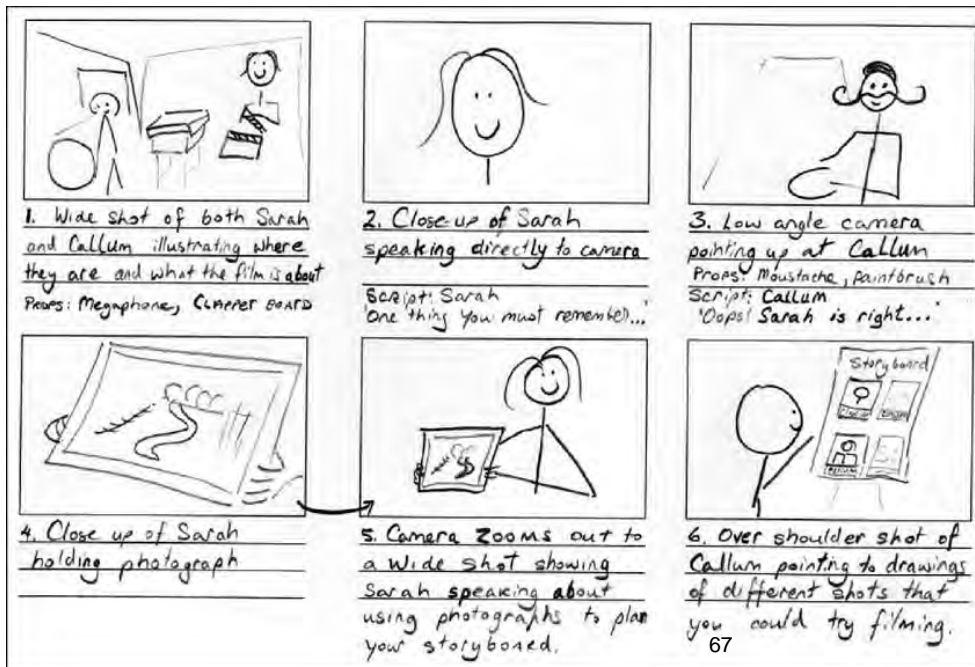
Purpose of a storyboard

- Allows them to see whole scene sequence view (1) so they know what to create (1)
- Allows animators to see how scenes develop into each other (1) so that they can morph the characters into movement (1)
- Animators need know how long scene will last (1) so they use the correct number of frames/frame rate (1)
- To show the content/ angles of a scene (1) when part of a sequence (1)
- To plan (1) the visual sequence (1)

Content

- Number of scenes
- Scene content
- Timings
- Camera shots
- Camera movement
- Lighting
- Sound
- Locations
- Camera type

- Camera angles:** film crew can see where (1) they will need to position camera to get view.
- Director can see how the image will look (1) in each scene (1)
- Camera person will know how to (1) frame the shot (1)
- Scene numbers:** the order of scenes can be seen (1) to help make sure shots flow into each other (1)
- Editors can see order (1) to place the scenes into when cutting the film (1)
- Camera movements:** lighting can see how camera will move (1) so that lighting can be suitably set up (1)
- Production team can position equipment (1) so not in view when camera moves (1)
- Camera crew can decide on which camera to use (1) to allow for the movement needed (1)
- Film crew will know where to place the dolly tracks (1) to get the correct shot (1)
- Director will know where to place the actors (1) so cameras can move around them (1)



Terminology

Hardware – The equipment used.

Software – Programs or applications used (to create pre-production documents)

Resources – covers hardware, software and people

Digitise – convert a paper-based document into a digital document that can be processed by a computer

Techniques for pre-production

Creating

Using hardware to **create the original document in a digital format.**



Digitising:

Creating the document by hand and then

convert to a digital copy using a scanner or digital camera.

You will have a **physical copy** as a back up and you can **send electronic version** as well

Hardware

Computer System – PC, MAC, Tablet

Computer peripherals – Keyboard, Mouse, Monitor, Microphone, speakers

Imaging devices – Digital Camera, Scanner

Hand drawing – Pen, Paper, Pencil

Printer – Turns digital to hard copy



Software

Image editing Software / Desk top Publishing
Visualisation Diagram, Mood board, Storyboard

- Adobe Photoshop
- Microsoft Publisher
- Illustrator



Word processing

Mind Map, Story board

- Microsoft Word
- Apple Pages



Presentation Software

Mood board, Mind map, Story board

- PowerPoint



Web Browsers

Search for ideas and images

- Google Chrome
- Internet Explorer
- Safari
- Firefox



Dedicated software

Mindmap (mind map)

Storyboard That (storyboard)

Toon Boom Storyboard (storyboard)

Version control

Create new versions of the project after changes have been made.

Version:

Advert_storyboard_V1

Advert_storyboard_V2

Date:

Advert_storyboard15_09-2018

Advert_storyboard20_09-2018

File formats

Word = .doc, .docx

Photoshop = .ps, .eps

Publisher = .pub

Powerpoint = .ppt, .pptx

Portable Document Format =

.PDF



Purpose of a Workplan

- To plan out what order the tasks (1) need to happen in
- To allow the project to meet the final deadline(1) by using checkpoints to stay on track (1)
- To provide timescales for parts (1) so that you don't spend too long on one thing

Contents

- Activities
- Resources
- Timescales /Duration
- Milestones
- Workflow
- Contingencies
- Deadlines

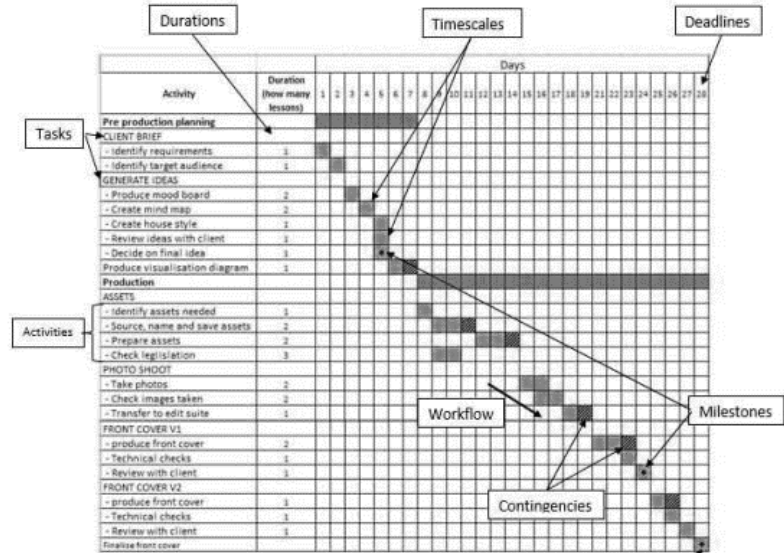
What is workflow?

- With the front cover (1) the title and images need to be created before (1) they can be put together to create draft 1 (1).
- In the main story (1) the artwork and storyline need to be created (1) before draft 1 can be made (1)

Milestone

•A milestone is a **specific point within a project's life cycle used to measure the progress toward the ultimate goal.** Milestones in project are used to indicate when a task has been completed and when to start the next task. You may also want to use a milestone to stop and check everything is ready before moving onto the next major task

Example work plan for a photoshoot



What are activities?

- A series of jobs, things, something (1) that need to be completed to finish a task (1)
- Jobs that an employee will do (1) to complete a whole task (1)
- Things you do such as create a logo (1) that would be used to create the advert (1)
- Any other suitable response

What is a contingency?

- Planning for a potential problem occurring in the future. This might be extra time in case a client wants you to change the visualisation or in case it rains whilst filming a scene




Legislation	
Copyright -	<p>Gives the creator of an original work the intellectual property right to decide how the work can(not) be used. The creator is protected by the law so that any breach of copyright could lead to people who have used the work without permission being sued. This could lead to them having to pay compensation to the copyright holder and for businesses would have a negative impact on their reputation. If the creator of an original work feels they would like others to be able to use it free of charge then they can register it under a creative commons licence to enable people to do this so long as they acknowledge the original creator and any limitations as to use</p>
Trademarks	<p>A trademark is a method used by businesses to make their work recognisable. This could be in the form of an image (logo), word, phrase, symbol or design. The symbol ® is used for a registered trade mark and ™ for an unregistered trade mark.</p>
Privacy	<p>In UK law the right to privacy is protected under the Human Rights Act 1998. This means that a person has the right to have their private and family life respected, and as such not to be subjected to an invasion of privacy in their home or to have their correspondence tampered with (post, emails, telephone, etc.)</p>
Defamation	<p>This is where a false statement has been made about a person that could cause damage to their reputation.</p>

Certification and Classification
<p>U – This rating is aimed at children of 4 years and older. As such to meet this requirement media must ensure that there is no language which may be considered discriminatory (unless disapproved of) or offensive. There should be no nudity of a sexual nature and violence will be very mild. Drug used should not be present unless in the form of an educational message.</p> <p>PG – As for U except mild violence may be permitted as long as it is not prolonged and is in context. Frightening sequences where characters are in danger should not be prolonged and sexual activity can only be implied.</p> <p>12 – Misuse of drugs must be infrequent and should not be glamorised. Media should not promote dangerous acts that could be imitated. Nudity should be discreet and seldom. Horror images may be shown however these should not form the main basis of the work. There may be moderate violence but this should not lead the viewer to dwell on the detail.</p> <p>15 – Discriminatory language may be used (racist, homophobic, etc.) however this cannot be endorsed by the film. Drug use may be shown but this should not be glamorised. Dangerous situations can be shown however these should not be easy to imitate. Strong language may be used infrequently and in context. There are no constraints on nudity in a non-sexual nature. Strong violence may be shown but the image should not focus on pain or injury.</p> <p>18 – These works are deemed as being suitable only for adults who are free to choose their own entertainment</p>

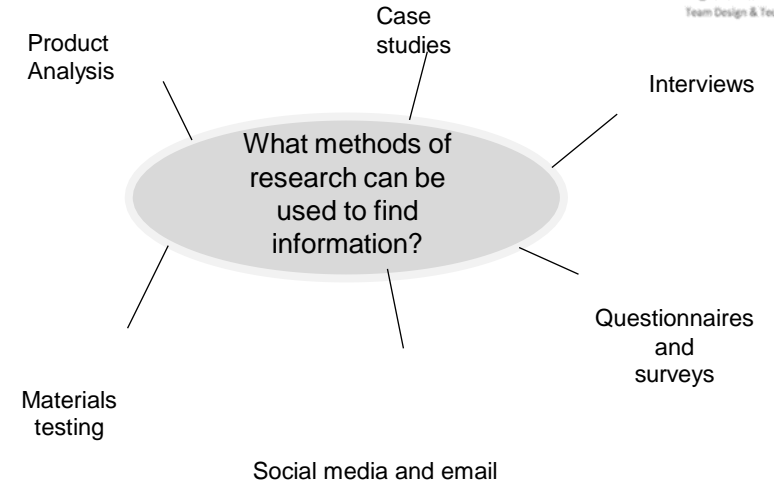
Health and Safety Considerations
<p>There are a number of different health and safety concerns that could arise in the media industry including; loud noises, machinery, lighting, weather, heavy lifting, trip hazards, working with water and electricity. Methods of reducing these risks needs to be considered before work starts!</p> <p>The principles of the Data Protection Act (DPA).</p> <ol style="list-style-type: none"> 1. Always have permission from the person whose data you are storing. 2. Only keep the amount of data that you have a reason to keep. 3. Only keep the information for as long as it is required. 4. Insure that any information held is kept up to date. 5. Ensure that the information is stored in a secure location and that all possible steps are taken to avoid theft, deletion or modification of data. 6. Do not share the information with other organisations without permission. 7. Never share data with organisations in other countries that do not have data protection legislation.

Naming conventions
<p>Ensure that all files are given an appropriate name so that they could be identified by someone else . Where there are different versions of a file version control should be put in place by adding the version of the document to the end of the file name e.g. V1 or V2 would indicate that it is the first or second version of the file.</p>

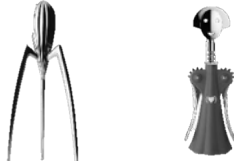

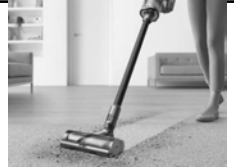
Work of Others

Image/ Example	Designer	Design Movement	Key info
	William Morris	Arts and Crafts	<ul style="list-style-type: none"> British designer in 1880s Simple natural crafts Useful and beautiful products (wallpapers, cushions, etc)
	Charles Rennie Mackintosh	Art Nouveau	<ul style="list-style-type: none"> Scottish designer in 1860s – 1920s Known for light and shadow Created stained glass and furniture Inspired by nature and geometric lines
	Ettore Stottas	Memphis	<ul style="list-style-type: none"> Italian designer in the 1950s/60s Enjoyed making everyday objects wacky and bold Used lots of bold colours and black lines

Research



Research can be divided into 2 categories; **Primary Research** and **Secondary Research**.
 Primary is research you complete yourself.
 Secondary is research from resources others can gathered e.g. books, magazines and internet.
 Primary research is generally more reliable as it is done by the person using it and can double-check the data.

Image/ Example	Brand	Key info
	Alessi	<ul style="list-style-type: none"> Italian Design Company Homeware and kitchen utensils "Post-modern" style Phillipe Starke is a major designer
	Apple	<ul style="list-style-type: none"> USA-based tech company Famous for iconic designs of iPod and iPhone Steve Jobs and Johnathon Ive are major designers Known for innovative and modern design
	Dyson	<ul style="list-style-type: none"> British engineering company Famous for vacuum cleaners and innovative technology James Dyson is a major designer

Another key piece of research, is Anthropometrics and Ergonomics . This helps develop the sizes of products, etc to make sure it fits the User	
Anthropometrics	<p>The study of measurements of the human body.</p> <p>E.g. Knowing the grip width of a palm, if designing a new travel coffee cup.</p>
Ergonomics	<p>The application of anthropometrics to ensure products are safe and comfortable to use. This can also include; size, material, appearance, brightness, sound and texture.</p> <p>How the body interacts with a product when in use.</p> <p>E.g. making sure the travel cup is the correct size, and an insulating smooth material to make it comfortable to hold for long periods of time.</p>

Market Pull and Technology Push

Technology Push is the development of new technology, materials and manufacturing methods to create new products or improve old ones.

Examples include; Smart Phones, Electricity, Mass Production, etc.

Market pull is the demand from consumers for new products and improvements in old ones; this is often found via reviews, polls and surveys.

Examples include; Product **Aesthetics**, making products easier to use.

Cultures, Faith and Belief

Different groups of people have different interests and have to be catered for.

Different countries and cultures also react to products differently.

E.g. In India McDonalds don't sell beef burgers as it has a large Hindu population, and cows are seen as sacred – in contrast the UK sells its most amount of fish and chips on a Friday as it is a Christian tradition to not eat meat on that day.

Case Study: £5 note

Hindu, Sikh and some other faith-based communities may choose to follow a vegetarian diet, and this is part of their culture. In addition to not eating meat, many followers of these faiths, as well as vegans and vegetarians, take every opportunity to avoid using animal products in their day-to-day lives.

The revelation in 2016 that the new polymer Bank of England £5 note contained tallow, an animal fat-based substance, upset a number of communities. There was a prompt call for the Bank of England to find an alternative way to produce the note and in the first two days of an official petition well over 100,000 signatures were received.

Shortly after the Bank of England admitted that the new polymer £5 note contained the animal by-product, some establishments refused to take the notes as a method of payment. One café owner was repulsed by the idea that the note contained tallow and believed that her customers supported her view. They received no complaints.



The Bank of England say they currently have no plans to change the manufacturing process.

Fashion and Trends

Fashion and trends will change quickly, and you can see major differences in fashions over decades.

Designers have to make sure their products meet the fashion and trends of the area they are designing and selling the product to.

The change of products over time is called **Product Evolution**. This is caused by Market Pull, Technology Push and Fashion and Trends.



Some products are seen as **timeless**. These products are called **Iconic Designs**. These products are timeless because they were innovative, set a bench mark for following products, changed their industry and are often copied.

Examples include; iPod, iPhone, Angle-Poise Lamp, Swiss Army Knife, Converse Shoes, Levi's Jeans, Classic Mini Cooper.



Inclusive vs. Exclusive Design

Inclusive Design: The aim to create a product that as many people as possible can use.

Examples include; cars, doorframes, adjustable products, etc.

Exclusive Design: The aim to create a product for a particular group and their needs.

Examples include; car seats for babies, wheelchairs, stairlifts.

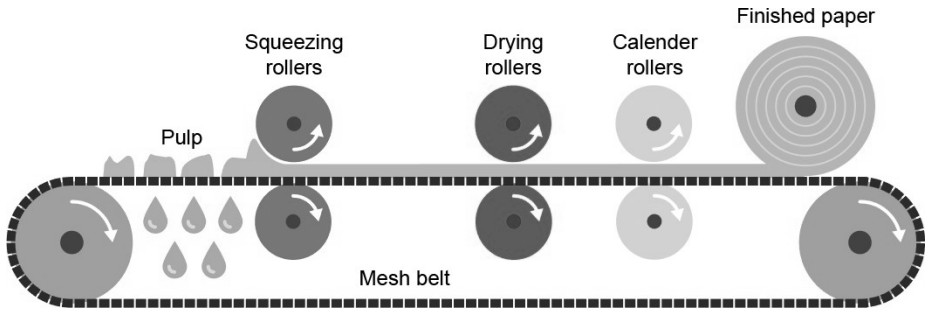
YEAR 11 -Design and Technology

Modern Materials are materials that have been developed recently		
Material	Key info	Examples
Corn- starch Polymers	These are plant-based polymers that are a replacement for plastics that are biodegradable but cannot be recycled.	Plastic bottles, tubs, food containers, etc
Flexible MDF	Made in the same way as normal MDF but with grooves cut into the surface so it is flexible. Flexiply is the same but for Plywood. These can easily be shaped into curves	Modern furniture, interior walls and room dividers
Titanium	High strength to weight ratio. Doesn't corrode or rust. Suitable for medical use as its hypo-allergenic	Prosthetics, medical applications, sports cars, etc
Kevlar	A woven polymer with a high strength to weight ratio.	Bullet-proof vests, tyres, helmets, etc

Papers and Boards come from trees. The Stock forms for papers are: rolls, sheets, A4, A3, etc		
Material	Key info	Uses/ Examples
Cartridge Paper	Thick white paper, completely opaque and more expensive than photocopy paper.	Sketching, ink drawings.
Layout Paper	Light, semi-translucent, good for blending inks and artist markers.	Sketching, drawing and some tracing.
Corrugated Cardboard	Strong but light. Rigid triangles of card sandwiched between a top and bottom layer.	Outer packaging, food packaging.
Duplex Board	Light card with white outside layers. Waxy coating can be added.	Cheap packaging. If waxy coating is applied, can be used for food.
Foil-lined Board	White card coated with a thin aluminium layer. Foil is great for insulation and water resistance.	Takeaway containers.
Solid White Board	High-quality white card with a smooth finish. Stiff and holds colours well.	Greetings cards, packaging and advertising.

Smart Materials are materials that change and react to the stimuli		
Material	Key info	Examples
Thermochromic Pigments	Change colour in reaction to heat	Kettles, baby bottles, etc
Photochromic Pigments	Change colour in reaction to light	Colour changing glasses, windows, etc
Shape Memory Alloy	Returns to its original shape, in reaction to heat	Braces and glasses
Polymorph	Granules that once exposed to hot water, become a modelling material (like a dough or clay)	Modelling and repairs

Primary Processing of Papers and Boards



Paper is made by first making pulp. Pulp is a mix of tree fibres and water. This is cooked and bleached white, and adding any other additives. The pulp is then drained and goes through **Calendering** where the pulp is drained and goes through rollers to convert it to its stock forms

Metals

Metals come from ores in the ground. **Stock forms** are sheets, bars and rods

Ferrous Metals contain iron and are magnetic and rust		
Material	Key info	Examples
Low Carbon Steel	Tough and ductile and easily machined and welded	Construction, screws, cars
High Carbon Steel	Hard and wears well	Tools, blades and knives
Cast Iron	Hard but brittle. Easily cast but hard to machine	Pots, pans, vices

Non-Ferrous Metals do not contain iron, aren't magnetic and don't rust		
Material	Key info	Examples
Aluminium	Light, high strength to weight ratio and ductile	Pots, pans, cars, cans
Copper	malleable and good conductor	Plumbing supplies and cables
Tin	Soft, malleable and good conductor	Used as a protective coating

Alloys

Alloys are mixtures of 2 or more metals to get the best of their properties		
Material	Key info	Examples
Brass	Malleable and easy to cast	Musical instruments, plumbing
Stainless Steel	Doesn't rust, hard and smooth	Cutlery, medical tools, etc

Plastics

Plastics come from crude oil. **Stock forms** are sheets, powders, granules and rods

Thermoplastics can be reheated and reshaped an infinite amount of times.		
Material	Key info	Examples
PET	Easily blow moulded , food safe and easily recycled.	Bottles, packaging.
PVC	Flexible, tough, easily extruded .	Pipes, tape, hard hats
HIPS	Flexible, lightweight, food safe and easily vacuum formed .	Containers and yoghurt pots
Acrylic	Tough, brittle, easily scratched.	Car lights, baths, displays/ signs

Thermosets once heated and set cannot be reshaped.		
Material	Key info	Examples
Melamine Formaldehyde	Food safe, hygienic, hard and brittle.	Kitchenware and work surfaces
Urea Formaldehyde	Good insulator, hard and brittle.	Electrical casings, buttons and handles
Polyester Resin	Strong, heat resistant, can be transparent.	Coatings, casings

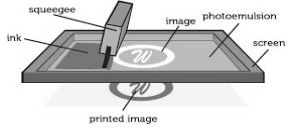
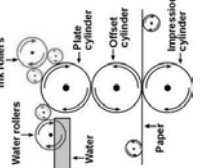
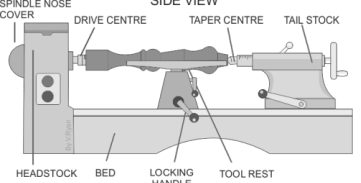
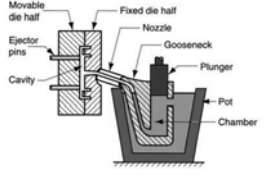
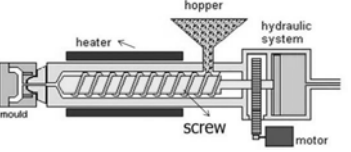
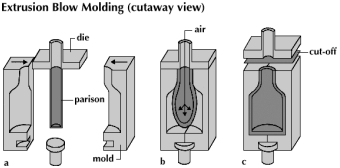
Primary Processing of Metals and Alloys

Metals are mined from the earth and then go through an extraction process. Extraction happens by putting the ore in a blast furnace. The metal is then separated from the waste material.

Primary Processing of Plastics

Crude oil is extracted from the earth and then processed into different types of fuels, etc. This is called **Fractional Distillation**.

A process called **Cracking** then converts the large hydrocarbon molecules into plastics.

Name of Process	Diagram	Material	Products Made	Key info
Screen-printing		Papers and Textiles	Posters, signs and t-shirts	Screen printing places paint on top of a screen. The screen has a stencil embedded in it, so when the paint is passed across it the desired shape is printed underneath. Good process in one-off and batch production as often done by hand.
Offset Lithography		Papers and card (thin, flexible plastics)	Posters, newspapers, plastics bags	Rollers containing the colours and water go onto the plate cylinder. The water stops the colours sticking to certain places, creating the shape. The shape is transferred between rollers and onto the material. Can be used at batch and mass production.
Lathe Turning		Wood and metal	Chair legs, baseball bats (cylindrical items)	Material is placed between the tail stock and the headstock and spun at high speed. The material is then cut using specialist tools (either by hand or by automated machinery) to the desired shape. Can be used in one-off and batch production.
Die Casting		Metal	Car parts, engine components, etc	Molten metal is poured into a chamber and a plunger forces the metal through the nozzle into the mould. Unlike sand casting, the mould is reusable. Good process for both one-of and batch production.
Injection Moulding		Plastics	Chairs, toys, etc	Plastic granules are poured into the hopper and onto the screw. The screw moves the material towards the heater where it turns into a liquid. The liquid is then forced into the mould, cooled and released. Great process for mass production as it makes 100s+ of products at once, to a identical standard.
Blow Moulding		Plastics	Plastic bottles 75	A Plastic parison is heated and put into the mould. The parison is then filled with air (like blowing up a balloon) and is forced to fit the mould shape. It is then cooled and then released. This is a great process for mass producing bottles.

CAD Computer Aided Design	
Examples; 2D Design, Autodesk Inventor, Fusion 360, Photoshop, etc	
Advantages	Disadvantages
<ul style="list-style-type: none"> • Easy to change designs • Designs are easily saved and sent • Can be worked on by multiple people simultaneously • Can be used for virtual testing • Can produce high-quality designs 	<ul style="list-style-type: none"> • Complex and time-consuming to learn <ul style="list-style-type: none"> • Expensive to buy • PCs can crash or be hacked – causing work to be lost <ul style="list-style-type: none"> • Takes up PC memory

CAM Computer Aided Manufacture	
Examples; 3D Printing, Laser Cutting, CNC Router, Automated Machines and Robotics, etc	
Advantages	Disadvantages
<ul style="list-style-type: none"> • Faster and more accurate than traditional tools • Repetitive accuracy/ consistent outcomes <ul style="list-style-type: none"> • Machines can run 24/7 	<ul style="list-style-type: none"> • Expensive to buy the equipment, etc <ul style="list-style-type: none"> • Training takes cost and time • Need specialists to maintain and repair the machines • Dependence on CAM can cause unemployment

Flexible Manufacturing Systems
<p>This is where automated machines are adaptable and can produce different products if needed.</p> <p>If a manufacture is making a product with machines that are just dedicated to specific tasks they have to be reprogrammed and re-tooled before changing to a new task. This is time consuming and expensive.</p> <p>Examples include; CNC Machines, 3D Printers, Laser Cutters, Robotic arms, etc</p>

Just-in-Time (JIT) Manufacture	
<p>This is where manufacturers only order materials, parts, etc when needed. The customer's order triggers the production process and the resources needed for that order are the only ones bought.</p> <p>This can be used in any scale of production but is particularly useful for one-off production.</p>	
Advantages	Disadvantages
<ul style="list-style-type: none"> • Saves on warehouse and storage costs • Money is not tied-up in stock <ul style="list-style-type: none"> • Little/minimal waste • Customer often pays in advance so money is secure before production 	<ul style="list-style-type: none"> • All production stops if a part/ material is missing • Needs to have a fast, reliable and good quality supply chain to work properly <ul style="list-style-type: none"> • Can be time-consuming

Lean Manufacturing
<p>This is where waste and energy is kept to a minimum. This helps manufacturers save money and resources in production, as well as helping minimise the environmental impact of producing products.</p>

Key terms

Rupa	Statue of Buddha
Dhammapada	Collective teachings of the Buddha (holy book)
Tripitaka	Buddhist holy book containing the dharma.
Mala	Prayer beads to help meditation and chanting
Mantra	Short religious phrase that is chanted (e.g. Om mani padme hum)
Meditation	Focussing deeply
Samatha Meditation	Meditation that focuses on clearing the mind. Buddhists may focus on a single object or their breathing)- both Therevada and Mahayana Buddhists do this.
Vipissana Meditation	Meditation that focusses on the dharma. It is usually done after samatha. Therevada Buddhists do this.
Visualization	Where Buddhists 'visualize' themselves as a Buddha to unlock their Buddha-nature
Parinirvana Day	A Mahayana festival that celebrated the enlightenment and passing on of the Buddha.
Wesak	Therevada festival celebrating the birth, life, enlightenment and death of the Buddha.
6 Perfections	Mahayana qualities you need to become a Bodhisattva (P atience, M orality, M editation, W isdom, G enerosity and E nergy)
Sunyata	Emptiness (of the mind)
4 Sublime states	4 Qualities needed to become a perfected being in Mahayana Buddhism (Metta, Karuna, Calmness, sympathetic joy.
Metta	Loving kindness
Karuna	Compassion
Gompa	Meditation hall
Vihara	Monastery
Shrine	An area with items to help Buddhists worship. May contain candles, flowers, rupas or thangkas.

Key teachings

Mourning Ceremonies

Also known as funerals, these can be done as cremation (burning), sky burials (feeding the bodies to vultures) or as a Pure Land Burial (chanting Amitabha in order to send the person to Sukhavati Heaven). By watching the skandhas get burned or torn apart, Buddhists are reminded of Anicca and anatta and the need to avoid attachment.

Samatha Meditation

This is where Buddhists will focus on a kasina (such as their breathing, a rupa or a red dot) to clear their mind. This will give them 'right concentration' on the 8FP/3FW and it is similar to how the Buddha achieved enlightenment.

Vipissana Meditation

This type of meditation focuses on the dharma. For example, on the 8 fold Path. By internalising the dharma, Buddhists increase their chance of reaching Nirvana as they will always act with it in mind.

Visualisation

Through looking at a thangka or rupa and imagining they have achieved Buddhahood, Buddhists unlock their Buddha nature. This is the potential to become a Buddha which we all have whether monk, lay, male or female.

Loving Kindness meditation

This is where Buddhists imagine showing love to family, a friend, a stranger a person they dislike and their worst enemy. It helps them develop metta which leads to doing good actions to even the most challenging people! This gains good karma.

Puja

Worship in Buddhism does not mean worshiping Buddha, but acknowledging the 'worth' of the dharma. Buddhists will use different places of worship to help them as well as different items such as sand mandalas. These sand patterns are complex and take a long time to make. They are then destroyed to remind Buddhists about Anicca. By learning the dharma, Buddhists gain good karma and develop 'right understanding' on the 8FP.

The 3 Refuges

Buddhists take 'refuge' or shelter from suffering. They do this through the **Buddha**- he gives hope it is possible to reach Nirvana through his example. **Dharma**- If we follow the dharma and gain good karma we can reach enlightenment. **Sangha**- By becoming a monk and following all ten precepts (5 lay & 5 monastic), Buddhists can reach Nirvana.

Retreat

As well as going on pilgrimage, Buddhists may go on retreat. This can be anywhere (a Buddhist centre, a cave, somewhere to be alone). Here, they will practise meditation, the dharma and try and reach Nirvana without distraction just like when Buddha retreated to the Bodhi tree.

Key Quotes

Meditation

Meditation frees us from Mara's fetter' Buddha
 'Peace comes from within' Buddha
 'What we think we become' Buddha

Life of Buddha

'Legs like bamboo...back like a rope' Jataka
 '3 mansions- one for winter, one for Summer and one for the Rainy Season' Jataka
 'I vow to sit here until I reach enlightenment...or die' Jataka

Focussing on Nirvana

The poison dart analogy. (Buddha)
 The Sitar analogy (Buddha)

Further quotations

'If you see the Buddha on the road...kill him' Tich Naht Hahn
 Nirvana is 'ineffable' William James.
 'No one can save us but ourselves' Buddha
 'My religion is kindness' The Dalai Lama



Key terms

Aims of Punishment	The reasons we punish criminals (RRPD)
Community service	Completing free work in the community as a punishment. It helps the criminal to reform and benefits society.
Corporal punishment	Physical punishment- e.g. The Cane, physical beatings.
Crime	Breaking the law. It can be committed against a person (e.g. assault), property (e.g. arson) or the state (e.g. terrorism).
Capital punishment	The death penalty/ execution.
Deterrence	To deter/ put off a 'would be' criminal.
Evil intention	Morally wrong thinking- planning to do something to harm others.
Forgiveness	Letting go of anger towards someone who has wronged you.
Hate crime	A crime committed because of prejudice- e.g. beating up a person because they are homosexual. This can double your sentence in the UK.
Law	The rules which a government has to keep up safe.
Reformation	Where the punishment aims to change/reform the criminal.
Retribution	Where the punishment aims to make the criminal suffer. This also includes getting justice for the victims.
Protection	Where the punishment helps to protect society.
Greed	Wanting to possess goods or items of value that you don't need
Mental illness	A medical condition that affects a person's feelings, emotions, mood or ability to relate to others.
Addiction	Dependency on a substance which is difficult to overcome
Free will	The ability to make decisions freely.

Key teachings

Purpose of the law

The point and purpose of having laws is to ensure a society works well to benefit its citizens. For example, we need laws on tax to fund the NHS and Education. We need laws on traffic to prevent crashes (such as stopping for a red light) and we need laws to protect life such as murder being illegal.

Purpose of punishment

Punishments exist to make sure people follow the law for the benefit of society. It also helps them develop and understanding of right and wrong through experiencing the rewards of good behaviour or the consequences of negative behaviour.

Moral agency

As humans, we are 'moral agents.' This means we are individuals (agents), who are capable of making good or wicked choices (morality). As we grow and develop, we gain a better understanding of right and wrong and aim to become 'fully moral agents.' some people are more morally developed than others (a less morally developed agent). Some people may never become 'fully moral agents' as they don't have a common sense of morals- EG a serial killer.

Corporal Punishment

Physical punishment uses the 'pain vs pleasure' principal to humiliate and cause pain to deter 'would be' wrong doers. Punishments could include whipping, birching, beating and caning (the cane/rod was used in English schools until 1986 for state schools and 1999 for religious ones).

Capital Punishment

Known as the 'ultimate punishment.' It is only used for the most serious criminals. Methods could include gas chambers, hanging, beheading, the firing squad and lethal injection as well as the electric chair. In England, it was banned in 1965 (with the exception of treason- banned 1998). Around half of the world still allows its use.

Forgiveness

In order to keep harmony in a society and support people emotionally (including mental health), we need forgiveness. We need to let go of our anger otherwise it drains us and makes us bitter/ resentful. Corrie Ten Boom (A Holocaust Survivor) says 'forgiveness is setting the prisoner free only to find out the prisoner was me.' Often, we try make the other person suffer, but we suffer too.

Hate Crimes

A hate crime is committed against an individual or group because of who they are (their protected characteristics). Crime that is considered a 'hate crime' is given a higher sentence/ penalty. Protected characteristics include a person's religion, sex, sexual orientation/preferences, race, age, disability or gender reassignment.

Key Quotes

General quotations

'An unjust law is no law at all' **Thomas Aquinas**
'It is our duty to break and unjust law' **Martin Luther King**

The conscience is the voice of God and must be obeyed according to the **Bible and Church**

'Right not to be discriminated against' **UN Declaration of Human Rights**

The punishment should fit the crime' **Cicero**
God will 'reward the good and punish the wicked'

Psalms
'Those who spare the rod hate their Children' **Old Testament**
'Give to Caesar' **Jesus**

Capital Punishment

'By killing a murdered you do not decrease the amount of murderers' **Churchill**
'The Death Penalty has a 100% non-reoffending rate'

Donald Trump
We have the 'right to live' and the 'right to not be tortured' **UN Declaration of Human Rights**

'An eye for an eye' **Old Testament**
'Thou shalt not kill' **Ten Commandments**

Forgiveness

'Let he who has no sin cast the first stone' **Jesus**
'Forgive 70x7' **Jesus**
'An eye for an eye makes the whole world blind'

Gandhi



Key terms

Atheism	The belief there is no God (these people are called atheists).
Agnostic	Not being certain if God is real.
Theist	A person who believes there is a God.
Design Argument	The ideas that 'all complex things need a designer,' Earth is complex so it needs a designer, God is the only being able to design it so he must exist to be the designer. (William Paley)
Causation Argument (First Cause)	'Everything needs to have been caused,' so the Earth needs a cause, the cause of Earth must be omnipotent and only God is like this so he must exist to be the cause.
General revelation	Where God indirectly reveals himself through nature showing his 'handiwork.' EG a mighty forest or the Giant's Causeway
Special revelation	Where God directly reveals himself to you like with St Paul or Moses and the Burning Bush
Humanism	A belief system that has good values but does not accept God
Impersonal	Beyond our capacity/ ability to understand
Personal	God desires a relationship with us
Immanent	God is with us 'here and now.'
Miracles	Events that break the laws of nature and make you think God must have done them (so he exists)
Natural evil	Evil/ suffering caused by nature (EG Volcanoes/earthquakes/flooding)
Moral evil	Evil caused by humans (Murder/theft/torture)
Transcendent	Beyond time and space (existed before it)
Vision	Seeing something which is not physical, such as Joseph's vision of the Angel Gabriel
Scripture	Holy writings (Bible) which reveal things about the nature of God
Problem of Evil	The idea that God can't exist if evil does, else he would have got rid of it.

Key teachings

The Nature of God

The 'nature' of a thing means what it is like. God is omnipotent, omniscient and omnibenevolent. He is the creator of the world and is able to perform miracles.

The Problem of Evil

Some people think that is God was all powerful he could stop evil, if was all knowing he would know how to stop it, and if he was all loving he would want to. Sadly, evil still exists, which suggests God does not. This is shown in the Inconstant Triad by Epicurus.

The Problem of Evil (Counter arguments)

Some people turn the Inconstant Triad into a 'consistent square' by saying God has a reason for allowing evil. For example, it could be because he can't interfere with our freewill (ability to choose our actions), it could be a part of his plan or it could even be the work of the devil! This means he can still exist even if there is evil. Perhaps evil does not even really exist.

The Design Argument

William Paley argued that complex things needs a designer, the Earth is complex so it needs a designer and the only being able to design it is God. This means God exists. He used examples like the eye, hand and pigs teats.

The Design Argument (Counter arguments)

Some argue that the designer could be omniscient aliens for all we know, or a 'pantheon of Gods' (David Hume- a group of Gods). This means the argument fails and must be abandoned. Evolution could be the 'designer.'

The Causation Argument

Thomas Aquinas said everything needs a cause, so the Earth needs a cause, the cause must be all powerful and the only being like this is God so he exists.

The Causation Argument (Counter arguments)

It could have been caused by a 'pantheon of Gods' (David Hume), the Big Bang or it could even be infinite and not have a cause. There is no solid evidence it was God. Bertrand Russell just said it was a 'brute fact.'

Miracles

Events like Joseph of Cupertino (a 16th Century Monk who could fly) and Set Bernadette's Incorruptible Corpse (the bodies of some Saints don't rot down after death), suggest that God must be using his power to make them happen. Any biblical miracles⁷⁹ count too! This means he must be real.

Key Quotes

Quotes for the existence of God

'Everything needs a cause' **Thomas Aquinas**

'Complex things need a designer'

William Paley

'The daffodils need to be caused to bloom' **Thomas Aquinas (Causation)**

'Look at the complexity of the

human eye' **William Paley**

'Privatio Boni' **Augustine**

Junkyard Jet Argument **Fred Hoyle**

'I am Jesus whom you persecute'

Jesus to St Paul on the Road to

Damascus (Special Revelation)

'Even the trees point to the

heavens' **St Claire** on General

Revelation

'Where were you when I made the foundations of the Earth' God speaking to Job **Book of Job (Bible)**

Picture Argument **Aquinas**

'Blessed are those who believe

without seeing' **Jesus**

'Fallen world' **Augustine**

Quotes against the existence of God

The evidence comes from a

'barbaric age' **Richard Dawkins**

'A wise man bases his belief on the evidence' **David Hume**

'Pantheon of Gods' **David Hume**

Inconsistent Triad **Epicurus**

Pointless Evil & The Deer Analogy

William Rowe

God is a 'blind watch maker'

Richard Dawkins

'We are atheists about most of the gods we have even known...some

of us just go one god further'

Richard Dawkins



Key terms

Human sexuality	How people express their sexual feelings
Heterosexual	Attracted to members of the opposite sex (male + female)
Homosexual	Attracted to members of the same sex (male+ male/ female+ female)
Pre-marital sex	Sex between unmarried people
Adultery	Having sex with a person other than your husband/ wife (spouse)
Contraception	Something that prevents pregnancy
Conception	When the sperm and egg meet to make a fertilised ovum
Natural Family Planning	Having sex at times when the woman is least fertile to avoid becoming pregnant.
Marriage	A legal union between partners (if religious-before God) In some countries, this can only be male and female.
Civil partnership	Legal union of same sex couples
Same sex marriage	Marriage between two people of the same sex
Cohabitation	Living together and having a sexual relationship without being married
Divorce	A legal ending of a marriage
Annulment	The Catholic Church can rule that a marriage was never valid
Family	A group of people related by blood, marriage or adoption
Nuclear family	2 parents and their children
Stepfamily	A family where two parents who were previously divorced have joined together with their existing children to make a family
Extended family	A family including grandparents, aunts, uncles and other relatives.
Polygamy	Having multiple wives (or husbands)

Key teachings

Human sexuality

In the UK, you are free to express your sexuality. It does not matter if you are homosexual, heterosexual or if you identify in other ways. However, religions have different views. While liberal or modern Christians may accept that God has made people with different sexualities, script/ traditional Christians argue that God intended for us to be heterosexual like the blueprint of Adam and Eve in Eden.

Family

Family is important, but it can be very different. Families should provide emotional and financial support and stability where the needs of children are met. For religious families, a religious upbringing where they learn to follow God's laws and rules is also important as God will judge them on how they raise their kids. Traditional Christians favour a nuclear family and may not theoretically accept same-sex parents.

Marriage and cohabitation

Today, many people cohabit (live together without being married). It makes financial sense and they may be in a long term relationship. While liberal Christians might accept this (if the couple are engaged), strict Christians insist on the couple being married. This is because premarital sex is seen as sinful. They think that marriage is the best/ most secure way to raise a family and it was the way that God intended. When married, the couple must be faithful and have exclusive sex, only with each other. Same sex marriage has been legal in the UK since 2014.

Divorce and remarriage

Divorce is much easier to achieve today and around 45% of marriages end in divorce. Due to this, some people are 'put off' being married. Grounds for divorce can include abuse, desertion, adultery and unreasonable behaviour. Most Christians accept divorce happens, but due to Jesus' teaching about divorce, some strict Christians will not allow remarriage and count it as adulterous.

Gender equality

The roles of men and women have changed considerably. Legally, both should be able to do any job in the UK and should be paid the same for it. There is less sexual stereotyping and even sexist adverts have been banned so that people feel freer to write their own future. That said, there is still a pay gap and women make up the vast majority of part time work to enable them to take care of the home and children. While most Christians believe that men are equal, some think they should have different roles. For example, in the Catholic Church only men can become priests as they take on the role of the apostles who were all men. They also represent Jesus in the mass, and he too was a man.

Key Quotes

Relationships & procreation

'If you divorce and remarry you commit adultery' Jesus
 'Thou shalt not commit adultery' Ten Commandments
 'The two shall become one flesh' Genesis
 'It is not good for man to be alone' Genesis
 'Go forth and multiply' Genesis
 'He spilled his semen on the ground' Genesis (story of Onan)
 'Man shall not lay with man' Leviticus/ Old Testament
 'Do not judge' St Paul
 'Till death do us part' Marriage Vows
 'In Sickness and in health...for better or for worse' Marriage Vows

Gender equality

'There is no longer man, slave, woman or free, all are equal before Christ' St Paul
 'Women should not speak in Church' St Paul
 'Women should not have authority over men' St Paul
 God created humans 'in his image' Genesis
 'If you harm even a single hair on a child's head, it would be better if you had never been born' Jesus
 'We are judged on the way we raise our children' Catechism of the Catholic Church

Key terms

Fundamentalist Christians	Christians who believe that the Bible and everything in it is literally true, eg, God actually made the world in 7 days.
Liberal Christians	Christians who believe the writers of the Bible were inspired by God and that it needs interpreting.
Awe & wonder	A feeling of respect and amazement at the beauty and complexity of the universe.
Responsibility	A duty to care for something
Stewardship	Believers have a duty to look after the Earth for God.
Dominion	We can do what we want with the Earth because we 'dominate' / control it.
Environment	The natural world on which we live and depend on
Natural resources	Naturally occurring materials such as oil, coal, trees etc.
Sustainable development	Progress that tries to reduce the impact on the natural world for future generations.
Pollution	Poisoning the earth through contaminating the environment.
Pescatarian	A person who does not eat meat, but will eat fish
Vegan	A person who does not eat animals or anything produced by them. For example, they will not drink milk.
Evolution	Things adapt to survive through random genetic mutations that make them more competitive.
Sanctity of life	All life is holy and belongs to God.
Quality of Life	Life must have benefits for it to be worth living
Euthanasia	The killing of a terminally ill person
Voluntary euthanasia	Where a TI person is able to ask for their life to be ended
Non-voluntary euthanasia	Where you think the TI person would want to die but they are unable to say so. You take their life.
Dignity	Pride and self-worth
Origin of the Universe	How the Universe began (Big Bang or Creation)

Key teachings

Abortion

In the UK, abortion is legal up to 24 weeks unless the foetus has a severe disability, when it can be longer. It must be agreed by 2 doctors and will be allowed if the mother or existing children will suffer physically or mentally if it is born.

Euthanasia

Active euthanasia is illegal in the UK, but some forms of passive euthanasia are (such as withdrawing food and treatment. Many Britons go to Dignitas in Switzerland where they are helped to die peacefully when they wish, and with their dignity. Some countries, such as Belgium and Holland now allow euthanasia for terminally ill young people.

The Origin of the Universe

Christians typically believe in Creation (that God made Earth in '7 days' – Genesis), while those who follow science believe it was not God's 'handiwork,' but rather the result of the big Bang and then Evolution. Life evolved from simple organisms, through natural selection, into the well adapted species we have today. However, sometimes religion and science agree. For example, some Christians think the '7 days' were 7 ages of time and they believe in theistic evolution (that God was responsible).

Stewardship

This is the belief that God gave Adam the responsibility to look after the world, and so the job has passed on to us. When God made Earth he said it was 'good' (Genesis). On judgement Day we will have to report to God on how well we have looked after creation. This is demonstrated in the Parable of the Talents.

Dominion

This is the belief that humans can do whatever they want to the Earth. This is because God made Adam and Eve and said 'let them rule' over the Earth (Genesis).

Animal Welfare

Some people think animals should have a high standard of welfare and should be treated respectfully. This is because they are able to feel pain, they can suffer and have a level of sentience. This would suggest that if you buy meat it should be free range and that animals should not be used for entertainment, such as what happens at sea life parks or zoos. Some people go further and add we should not exploit them for the use of their milk, eggs or meat. These people are called vegans.

Key Quotes

Pro-life/ Anti Euthanasia

We should protect life 'from womb to tomb' John Paul II
Human life is made 'in the image of God' (Genesis) so it is sacred and belongs to him (Sanctity of Life)

'Thou Shalt not kill' Ten Commandments

Pro-choice/ Pro Euthanasia

'Personhood does not begin at conception' Peter Singer
Famous Violinist Analogy Judith Jarvis Thompson
Doctrine of Double Effect Church

Pro Environment

Parable of the Talents Jesus (God wants the Earth back even better than when he gave it to us)

'Are not 5 sparrows sold for 2 pennies...yet not one is forgotten by God' Jesus

'Just because we can does not mean we should'
Peter Vardy

Pro Human

God created Earth/animals and it was 'good' but when he made humans he said they were 'very good' Genesis

'Let them rule over the Earth' Genesis

Origin of the Universe

'Red tooth and claw' (Darwin)
'7 days' by his 'handiwork' (Genesis)

'A wise man bases his belief on the evidence' (David Hume)
Junkyard Jet analogy (Fred Hoyle)
'Climbing Mt. Improbable' by 'smearing out the luck' (Dawkins).

Paper 2 – Resource Management

Key Terms

Resource	A commodity that has value in terms of human development. This could be vital, such as water, or luxury, such as coffee.
Resource management	The control and monitoring of resources so they don't become depleted or exhausted.
Surplus	When there is more of a resource than is needed to meet demand.
Deficit	When there is not enough of a resource to meet demand.



Energy

Why is energy important?	<ul style="list-style-type: none"> Used for electricity production, heating, transport and for water supply (e.g. wells). Supports industrialisation and development.
Deficit and surplus	The richest 13% of people globally use 50% of the world's energy. The poorest 13% of people globally use 4% of the world's energy. Some countries do not have their own sources of energy and rely on importing.
Carbon footprint	A measurement of all the greenhouse gases we individually produce
UK Energy mix	2015 = 65% from fossil fuels, 31% coal, 25% gas, 19% nuclear and 22% renewable sources. 1970 = 91% from fossil fuels.
Fossil fuels	A natural fuel formed in the geological past from the remains of living organisms – non-renewable.
Renewable energy	Supply of energy from natural sources that don't run out, e.g. solar, wind etc.
Fracking	The extraction of natural gas from shale rock by pumping high pressure water into the ground.



Water

Why is water important?	<ul style="list-style-type: none"> Used for survival, washing, food production, industry. Clean, safe water enables development and allows people to break free from the cycle of poverty. Globally 2 billion people drink from contaminated water sources.
Deficit and Surplus	<ul style="list-style-type: none"> UK - North and West = water surplus, South and East = water deficit. Globally - North of the Brandt Line = water surplus or balance, South of the Brandt Line = water stress.
Over abstraction	When water is being used more quickly than it is being replaced by rainwater.
Water conflict	Disputes between different regions or countries about the distribution and use of fresh water.
Water security	Reliable availability of an acceptable quality and quantity of water.

Water Management

Strategies to increase water supply	<ul style="list-style-type: none"> Diverting supplies and increasing storage. Dams and reservoirs. Water transfer schemes Desalination
Large scale water transfer scheme example	Lesotho Highland Water Project – movement of rainwater from LIC Lesotho to HIC South Africa in exchange for money. 75% of Lesotho's income is generated by the scheme and receives cheaper electricity from the dam. South Africa's access to safe drinking water will increase to 90% however water has been lost due to leaks causing water prices to increase.
Strategies to make water sustainable	<ul style="list-style-type: none"> Water conservation Groundwater management Recycling/'grey' water
Local scheme to increase sustainable water supplies	Wakel River Basin, Rajasthan, India – needed due to overuse from irrigation and low rainfall/high temperatures. Taankas = underground water storage to prevent evaporation. Johed – small dams to capture rainwater. Pats – using a bund to divert water along irrigation channels to fields.



Food

Why is food important?	<ul style="list-style-type: none"> Calories provide energy that is needed for human survival. Globally more than 1 billion people suffer from malnourishment (not enough food) = disease and death, 2 billion are undernourished (poor diet)
Agribusiness	Large scale, mechanised farming with minimal workforce of usually one crop to increase profits.
Food miles	The distance covered moving food from the area it is produced to where it is consumed. Increase food miles from: increased demand for organic and exotic foods, year-round demand for seasonal produce and unsuitable UK climate for growing.
Deficit and surplus	Food surplus North of Brandt Line (UK calorie consumption = 3200) Food deficit South of Brandt Line (Ethiopia calorie consumption = 1500) ⁸²

Paper 2: Changing Economic World

Classifying & measuring development

HIC	Wealthiest countries, high GNI and high quality of life (HDI). Tertiary/Quaternary economy.
LIC	Poorest countries, low GNI and low quality of life for most, primary economy.
NEE (Newly Emerging Economy)	Rapidly getting richer move from agricultural to industrial econ. Developing secondary economy.
GNI per head	Total value of goods and services earned by the country per year divided by total population
Birth rate	Number of life births per 1000 per year
Death rate	Number of deaths per 1000 per year
Infant mortality rate	Number babies that die in first year out of 1000 live births
People per doctor	Number of doctors per 100 of population
Literacy rate	% of adults that can read and write
Access to safe water	% of population who have access to safe water
Life expectancy	Average age a person can be expected to live
HDI	Combination of GNI, life expectancy and education level
DTM	Demographic transition model

Nigeria a NEE

Nigeria	West coast of Africa, richest African nation and set to be in top 20 largest global economies by 2050
Wider context	Politically used to be UK colony, Socially it is has a multi faith mix, Culturally there's Nollywood and Environmentally there's a mix of desert in the north and more tropical in the south.
Changing economic structure	An NEE that's moving from an agricultural based economy to an industrial one.
TNCs	Shell is one of main TNCs; they make a huge positive contribution to taxes and export revenue however oils spills and human rights abuse are also a feature.
Aid	100 million live on less than \$1 a day therefore they receive plenty of international aid eg nets for life is bilateral health aid from UK with a development focus.

Development gap causes and strategies to reduce

Development Gap CAUSES	The different rate that 2 countries are developing – usually faster in HIC's.
Physical	Poor climate, low quality farmland or natural hazards
Economic	Poor trade links, agricultural economy or debt
Historical	Colonisation and conflict in past create lack of development
STRATEGIES TO REDUCE	
Investment	Foreign Direct Investment FDI – when a TNC invests money in a different country.
Industrial dev	Moving economy to industry (secondary) and away from agriculture (primary)
Tourism	Increase in tourism can boost economy. Tourists are FDI.
Aid	Money and resources can be given
Intermediate tech	Sustainable simple technology that is easy to use and repair
Fair trade	Ensuring a living wage along supply chain in primary and secondary sectors.
Debt relief	Cancelling debt so money saved can be invested, eg UK/Zambia – debt cancelled and healthcare system installed.
Microfinance loan	Small loans to help people set up small businesses
Historic economic change	UK has de-industrialised and now is a post-industrial globalised economy
Industrial environmental impact	Heavy industry was very polluting; modern industry can be far more environmental and sustainable
Changes in rural landscapes	Hebden Bridge is a booming rural location with a strong tertiary economy from 6 million annual tourists and as a quaternary commuter town due to close transport links to Manchester and Leeds. Nelson is declining without such connections.
Transport improvements	HS2 is set to improve rail provision, Smart motorways reduce congestion and 3 rd runway at Heathrow. All flawed.
North – south divide	Higher salaries, better education outcomes and more job opportunities in the south. BBC move to Media City in Manchester to help redress.
UK and wider world	Strong trade and political links with rest of world – NATO & G7. But Brexit.

UK – Economic future

Paper 1 – Natural Hazards

NATURAL HAZARDS

Natural hazard	Natural process threatens people or property.
Tectonic hazard	Earthquakes and volcanoes that threaten people or property.
Meteorological hazard	Extreme weather and climate that threaten people or property.
Risk	How vulnerable people are, their capacity to cope and the nature of hazard combined.



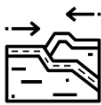
WEATHER HAZARDS

Global atmospheric circulation	Air moving through pressure belts e.g. Hadley Cell, Ferrell Cell and Polar Cell.
Surface/trade winds	Air moves from areas of high pressure to low pressure.
Equator	Rising warm air creates hot and wet climates (TRF).
30°N & 30°S of Equator	Sinking cool air gives creates hot and dry climates (deserts).
Tropical storm	Very low-pressure weather system that bring heavy rain and strong winds that spiral round the centre caused warm ocean temperatures over 27°C.
Tropical storm features	Large spiralling clouds (cumulonimbus), eye, eye wall, high wind speeds up to 75mph.
Climate change and tropical storms link	Occur more often and more intense due to warmer oceans and seas.
Tropical storm case study	Hurricane Katrina - August 2005 (category 5 storm) in New Orleans, Louisiana, USA.
Examples of recent extreme weather events in the UK	<ol style="list-style-type: none"> 1. Boxing Day flood (2015) in Todmorden caused by storm Eva, 60mm+ rain fell in 24 hours. 2. Heatwave (2003) across England caused 2000 deaths. 3. Beast from the East (2018) widespread disruption from heavy snow and ice.



CLIMATE CHANGE

Evidence	Arctic ice melt, global temperature increase, geological evidence e.g. corries, sea level rise and ice core
Natural Factors	Milankovitch cycles, volcanic activity and solar flares all increase amount solar radiation.
Human factors	Increased burning of fossil fuels, agriculture and deforestation are increasing the amounts of greenhouse gases.
Mitigation	Trying to prevent further warming by reducing causes and fixing the problem e.g. Paris Agreement, alternative energy etc.
Adaptation	Minimising the impacts e.g. water transfer schemes, building sea walls etc.



TECTONIC HAZARDS

Destructive margin	Oceanic crust subducts under continental crust creating volcanoes and earthquakes.
Constructive margin	Oceanic crusts move apart creating new land as magma rises through the gap forming volcanoes and earthquakes.
Conservative margin	Plates slide past each other causing a build-up of pressure creating earthquakes.
Reasons people live in tectonic areas	Always lived there, confidence in monitoring systems, tourism and fertile soil.
How do we manage risk?	3 P's = prediction, protection and planning.
LIC hazard case study	Haiti - Jan 2010 (7.1 on the Richter scale) where more than 200,000 people died due to lack of resources.
HIC hazard case study	New Zealand - Sept 2010 (7.1 on the Richter scale) where 1 person died initially - 185 total in aftershock.
Primary Effect	Happen as the hazard is occurring e.g. buildings destroyed, death etc.
Secondary Effect	Happen later e.g. homelessness, lack of clean water, disease etc.
Immediate Response	First responses – normally to reduce loss of life e.g. evacuate, search and rescue, provide clean water etc.
Long-term Response	Occur in the weeks/months/years after the hazard e.g. rehoming, rebuilding, improving the 3 P's etc.

Topic Area 1: Therapies and their benefits

Types of therapies:

- Sensory: aromatherapy, reflexology, massage.
- Cognitive: hypnotherapy, speech and language, mind-body healing by using the power of positive thinking, reminiscence therapy.
- Expressive: art therapy, play therapy, express thoughts and emotions.
- Physical: yoga, Tai Chi, reiki.

Benefits of therapies:

- Physical: improves movement, appetite and sleep, lowers blood pressure, reduces pain.
- Intellectual: mental stimulus, improves creativity, helps concentration, memory recall, improves communication skills.
- Emotional: improves self-esteem and confidence; reduced stress, anxiety, panic attacks, depression and grief; increases self-awareness; sense of wellbeing.
- Social: helps connect with others, improves cooperation, understanding rules and moral behaviours.

Topic Area 2: Creative activities and their benefits

Examples of types of creative activities

- Physical activities: painting, dancing, drawing, sewing, knitting, embroidery, crochet, arm chair exercise, sports, physical education, walking, music and movement, bead and jewellery making.
- Intellectual/cognitive activities: ICT, reading, quizzes, radio, poetry, writing, Pictionary, Jigsaw puzzles, reminiscence.
- Emotional activities: storytelling, painting, craft work, photography, mime.
- Social activities: singing, quizzes, dancing, roleplay, bingo, card games, board games.
- Sensory activities: gardening, painting, clay, sand and water, cookery.
- Imaginative activities: drama, crafts, reading, painting, making a scrapbook or collage making, junk modelling.

Examples of benefits of creative activities

- Physical benefits: hand eye coordination, balance, improved breathing, gross and fine motor skills, improved strength, dexterity, circulation, improved fitness, improved sleep and appetite, reduced tension, stress and anxiety, improved relaxation, pain management.
- Intellectual benefits: maintain and improve memory, concentration, improve communication, problem solving, mental stimulation, learn new skills.
- Emotional benefits: improved self-esteem and self-concept, motivation, sense of achievement, develop new interests, improved confidence, express emotions, and feel valued, empower.
- Social/moral benefits: make friends and develop new relationships, engagement, and interaction with others reduces boredom, learn new rules, prepare children for starting school, learn right and wrong, follow and learning rules, modelling appropriate behaviour.

Topic Area 3: Plan a creative activity for individuals or groups in a health or social care setting

Aims of the creative activity

- The purpose specific to an individual or group
- Timescales
- Resources needed
- Safety
- Communication
- Appropriateness to individuals
- Methodology to be used
- Demonstration
- Group work
- Individual contribution
- Feedback methods

Topic Area 4: Deliver a creative activity and evaluate your own performance

Skills/personal qualities required to encourage participation

Deliver a creative activity with a group or individual

- Introduce the activity
- Aim(s)
- Content
- Settle the individuals so that they are prepared to carry out the activities
- Supervise the activity
- Encourage participation
- Intervene when necessary
- Provide support
- Maintain safety
- Keep to timescales
- Replenish resources/materials
- Collect feedback from participants

Evaluation

- How to evaluate your own performance
- Use feedback
- Self-reflect
- Review strengths and weaknesses of your planning
- Your communication skills
- How you encouraged participation of the individual/group
- Suggest improvements
- What you would do differently and why

Topic Area 1: The rights of service users in health and social care settings

1.1 Types of care settings

- Health care
- Social care

1.2 The rights of service users The right to:

- Choice
- Confidentiality
- Consultation
- Equal and fair treatment
- Protection from abuse and harm

1.3 The benefits to service users' health and wellbeing when their rights are maintained

- Empowerment (encourages independence and being self-reliant, feeling in control of their lives, gives service users choice, control and independence)
- High self-esteem (feeling valued, feeling respected, positive mental health)
- Service users' needs are met (appropriate care or treatment such as mobility aids provided, or dietary requirements met, results in good/improving physical or mental health)
- Trust (reassured that service providers will not harm them, confident that service providers have service users best interests in mind, confident in the care they receive)

Topic Area 2: Person-centred values

2.1 Person-centred values and how they are applied by service providers

- Person-centred values (individuality, choice, rights, independence, privacy, dignity, respect, partnership, encouraging decision making of service user)
- Qualities of a service practitioner, the 6Cs (care, compassion, competence, communication, courage, commitment)

2.2 Benefits of applying the person-centred values

Benefits for service providers of applying person centred values

- Provides clear guidelines of the standards of care that should be given
- Improves job satisfaction
- Maintains or improves quality of life
- Supports rights to choice and consultation
- Supports service practitioners to develop their skills
- Enables the sharing of good practice

Benefits for service users of having the person-centred values applied

- Ensures standardisation of care being given
- Improves the quality of care being given to the service user
- Maintains or improves quality of life for the service user
- Supports service users to develop their strengths

Topic Area 2: Person-centred values

2.3 Effects on service users' health and wellbeing if person-centred values are not applied

- Physical effects
 - Pain if medication or treatment is not given
 - Illness may get worse
 - Malnutrition/illness due to lack of food for special dietary needs
 - Dehydration due to lack of regular fluids
 - Injury
- Intellectual effects
 - Lack of progress or skills development
 - Failure to achieve potential
 - Loss of concentration
 - Lack of mental stimulation
- Emotional effects
 - Depression
 - Feeling upset
 - Low self-esteem/feeling inadequate
 - Anger/frustration
 - Stress
- Social effects
 - Feeling excluded
 - Feeling lonely
 - Lack of social interaction/poor social skills
 - Become withdrawn

Topic Area 3: Effective communication in health and social care settings

3.1 The importance of verbal communication skills in health and social care settings

- Adapting type/method of communicating to meet the needs of the service user or the situation
- Clarity
- Empathy
- Patience
- Using appropriate vocabulary
- Tone
- Volume
- Pace
- Willingness to contribute to team working

3.2 The importance of non-verbal communication skills in health and social care settings

- Adapting type/method of communicating to meet the needs of the service user or the situation
- Eye contact
- Facial expressions
- Gestures
- Positioning (space, height, personal space)
- Positive body language, no crossed arms/legs
- Sense of humour

3.3 The importance of active listening in health and social care settings

- Active listening skills (open, relaxed posture, eye contact, looking interested nodding agreement, show empathy, reflecting feelings, clarifying, summarising to show understanding of key points).

3.4 The importance of special methods of communication in health and social care settings

- Advocate
- Braille
- British Sign Language
- Interpreters
- Makaton
- Voice activated software

3.5 The importance of effective communication in health and social care settings

- Supports the person-centred values and individual's rights
- Empowerment
- Reassurance
- Feeling valued
- Feeling respected
- Trust

- Helps to meet service users' needs
- Protects the rights of service users
- The impact of good communication skills
- The impact of poor communication skills

Topic Area 4: Protecting service users and service providers in health and social care settings

4.1 Safeguarding

- Service users who need safeguarding
Vulnerable groups – e.g. homeless people
Children People with physical and learning disabilities
People with mental health conditions
Older adults in residential care settings
People who have a sensory impairment – sight loss, hearing loss
People in residential care dependent on carers – children, older adults
- Impacts for service users of a lack of safeguarding
Physical impacts
Intellectual impacts
Emotional impacts
Social impacts
- Safeguarding procedures in care settings
Safeguarding policy
Designated Safeguarding Lead (DSL) person with responsibility for safeguarding
- Safeguarding training for all staff so that they:
Are aware of their duty to report a serious concern
Know the care settings procedures for reporting a disclosure of abuse or serious concern
Can recognise possible signs of abuse or harm
Know who to report to
- Disclosure and Barring Service (DBS) checks for all staff
Standard checks
Enhanced checks
The barred list

4.2 Infection prevention

- General cleanliness
Use anti-bacterial sprays on surfaces
Clean toys and play equipment regularly
Mop floors and vacuum carpets daily
Clean and disinfect toilets frequently
Correct disposal of hazardous waste in health and care settings
- Personal hygiene measures
Hair tied back/covered
Open wounds covered
No jewellery
No nail polish
Correct hand washing routine
Regular showering and hair washing
Regular brushing of teeth
Appropriate use and disposal of tissues/ antiseptic wipes/sanitiser
- PPE (personal protective equipment)
Disposable aprons
Disposable gloves
Rubber gloves
Face masks
Hairnets or hygiene hats
Overalls
Overshoes
Surgical garments/scrubs

4.3 Safety procedures and measures

- Safety procedures for reducing risk/danger and promoting good practice
First aid policy
Risk assessments
Staff training programmes for
- Safety measures
Displaying a fire safety notice
Using warning signs o A 'wet floor' sign o 'No entry' sign

4.4 How security measures protect service users and staff

Security measures

- Identifying staff
ID lanyards
Staff uniform
- Monitoring of keys
Limits number of people with access to keys
List of keyholders – know who has the keys
- Receiving and monitoring visitors
Staff on duty at entrance monitors access
Signing in and out book for visitors, know who is there and who has left
Issuing visitor badges
- Reporting of concerns to line managers
Appropriate action can be taken by senior staff
- External doors, restricting access
Electronic swipe card entry system
Buzzer entry system
Security pad with pin code
- Window locks and restraints
Keeps vulnerable service users safe – prevents falling out of open window or strangers entering

History, Year 11: American people and the 'Boom'



Key people

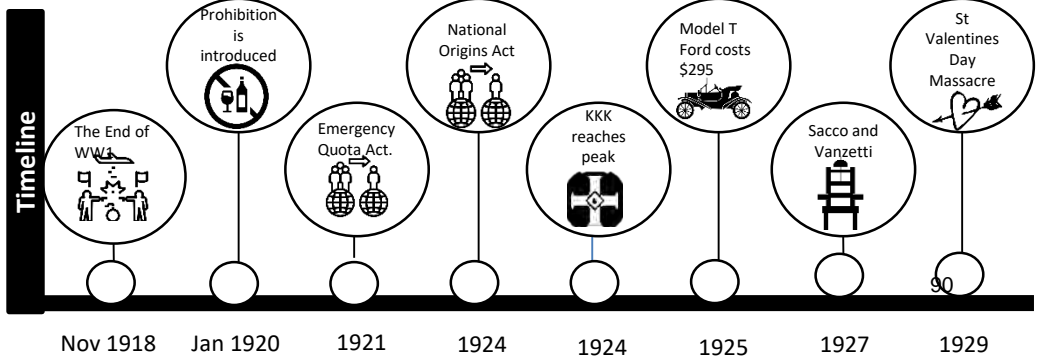
- Presidents during the 1920s**
- Warren Harding**
Republican President March 4, 1921 - August 2, 1923. Focused on getting America back to normal after war.
 - Calvin Coolidge**
Republican President August 2, 1923 - March 4, 1929. Famously said 'the chief business of the American people is business.'
 - Herbert Hoover**
Republican President March 4, 1929 - March 4, 1933. Believed in Rugged Individualism.
- Celebrities during the 1920s**
- Henry Ford**
American entrepreneur and business man, founder of the **Ford** Motor Company and chief developer of the assembly line.
 - Charlie Chaplin**
Famous actor in silent movies. Born in England. Earning \$1500 a week. A fortune in the 1920s.
 - Al Capone**
Gang boss in Chicago. Famous for the St. Valentines Day Massacre of the rival Bugs Moran Gang.
 - Sacco and Vanzetti**
Italian immigrants to America who were executed for a crime they probably didn't commit.

Key words

- American Dream** American ideal in which equality is available to all.
- Congress** The American national government.
- Consumerism** A social and economic order and ideology that encourages the acquisition of goods and services in ever-increasing amounts.
- Credit** Buying goods with an agreement to pay later (in instalments).
- Hire Purchase** Method to buy goods and pay in regular instalments
- Immigration** People moving to a foreign country to live there permanently.
- Ku Klux Klan** White American group using violence against Black Americans and other minority groups/individuals.
- Mass production** Making large quantities of goods (usually using assembly lines).
- Prohibition** Law banning the production and sale of alcohol 1920-33.
- Speculation** Investing money in the hope of gain, but also risking loss.
- Laissez-faire** French phrase meaning 'leave alone' = no high taxes.
- Republican Party** A political party who liked to keep hold of traditions and stay out of people's lives. A kind of Businessman's party.
- Democratic Party** More of an ordinary people's party. They favoured helping those in need.

Key events

- Economic 'Boom' in the 1920s** First World War left America in a stronger position than Europe. American business was able to mass produce goods and sell them meaning more people were employed and so more people had money to spend. Advertising encouraged people to spend not save. Hire purchase gave people a way to buy things on a payment plan.
- Exclusions form the 'Boom'** African Americans did not experience the boom. They were paid less and lived in poorer conditions. Immigrants had similar experiences to American Americans. They were treated with suspicion. Sacco and Vanzetti would be a good example. Farmers also found they didn't benefit. They were already living in poverty when the boom started.
- Popular Culture** Cinemas were hugely popular. 100 million people went a week by 1929. Jazz became incredibly popular and new dances went with it. For example The Charleston and The Black Bottom. Watching sport was a favoured pass time. Babe Ruth was a national hero for setting a home run record. He was paid \$80,000 a year. Crazy crazes also took over. Marathon dancing and pole sitting were very popular. Alvin 'shipwreck' Kelly set the record when he remained on a platform for 49 days.
- Women** By 1929 10.5 million women were in work. That's 25% more than in 1920. Flappers were a new sort of woman. They wore more revealing clothes, rode motorbikes, smoked and went out without a chaperone. Women also had the right to vote. However, women were still not equal and the flapper tended to be middle class and above.
- Negatives** Prohibition banned alcohol and encourage gang activity to provide illegal alcohol to Americans. Gangs run by men like Al Capone almost took over whole cities. For example, Chicago was largely out of control and run by gangs. Immigration quotas created a split society and racial tension in America. African Americans and European immigrants were subjected to persecution by the KKK.



Interpretation skills

- Interpretation** Personal viewpoint written after an historical event.
- Content** What can be seen in the interpretation?
- Provenance** Who created the interpretation and why?



History, Year 11: Bust – American’s experiences of the Depression and New Deal

Key people

Political figures

Herbert Hoover
Republican President 1928 – 1932. Followed Rugged Individualism and said that ‘prosperity is just around the corner.’ Heavily criticised for his work during the Depression.

Franklin Delano Roosevelt
Democrat President elected in 1932. Took office in 1933. He was the man behind the New Deal that brought the Alphabet Agencies into existence.

Senator Huey Long
Critic of the New Deal. Wanted to limit personal wealth to a max of \$3 million with aim to share wealth between all Americans

Celebrities

Fred Astaire and Ginger Rogers
Glamorous dancers/movie stars of the big screen. Made films through the Depression to keep spirits high.

Rosie the Riveter
Important symbol of women taking over traditional roles of men during the Second World War.

Key words

Alphabet Agencies Name given to the various measures introduced under the New Deal

‘Brains Trust’ Group of advisers who helped Roosevelt develop the New Deal.

Economic Depression Long period of financial problems

Dustbowl The area of the Tennessee Valley, the land into a desert.

Hooverville Shanty town of ramshackle huts where unemployed workers lived whilst they searched for work.

Malnutrition Lack of proper nutrition/food to keep a person healthy.

Supreme Court Highest court in US, with 9 judges.

Overproduction Goods being made faster than they could be sold.

Tariff A tax placed on imported goods.

Bonus Army Veterans of the First World War who marched on Washington demanding their bonus early.

Breadlines Queues that formed at soup kitchens run by charities.

Rugged Individualism The belief that an individual is totally self-reliant.

Lend Lease American policy of ‘lending ‘ Britain \$7000 million worth of weapons.

Key events

Hoover and the Depression

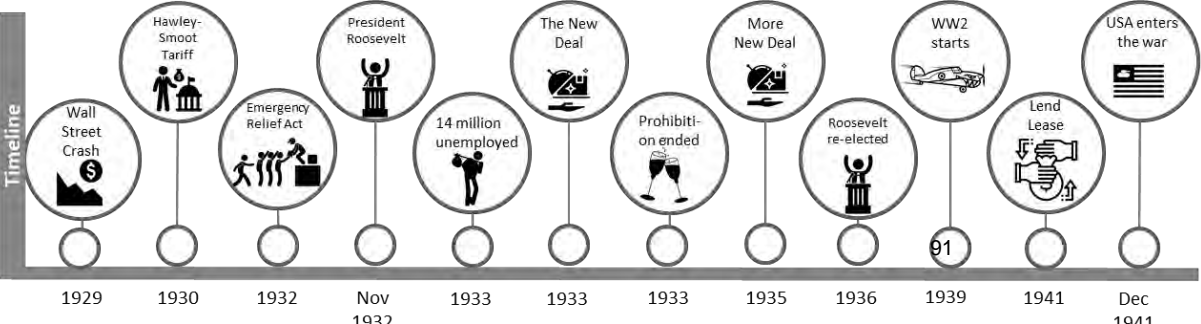
Hoover was convinced that America would recover soon and believed in rugged individualism. Eventually set up the Reconstruction Finance Corporation – lent money to businesses in trouble. 1930 cut taxes by \$130 million. 1930 Hawley-Smoot tariff = high tax on imported goods to encourage Americans to buy American. Europe responded with similar tariffs making it harder for American businesses to sell abroad. 1932 Emergency Relief Act made \$300 million available to states to help the unemployed. Some states felt this was not the Federal Governments responsibility so only \$30 million was actually given out.

Roosevelt and the New Deal

Closed down banks and only reopened the reliable ones. This restored faith in the banking system. Cut the pay of government workers and the armed forces by 15%. This saved \$1 billion straight away. Removed the prohibition laws making it legal to sell alcohol. This meant a tax could be put on sales, raising money for the Government. Introduced the Alphabet Agencies targeting all sorts of areas. The idea was to provide work and income for those hit by the depression.

Impact of the Depression on people

13 million had lost their jobs by 1932, nearly 25% of the workforce. 1929-1932 factory production dropped by 45%. 12,000 people a day losing jobs by 1932 as 20,000 companies went out of business. 250,000 Americans stopped paying their mortgages and were evicted from their homes. Many lived on the streets. One family moved into a cave in New York’s Central Park.



Popular Culture in the 1930s

Jazz remained popular. Radio remained the main way that people listened to music but Gramophones became more popular. 60 million people a week were still going to the cinema to escape their troubles. Comic books became popular.

History, Year 11: Post-war America



Key people

Presidents

John F Kennedy
The president behind the 'New Frontier'. Assassinated in 1963. Was a supporter of Civil Rights.

Lyndon B Johnson
The President who replace JFK. Also introduced the 'Great Society'. Also passed Civil Rights legislation.

Political figures

Martin Luther King
One of the most famous peaceful civil rights leaders.

Malcolm X
Follower of the Nation of Islam. Believed in using violence as form of protest.

Betty Friedan
Author of *The Feminine Mystique* – turning point in attitudes to women.

Phyllis Schlafly
Leader of Stop-ERA movement.

Celebrities

Elvis Presley
Rock and Roll singing heartthrob.

James Dean
Young actor who was famed for his rebellious nature with leather jackets and fast cars.

Key words

Black Power Movement
African-American movement emphasising racial pride and equality.

Civil Rights
The right of citizens to political and social freedom and equality.

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

Great Society
Johnson introduced many social reforms to help tackle the problems of unemployment, bad housing and medical.

McCarthyism
Campaign against alleged communists in the US government and other institutions.

Suburbs
Residential areas built outside towns and cities.

Consumerism
Encouraging people to buy goods in increasing amounts.

Rock and Roll
New style of music made famous by Elvis. Very popular with teenagers. Often had sexualised lyrics.

Red Scare
Communist spies found in the USA, fear of communism spread like wildfire.

HUAC
The House of Representatives Un-American Activities Committee. Connected to McCarthyism.

Little Rock
Court case involving African American students who were due to attend a previously white school.

Montgomery Bus Boycott
African American refusal to use the busses in America after the actions of Rosa Parks.

NOW
National Organisation for Women. Had up to 40,000 members. Mainly middle class and middle aged. Campaigned for rights.

Sit-in
African Americans using 'white only' sections of restaurants etc and refusing to leave.

Women's Liberation Movement
Younger women who used a more direct approach and became known as women's lib.

Key events

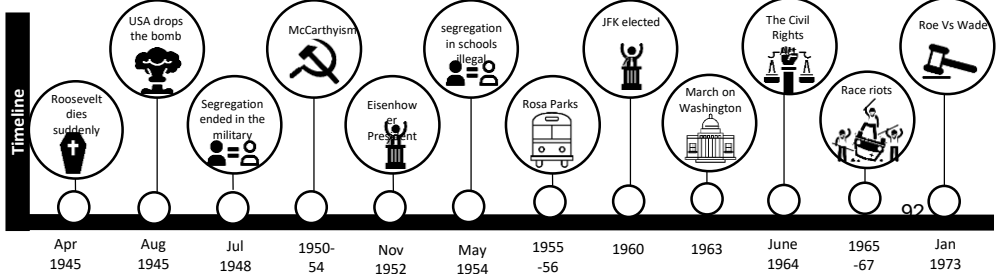
Society and economy
The economy was now far stronger having produced weapons for the war.
Women were still struggling with equality. It was seen by a lot of men that a woman's place was in the home.
The American Dream dominated society. The idea that all Americans were able to live their best life.

The Teenager
Rock and Roll dominated the charts and teenagers made this music their own. They had money of their own, \$10 - \$15 a week compared to \$1 - \$2 a week in the 1940s. Communism created huge levels of fear in society. The USSR was deeply feared by the American Government and the American people.

Racial tension
America was still segregated. African Americans and White Americans were educated and entertained separately. This was the time period in which segregation would be challenged. Men like Martin Luther King, Malcom X, President Kennedy and President Johnson would all make contributions to this. The courts were used to force de-segregation. Many opposed this. The most famous cases were in Little Rock and Montgomery. Progress was slow.
Martin Luther King's passive resistance methods were soon challenged by the direct action of men like Malcom X.

America and the 'Great Society'
President Kennedy started to move towards the idea that the Government would become more involved in the lives of everyday Americans. He did work around civil rights, education, health care and the economy.
Kennedy was assassinated before he could complete his work. President Johnson had been Kennedy's vice president. He continued the work of Kennedy and called it the Great Society. He raised the minimum wage from \$1.25-\$1.40, cleared up slums, provided medical care for the elderly and low income families. His work was overshadowed by his Government's involvement in the Vietnam War.

Women
Equal pay was wanted, equal job opportunities and rights over their own bodies.
Two movements were set up - NOW and Women's Lib. These had very different types of women in them and they wanted very different things. This made them less effective as they were divided.
Roe vs Wade was a stand out court case that saw women gain more rights over their own bodies and changed American abortion laws. Equal Rights Amendment (ERA) proposed more equality. Stop ERA movement was led by Phyllis Schlafley who wanted to keep women in traditional roles.



History, Year 11: Elizabeth and her Government



Key people

Monarch **Elizabeth I (1533-1603)**
Elizabeth was the last of the Tudor monarchs, dying in 1603 without producing an heir. Her reign is described as a 'Golden Age' in English history due to religious stability, voyages of exploration, developments in culture and fashion and the wealth some in England enjoyed.

Privy Counsellors **William Cecil, Lord Burghley (1520-1598)**
Elizabeth's most trusted advisor, Cecil was named Secretary of State in 1558. He sought to avoid war, unite the country with moderate policies and was a devout protestant. He was made Lord Treasurer in 1571.

Francis Walsingham (1532-1590)
Known as 'The Spymaster', Walsingham was Elizabeth's eyes and ears against potential plots. A radical Puritan, he was fiercely loyal to Elizabeth an uncovered multiple plots against her.

Robert Dudley, Earl of Leicester (1533-1588)
Elizabeth's childhood sweetheart and friend, Dudley was fiercely loyal to Elizabeth; there were even rumours of a relationship between the two. He was made Master of the Horse, meaning he was responsible for Elizabeth's safety.

Key terms

'Divide and Rule'

Elizabeth's tactic of encouraging competition between privy councillors to ensure their loyalty.

Gentry

Members of a 'middling class' who are increasing in wealth and power.

Illegitimate

Not legally entitled to take the throne.

Justice of the Peace

Members of the gentry tasked with controlling local populations.

Lords Lieutenant

Given orders from the Privy Council and keep authority across England. They were in charge of JPs

Lord Treasurer

Minister in charge of England's finances.

The Royal Court

The Court was simply wherever the Queen was (500 ministers, advisors, nobles, servants).

Parliament

House of elected officials. The monarch decided when to call parliament, usually to ask for taxes.

Patronage

Showing favouritism by giving individuals important jobs in return for loyalty.

Privy Council

Council of advisors.

Progresses

Elizabeth tours England, visiting nobles' houses.

Key events

Elizabeth's early life

Daughter of Henry VIII and Anne Boleyn. Made illegitimate in 1536.
Difficult relationship with siblings as England went through multiple religious changes.
Intelligent child who spoke 6 languages, read widely, able to converse and talk about politics.

Elizabeth's problems at ascension

Heir – unmarried with no heir to the throne.
Female ruler – doubts over young queen's ability to rule
Legitimacy – some doubted Elizabeth's legitimacy
Religion – England is divided between Catholicism and Protestantism.

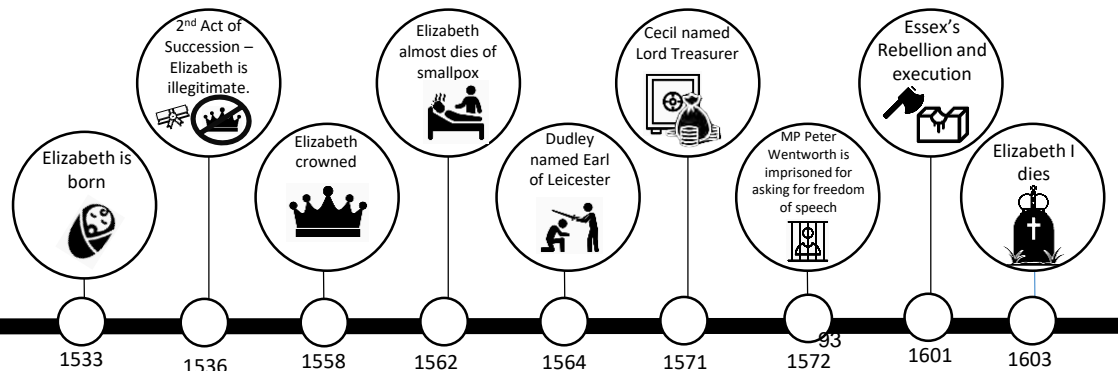
Elizabeth's government

Privy Council – Close advisors to the Queen responsible for running the country; Elizabeth appointed 19 men. These men were loyal to the Queen and would compete to impress her. She used Divide and Rule to control her Privy Councillors.
Progresses – Elizabeth travelled the country, staying in the houses of nobles. This was done to check that laws were being followed and to show Elizabeth was visible.
Patronage – Elizabeth would promote and give favour to certain ministers. This was done to make ministers seek Elizabeth's approval and admiration.
Parliament – Elizabeth regarded Parliament as an inconvenience and mostly called them when she needed taxes. She even went 29 years without calling parliament. She was furious when MPs began to question her about the issue of marriage. In 1572, MP Peter Wentworth was imprisoned for asking for MPs to have Freedom of Speech.

Essex's Rebellion

Robert Devereux (Earl of Essex) was one of Elizabeth's favourites towards the end of her life. He was sent to Ireland to put down a rebellion. Without consulting the Queen, Essex made peace with Irish rebels. When he returned to England he marched on London in an attempt to 'rescue' the Queen from her councillors. It looked like he was leading an uprising against the Queen. He was tried and executed in 1603.

Timeline



History, Year 11: Life in Elizabethan England



Key people

Privateers

Sir Francis Drake (1540-1596)

English privateer and sailor who became the first Englishman to circumnavigate the globe in 1577. He led a fleet during the Spanish Armada.

Sir Walter Raleigh (1552-1618)

English sailor and explorer who is credited with exploring the New World and colonising North America. Became one of Elizabeth's favourites at Court.

Sir John Hawkins (1532-1595)

An English privateer and naval commander regarded as the first to involve England in the Atlantic Slave Trade.

Cultural figures

William Shakespeare (1564-1916)

Famously known as 'The Bard', Shakespeare wrote 37 plays, mostly during Elizabeth's reign. He was partly responsible for the opening of the Globe Theatre. Regarded as one of England's greatest writers.

Christopher Marlowe (1564-1593)

Poet and playwright known for *Dr Faustus*. Marlowe was rumoured to be a government spy but was killed during a bar brawl.

Elizabeth of Shrewsbury, or Bess of Hardwick (1527-1608)

Elizabeth's lady in waiting, Bess was one of England's wealthiest women. She built Hardwick Hall in 1590 which has become a symbol of Elizabethan grandeur.

Key terms

Able-bodied poor

Alms

Alms-house

Circumnavigate

Enclosure farming

Gentry

Gloriana

Golden Age

Idle poor

Impotent poor

Privateer

Sumptuary Laws

Vagabond/Vagrant

Poor people in England who were physically able to work but could not find employment.

Charity provided by local parish.

Place that provided charity (alms).

Travel around the globe.

Farming techniques that changed strips of land for crops to open fields for sheep.

Well-born families who owned land, but did not inherit titles so were below the rank of nobility.

Popular name given to Elizabeth I.

A time of cultural and historical importance.

Poor people who were regarded as lazy and criminals.

The poor in England who were too old/young/sick to work.

Pirates licensed by the government to attack and loot enemy ships.

Laws passed governing clothing based on standing in society.

A homeless, unemployed person who wanders from place to place and begs.

Key events

Poverty in Elizabethan England

Causes

- Henry VIII's policies and actions e.g. Dissolution of the monasteries e.g. Henry VIII's wars led to high taxes.

- Famines even before Elizabeth became Queen.

- Population growth between 1550-1600.

- Changes in farming – enclosures meant less common land.

Views on poverty

- Believed that 'idle poor' were dishonest and lazy 'vagrants' using new methods being used to trick people.

- Considered a threat to the social order Vagrancy also blamed for spread of disease from town to town.

- Puritans in particular disapproved of vagrancy.

Success?

Government taking responsibility was established e.g. 1601 Poor Law = Poor Rate

Lasted until 1834

Prevented rebellion caused by poverty

Elizabethan culture

- This was the time of the Renaissance or rebirth of learning

- Developments took place in art, portraiture, symbolism, miniature portraits.

- Developments of the theatre included Shakespeare. The theatre became a centre for entertainment of all classes. Plays were also used as political propaganda.

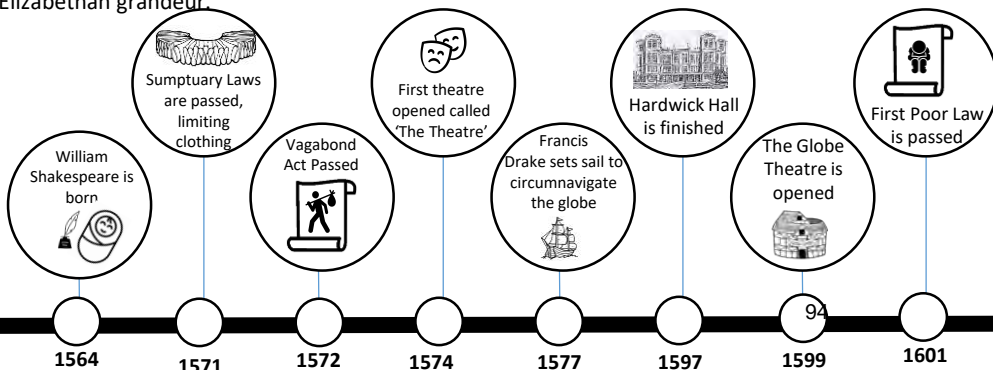
- The gentry were gaining more power and the nobility in decline as trade became more important and brought wealth to the gentry. Fortunes were made through trade and exploration. They used this wealth to build themselves grand houses and to educate themselves.

- **BUT** This was a time of blood sports and life expectancy was low. There was a belief in the 'Great Chain of Being' with a rigid adherence to hierarchy, poor being at the bottom. Sumptuary Laws were even based to dictate clothing based on class.

Voyages of Discovery

Francis Drake - Most famous English explorer who increased hostility with Spain through his privateering actions, sealing an estimated £480 million from Spanish ships. First Englishman to circumnavigate the globe in 1577. Helped win the Spanish Armada

Timeline



History, Year 11: Threats from home and abroad

Key people

Elizabeth's allies
Francis Walsingham (1532-1590)
 Elizabeth's spymaster. Walsingham was responsible for a network of spies across England, who's aim was to uncover plots against the Queen.

Threats to Elizabeth
Mary, Queen of Scots (1542-1587)
 Elizabeth's Catholic second cousin, has legitimate claim to the English throne. Seeks refuge in England after being driven out of Scotland. Has produced an heir (future King James I). At the centre of plots to depose Elizabeth. Executed for treason after Babington plot is uncovered.

Earls of Northumberland (1528-1572) and Westmorland (1542-1601)
 Catholic northern earls who rebelled in 1569 at loss of power under Elizabeth.

Duke of Norfolk (1536-1573)
 English Protestant noble with links to Catholics. Involved in plots to marry Mary and depose Elizabeth. Executed in 1572 after being involved in Ridolfi Plot.

Key terms

Clergy
 Religious leaders such as priests and bishops.

Council of the North
 Set up after the Papal Bull to enforce government authority and policies in the North of England.

Divine Right
 The belief that a monarch's right to rule came from God.

Excommunication
 A severe punishment, imposed by the Pope, where a person is expelled from the Catholic church.

Jesuits
 Roman Catholic missionaries whose aim was to destroy heresy (Protestantism).

Papal Bull
 A written order issued by the Pope.

'Protestant Wind'
 Wind that blew the Spanish Armada off course. Some argued that God sent the wind to show he favoured Elizabeth and Protestants.

Recusants
 Catholics who are unwilling to attend Protestant church services.

Religious Settlement
 Set of laws passed by Elizabeth to try and unify the country and heal the religious divisions.

Seminary Priests
 Priests trained in Roman Catholic Colleges.

Religious Settlement

Act of Supremacy – gives Elizabeth power of Church
 • Elizabeth as Supreme Governor of Church; all clergy must swear loyalty to her

Act of Uniformity – establishes consistency in churches
 • Book of Common Prayer used, in English
 • Wording of prayer book deliberately unclear so it can be interpreted differently by Catholics and Protestants
 • Everyone had to attend church on Sunday – fined 1 shilling for every absence
 • Elizabeth is initially very tolerant of Catholics, who she allows to worship in secret. This changes from 1580s because;
 ○ Jesuit Missions are sent to convert to Catholicism
 ○ Papal Bull in 1570 encourages Elizabeth's assassination
 ○ Mary, Queen of Scots arrives in England in 1568 and becomes a Catholic figurehead for plots

Plots against Elizabeth

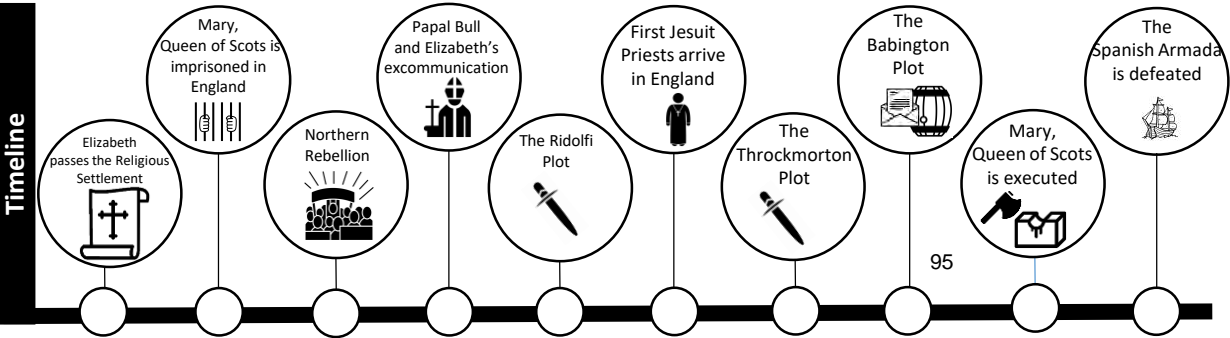
Northern Rebellion (1569) started when Elizabeth would not give permission for the Duke of Norfolk to marry Mary Queen of Scots. The Earl of Westmorland and the Earl of Northumberland took control of Durham Cathedral and celebrated Catholic mass. They attempted to march to London but were defeated. Northumberland was executed. Westmorland fled and Norfolk was sent to the tower.

The Ridolfi Plot (1571) was organised with the Duke of Norfolk. Ridolfi was a Catholic Italian banker living in England. He planned invasions from both the Netherlands and the North. It was stopped when spies captured a message.

Throckmorton Plot (1583) was backed by the Spanish and the Pope to invade England. Francis Throckmorton acted as a go between linking Mary Queen of Scots to the Spanish ambassador. Once again Walsingham's spies found out about the plot. Throckmorton was tortured and confessed.

Babington Plot (1586) to murder Elizabeth and put Mary on the throne, again with the support of Philip II of Spain and the pope. Letters to Mary were intercepted by Walsingham and the evidence against her was so strong that Mary was finally tried for treason by the Privy Council and found guilty. She was executed in 1587.

Following Mary's execution, Phillip II of Spain launched an armada of approximately 150 ships to dethrone Elizabeth. The wind changed, meaning Spanish ships were blown off course towards Scotland where almost half of the Armada were destroyed. This "Protestant Wind" was a propaganda victory for Elizabeth and there was not another major foreign challenge to her reign.



Head Chef Responsibilities

- Making sure food is of the right quality and price and is produced on time.
- Managing stocks of food/meeting suppliers.
- Managing health and hygiene procedures.
- Organising the staff duty rota.
- Overall responsibility for daily operations in the kitchen.
- Deals with customer complaints.

- Employees receive the necessary training.
- The Executive Chef assigns duties to his or her staff.
- Ordering supplies.
- Meal creations/menus/producing menus and new dishes
- Maintaining or raising the profit margins on food/costings of dishes.
- Staffing: hiring and firing of staff.
- Attending meetings.

EHO Responsibilities

- Carrying out routine or unplanned visits and inspections to ensure compliance with health and safety legislation and taking action to improve conditions.
- Providing advice and assistance to householders and businesses.
- Taking photos, producing drawings, removing samples and conducting interviews as part of the inspection process.
 - Investigating complaints from the general public.
- Investigating accidents at work and complaints about poor standards of health and safety, as well as identifying areas of negligence.
- Investigating outbreaks of infectious disease and preventing it spreading any further.
- Taking enforcement action, initiating legal proceedings, preparing and giving evidence in court.

Key terminology

Employee	Someone who works in the industry and has an employment contract.
Employer	Someone who hires staff to work for them.
Worker	Someone who works in the industry but does not have an employment contract.
Covers	Customer orders that are sent to the kitchen.
Workflow	The way food passes through a kitchen from delivery to plate.
HACCP	Hazard Analysis Critical Control Point – safety procedure that identifies hazards and prevents them.
FSA	Food Standards Agency – responsible for enforcing food hygiene and safety laws.
Kitchen Porter	Member of staff responsible for kitchen organisation, supplying the chefs and the stock of the kitchen.
Brigade	Term for a group of chefs in a professional kitchen.

Food Safety Laws

Food safety laws protect:

Consumers

- To stop them getting food poisoning.
- To make sure all food businesses have high food safety standards.
- To take action if a business breaks the law.

Food businesses

- To make sure all food handlers are trained in food safety.
- To make sure working conditions are good so food handlers can obey the law.
- To prevent consumers making false claims about being ill after eating the food.

Food Safety Act 1990

All food businesses must make sure that all food they produce is:

1. Safe to eat.
2. What people expect it to be.
3. Not labelled, advertised or presented in a misleading way.

Food Premises Requirements

Must be	Must have
<ul style="list-style-type: none">• Clean and maintained.• Hygienic.• Easy to keep clean.• Free from pests.• Well lit.• Well ventilated.	<ul style="list-style-type: none">• A supply of safe drinking water.• Enough space for people to work in.• Good drainage to remove dirty water.• Good, hygienic staff washing and toilet facilities.• A good waste disposal system.

Food Handler Responsibilities

- Do not sneeze or cough over food.
- Cover cuts and sore with a clean dressing and wear gloves.
 - Wear clean clothes and no jewellery.
 - Keep fingernails short and clean.
- Do not wear nail varnish or false nails.
 - Tie back/cover hair.
- Do not lick fingers when preparing food.
- Wash hands regularly and dry thoroughly.
- Do not put shoes onto food prep surfaces.

Food hygiene regulations

Anyone who owns, manages or works in a food business must:

Make sure food is handled and sold hygienically.

Identify possible food safety hazards.

Know which stages are critical for food safety.

Control these critical points so they prevent risks.

Make sure the controls are in place and regularly checked.

Food Allergy

Serious, possibly life threatening reaction to certain foods and ingredients.
 Can occur with medication and insect bites.
 The severe reaction is called ANAPHYLAXIS (anaphylactic shock).
 Occurs when the immune system reacts to something in the food and produces HISTAMINE.

Visible symptoms	Non –visible symptoms
<ul style="list-style-type: none"> • The skin becomes flushed and red • Raised, red/pink itchy rash appears. (Hives) • The skin swells – usually the face. • Difficulty breathing – wheezing and coughing. • Lips and eyelids swell. 	<ul style="list-style-type: none"> • The mouth, tongue and throat swell up – inhibit breathing, swallowing and speaking. • Pain in the abdomen, nausea and vomiting. • They may collapse and become unconscious.

Food Intolerance

Long term condition where certain foods cause someone to be unwell and develop a range of symptoms.
 Not usually life threatening.

Lactose Intolerance
 Lactose: natural sugar found in milk and milk products
 Fairly common intolerance and can develop at any age
 With LI, people don't make enough lactase (enzyme). So bacteria start digesting the lactose in the small intestine. This releases a lot of gas and causes bloating, flatulence, abdominal pain , diarrhoea and nausea.

Coeliac disease
 Inability to digest gluten – a protein found in wheat, barley, oats and rye.
 Affects 1 in 100 people
 Coeliacs can become malnourished and develop anaemia symptoms due to malabsorption of nutrients. They can also develop symptoms of tiredness and weight loss.

Year 10 Hospitality and Catering

Energy balance

To maintain body weight it is necessary to balance energy intake (from food and drink) with energy expenditure (from activity).

Energy intake is measured in joules (J) or kilojoules (kJ), but many people are more familiar with Calories (kcal).

1 kilojoule (kJ) = 1,000 joules
1 megajoule (MJ) = 1,000,000 joules
1 kilocalorie (kcal) = 1,000 calories

To convert from one unit to another: 1 kcal = 4.184 kJ

Energy from food

- Energy intake is measured in joules (J) or kilojoules (kJ), but many people are more familiar with Calories (kcal).
- Different macronutrients, and alcohol, provide different amounts of energy.

Basal metabolic rate (BMR)

Basal metabolic rate (BMR) is the rate at which a person uses energy to maintain the basic functions of the body when it is at complete rest, such as:

- breathing;
- keeping warm;
- keeping the heart beating

Physical activity level (PAL)

In addition to their BMR, people also use energy for movement of all types, expressed as PAL. The amount of energy a person uses to perform daily tasks varies.

Energy requirements vary from person to person, depending on BMR and PAL.

Total energy expenditure
= BMR x PAL

Different people need different amounts of dietary energy depending on their:

- age;
- gender;
- body size;
- level of activity;
- genes.

The figures determined are known as Estimated Average Requirements (EAR) for energy.

Undernutrition and obesity

Managing energy intake and expenditure, and maintaining energy balance can help reduce the risk of overweight/obesity and being underweight.

People who are obese are more likely to suffer from coronary heart disease, type 2 diabetes, gall stones, arthritis, high blood pressure and some types of cancers, i.e. colon, breast, kidney and stomach.

Being underweight is also linked with health problems, such as osteoporosis (low bone mass), infertility (difficulty to conceive) and even heart failure.

Key terms

Basal metabolic rate (BMR): The rate at which a person uses energy to maintain the basic functions of the body when it is at complete rest.

Body Mass Index (BMI): An equation that can be used to identify if an adult is a correct weight for their height.

Dietary reference values: Estimated dietary requirements for particular groups of the population.

Energy: The power the body requires to stay alive and function.

Physical activity level (PAL): The amount of energy a person uses to perform daily tasks varies.

Estimated Average Requirements (EAR): An estimate of the average requirement of energy or a nutrient needed by a group of people.

Vitamins

Nutrient	Function	Sources
Vitamin A	Helps the immune system to work as it should and with vision.	Liver, cheese, eggs, dark green leafy vegetables and orange-coloured fruits and vegetables.
B vitamins	Thiamin, riboflavin, niacin, folate, and vitamin B12 have a range of functions within the body.	Different for each B Vitamin.
Vitamin C	Helps to protect cells from damage and with the formation of collagen.	Fruit (especially citrus fruits), green vegetables, peppers and tomatoes.
Vitamin D	Helps the body to absorb calcium & helps to keep bones strong.	Oily fish, eggs, fortified breakfast cereals and fat spreads.
Vitamin E	Helps to protect the cells in our bodies against damage.	Vegetable and seed oils, nuts and seeds, avocados and olives.
Vitamin K	Needed for the normal clotting of blood and is required for normal bone structure.	Green vegetables and some oils (rapeseed, olive and soya oil).

Minerals

Nutrient	Function	Sources
Calcium	Helps to build and maintain strong bones and teeth.	Dairy, calcium-fortified dairy-alternatives, canned fish (where soft bones are eaten) and bread.
Iron	Helps to make red blood cells, which carry oxygen around the body.	Offal, red meat, beans, pulses, nuts and seeds, fish, quinoa, wholemeal bread and dried fruit.
Phosphorus	Helps to build strong bones and teeth and helps to release energy from food.	Red meat, poultry, fish, milk, cheese, yogurt, eggs, bread and wholegrains.
Sodium	Helps regulate the water content in the body.	Very small amounts found in foods. Often added as salt.
Fluoride	Helps with the formation of strong teeth and reduce the risk of tooth decay.	Tap water, tea (and toothpaste).
Potassium	Helps regulate the water content in the body and maintain a normal blood pressure.	Some fruit and vegetables, dried fruit, poultry, red meat, fish, milk and wholegrain breakfast cereals.
Iodine	Helps to make thyroid hormones. It also helps the brain to function normally.	Milk, yogurt, cheese, fish, shellfish and eggs.

Protein

Made up of building blocks called amino acids. There are 20 amino acids found in protein. Eight amino acids have to be provided by the diet (called essential amino acids).

In young children, additional amino acids, e.g. histidine and tyrosine, are sometimes considered to be essential (or 'conditionally essential') because they may be unable to make enough to meet their needs.

Recommendations

0.75g/kg bodyweight/day in adults.

Sources:

Animal sources: meat; poultry; fish; eggs; milk; dairy food.

Plant sources: soya; nuts; seeds; pulses, e.g. beans, lentils; mycoprotein.

Carbohydrate

All types of carbohydrate are compounds of carbon, hydrogen and oxygen. They can be divided into three main groups according to the size of the molecule.

These three types are:
monosaccharides (e.g. glucose);
disaccharides (e.g. lactose);
polysaccharide (e.g. sucrose).

The two types main of carbohydrate that provide dietary energy are starch and sugars. Dietary fibre is also a type of carbohydrate.

Starchy carbohydrate is an important source of energy.

Starchy foods - we should be choosing wholegrain versions of starchy foods where possible.

Fat

Sources of fat include:
saturated fat;
monounsaturated fat;
polyunsaturated fat.

Fats can be saturated, when they have no double bonds, monounsaturated, when they have one double bond, or polyunsaturated, when they have more than one double bond.

A high saturated fat intake is linked with high blood cholesterol levels.

Sources:

Saturated fat: fatty cuts of meat; skin of poultry; butter; hard cheese; biscuits, cakes and pastries; chocolate.

Monounsaturated fat: edible oils especially olive oil; avocados; nuts.

Polyunsaturated fatty acids: edible oils especially sunflower oil; seeds; margarine; spreadable fats made from vegetable oils and oily fish.

Fibre

- Dietary fibre is a type of carbohydrate found in plant foods.
- Food examples include wholegrain cereals and cereal products; oats; beans; lentils; fruit; vegetables; nuts; and, seeds.

Dietary fibre helps to:

- reduce the risk of heart disease, diabetes and some cancers;
- help weight control;
- bulk up stools;
- prevent constipation;
- improve gut health.

Hydration

Aim to drink 6-8 glasses of fluid every day.

Water, lower fat milk and sugar-free drinks including tea and coffee all count. Fruit juice and smoothies also count but should be limited to no more than a combined total of 150ml per day.

Drinking too much water can lead to 'water intoxication' with potentially life threatening hyponatraemia.

This is caused when the concentration of sodium in the blood gets too low.

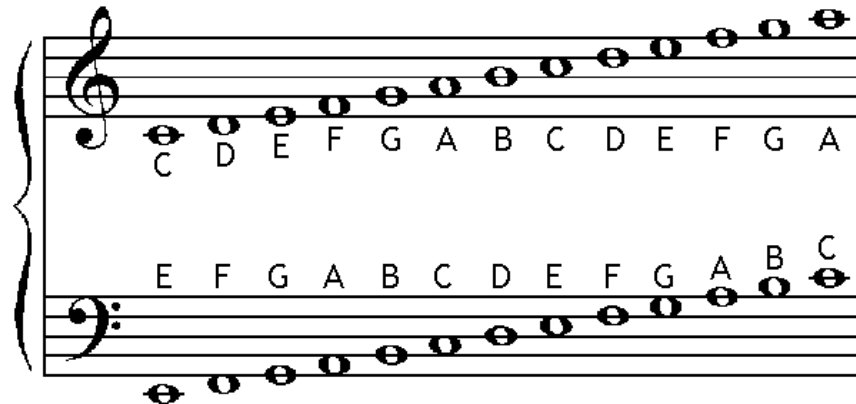
Music Industry Job Roles

Musician	Performs music, either as an instrumentalist or singer.		Artistic manager/Band manager	Guiding an artist's professional career.
Composer/Song writer	Writes the music and/or lyrics.		Journalist/blogger	Reviewing and reporting on new music.
Producer	Oversees and manages the recording process.	Job roles within a recording studio.	Broadcaster	Hosting a TV/radio music programme.
Studio manager	Organises the admin, booking and running of the studio.		Software programmer	Developing music apps and computer programs.
Sound engineer	Assemble, operate and maintain musical equipment.		Hire & transport	Rent and move music equipment to venues.
Session musician	A musician who plays on recordings at short notice.		PRS	Performing Rights Society.
Mastering engineer	Preparing final recorded sound for distribution.		PPL	Phonographic Performance Limited.
Artists and Repertoire (A&R)	Scout new talent and oversee current artists.		MCPS	Mechanical Copyright Protection Society,.
Conductor/MD	Directs and leads an ensemble, such as an orchestra.		Job roles during a live performance.	Musicians Union MU
Live sound technician	Prepares and controls the sound at live events.	Equity		Professional performers and creative practitioners.
Roadie	Travel around with musicians. Set up and pack away.	BECTU		Broadcasting Entertainment Cinematograph Theatre
Instrument technician	Specialist knowledge of certain instruments. Live show.	MPG		Music Producers Guild
Venue manager	Ensures the smooth running of a venue.	APRS		Association of Professional Recording Services
Promoter	In charge of advertising a show for a venue or artist.		PLASA	Professional Lighting and Sound Association
Marketer	Creates a brand, takes opportunities to advertise the musician.		Record labels	Major-Sony/universal. Sub-Columbia. Independent.
Manufacturer	Creates physical copies of CDs and vinyls ready to sell.		Employment	Full/part time, freelance, permanent, casual work.
Distributor	Sells recordings through stores or online companies.		Venue size	Large multi use, small and medium venues.
Retailer	Selling music to consumers. Physical copies and/or downloads.	102	Health & Safety	Equipment, first aid, fire safety, access, audience capacity, toilets and parking.

Musical elements		Compositional devices	
Dynamics	The volume. How loud or quiet the music is.	Chords	A combination of notes that are harmonised. The basic chord consists of the 1 st , 3 rd and 5 th note from a scale.
Duration	The length of the notes. The note value.	Riffs	A short repeated musical phrase or melodic idea.
Rhythm	The variety of long and short sounds, that create patterns within music.	Rhythmic patters	Repetitive patterns using a variety of rhythms.
Pitch	How high or low the music is.	Style/genre	The various categories of music. Specific musical features can dictate the genre.
Structure	The format of the music. How a piece of music is built and put together.	Improvisation	Music made up on the spot, often following a specific format.
Melody	The tune. The main point of interest or memorable part.	Bassline	A low frequency sound which is often repeated. A bassline adds texture and depth to a piece of music.
Instrumentation	The combination of instruments used within the music.	Sequence	A musical pattern or melodic idea that is repeated.
Tempo	The speed of the music. How fast or slow.	Modulation	A change of key or mood within the music.
Texture	The layers of sound within the music.	Inversions	A different combination or order of the chords.
Timbre	The tone or quality of the sound.	Polyphonic	A thick and busy texture. Multiple layers of sound within the music.
Tonality	The key the music is written in. Major or minor tonality.	Homophonic	One melody is supported by other parts within the music. All parts are playing in harmony.
Harmony	How multiple sounds work together.	Unison	Multiple parts playing the same thing at the same time.

Musical Elements

- Dynamics** How loud or quiet a sound is.
- Rhythm** The variety of long and short sounds, that create patterns within music.
- Pitch** How high or low a sound is.
- Structure** The layout of the music.
- Melody** The tune.
- Instrumentation** The instruments used.
- Texture** The layers of sound within the music.
- Harmony** How multiple sounds work together.



Terminology

- Bar & bar lines
- Score
- Notation
- Articulation
- Accuracy
- Fluency
- Expression
- Tempo
- Metre
- Tonality
- Timbre
- Style
- Genre
- Ensemble

Artistic intention

Context and style

Mentally prepared

Focused and engaged

Physically prepared

Warmed up

Organisation

Equipment and music

Meet targets

Refer to SMART targets

<u>Musical terminology</u>	
Scale	A collection of notes ordered by pitch.
Arpeggio	A broken chord. Notes from the scale are played individually.
Range	The distance from the lowest to highest note.
Improvisation	Creating and composing music on the spot.
Interpretation	Bringing a piece of music to life.
Technical exercises	Tasks that develop your technical ability and improve your standard of playing.
Project	Having the strength and technique to sing or play clearly.
Sensitivity	Ability to bring out different moods and styles within music.
Crescendo	Gradually getting louder.
Diminuendo	Gradually getting quieter.
Rallentando	Gradually slowing down.

Warm up tasks

Scales
Arpeggios
Improvisation
Humming & lip trills
Pitch slides
Octaves
Muscle warm ups
(hands, fingers, shoulders)
Isolate tricky sections
Slow practice
Rhythm exercises

Reflection top tips!








Strengths
Areas to improve
Evaluate
Analyse
Review
Demonstrate
Critique

BTEC Music

Performance

Musical terminology

Stage presence	The ability to capture and command the attention of an audience.
Expression	Bringing a piece of music to life. Adding a personal response to your performance.
Phrasing	The shape of the melody.
Tempo	The speed of the music. Italian terms are usually used.
Notation	How music is written down.
Repertoire	The pieces of music you are learning to play.
Key signature	Indicates which sharps and flats are used in the piece, and which scale it is written in.
Time signature	How many beats per bar within the music.
Accuracy	How precise or correct the performance is.
Fluency	How smooth and effortless the music is played.
Intonation	Performing in tune, with an accurate demonstration of pitch.

Note values		
4 beats	Semibreve	
2 beats	Minim	
1 beat	Crotchet	
1/2 beat	Quaver	
1/4 beat	Semiquaver	
1 beat	2 quavers	
1 beat	4 semiquavers	
Dotted notes Adds on half the value of the note E.g. Dotted crotchet=1 ½ beats		

BTEC Music

Style & Genre

Musical styles

Rock 'n' roll

Elvis: Jailhouse Rock, Jerry Lee Lewis: Great Balls Of Fire, Chuck Berry: Johnny B Goode.

Motown

Four Tops: Can't Help Myself, The Supremes: Where Did Our Love Go?

Heavy metal

Led Zeppelin: Whole Lotta Love, Metallica: Master Of Puppets.

Disco

Bee Gees: Night Fever, Donner Summer: I Feel Love.

Reggae

Bob Marley: Redemption Song, Bob Marley: One Drop.

Hip hop

Jay Z: Empire State Of Mind, Dr Dre: Still Dre.

Britpop

Blur: Common People, Oasis: Don't Look Back In Anger.

Drum and Bass

Friction: Good To Me, Shy FX: Original Nuttah

Samba

Beth Carvalho: Quando O Povo, Global Grooves: Showreel 2021, A Sharing of Gifts.

Bhangra

Gurnam Bhullar: Diamond, Punjabi MC: Mundian To Bach Ke.

Baroque

Vivaldi: Concerto For Two Cellos, Corelli: Concerto Grosso Op.6 No. 8.

Romantic

Chopin: Nocturne op.9 No.2, Debussy: Clair de Lune.

Minimalism

Philip Glass: Metamorphosis

Blues

Sonny Terry & Brownie McGhee: Walk On.

Performing Arts: Job Roles

Artistic director: Creates a programme for the year of which shows will be performed. May direct in-house performances.

Producer: Responsible for getting the show on stage by finding funding and employing creative staff. Mostly involved at the start of the project.

Director: Has the overall vision for the production. Reads the script. Auditions and casts production. Tells the cast what to do vocally and physically (blocks the scenes). Runs rehearsals and gives notes to actors. Liaises with designers. Rehearses performance.

Playwright: Writes the play. Includes characters, plot and stage directions.

Choreographer: Prepares dance routines and movement sequences. Teaches movement.

Musical director: Leads the orchestra. In charge of all music in the production. Rehearses songs with singers and sorts musical arrangements (during rehearsals).

Performer: Auditions. Learns lines/songs/dances, attends all rehearsals. Performs the show. Understudy: Learning lines and movement so they can take over the role if there is an unexpected absence. Ready to perform.

Stage manager: Responsible for the smooth running of back stage. Oversees technical elements. In charge of performance space at all times. Organises rehearsal schedule and keeps lists of props and other tech needs, creates prompt book and calling cues. Assistant Stage Manager: Helps the stage manager with the smooth running of the performance. Stays backstage, duties include: prompting actors, general organisation and admin. Deputy stage manager: Sits in the wings and tells lighting, sound and backstage what to do via in-house radio system known as 'cans'. Follows the script and makes sure that technical cues are in the right place.

Stage crew: Responsible for putting the set up/ taking it down and moving it during performance. Help out backstage. Wear black so they can't be seen.

Props master: Responsible for any item that is carried on stage. Makes sure they are in the wings at the right time. Responsible for finding, making and maintain props.

Lighting designer: Designs the lighting states and effects taking in to account mood & atmosphere, location and time. Works with costume designer to make sure the colours don't clash. Create plot sheets and cue sheets.

Costume designer: Designs, creates and maintains costumes. Researches appropriate garments based on themes, time period, location, character. Measures actors. Checks the costumes at dress rehearsal.

Set designer: Works with director to make sure they have the same vision. Researches, creates sketches and models. Works out how set can be moved and used. Oversees building of set. Present at tech rehearsals to make sure that the set operates properly and is safe.

Sound designer: Designs sound which may include music and sound effects. May record own sounds or remix existing sounds. Decides when live or recorded sound will be used. Create plot sheets and cue sheets.

Puppet designer: Designing the puppets for a production, taking into account the style of puppets and how they will be operated. Creates the puppets for rehearsals.

Technician: Runs sound and lighting. Programmes the cues and rigs the lighting.

Box Office: In charge of ticket sales on the phone, online and on the door.









Theatre manager: Runs the theatre building, including overseeing the front of house staff (ushers) and the box office staff.

Front of house: Check tickets, show audience to seats, sell refreshments and generally look after the public.

Usher: Helps the audience find their seats, toilets etc. Might sell programmes.

Public relations: People who shape an organisations public image. This includes the marketing and promotional team, writing grants for funding, designing programmes and securing advertising.

Performing Arts: Business

	<p>Funding: Ticket sales aren't enough to sustain most arts projects, therefore, companies apply for funding (money) to support them.</p>
<p>Funding bid</p> 	<p>This is how a company applies for funding. They will need to include detailed information: what the money will be used for, who will benefit, how the participants will benefit, timelines etc.</p>
<p>Private funding</p> 	<p>Sponsorship from local businesses, money from alumni (previous students), charitable trusts and foundations, O2 Think Big, Kickstarter (crowd funding).</p>
<p>Public funding</p> 	<p>Funding from large, publicly funded (through taxes) organisations: Arts Council England (ACE); Regional Arts Boards (in England); Local Authorities National Lottery.</p> <p style="text-align: center;">Open access funding- the information is openly accessible to the public.</p>
<p>Budgeting</p>	<p>The process of calculating how much money you must earn or save during a particular period of time, and of planning how you will spend it.</p>
<p>Performing rights & royalties</p> 	<p>When someone produces work (songs, plays, dances etc.), you need to pay to have the right to perform their work. These are payable for 70 years after the artist's death; for example, you don't have to pay to perform a Shakespearian production. The cost of the rights and the amount of royalties that you pay is a contributing factor to the choice of production.</p> <p>PPL licence: you need to have a licence to play music in public https://www.ppluk.com/what-we-do/</p>
<p>Programming</p> 	<p>The Artistic Director will consider the programme for the season. To ensure that the theatre is accessible to a range of audiences, they will need to consider: the range of performances (genre), target audiences, the cost of tickets, the times of performances, the issues that the performances deal with, length of run, specific time of year (Panto at Christmas), touring productions/ in-house.</p>
<p>For profit</p>	<p>A for-profit organization is one whose main goal is to make money, i.e., make a profit.</p>
<p>Not-for-profit organisations</p>	<p>Types of organizations that do not earn profits for its owners. All of the money earned by or donated to a not-for-profit organization is used in pursuing the organization's objectives and keeping it running.</p>
<p>Expenditure</p> 	<p>Money spent: wages, rent/mortgage, insurance, bills, materials etc.</p>
<p>Income</p> 	<p>Money received: ticket sales, funding, merchandise, bar etc.</p>
<p>Profit</p>	<p>A financial gain, especially the difference between the amount earned and the amount spent in buying, operating, or producing something.</p>
<p>Public liability insurance</p>	<p>Public liability insurance protects your business against compensation claims and their legal costs if you cause injury (including death) to a third party or damage to their property. Public liability insurance covers you on your premises and working off-site.</p>

Performing Arts: Areas of the Theatre and Stage Configurations

Front of House (FOH): areas that the audience have access to

Foyer: entrance

Box office: where tickets are sold

Auditorium (the house): where the audience sit

Stalls: seating area in front of stage

Dress circle: balcony seating

Upper circle/Gallery/Gods: second balcony

Orchestra pit: where MD and musicians perform
Apron: section immediately in front of the stage

Prompt corner: where deputy stage manager sits and gives cues

Wardrobe: where costumes are made and stored

Fly tower: above stage where set is flown in/out from

Wings: space at the side of the stage

Dressing room: where performers get changed

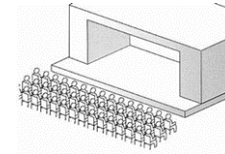
Green room: where performers relax when not on stage/getting ready

Dock: where trucks unload all the sets, costumes and technical equipment

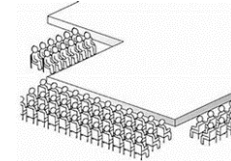
Tech box: where technicians operate sound & lighting from

Workshop: where tech equipment is stored & fixed

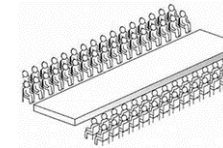
Proscenium Arch



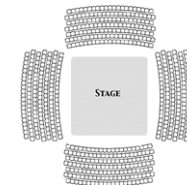
Thrust



Traverse



In the round



Performing Arts: Responding to a Brief

Responding to a brief	Identify the key features of the brief: Target audience Aim Theme Date Performance space Create your work in response to the brief: Consider what content is appropriate for your audience; have a clear aim (educate/inform); clearly explore the theme; consider practical considerations like stage configuration and time of year/day.			
Skills: use a range of skills as individuals and as an ensemble to achieve your artistic aims for the piece				
The basics	Vocal	Dance	Practitioner	Evaluate
<ul style="list-style-type: none"> ▪ Be seen: don't mask or upstage other performers. ▪ Be heard: project and speak clearly. ▪ Connect with your audience: carefully block and make eye contact. ▪ Clear narrative: the audience should follow the plot easily. 	<p>Pace: fast, slow, controlled, hesitant. Pitch: high, low, deep. Pause Tone: aggressive, proud, nervous. Volume: loud, quiet. Emphasis: highlight words/phrases. Diction: clarity of speech/ enunciation. Timing: when you deliver your lines. Accent</p>	<p>Focus: use of the eyes. Motif: A movement phrase encapsulating an idea that is repeated and developed throughout the piece. Dance actions: leap, turn, run etc. Relationships: unison/canon/accumulation/contact Dynamics: how the move is executed. Space: Direction, pathways, levels. Manipulation of number: number of dancers. Posture/ alignment Control Flexibility /mobility Strength & stamina Extension Isolation</p>	<ul style="list-style-type: none"> ▪ Identify their style: naturalistic/ political/physical/ contemporary/ ballet. ▪ Watch their work: identify specific ideas/scenes/ techniques that inspire you. ▪ Techniques: explore the techniques that make their work so unique e.g. monologues, puppets, chair duets, song & dance etc. ▪ Create your work using your chose practitioner's techniques and style. 	<ul style="list-style-type: none"> ▪ Do all sections link to the brief? ▪ If someone new watches the performance, do they know what it is about? ▪ Which sections need to be cut? ▪ Which sections need to be explored further? ▪ Is the distribution of lines/ performance time fair? ▪ Are you showing the full range of your skills?
Stage space	Physical			
<ul style="list-style-type: none"> ▪ Heath & safety: no glass or liquids, rehearsed with props & set, warmed up. ▪ Stage configuration: chosen for a reason. ▪ Proxemics: meaningful use of space between performers. ▪ Levels: used for meaning and to create dynamic stage pictures. ▪ Focus: what/who do you want your audience to focus on? 	<p>Facial expression Eye contact Posture: positioning of the spine. Movement Stillness Gesture Gait: walk Timing Pace</p> <ul style="list-style-type: none"> ▪ Structure: the sequence of scenes e.g. linear/ non-linear ▪ Structural conventions: cross-cutting, flashback, repetition 			
<p>Creativity: using a range of inventive techniques to express actions & feelings. Originality: creating something new rather than imitating work that exists. You can be influenced by a practitioner but create an original piece.</p>				

Performing Arts: Benefits of the Arts

Economic

- Generates £10.8 billion a year for the economy
- Creates 363,700 jobs
- Brings business to the local area e.g bars and restaurants
- Attracts and retains talent, trade and investment

Personal

- Make new friends
- Develop essential skills: confidence, teamwork, working under pressure
- Work with people outside of your social group
- Develop empathy

Social

- Creates better communities to live in
- Changes the way places look
- Changes perceptions of places
- Engages communities with new ideas
- Can be educational and thought provoking
- Changes the way people think, see and act

Performing Arts: Terminology

<p><u>Vocal</u></p> <p>Pace (fast, slow, controlled, hesitant)</p> <p>Pitch (high, low, deep)</p> <p>Pause</p> <p>Tone (aggressive, harsh, authoritative, proud, nervous, warm)</p> <p>Volume (loud, quiet, soft)</p> <p>Emphasis</p> <p>Intonation</p> <p>Inflection</p> <p>Diction</p> <p>Timing</p> <p>Accent</p> <p>Projection</p>	<p><u>Dance</u></p> <p>Style</p> <p>Motif</p> <p>Unison/canon/accumulation/contact</p> <p>Dynamics</p> <p>Space Structure</p> <p>Alignment</p> <p>Control</p> <p>Flexibility</p> <p>Mobility</p> <p>Strength</p> <p>Stamina</p> <p>Extension</p> <p>Isolation</p> <p>Projection</p> <p>Focus</p>	<p><u>Costume</u></p> <p>Colour</p> <p>Fabric</p> <p>Accessories</p> <p>Make up/wigs</p> <p>Shape</p> <p>Appropriate fit</p> <p>Symbolism</p> <p>Condition</p> <p>Period detail</p> <p>Movement constraints</p>	<p><u>Sound</u></p> <p>Volume</p> <p>Amplification</p> <p>Fade</p> <p>Levels</p> <p>Sound effects</p> <p>Music</p> <p>Distortion</p> <p>Diegetic /Non-diegetic</p> <p>Echo</p> <p>Underscore</p> <p>Direction</p>	<p><u>Evaluation (making a judgement)</u></p> <p>Convincing Considerable</p> <p>Believable Persuasive</p> <p>Credible Second-rate</p> <p>Dissatisfying Pleasing</p> <p>Reasonable Adequate</p> <p>Appalling Unbearable</p> <p>Unconvincing Successful</p> <p>Unsuccessful Ineffective</p> <p>Effective Horrendous</p> <p>Superb Outstanding</p> <p>Disappointing Lack-lustre</p> <p>Satisfactory Passionate</p> <p>Accurate Innovative Cleverly</p> <p>crafted Resounding</p>	<p><u>Audience response</u></p> <p>Intrigued</p> <p>Shocked</p> <p>Laughter</p> <p>Cried</p> <p>Devastated</p> <p>Sympathy</p> <p>Apprehensive</p> <p>Detest</p> <p>Irritation</p> <p>Think/consider/reflect</p> <p>Outrage</p>
<p><u>Physical</u></p> <p>Facial expression (angry, cheery)</p> <p>Eye contact</p> <p>Posture (relaxed, upright)</p> <p>Movement/stillness</p> <p>Body Language</p> <p>Gesture</p> <p>Gait (uneven, steady)</p> <p>Proxemics</p> <p>Stage space</p> <p>Timing</p> <p>Pace</p> <p>Levels</p> <p>Physical appearance: age, height, build, facial features</p> <p>Physical contact</p>	<p><u>Set</u></p> <p>Scale</p> <p>Texture</p> <p>Colour</p> <p>Trucks</p> <p>Material</p> <p>Flies</p> <p>Multi-media</p> <p>Revolve</p> <p>Levels</p> <p>Backdrop</p>	<p><u>Lighting</u></p> <p>Colour</p> <p>Intensity</p> <p>Gauze</p> <p>Gobo</p> <p>Wash</p> <p>Spotlight</p> <p>Follow spot</p> <p>Floor lamps</p> <p>Angle</p> <p>Effect on stage space</p>	<p><u>Abbreviations</u></p> <p>SM (stage manager)</p> <p>DSM (Deputy Stage Manager)</p> <p>ASM (Assistant Stage Manager)</p> <p>LX (Lighting effects)</p> <p>SFX (special effects)</p> <p>MD (Musical Director)</p> <p>CS (Centre Stage)</p> <p>DSR (Downstage Right) etc</p>	<p><u>Linking words</u></p> <p>In stark contrast</p> <p>On the other hand</p> <p>Whereas</p> <p>However</p> <p>Similarly</p> <p>Equally</p> <p>In comparison</p> <p>Likewise</p> <p><u>Example</u></p> <p>For example</p> <p>For instance</p> <p>To illustrate this point</p> <p>An example of this</p>	

Year 11 – Photography - TERM 1

During this project students will be developing their own styles and creating work based around a personal topic of interest within photography. Students will begin by researching photographer's and creating a research page about who they are going to choose to study (AO1). This process will help develop students' understanding of different types of photography and help them to decide which area to focus on for their own project. These pieces of work will also contain in depth written analysis of the photographer's work (AO3). After the initial research stage, students will design and implement a photo shoot showing compositional understanding and professional presentation. Elements such as background, costumes, props and angles of shot should all have been considered and be easily shown through their contact sheet. Students will edit their images using a variety of editing tools, showing a deep understanding of Photoshop and how to create the effect they have intended (AO2). They will create a number of refined editing journeys in order demonstrate their understanding of photograph editing software (AO3). This project will conclude with a number of final piece images that are specifically chosen by the student (AO4). These images will then be analysed by the student who will write a detailed project evaluation.

Photoshoots need to show at least 30 images that demonstrate professional standards such as thought for props, costumes, composition and backdrops. Contact sheets need to show understanding and use of the compositional elements and must be effective shots before they are edited. Students must not rely on editing to make their photographs effective - editing must simply be a way of subtly improving an already high-quality image.

Each project must have:

- 2 x Artist Research Pages.
- 2 x analysis of photographs
- Photo shoot plan.
- Annotated contact sheet.
- Photographs that are sharp and high quality.
- Minimum of 10 annotated editing journeys.
- Final piece as a whole slide.
- Evaluation.

Important Vocabulary

Rule of thirds - A type of composition in which an image is divided evenly into thirds and the focal point is placed around the edges.

Leading Lines – Lines that our eyes follow round a composition are called leading lines. They are a useful tool to create a visual flow or to emphasise focal points.

Refine - Finishing touches to something or to improve the quality.

Composition - The considered layout of a piece of work.

Contrast – A strong distinction between the darkest areas and the lightest areas of an image.

Sequence – the repetition of a focal point.

Texture – the feel, appearance, or consistency of a surface.

Focal Point - the center of interest or activity.

Assessment Objective 1 is around artist research and showing an understanding and clear link to other photographers' work. This can be shown through artist research pages and analysis.

Assessment Objective 2 is about editing your images and showing a clear and developed understanding of editing software and how to improve the quality of your images. This will be shown through editing journeys including print screens of process and annotation of steps.

Assessment Objective 3 is about annotation and written analysis, this will be shown through the project. Annotation must show personal ideas and thoughts rather than facts.

Assessment Objective 4 is the final piece which must show compositional understanding, effective editing and a clear link to the chosen photographer.

Year 11 – Photography - TERM 2

During this project students will be developing their own styles and creating work based around a personal topic of interest within photography. Students will begin by researching photographer's and creating a research page about who they are going to choose to study (AO1). This process will help develop students' understanding of different types of photography and help them to decide which area to focus on for their own project. These pieces of work will also contain in depth written analysis of the photographer's work (AO3). After the initial research stage, students will design and implement a photo shoot showing compositional understanding and professional presentation. Elements such as background, costumes, props and angles of shot should all have been considered and be easily shown through their contact sheet. Students will edit their images using a variety of editing tools, showing a deep understanding of Photoshop and how to create the effect they have intended (AO2). They will create a number of refined editing journeys in order demonstrate their understanding of photograph editing software (AO3). This project will conclude with a number of final piece images that are specifically chosen by the student (AO4). These images will then be analysed by the student who will write a detailed project evaluation.

Photoshoots need to show at least 30 images that demonstrate professional standards such as thought for props, costumes, composition and backdrops. Contact sheets need to show understanding and use of the compositional elements and must be effective shots before they are edited. Students must not rely on editing to make their photographs effective - editing must simply be a way of subtly improving an already high-quality image.

Each project must have:

- 2 x Artist Research Pages.
- 2 x analysis of photographs
- Photo shoot plan.
- Annotated contact sheet.
- Photographs that are sharp and high quality.
- Minimum of 10 annotated editing journeys.
- Final piece as a whole slide.
- Evaluation.

Important Vocabulary

Rule of thirds - A type of composition in which an image is divided evenly into thirds and the focal point is placed around the edges.

Leading Lines – Lines that our eyes follow round a composition are called leading lines. They are a useful tool to create a visual flow or to emphasise focal points.

Refine - Finishing touches to something or to improve the quality.

Composition - The considered layout of a piece of work.

Contrast – A strong distinction between the darkest areas and the lightest areas of an image.

Sequence – the repetition of a focal point.

Texture – the feel, appearance, or consistency of a surface.

Focal Point - the center of interest or activity.

Assessment Objective 1 is around artist research and showing an understanding and clear link to other photographers' work. This can be shown through artist research pages and analysis.

Assessment Objective 2 is about editing your images and showing a clear and developed understanding of editing software and how to improve the quality of your images. This will be shown through editing journeys including print screens of process and annotation of steps.

Assessment Objective 3 is about annotation and written analysis, this will be shown through the project. Annotation must show personal ideas and thoughts rather than facts.

Assessment Objective 4 is the final piece which must show compositional understanding, effective editing and a clear link to the chosen photographer.

Year 11 – Photography – TERM 3

This term, students will be given the opportunity to look back over all previous projects in order to finish all work and refine their digital portfolio. During this time students will be able to rework all their all slides and refine them. Students will also be given time to further develop their outcomes looking at a range of physical digital manipulation styles such as weaving, sewing, collaging and painting onto photographs. This time will help students to improve the quality over all work completed during their GCSE and to help make their projects into full, refined and well rounded artistic journeys.

In conjunction with this, students are also able to complete a final GCSE project. During this project, students will be developing their own styles and creating work based around a personal topic of interest within photography. Students will begin by researching photographers and creating a research page about who they are going to choose to study (AO1). These pieces of work will also contain in depth written analysis of the photographer's work (AO3). After the initial research stage, students will design and implement a photo shoot showing compositional understanding and professional presentation.

Students will edit their images using a variety of editing tools, showing a deep understanding of Photoshop and how to create the effect they have intended (AO2). They will create a number of refined editing journeys in order demonstrate their understanding of photograph editing software (AO3). This project will conclude with a number of final piece images and experimental developments of printed photographs that are specifically chosen by the student (AO4). These images will then be analysed by the student who will write a detailed project evaluation.

Photoshoots need to show at least 50 images that demonstrate professional standards such as thought for props, costumes, composition and backdrops. Contact sheets need to show understanding and use of the compositional elements and must be effective shots before they are edited. Students must not rely on editing to make their photographs effective - editing must simply be a way of subtly improving an already high-quality image.

Each project must have:

- 2 x Artist Research Pages.
- 2 x analysis of photographs
- Photo shoot plan.
- Annotated contact sheet.
- Photographs that are sharp and high quality.
- 5 x annotated editing journeys
- 5 x Developed manipulations
- Final piece as a whole slide.
- Evaluation.

Assessment Objective 1 - artist research and showing an understanding and a clear link to other artist's work. This can be shown through artist research page.

Assessment Objective 2 - experimentation and ability to use materials. This is shown through editing and development of photographs

Assessment Objective 3 - annotation and written analysis

Assessment Objective 4 - final piece must show compositional understanding, effective use of materials, clear link to previous work.

Important Vocabulary

Rule of thirds - A type of composition in which an image is divided evenly into thirds and the focal point is placed around the edges.

Leading Lines – Lines that our eyes follow round a composition are called leading lines. They are a useful tool to create a visual flow or to emphasise focal points.

Refine - Finishing touches to something or to improve the quality.

Composition - The considered layout of a piece of work.

Contrast – A strong distinction between the darkest areas and the lightest areas of an image.

Harmonious colours – colours that are next to each other on the colour wheel and blend well together.

Complimentary colours – colours that are opposite each other on the colour wheel and compliment each other.

Colour theory – The use of colour to create an aesthetic.

Aesthetic – the way a piece of work looks

Sequence – the repetition of a focal point.

Crop – Cropping is the process of removing portions of a photo to create focus or strengthen the composition.

Texture – the feel, appearance, or consistency of a surface.

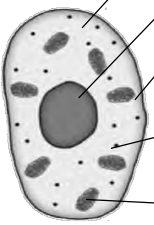
Focal Point - the center of interest or activity.

Separate Biology – Topic 1 Key Concepts

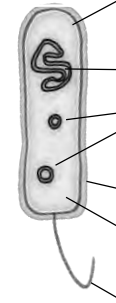
Eukaryotes complex organisms

cytoplasm	<i>Site of chemical reactions in the cell.</i>	Gel-like substance containing enzymes to catalyse the reactions.
nucleus	<i>Contains genetic material.</i>	Controls the activities of the cell and codes for proteins.
cell membrane	<i>Semi-permeable.</i>	Controls the movement of substances in and out of the cell.
ribosome	<i>Site of protein synthesis.</i>	mRNA is translated to an amino acid chain.
mitochondrion	<i>Site of respiration.</i>	Where energy is released for the cell to function.

animal cell



Prokaryotes



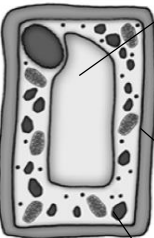
cell membrane	<i>Semi-permeable.</i>	Controls the movement of substances in and out of the cell.
chromosomal DNA	<i>Not in nucleus. Floats in the cytoplasm.</i>	Controls the function of the cell. Can be found as chromosomal DNA and plasmid DNA (small rings).
Plasmid DNA		
cell wall	<i>NOT made of cellulose.</i>	Supports and strengthens the cell.
cytoplasm	<i>Site of chemical reactions in the cell.</i>	Gel-like substance containing enzymes to catalyse the reactions
flagella	<i>Whip-like tail.</i>	Allows the bacterial cell to move.
ribosome	<i>Site of protein synthesis.</i>	mRNA is translated to an amino acid chain.

Enzymes catalyse (increase the rate of) specific reactions.

plant cell

contains all the parts of animal cells plus:

permanent vacuole	<i>Contains cell sap.</i>	Keeps cell turgid, contains sugars and salts in solution.
cell wall	<i>Made of cellulose.</i>	Supports and strengthens the cell.
chloroplast	<i>Site of photosynthesis.</i>	Contains chlorophyll, absorbs light energy.



Transporting Substances

Diffusion	<i>Movement of particles from a higher to a lower concentration e.g. O₂ and CO₂.</i>
Osmosis	<i>Movement of water from a dilute solution to a more concentrated solution e.g. Plants absorb water from the soil.</i>
Active transport <i>ENERGY</i> required	<i>Movement of particles from a dilute solution to a more concentrated solution e.g. movement of mineral ions into roots of plants.</i>

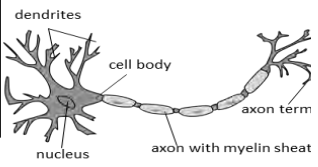
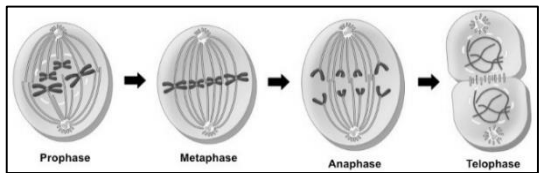
The activity of enzymes is affected by changes in temperature, pH and substrate concentration.

<i>Enzymes activity has an optimum temperature.</i>	<i>Enzyme activity has an optimum pH.</i>	<i>Increasing substrate concentration increases rate (limited by number of active sites).</i>

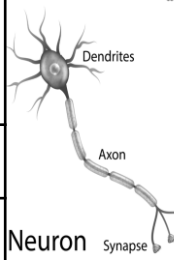
Separate Biology
Topic 2 – Cells and Control

Key Terms / Words	Definition
asexual reproduction	Producing new organisms from one parent only. These organisms are genetically identical to the parent.
cancer cell	Cell that divides uncontrollably.
cell cycle	A sequence of growth and division that happens in cells. It includes interphase and mitosis and leads to the production of two daughter cells that are genetically identical to the parent cell.
interphase	The stage when the cell prepares itself for the process of cell division, and DNA replication takes place. The cell also makes more of its sub-cellular structures.
mitosis	The process of cells dividing to produce two daughter cells that are genetically identical to the parent cell.
differentiation	When a group of similar things, such as cells, become different in form from each other.
meristem	A small area of undifferentiated cells in a plant, near the shoot tips and root tips, where cells are dividing rapidly by mitosis.
sensory neurone	Neurone that carries impulses from receptor cells, towards the central nervous system.
motor neurone	Neurone that carries impulses to effectors.

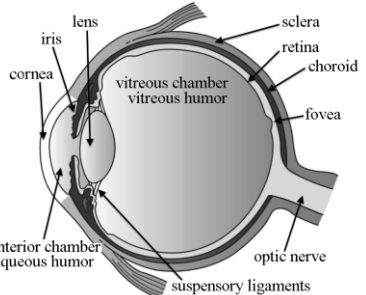
Mitosis



Stage 1	Interphase (not part of mitosis)	Before mitosis: Increase the number of sub-cellular structures e.g. ribosomes, mitochondria. DNA replication makes copies of chromosomes.
Stage 2	Prophase	Nucleus breaks down and spindle fibres appear.
Stage 3	Metaphase	Chromosomes are lined up on spindle fibres on the equator (middle) of the cell.
Stage 4	Anaphase	Chromosome copies are separated and pulled to opposite ends of the cell.
Stage 5	Telophase	A new nuclear membrane forms around each set of chromosomes.
Stage 6	Cytokinesis	Cell surface membrane forms to separate the cells (+new cell wall in plants).



The eye



Information from receptors passes along cells (neurones) as electrical impulses to the central nervous system (CNS)

The CNS is the brain and the spinal cord.

Reflex actions are automatic and rapid.

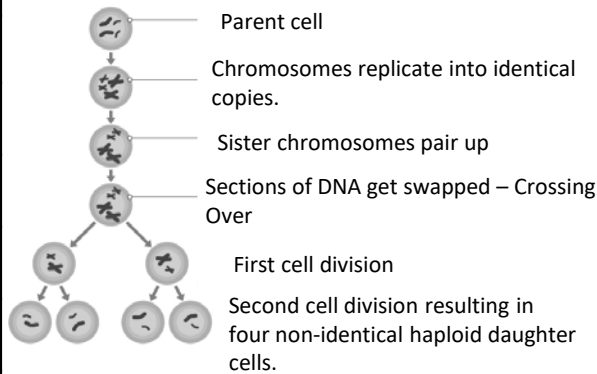
Human Embryonic stem cells	Can differentiate into any cell type	Therapeutic cloning of stem cells to produce new tissue uses same genes so the body does not reject the tissue. Can be a risk of infection
Adult stem cells	Can differentiate into a limited number of human cells e.g. blood cells	Tissue made from adult stem cells is matched to avoid rejection, risk of infection. Only a few types of cells can be formed.
Meristems (plants)	Can differentiate into any plant cell type throughout the life of the plant.	Used to produce clones quickly and economically, e.g. rare species, crop plants with pest /disease resistance

Stimulus	Touch hot object
Receptor	Cells in skin
Sensory neurone	CNS
Relay neurone in CNS	CNS
Motor Neurone	CNS
Effector	Muscles connected to arm
Response	Hand moves

Todmorden High: Separate Biology – Topic 3 Genetics

Key term	Definition
chromosome	Long molecule of DNA packed up with proteins.
diploid	A cell or nucleus that has two sets of chromosomes.
haploid	A cell or nucleus that has one set of chromosomes. Gametes are haploid.
gamete	A haploid cell used for sexual reproduction (sperm or egg cell).
meiosis	A form of cell division in which one parent cell produces four haploid daughter cells.
gene	Section of DNA, which often contains instructions for a protein.
genome	All the DNA in an organism. Each body cell contains a copy of the genome.
allele	Different version of a gene.
genotype	The alleles for a certain characteristic that are found in an organism
phenotype	The characteristics that a certain set of alleles produce.
dominant	Allele that will always affect the phenotype
recessive	Allele that will only affect the phenotype if the other allele is also recessive. It has no effect if the other allele is dominant.
homozygous	When both the alleles for a gene are the same in an organism.
heterozygous	When both the alleles for a gene are different in an organism.
transcription	The process by which the genetic code in one strand of DNA molecules is used to make mRNA
translation	The process by which the genetic code in a molecule of mRNA is used to make a polypeptide.
messenger RNA (mRNA)	A single strand of RNA produced in transcription.
transfer RNA (tRNA)	A molecule of RNA that carries an amino acid.

Meiosis



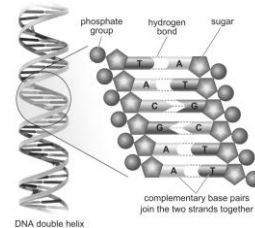
DNA

There are four DNA bases:

- Adenine
- Thymine
- Guanine
- Cytosine

A always pairs with T
G always pairs with C

DNA is made of many similar units joined in a chain, therefore is a polymer. Hydrogen bonds holding two strands together are weak forces of attraction.

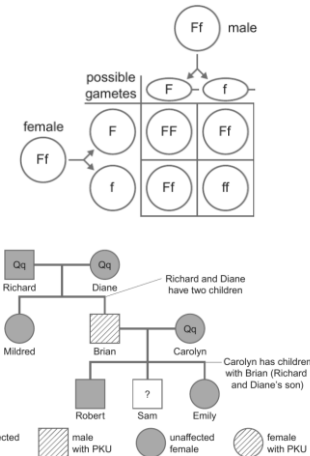


Inheritance

Genetic diagrams and punnet squares show the possible combination of alleles when organisms breed.

They can be used to predict the phenotypes of offspring.

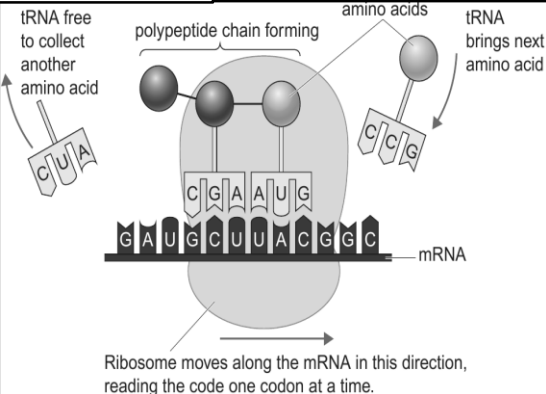
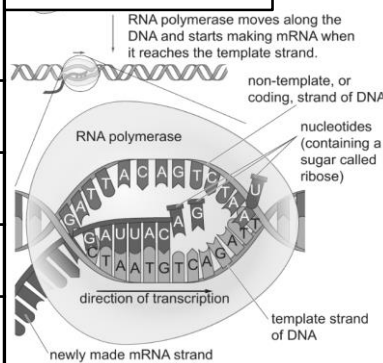
Family pedigree charts show how genotypes and resulting phenotypes are inherited in families.



Gene mutation

A change in a gene that creates a new allele. A change to DNA sequence due to mistakes during DNA replication. This can be random or caused by mutagenic agents (radiation). Some gene mutations change the protein produced therefore alter the phenotype. Some mutations have no effect on the phenotype. Only mutations in gametes are passed on to offspring.

Protein Synthesis



Human genome project (2003)

It revealed that there are variations between people, but over 99% of DNA bases in different people are the same.

Mapping a person's genome can:

- Indicate risk of developing genetic diseases
- Identify which medicines might be best to treat an illness (personalised medicine).

Variation

Genetic variation: caused by alleles inherited through sexual reproduction.

Environmental variation: caused by surroundings (changes that are changed by the environment during life of individual are acquired characteristics.)

Discontinuous variation: where the data can only take a limited set of values.

Continuous variation: where the data can be any value in a range.

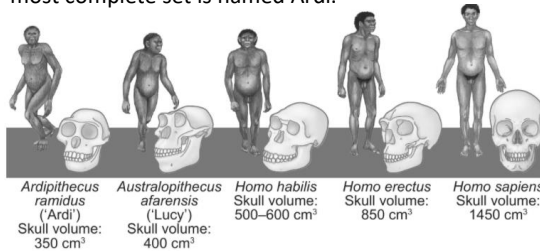
Separate Science- Biology – Topic 4 Natural Selection and Genetic Modification

Key Terms / Words	Definition
Classification	Sorting things into groups.
Evolution	A change in one or more characteristics of a population over a long period of time.
Fossil	Remains or impression of a prehistoric plant or animal embedded in rock and preserved in the earth's crust.
species	A group of organisms that can reproduce with each other to produce offspring that will also be able to reproduce. Organism names have two Latin words – the first is its genus and the second is its species.
Selective breeding	When humans choose an organism that has a certain characteristic and then breed more of these organisms, making that chosen characteristic more and more obvious.
Natural selection	A process in which certain organisms are more likely to survive and reproduce than other members of the same species, because they possess certain genetic variations.
genetic engineering	Altering the genome of an organism, often by adding genes from another species. Also called genetic modification.
Antibiotic resistance	In a population of bacteria, some have evolved to be resistant to antibiotics, making them difficult to destroy. Not completing a course of antibiotics can increase risk of antibiotic resistance.
plasmid	A small loop of DNA found in the cytoplasm of bacteria.
recombinant DNA	DNA made by joining two sections of DNA together.
restriction enzyme	An enzyme that cuts DNA molecules into pieces.
sticky end	A short section of single-stranded DNA found at the end of a section of DNA that has been cut by a restriction enzyme.

Fossil Evidence

Scientists use fossils to determine human evolution. They put them in age order. Fossils do not show smooth changes over time because some have not been discovered.

4.4 million old fossilized bones from a female human-like species were discovered in 1992. More fossils were found and named *Ardipithecus ramidus*. The most complete set is named Ardi.

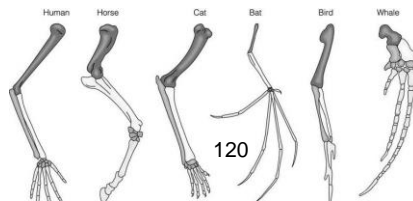


The first significant hominid fossil attributed to Leakey, a robust skull with huge teeth dated to 1.6 million years ago, was found by the Leakey family. Charles Darwin's theory of **evolution** describes how **natural selection** causes characteristics of species to change over time.

Pentadactyl limb

Many vertebrates have a similar bone structure despite their limbs looking very different on the outside. This structure is known as the pentadactyl (**five fingered**) limb. It suggests that many vertebrates descended from the same common ancestor.

Although the limbs of crocodiles, birds, whales, horses, bats and humans look very different they share the same five-fingered bone structure. This provides evidence for the theory of **evolution**.



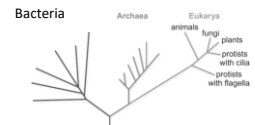
Natural Selection

During the nineteenth century, pollution and soot caused the bark on trees to appear darker. Light-colored moths were no longer **camouflaged** and were eaten by birds. The rare dark moths had a better camouflage.

As a result, dark moths had a greater chance of reproducing and passing on the genes that make them dark. This led to a gradual increase in the proportion of dark moths until light moths became very rare in industrial areas.

Classification of the 3 kingdoms.

The 5 kingdom system relied on human judgement to compare characteristics of organisms. DNA sequencing of species has challenged this classification system.



For example, DNA sequencing has shown that the red panda is more closely related to the raccoon than to the giant panda.

This has led to the development of the 3 domain classification system.

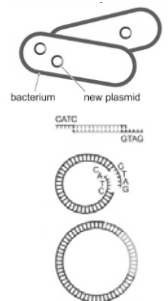
Selective Breeding

Selective breeding has been carried out for centuries to either select or eliminate certain characteristics. For example, farm animals have been bred to be hardy in cold climates or to produce better quality meat.



Genetic modification

Also called **genetic engineering**. This process involves moving a gene or genes from one species to another. This is a complicated scientific process which can improve crops and even make bacteria to make medicines like insulin.



Separate Science – Biology – Topic 5 Health and Disease

Communicable diseases

Disease	Pathogen	Symptoms	Spread
Cholera	Bacteria	Diarrhoea	Water
Tuberculosis	Bacteria	Lung damage	Airborne
HIV (STI)	Virus	Destroys white blood cells	Body fluids, sexual intercourse
Malaria	Protist	Damage to blood and liver	Mosquito (vector)
Chalara ash dieback	Plant fungi	Damage to plant leaves.	Airborne

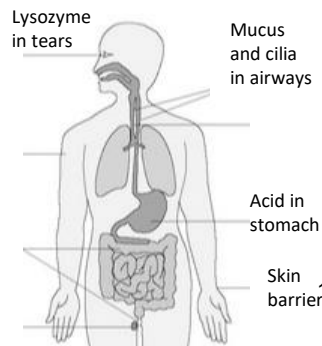
Non-communicable diseases

Risks factors for non-communicable diseases such as diabetes, some cancers and cardiovascular disease include obesity, smoking, lack of exercise. Obesity can be calculated using BMI index and waist : hip ratio.

Cardiovascular disease can be treated in 3 ways:

- Surgically – stent or bypass surgery.
- Use of long term medications such as statins.
- A change in lifestyle that involves healthy diet, exercise and not smoking.

Physical and chemical defences

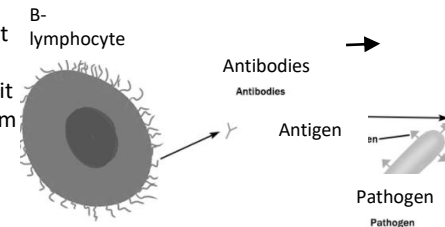


Plant defences

Bark - Many plants are covered with a thick bark, which forms a physical barrier against infection.
Thorns and hairs - Plants like roses have evolved large thorns to avoid being eaten.
Antibacterial chemicals - Produced by some plants such as mint and witch hazel produce. These kill **bacteria** that were not stopped by physical defences.

Immune System

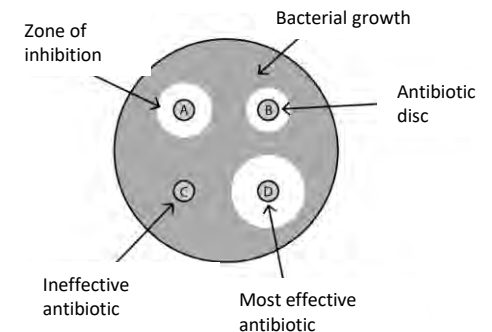
Body produces many B-lymphocytes that produce antibodies that fit onto antigen from pathogen. This destroys pathogen.



Vaccinations

Vaccines allow a dead or altered form of the disease causing pathogen to be introduced into the body, which contain a specific **antigen**. This causes the immune system, specifically the **white blood cells**, to produce complementary **antibodies**, which target and attach to the antigen, this destroys the pathogen.

Required Practical – Aseptic Techniques



Investigation into the effect of antiseptics, antibiotics or plant extracts on microbial cultures.

The effectiveness of antibiotics or antiseptics can be tested experimentally using agar plates covered with a lawn of known bacteria.

The effectiveness of the chosen antibiotic or antiseptic can be measured numerically by using the formula πr^2 , where r is the radius of the zone of inhibition.

Separate Biology – Topic 6 Plant structures and their functions.

Key Terms / Words	Definition
chloroplast	A green disc containing chlorophyll, found in plant cells. This is where the plant makes glucose through photosynthesis.
endothermic reaction	A type of reaction in which energy from the surroundings is transferred to the products, e.g. photosynthesis.
guard cell	A pair of guard cells open and close plant stomata.
palisade cell	Tall, column-shaped cell near the upper surface of a plant leaf.
photosynthesis	A series of enzyme-catalysed reactions carried out in the green parts of plants. Carbon dioxide and water combine to form glucose and oxygen. This process requires energy transferred by light.
stoma	A tiny pore in the lower surface of a leaf, which, when open, allows gases to diffuse into and out of the leaf. Plural is stomata.
gibberellins	A group of plant hormones that cause seeds to germinate and flowers and fruits to form.
limiting factor	A single factor that, when in short supply, can limit the rate of a process such as photosynthesis.
auxins	A group of plant hormones that affect the growth and elongations of cells.
phloem tissue	Living tissue formed of sieve tubes and companion cells that transports sugars and other soluble compounds around a plant.
xylem vessel/cell	A long, thick-walled tube found in plants, formed from many dead xylem cells. The vessels carry water and dissolved mineral salts through the plant.
transpiration	The flow of water into a root, up the stem and out of the leaves.

Photosynthetic reaction

Photosynthesis	Plants make use of light energy from the environment (ENDOTHERMIC) to make food (glucose)	(energy in) Carbon dioxide + Water → Oxygen + Glucose
		(energy in) CO ₂ + H ₂ O → O ₂ + C ₆ H ₁₂ O ₆

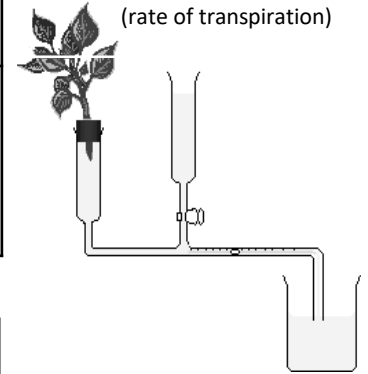
Rate of photosynthesis

The rate of photosynthesis is affected by temperature, light intensity, carbon dioxide concentration.

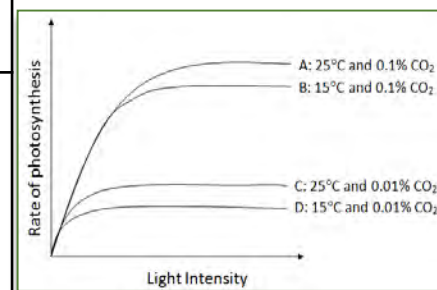
Factor	How the rate is affected	Limiting factors (why the rate stops going up)
Temperature	As the temperature of the environment the plant is in increases rate of photosynthesis increases (up to a point) as there is more energy for the chemical reaction.	Photosynthesis is an enzyme controlled reaction. If the temperature increases too much, then the enzymes become denatured and the rate of reaction will decrease and stop
Light intensity	Light intensity increases as the distance between the plant and the light sources increases. As light intensity increases so does the rate of photosynthesis (up to a point) as more energy is available for the chemical reaction.	At point X another factor is limiting the rate of photosynthesis. This could be carbon dioxide concentration, temperature or the amount of chlorophyll
Carbon dioxide concentration	Carbon dioxide is needed for plants to make glucose. The rate of photosynthesis will increase when a plant is given higher concentrations of carbon dioxide (up to a point).	At point X another factor is limiting the rate of photosynthesis. This could be light intensity, temperature or the amount of chlorophyll

Transpiration

A potometer is used to measure the amount of water lost over time (rate of transpiration)



The rate of photosynthesis is proportional to light intensity. Light intensity obeys the inverse square law. This means that if you double the distance between the plant and the light source you quarter the light intensity



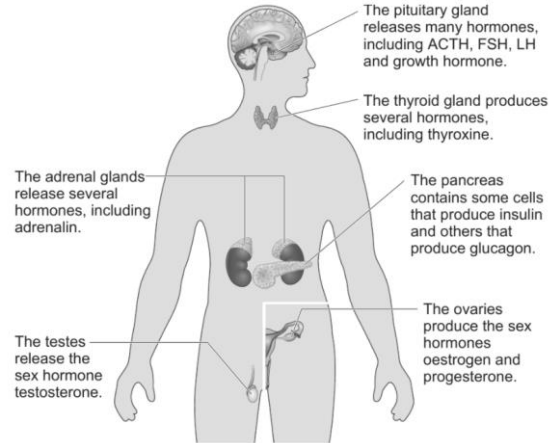
Graph lines A and D: If carbon dioxide concentration and temperature are increased the rate of photosynthesis increases significantly up to a point.

Separate Science – Biology – Topic 7 Animal Coordination, Control and Homeostasis.

Key Terms / Words	Definition
Hormone	Chemical messenger that is released into the blood from an endocrine gland and causes target cells to change how they work.
Endocrine Gland	An organ that makes and releases hormones into the blood.
Target Organ	An organ on which a hormone has an effect.
Homeostasis	Controlling the internal environment of the body at stable levels.
Negative Feedback	A control mechanism in which a change in a condition, such as temperature, causes the opposite change to happen and so brings the condition back to a normal level.
Oestrogen	A hormone produced by the ovaries which is important in the menstrual cycle.
Progesterone	One of the hormones released by the ovaries.
Contraceptive	The prevention of pregnancy.
Ovulation	The release of an egg from an ovary.
Period	The 'bleed' that occurs during menstruation.
Insulin	A hormone that decreases blood glucose concentration by causing cells to take in glucose. It is used in the treatment of type 1 diabetes.
Diabetes	A disease in which the body cannot control blood glucose concentration at the correct level.
Pituitary Gland	An organ just below the brain that controls many activities of the body (e.g. metabolic rate and the menstrual cycle) by the release of hormones into the blood. It can be referred to as the pituitary.
Pancreas	Organ in the body that produces some digestive enzymes, as well as the hormones insulin and glucagon.

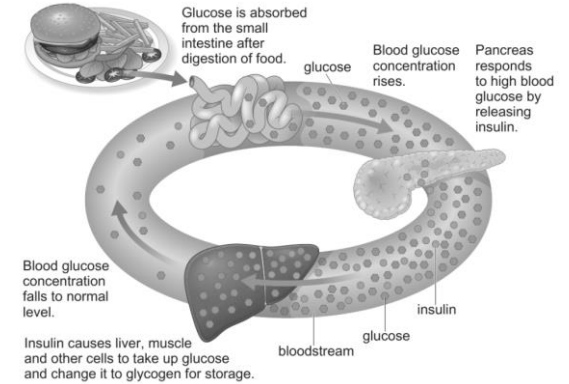
Endocrine Glands

The hormonal system uses chemical messengers called hormones, which are carried by the blood. It is a much slower system than the nervous system.



Blood Glucose Concentration

Insulin is released from the pancreas in response to an increase in blood glucose levels.



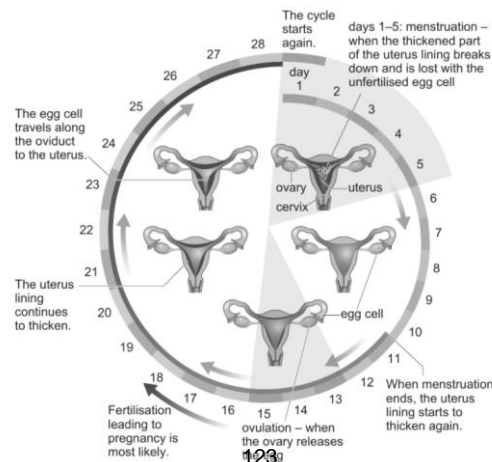
Diabetes

<i>Type 1</i>	<i>Type 2</i>
Pancreas fails to produce sufficient insulin leading to uncontrolled blood glucose levels. Normally treated by insulin injection.	Obesity is a risk factor. Body cells no longer respond to insulin. Common treatments include changing by diet and increasing exercise.

Scientists have found a correlation between type 2 diabetes and high body mass and believe an increase in body fat increases the risk of developing type 2 diabetes. Scientists can check someone's risk by working out the following:

Body Mass Index (BMI)	Waist:Hip Ratio
$BMI = \frac{\text{mass (kg)}}{\text{height (m)}^2}$	

Menstrual Cycle



Todmorden High Science K.O.
Separate Science Biology – Topic 8 Exchange and Transport in Animals

Key term	Definition
Circulatory system	The system that moves blood through the body. It consists of the heart, arteries, veins and capillaries.
Gas Exchange	A process in which one gas diffuses across a membrane and another gas diffuses in the opposite direction.
Alveolus	A small pocket in the lungs in which gases are exchanged between the air and the blood (plural is alveoli).
Diffusion	The random movement and spreading of particles. There is a net (overall) diffusion of particles from a region of higher concentration to a region of lower concentration.
Red blood cell	A biconcave disc containing haemoglobin that gives blood its red colour and carries oxygen around the body to the tissues. Also known as an erythrocyte.
White blood cell	A type of blood cell that forms part of the body's defence system against disease. There are many different types of white blood cell, including lymphocytes and phagocytes.
Atrium	An upper chamber in the heart that receives blood from the veins (plural is atria).
Ventricles	A lower chamber in the heart that pumps blood out into the arteries.
Aerobic Respiration	A type of respiration in which oxygen is used to release energy from substances such as glucose.
Anaerobic Respiration	A type of respiration that does not need oxygen.

Alveoli

Alveoli are found in the lungs. They are adapted to support gas exchange

The Heart

Cardiac Output

Is the volume of blood pushed into the aorta each minute. It can be calculated using the following equation:

$$\text{cardiac output} = \text{stroke volume} \times \text{heart rate}$$

(litres/min) (litres/beat) (beats/min)

Aerobic Respiration

Cellulose + oxygen → carbon dioxide + water
energy from glucose. This occurs in mitochondria in cells.

(energy out)

It is an exothermic reaction so some of the energy is transferred out of the cells as heat.

Blood Vessels

	Arteries	Capillaries	Veins
Where they carry blood?	Carry blood away from the heart.	Carry blood to tissues in the body.	Carry blood towards the heart.
Structure	Wall is a thick layer of elastic and muscle fibres.	Narrow tube with a wall one cell thick.	Thin, flexible wall.
How are they well adapted to their function?	The walls are thick to withstand the sudden increase in pressure when the heart beats.	Capillary wall is very thin to allow faster diffusion into and out of the capillary.	Valves prevent blood flowing backwards.

Diffusion into, and out of Capillaries

The circulatory system transports the reactants needed for respiration to all cells and carries waste products away.

Anaerobic Respiration

During strenuous exercise, oxygen is used up faster than we can replace it. Anaerobic respiration will then occur in the cytoplasm in cells which doesn't require oxygen.

(energy out)

It doesn't release as much energy as aerobic respiration and the lactic acid causes muscle fatigue and cramps. It is useful for animals when they need to move fast, suddenly, e.g. to catch prey.

Separate Science – Biology – Topic 9 – Ecosystems and Material Cycles

Key Terms / Words	Definition
Ecosystem	An area in which all the living organisms and all the non-living physical factors in an area form a stable relationship that needs no input from outside the area to remain stable.
Habitat	Place where organisms live e.g. woodland, lake.
Population	A group of one species living in the same area.
Community	All the different organisms living and interacting with one another in a particular area.
Competition	When organisms need the same resources as each other, they struggle against each other to get those resources. We say that they 'compete' for those things.
Quadrat	A square frame of known area, eg 1 m ² , that is placed on the ground to get a sample of the organisms living in a small area.
Inter-dependent	When organisms in an area need each other for resources, e.g. for food and shelter.
Mutualism	A relationship between individuals of different species where both individuals benefit, e.g. by getting more food or shelter than if they were on their own.
Biotic	Living components (the organisms) in an ecosystem.
Abiotic	Non-living conditions that can influence where plants or animals live (e.g. temperature, the amount of light).

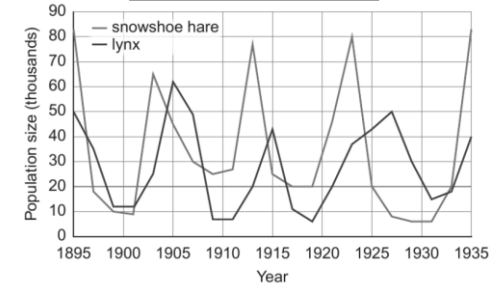
Parasitism

The parasite feeds off the host, eg worms in a gut.

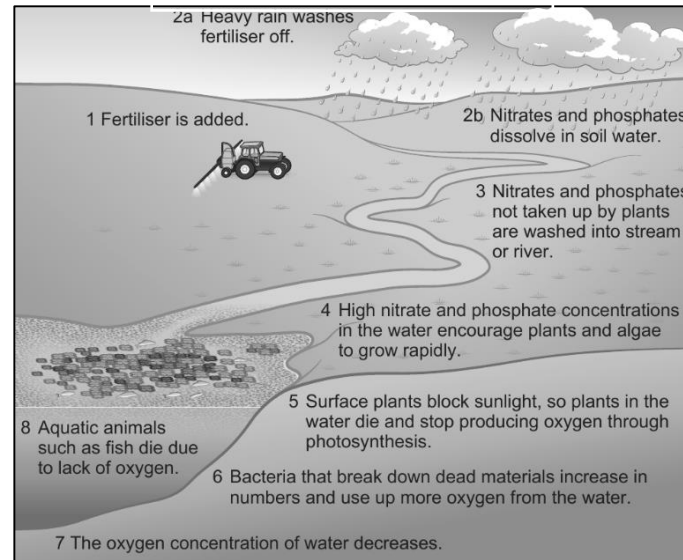
Mutualism example

Flowers and insects. Insects benefit by collecting nectar from flowers. Flowers benefit by fertilisation of their eggs

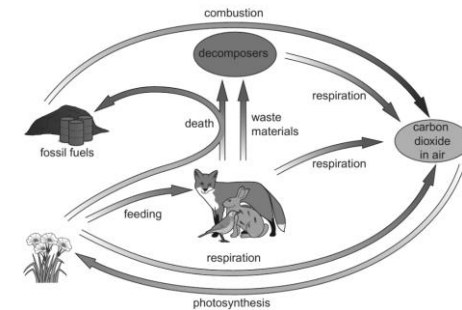
Predator:Prey Relationships



Eutrophication



Carbon cycle



Biodiversity and Humans

Introducing species can affect native species, eg rats from sailing ships have decimated bird populations on some tropical islands.



Cane toads eat a wide range of indigenous species.

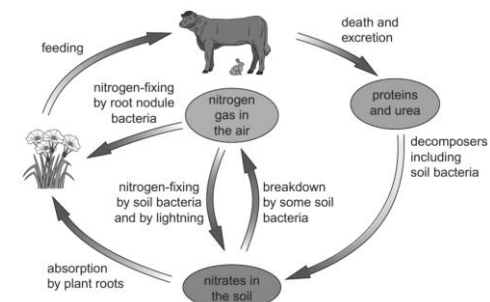
Fish farming

About 17 per cent of protein eaten by humans comes from the ocean. Fish farming seeks to reduce the effects of overfishing.



125-necked parakeets are escaped pets that are now common in parts of the UK. Some smaller native birds are unable to compete for food with the parakeets.

Nitrogen cycle



Reversible reactions

Topic 4 and Topic 5 – Separate chemistry 1 - Reversible reactions and dynamic equilibria

In a reversible reaction the products can be changed back into the original reactants. Reversible reactions can easily be identified as their equations contain the following arrow: \rightleftharpoons

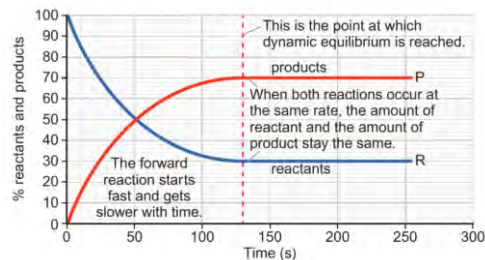
The forward reaction acts to the right – Reactants form products

The backward reaction acts to the left – Products form reactants.

Dynamic equilibrium

Reversible reactions can reach dynamic equilibrium:

- **Dynamic equilibrium is when the forward and backward are occurring at the same rate, but the percentages of reactants and products remains the same.**
- **Dynamic equilibrium only occurs in a closed system.**



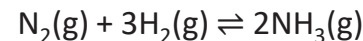
The equilibrium position, and therefore yield of product, can be altered by changes in:
Temperature Pressure Concentration.

The equilibrium position always moves to reduce the effect of any changes to the system.

Change by ...	Equilibrium position shifts ...
increasing temperature	in the endothermic direction (transferring energy from the surroundings, cooling them down)
decreasing temperature	in the exothermic direction (transferring energy to the surroundings, heating them up)
increasing gas pressure	in the direction that forms fewer gas molecules (as this reduces pressure)
decreasing gas pressure	in the direction that forms more gas molecules (as this increases pressure)
increasing a concentration	in the direction that uses up the substance that has been added
decreasing a concentration	in the direction that forms more of the substance that has been removed

THE HABER PROCESS

Reversible reaction between Nitrogen (from the air) and Hydrogen (from natural gas) that forms Ammonia.



Haber process reaction conditions:

Temperature 450°C, pressure 200 atm and an Iron catalyst.

Fertilisers

Ammonia is an important industrial product used to make fertilisers. Fertilisers provide mineral ions important for plant growth. Farmers use fertilisers to increase the concentration of mineral ions in the soil.

Nitrogen, Phosphorous and Potassium

Compounds containing nitrogen, phosphorous and potassium promote plant growth. Fertilisers that contain these elements are referred to as NPK fertilisers.

Useful fertiliser compounds (in **bold**) can be made using ammonia:

Ammonia + Nitric acid \rightarrow **Ammonium Nitrate**

Ammonia + Sulphuric acid \rightarrow **Ammonium Sulphate**

Ammonia sulphate can be produced both in a laboratory and on an industrial scale:

	Laboratory preparation	Industrial production
scale of production	small scale	large scale
starting materials	ammonia solution and dilute sulfuric acid	raw materials for making ammonia and sulfuric acid
stages	titration (see <i>SC8 Acids and Alkalis</i>), then crystallisation	several stages
type of process	batch	continuous

Separate science – Chemistry - Topic 6 – Groups in the periodic table

Key information	
alkali metals	Alternative name for group 1 elements
halogen	Alternative name for group 7 elements
noble gases	Alternative name for group 0 elements
trend	A pattern in a property down a group
group	A vertical column of elements in the periodic table. Elements in the same group have similar chemical properties.
displacement reaction	When a more reactive element displaces a less reactive element in a compound.
diatomic	Two atoms covalently bonded together.
hydrogen halide	A compound formed in a reaction between a halogen and hydrogen.
metal halide	A compound formed in a reaction between a halogen and hydrogen.
salt	A compound formed by neutralisation of an acid by a base.
redox	A reaction in which both oxidation and reduction occur.
oxidation	A type of reaction in which a reactant is oxidised.
oxidised	A reactant that has lost electrons or gained oxygen, in a redox reaction.
reduction	A type of reaction in which a reactant is reduced.
reduced	A reactant that has gained electrons or lost oxygen, in a redox reaction.
inert	Unreactive.

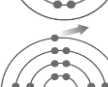
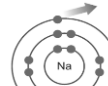
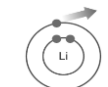
Group 1 metals

Unusual properties:

- Soft
- Relatively low melting points

Explaining the reactivity of group 1

- All the group 1 alkali metals have one electron in their outer shell
- The reactivity of the alkali metals increases as we move down group 1.
- As we move down the group, the outer electron gets further away from the nucleus, is less strongly attracted and therefore more easily lost.



Example question:

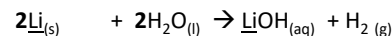
Explain why sodium is more reactive than lithium (2)

Sodium's outer electron is further from its nucleus than lithium's, therefore there is less attraction between the nucleus and outer electron meaning it is more easily lost.

Reaction with water

Alkali metal + water → Metal Hydroxide + Hydrogen

Lithium + Water → Lithium Hydroxide + Hydrogen



All the group 1 metals react in the same way so in a reaction between sodium and water you would simply replace Lithium for Sodium

Group 1 metal	Description of reaction with water
Lithium	Fizzing, slow movement on surface of water, gets smaller
Sodium	Fizzing, movement on surface of water, gets smaller and forms a ball, explodes.
Potassium	Fizzing, fast movement on surface of water, gets smaller and forms a ball, ignites with a lilac flame.

Reactivity increases

Group 0 – Noble gases (non-metals)

All the noble gas atoms exist as single atoms because they are very unreactive, or inert, due to them having full outer electron shells. They do not form bonds easily. They have a very stable electron structure.

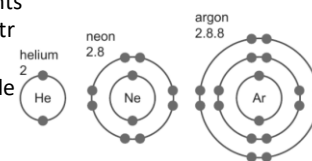
Physical properties -

- Colourless gases
- Very low melting and boiling points
- Poor conductors of heat and electricity

Trends – Melting/boiling point and density down group 0.

Uses

Helium – is used in weather balloons and airships due to its very low density and the fact it is not flammable.
 Neon – Produces bright red/orange light when electricity is passed through it making it useful in signs.
 Argon – is denser than air and can be used to prevent food spoiling.
 Krypton – used in photography lighting as it produces a white light when electricity passes through it.

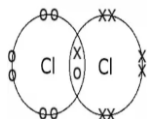


Group 7 – Halogens (non-metals)

- All the halogens exist as diatomic molecules joined by a single covalent bond.
- They are all non-metals that are simple covalent structures.
- This means they all have low m.p/b.p and are poor conductors of electricity.

Physical properties

Melting and boiling point, along with density all increase as we move down group 7.



	Yellow gas
	Green gas
	Brown liquid
	Purple/black solid

Reactivity decreases

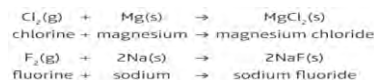
Explaining the reactivity down group 7

- In order to react the halogens, need to gain one electron.
- As we move down group 7 the atoms get larger and the distance between the positive nucleus and the outer shell increases.
- This means the force of attraction between the nucleus and an incoming electron gets weaker and therefore less reactive.

Reactions with Hydrogen

Hydrogen + Chlorine → Hydrogen Chloride
 $\text{H}_2(g) + \text{Cl}_2(g) \rightarrow 2\text{HCl}(g)$
 The hydrogen halides formed can dissolve in water to form acidic solutions e.g. hydrogen chloride dissolves in water to form hydrochloric acid.

Reactions with metals - Halogens react with metals to form ionic compounds called salts. The salt will contain a halide ion (single negative charge) and is referred to as a halide salt.



Displacement reactions – a more reactive element takes the place of a less reactive element in a compound.

Halogen displacement - A **more reactive halogen** will **always** displace a **less reactive halide** from its compound, in solution.

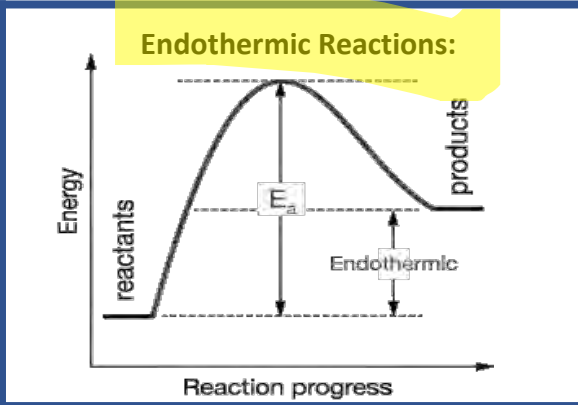
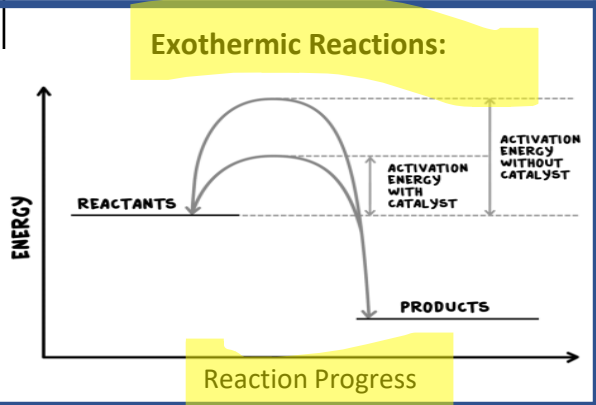
Chlorine + Sodium Bromide

↓

Sodium Chloride + Bromine

Key information

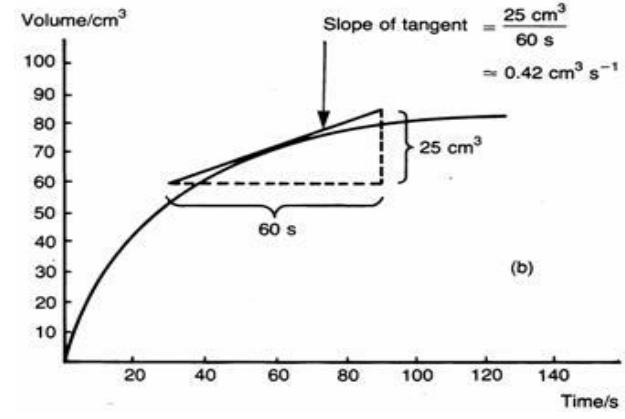
Collision Theory	Chemical reactions can only occur when i) reacting particles collide with each other, ii) with the activation energy iii) The greater the number of successful collisions per second (frequency) the greater the rate of reaction.
Rate of Reaction	The speed at which a chemical reaction takes place.
Activation Energy (E _a)	The minimum amount of energy colliding particles need in order to react.
Catalyst	<ul style="list-style-type: none"> A substance that increases the rate of a reaction. Catalysts lower the activation energy of a reaction pathway. It is not chemically changed by the reaction. Enzymes are biological catalysts.



Rate of Reaction

$$\text{Rate} = \frac{\text{increase in [product]}}{\text{time}} = \frac{\text{decrease in [reactant]}}{\text{time}}$$

Units: g/s or cm³/s



To calculate the rate of reaction, you can calculate the gradient at a point on a rate graph.

Factors affecting Rates of Reaction:

- Temperature
- Reactant Concentration
- Surface Area (of a Solid)
- Pressure (of a gas)
- Catalyst Use

Energy changes in reactions

The overall energy change for a reaction can be exothermic or endothermic.

EXOTHERMIC REACTION

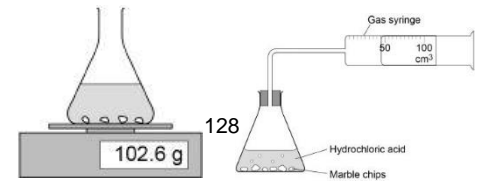
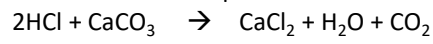
- More energy is released when bonds are made in the products than is absorbed to break the bonds in the reactants.
- This releases energy into the surroundings and increases the temperature.
- The products have less energy stored in them than the reactants.

EXOTHERMIC REACTION

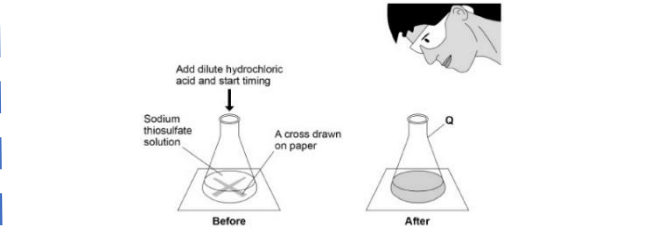
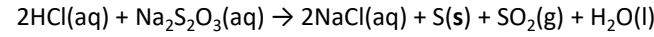
- More energy is absorbed when bonds are broken in the reactants than is released when bonds are formed in the products.
- This absorbs energy from the surroundings and decreases the temperature.
- The products have more energy stored in them than the reactants.

Core Practicals:

Measuring the rate of reaction from the **gas produced** in the reaction between acid and marble chips.



Measuring the rate of reaction from the **colour change** when sodium thiosulphate reacts with hydrochloric acid to form a precipitate. (Disappearing Cross)



Separate science – Chemistry - Topic 8 - Earth and atmospheric science

<u>Early atmosphere</u>	<u>Description of change and reason</u>	<u>Atmosphere today</u>
<p>Gases produced by volcanic activity formed the early atmosphere. It was thought to contain:</p> <ul style="list-style-type: none"> • Little or no oxygen • Large amount of carbon dioxide • Water vapour 	<p>Increased amount of oxygen and a decreased amount of carbon dioxide – growth of primitive plants resulted in the use of carbon dioxide and production of oxygen as a result of photosynthesis.</p> <p>Carbon dioxide also decreased as it dissolved in the forming oceans</p> <p>Water vapour condensed to form the oceans</p>	<ul style="list-style-type: none"> • Approximately 78% Nitrogen • Increase to around 21% Oxygen • Decrease in carbon dioxide – less than 1% • Less water vapour

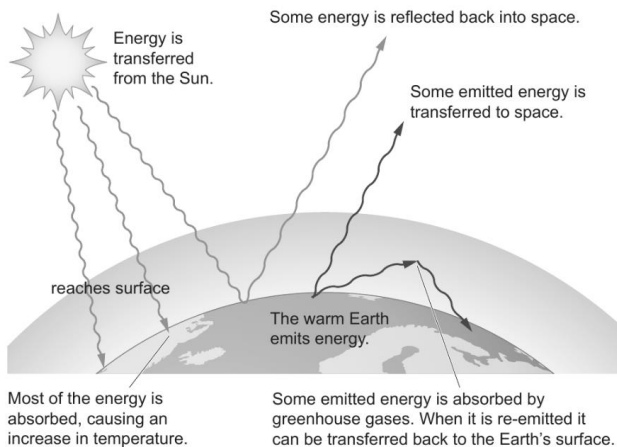
<u>Key information</u>	
Absorb	To take in
Emit	To give out
Correlation	A relationship between two variables, so that if one variable changes so does the other. Can be positive or negative.
Causal link	When one thing can be shown to be causing another to happen.
Evidence	Facts or data that support, or contradict, a hypothesis.
Resolution	The smallest change that can be measured by an instrument.

Greenhouse effect

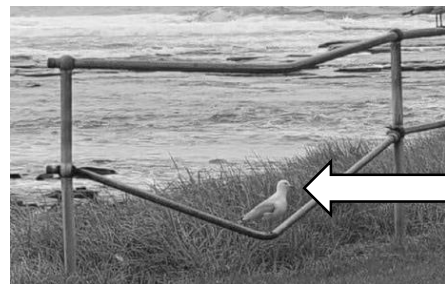
➤ Greenhouse gases:

- **Water vapour (H₂O)**– released in combustion of hydrocarbons
- **Methane (CH₄)**– released from livestock, rice paddy-fields and landfill sites.
- **Carbon dioxide (CO₂)** – released in combustion of hydrocarbons/fossil fuels

Greenhouse gases, present in the atmosphere, can absorb heat radiated from the Earth. They can re-emit heat back into the atmosphere causing global warming.



➤ Global warming is *thought* to be causing climate change – changes to average weather conditions around the world.



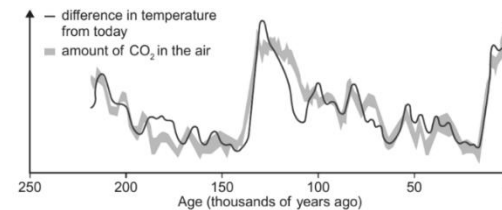
Issues with evidence

1. Oldest continuous temperature records are from one place in England – cannot be used assess global temperatures at that time.
2. First continuous global temperature records were not until 1880 and were not very accurate. The measurements would have been prone to errors and the thermometers would have a lower resolution than modern thermometers.

Effects of climate change

1. Ice at the poles and glaciers melt
2. Added water causes sea levels to rise
3. Increased flooding in some areas
4. Changes to habitats damaging to wildlife.
5. Changes to weather patterns – more extreme weather.

Correlation and climate change



☐ Average global temperatures and atmospheric carbon dioxide levels are correlated.

There is a strong correlation between CO₂ levels and surface temperature. However, correlation does not mean there is a causal link (one thing causes another).

In order to show causal link, scientists must collect **evidence** that can explain how and why the correlation occurs.

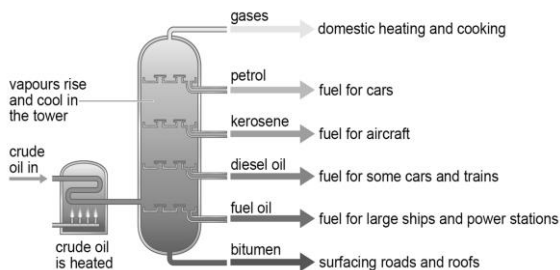
Limiting impact

- Renewable energy resources reduce greenhouse gas emissions.
- Capture greenhouse gases and trap underground – methane can be burnt to generate electricity.

Key information

Hydrocarbon	A compound that contains hydrogen and carbon atoms only.
Crude oil	A complex mixture of hydrocarbons that contains molecules in which carbon atoms are found in chains or rings. It is an important source of fuels and feedstock for the petrochemical industry.
Feedstock	Raw materials for the petrochemical industry
Petrochemical industry	Industry that produces useful products from crude oil e.g. polymers and fuels
Fractional Distillation	A separation method used to separate two or more liquids with different boiling points.
Fraction	A component of a mixture separated by fractional distillation
Homologous series	A series of compounds that have the same general formula, neighbouring molecules differ by CH_2 , have similar chemical properties and show a gradual variation in physical properties.
Alkane	A saturated hydrocarbon with the formula $\text{C}_n\text{H}_{2n+2}$
Combustion	An exothermic reaction where a fuel reacts with oxygen to make carbon dioxide and water.
Oxidation	When an substance gains oxygen.
Exothermic	A reaction in which energy is released into the surroundings

Fractional distillation of crude oil



Alkanes – saturated hydrocarbons

The hydrocarbons found in crude oil are mainly alkanes. Alkanes are an example of a homologous series:

- General formula: $\text{C}_n\text{H}_{2n+2}$
- Neighbouring formula differ by CH_2

Name	Molecular formula	Structural formula
methane	CH_4	
ethane	C_2H_6	
propane	C_3H_8	

- Show a gradual variation physical properties e.g. *The boiling point increases as the number of carbon atoms in a molecule increases.*
- Have similar chemical properties.

Separate science – Chemistry - Topic 8 - Fuels and hydrocarbons

Alkenes – unsaturated hydrocarbons

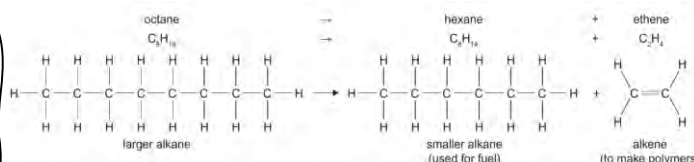
Have a $\text{C}=\text{C}$ double bond in their structure – this is the alkene functional group. Alkenes are also an example of a homologous series:

- General formula: C_nH_{2n}

Name	Molecular formula	Structural formula
ethene	C_2H_4	
propene	C_3H_6	
butene	C_4H_8	

Cracking

Involves breaking down larger alkanes into smaller more useful alkanes and alkenes.



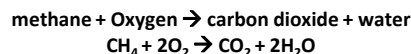
Cracking is important as it helps to meet the demand for the shorter more useful alkanes/hydrocarbons.

Combustion

Hydrocarbon fuels can react with oxygen, from air, when they burn. The carbon and hydrogen atoms undergo **oxidation** in a reaction called combustion.

Complete combustion of a hydrocarbon

- Only produces carbon dioxide and water
- Is exothermic
- Occurs when there is a plentiful supply of oxygen.



Incomplete combustion of a hydrocarbon

- Produces water
- Releases LESS energy than complete combustion.
- Can produce carbon monoxide and carbon

Carbon monoxide – Toxic gas – Combines with haemoglobin, in red blood cells reducing the amount of oxygen carried in the blood stream. This can lead to tiredness, falling unconscious and death.

Carbon (soot) – Can block pipes carrying waste gases, dirt buildings and cause breathing problems.

Bromine water test

1. Bromine water is orange-brown in colour.
2. When mixed with alkenes it turns colourless.
3. When mixed with alkanes it remains orange-brown and does not de-colour

Bromine reacts with the alkene in an addition reaction due to the presence of the $\text{C}=\text{C}$ double bond.

Pollutants - Sulphur dioxide

Hydrocarbon fuels, such as petrol and diesel can contain sulphur impurities.

When sulphur is oxidised it can form sulphur dioxide (SO_2) that leads to acid rain.

Acid rain problems:

- Damage crops as a result of acidic soil.
- Prevent fish eggs from hatching due to excess acidity in rivers/lakes
- Cause weathering of buildings made from limestone.

Pollutants – Oxides of Nitrogen

Oxides of nitrogen (NO_x) - formed when oxygen and hydrogen react at high temperatures in a car engine.

Nitrogen dioxide (NO_2), is an example of an oxide of nitrogen that is a brown toxic gas, linked to breathing problems. It can also lead to acid rain.

Catalytic converters can be used to convert oxides of nitrogen back into nitrogen in car exhaust systems.

Fraction properties





Fraction	Number of atoms in molecules	Boiling point	Ease of ignition	Viscosity
gases	smallest (1–4 carbon atoms)	lowest (<0 °C)	easy to ignite	lowest (flows most easily)
petrol	↑	↑	↑	
kerosene				
diesel oil				
fuel oil				
bitumen				

Separate science – Chemistry - Topic 9 – alcohols, carboxylic acid and polymers

Alcohols

Alcohols are another example of a homologous series.

- General formula: C_nH_{2n+1}

Name	Molecular formula	Structural formula
methanol	CH_3OH	
ethanol	C_2H_5OH	
propanol	C_3H_7OH	
butanol	C_4H_9OH	

- All have similar chemical properties due to the **-OH functional group**:

- Produce carbon dioxide and water in complete combustion
- Can be oxidised to form carboxylic acids
- React with metals, like sodium, to form hydrogen gas as one of the products.

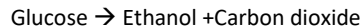
- Show a trend in their properties: The greater the number of carbon atoms in their chain, the less reactive they are reactive metals.

Uses

- Used to produce solvents for cosmetics, medical drugs and varnishes.
- Methanol and **ethanol** are widely used as fuels as they can be produced from **renewable sources**.

Ethanol production

Ethanol can be produced from the fermentation of carbohydrates. The carbohydrates contain glucose that is converted into ethanol and carbon dioxide, by enzymes.



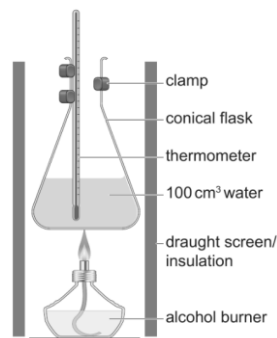
Reaction conditions:

- Requires enzymes, usually from yeast.
- Must be anaerobic as fermentation only occurs due to an absence of oxygen.
- pH and temperature have to be carefully controlled as they can denature the enzymes.

Fractional distillation is used to increase the concentration of the solution produced in fermentation.

Core practical – The combustion of alcohols

AIM: to investigate the temperature increase in a known mass of water, by combustion, for different alcohols.



Method

- Measure mass of alcohol burner and cap. Record along with name of alcohol.
- Place on heat proof mat below a conical flask containing 100cm³ of water.
- Measure starting temperature of water and record.
- Light burner and heat water until a temperature change of 40°C is seen.
- Re-measure mass of alcohol burner and cap and record. Calculate difference in mass.
- Calculate mass of alcohol burned to produce a 1°C rise in temperature.
- Repeat for other alcohols.

Independent variable: Type of alcohol

Dependent variable: Mass of alcohol burned to produce a 1°C rise in temperature

Control variables: Volume of water, distance between burner and conical flask, starting temperature of water.





Main sources of error – energy is also transferred to the surroundings, not just to the water in the conical flask.

Carboxylic acids

Carboxylic acids are produced from the oxidation of alcohols, using oxidising agents.

Carboxylic acids are also an example of a homologous series.

- General formula: $C_nH_{2n+1}COOH$

Name	Molecular formula	Structural formula
methanoic acid	$HCOOH$	
ethanoic acid	CH_3COOH	
propanoic acid	C_2H_5COOH	
butanoic acid	C_3H_7COOH	

Carboxylic acids (cont.)

- All carboxylic acids contain the **functional group -COOH**

- Chemical properties:**

- Form solutions with a pH of less than 7.
- Have acidic properties because they form hydrogen ions in solution.
- Are formed from the oxidation of alcohols.

Polymers

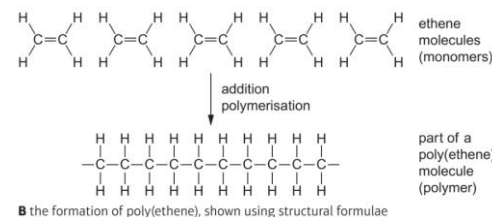
Polymers have a high relative molecular mass and are made up of smaller repeating units (monomers).

Polymers can be made by addition polymerisation or condensation polymerisation.

Addition polymerisation

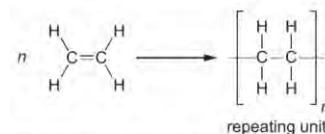
The polymer is formed when lots of small monomer molecules are joined together. This can happen because the monomer contains a C=C double bond that breaks (the monomers are often alkenes)

Polythene example:



This can also be presented in a more efficient way, as an equation:

This can be written as an equation:



Polythene is a synthetic polymer. There are natural polymers e.g. DNA (nucleotides are the monomer), starch (glucose), protein (amino acids)

Polymer properties and uses:

Polymer	poly(ethene)	poly(propene)	poly(chloroethene)	poly(tetrafluoroethene)
Common name	polythene	polypropylene	polyvinyl chloride, PVC	PTFE, Teflon™
Properties	flexible, cheap, good insulator	flexible, does not shatter	tough, good insulator, can be made hard or flexible	tough, slippery
Uses	plastic bags, plastic bottles, cling film, polytunnels	buckets and bowls, crates, ropes, carpets	window frames, gutters, pipes, insulation for electrical wires	non-stick coatings for frying pans and kitchen utensils, burette taps, stain-proofing clothing and carpets

Separate science – Chemistry - Topic 9 - Separate Chemistry 2 - Qualitative analysis and materials

Testing for ions

Identifying cations - FLAME TESTS

Flame tests are used to identify ions in solid or solutions.

Method:

1. Place wire loop in hydrochloric acid to clean.
2. Place wire into test chemical.
3. Place wire loop and test chemical in the edge of the flame and observe the flame colour.

Metal ion	Symbol	Flame test colour
Lithium	Li ⁺	Red
Sodium	Na ⁺	Yellow
Potassium	K ⁺	Lilac
Calcium	Ca ⁺	Orange-red
Copper	Cu ⁺	Blue green

Flame photometry

A machine that can measure the light intensity of flame colours produced by metal ions. They can also determine the concentration of a metal ion in a solution.

The flame colours is displayed as a spectrum, with each ion having its own unique emission spectra. Unknown metal ions can be identified by comparing spectra e.g.

Emission spectra produced from unknown metal ion in sample:



Metal ion X has an emission spectra that matches Na⁺, a sodium ion

Known metal ion emission spectra:



Advantages of flame photometry when compared to flame tests:

- Very sensitive – can detect different concentrations of ions present in a sample
- Speed – The analysis is very quick
- Accurate



Identifying cations – Precipitation reactions

Precipitation reactions involve the **addition of sodium hydroxide solution to the test solution.**

Different metal hydroxides produce different colour precipitates (insoluble solid)

Metal ion	Symbol	Precipitate colour
Iron (II)	Fe ²⁺	Green
Iron (III)	Fe ³⁺	Brown
Copper	Cu ²⁺	Blue
Calcium	Ca ⁺	White*
Aluminium	Al ³⁺	White*

***To distinguish between calcium and aluminium ions, an excess of sodium hydroxide should be added. If the solution remains white it is calcium and if it turns colourless it is aluminium.**

Testing for ammonium ions - NH₄⁺

1. Add sodium hydroxide solution.
2. Warm the solution
3. Ammonia is released
4. Confirmatory test for ammonia gas – turns damp red litmus paper blue.

Identifying anions

Testing for carbonate ions – CO₃²⁻

Step 1 – add any acid to test solution

Step 2 – If it fizzes collect gas and pass through limewater

Step 3 – If limewater turns cloudy carbonate ions must have been present.

Testing for sulphate ions – SO₄²⁻

1. Add hydrochloric acid to test solution (cannot use sulphuric as it contains sulphate ions.
2. Add barium chloride 132
3. If a white precipitate forms (Barium Sulphate), sulphate ions must have been present.

Materials

Ceramics – durable – change very little when heated, chemically unreactive, hard and brittle. Poor electrical and thermal conductors with high melting points e.g. brick, porcelain, china

Metals – Strong, hard, shiny, good conductors of heat and electricity. Malleable and can form alloys.

Polymers – can be moulded into complex shapes and depending on composition can have many different properties. Most are unreactive, strong and poor thermal and electrical conductors.

Composite material – mixture of two or more materials to create a material with improved properties. Often composite materials have a matrix and reinforcement structure e.g. concrete - reinforcement is sand and aggregate with a matrix of cement.

Nanoparticles

- Consist of a few hundred atoms 1-100nm in size – larger than atoms and simple molecules but smaller than cells.
- Have large surface area to volume ratio
- Make useful catalysts
- Also found in sunscreen
- May pose hazard to human health as they could pass through cell surface membranes in the lungs and enter the blood. Could potentially catalyse harmful reactions

Identifying anions

Testing for halide ions – Group 7 ions – Cl⁻, Br⁻, I⁻

- a. Add nitric acid to test solution – cannot be hydrochloric as it contains chloride ions.
- b. Add silver nitrate
- c. Silver halide precipitate forms:

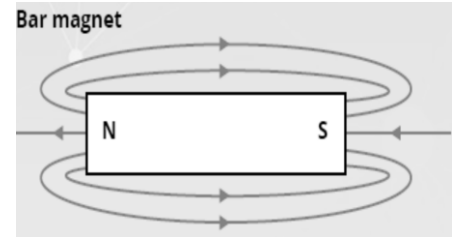
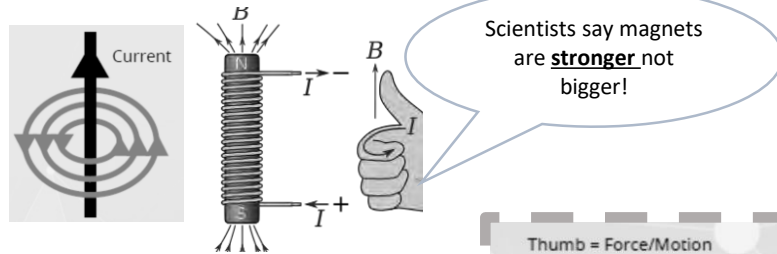
Halide ion	Symbol	Precipitate colour	
Chloride	Cl ⁻	White	Milk
Bromide	Br ⁻	Cream	Cream
Iodide	I ⁻	Yellow	Butter

Cannot use this test for fluoride ions as silver fluoride is soluble

Todmorden High Separate Science Physics: Topic 12....Magnetism

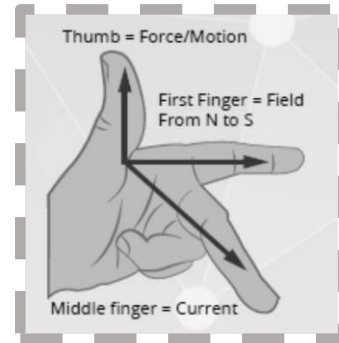
Key term	Definition
Permanent magnets	Produce a magnetic field around them which exerts a non-contact force on a magnetic material (or a moving electrical charge).
Magnetic materials	Can be attracted by permanent magnets, but cannot be repelled by magnets! Iron, nickel and cobalt are the only magnetic elements. Magnetic materials become induced magnets in a magnetic field.
Magnetic field lines.	These are not real but represent the strength and direction of the magnetic force on a North pole of a magnet, they always point from N to S
solenoid	A coil of wire used in an electromagnet.
Soft iron core	readily magnetises and demagnetises.
Magnetic Field lines.	show the direction and strength of a magnetic field. The closer they are the stronger the field. They always point from N to S.
Magnetic flux density (B)	The strength of a magnetic field measured in teslas (T).

The **Right Hand Screw Rule** gives the direction of a magnetic field around a current in a wire.



Field lines run from north to south.

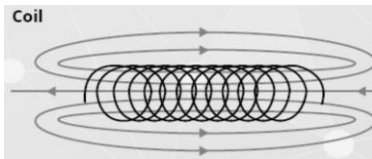
HT only. Fleming's Left Hand Rule predicts the direction of the force on a current in a magnetic field.
F=BIL calculates the magnitude of the force (**F**) on a length of wire (**L**), carrying a current (**I**) at right angles to the magnetic field (**B**).



Core practical. To show the shape and direction of a magnetic field.

- Place a sheet of paper over the bar magnet.
- Sprinkle iron filings over the paper.
- Using a pencil mark the lines where the filings lie, these are the magnetic field lines.
- Remove the iron filings – making sure that the papers stays in the same position over the magnet.
- Place a plotting compass on the field lines to determine the direction of the field. The north pole of the compass will point towards the south pole of the magnet. (Same poles repel, opposite poles attract). **This is how we know that at geographical North there is a magnetic south pole.**

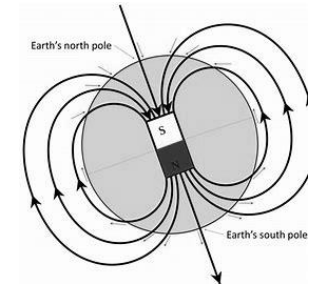
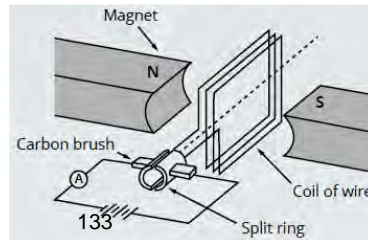
A coil or a **solenoid** produces a **very strong uniform magnetic field** inside the coil. And a much weaker field outside the coil.



The magnetic field strength of the solenoid can be increased by,

- increasing the current
- increasing the number of turns per m
- adding a soft iron core to the centre.

A electric motor uses the fact that magnetic field from the current carrying wire **INTERACTS** with the magnetic field from the magnet and this creates a force on the wire. Each side of the coil carries current in the opposite direction (relative to the magnetic field). Therefore the forces on each side of the coil are in opposite directions, causing the coil to spin. A **split ring commutator** ensures the coil spins in one direction only i.e. rotation does not reverse.

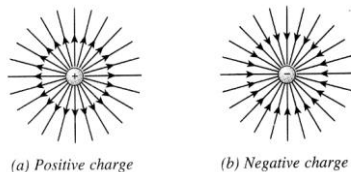


A loudspeaker is an application of the motor effect.

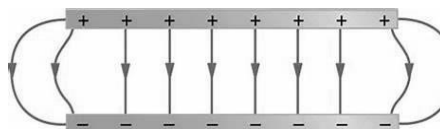
Todmorden High Separate Physics Topic 11 Static Electricity

Key term	Definition
An electric field	A region where an electric charge experiences an electrostatic force.
Electric charge	Is positive or negative and is measured in coulombs (C).
Charged objects	Protons are positively charged. Electrons are negatively charged.
Charging by friction	Only electrons are transferred from one object to another by friction. Electrons are knocked off one object onto another.
Charging by conduction	A charged object touched a neutral object and a transfer of electrons charges the neutral object.
Charging by induction	A charged object moves close to, <u>but does not touch</u> a neutral object, the charge within the object moves, leaving one area charged. Temporary earthing then allows charge to flow making the object charged.
Arrows on field lines	Show the direction of the force that a positively charged particle would experience.
Density of field lines	Shows the magnitude of the electrostatic force, the closer the lines the stronger the force. (like contours on a map).
conductors	Allow electric charge to flow through them.
insulators	Do not allow charge to flow freely through them leading to a build up of static charge i.e. charge unable to flow.
Attraction and repulsion	Opposite charges attract, like charges repel.
Earthing	Connecting an object to the Earth.

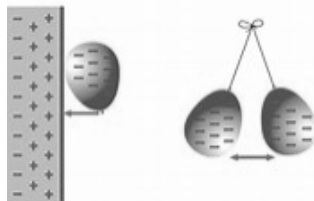
The fields around point charges are **radial fields**.



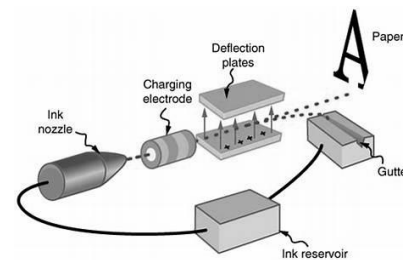
The fields between parallel plates are **uniform fields**.



The balloon charges the wall by **induction**, a charged object moves the charge in a neutral object to leave part of it charged.



Electrostatics can be useful e.g. inkjet printer.



Electrostatics can be dangerous e.g. flour mill explosions. When one object, e.g. flour, flows down a chute there is friction, causing a build up of static. If the build up of charge causes a large enough potential difference between the charged object and the Earth, a spark can result (like lightning.) The spark could cause a fire.

Earthing. Any object connected to the Earth via a low resistance earth wire is said to be earthed.



Earthing can help prevent damage to appliances and electrocution of people.

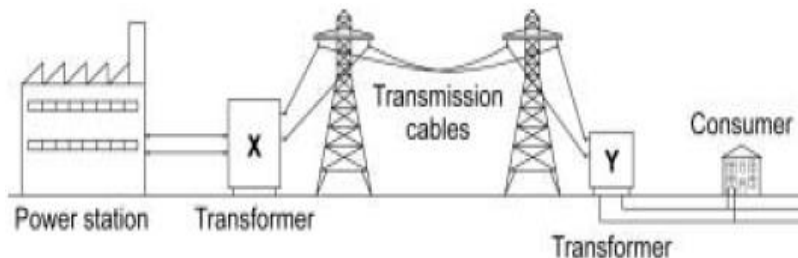
Todmorden High Separate Science Physics

Topic 13....Electromagnetic Induction

Key term	Definition
transformer	Device to change the voltage of an alternating voltage only i.e. will not work with a d.c. supply.
Step-up transformers	More turns on the secondary coil than the primary, increase voltage and decrease current making power transmission safer.
Step down transformers.	Fewer turns on the secondary coil than the primary, decrease voltage to a safer level for consumers.
$V_p \times I_p = V_s \times I_s$	I_p , current through primary coil I_s , current through secondary coil
National Grid	A system of transformers and cables to distribute power from generators to consumers.

Explain how a transformer works (HT)

- An alternating current through a primary coil of wire produces a constantly changing magnetic field around the coil.
- The magnetic field lines from the primary cut across a secondary coil of wire and electromagnetic induction produces a potential difference across the ends of the wire.
- If the ends of the wire are connected in a circuit a current will flow.
- The alternating current will have the same frequency as the alternating current in the primary coil.



(HT) Factors affecting size and direction of induced potential difference.

1. More turns per m on the output coil,
 2. presence of a soft iron core,
 3. a higher rate of cutting of the magnetic field,
- all **increase** the magnitude of the induced potential difference.

Any reversal of the cutting motion **reverses** the induced potential difference.

The right-hand generator rule can predict the direction of the induced current.

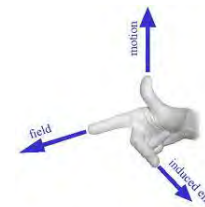
The induced current produces a induced magnetic field which act so as to oppose the first magnetic field.

Explain how electrical power is transferred efficiently and safely to consumers. (FT and HT)

- When an electric current flows through a cable, energy is lost as heat, because electrons collide with ions.
- A step-up transformer (X) increases the output voltage across the overhead cables
- Energy cannot be created or destroyed so the output power from the transformer cannot be greater than the input power

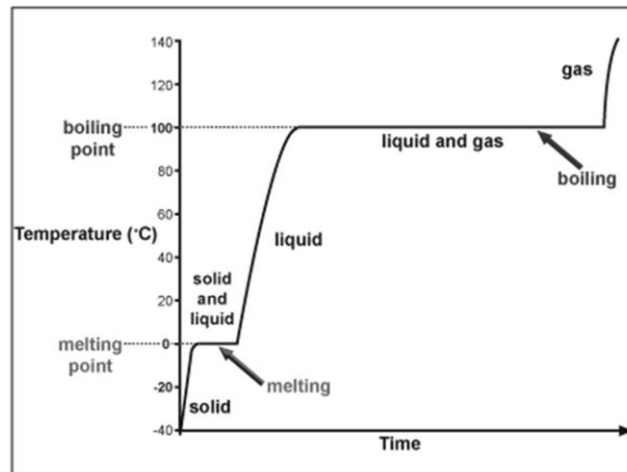
$P_{in} = P_{out}$ i.e. $V_p \times I_p = V_s \times I_s$ and so by increasing the potential difference across the transmission cable, the current through the transmission cable is decreased for the same power transfer.

- Reducing the current through the wire reduces the power loss and increases the efficiency of the power transmission.
- The step up transformer (Y) is needed to decrease the voltage to a safer (not safe) level for the consumer.



Todmorden High Combined Science Physics Topic 14 Particle Model of Matter.

Key Terms / Words	Definition
Specific heat capacity	The heat energy transferred to change the temperature of 1kg of a substance by 1 °C.
Equation for specific heat capacity	$\Delta Q = M \times C \times \Delta\theta$ ΔQ , Change in heat (internal energy) in joules (J) M, mass in kilograms (kg) C specific heat capacity ($J/kg^{\circ}C$) $\Delta\theta$, change in temperature ($^{\circ}C$)
Latent heat of fusion	The heat energy transferred to change the state of 1 kg of a substance from solid to liquid, without a change in temperature.
Latent heat of vaporisation	The heat energy transferred to change the state of 1 kg of a substance from liquid to gas, without a change in temperature.
Latent Heat equation.	$Q = M \times L$ Q energy transferred of a change of state only. M mass in kilograms (kg) L specific latent heat of (fusion or vaporization) joules per kilogram (J/kg)
density	is the mass per unit volume. $\rho = m/v$ P is density in kg/m^3 . M is mass in kg. V is volume in m^3 .
Deposition.	Change of state from gas to solid.
sublimation	Change of state form solid to gas



Key idea.

When energy is transferred to an object, it either increases the kinetic energy of the particles and therefore the temperature or it is used to break the bonds between particles. Bond breaking requires energy, bond making releases energy.

Core Practical 1. Determine the density of solids and liquids

1. Measure the mass of the irregular solid on a **top-pan balance**.
2. Completely submerge the object into a full eureka can and collect the displaced water in a **measuring cylinder**.
3. The volume of water displaced is equal to the volume of the object.
4. Calculate the density using the equation $\rho = m/v$.

Determine the density of a liquid.

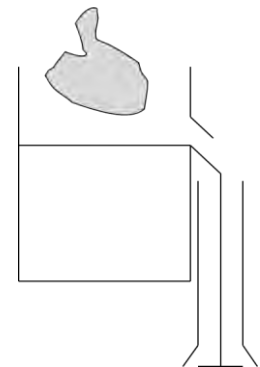
1. Place an empty measuring cylinder on a **top-pan balance** and set the balance to zero!
2. Add liquid to the **measuring cylinder, and measure the volume**.
3. Measure the mass of the liquid using a **top-pan balance**.
4. Calculate the density using the equation $\rho = m/v$.

Core Practical 2 Finding the specific heat capacity of water.

- 1 Measure the mass of 200cm³ of water using a top pan balance. (see above).
2. Place the water in an insulated beaker and submerge an immersion heater.
3. Take the starting temperature.
3. Turn on the immersion heater and measure the energy in using a joule meter for a corresponding temperature change.
- 4 Calculate C using the equation $\Delta Q = M \times C \times \Delta\theta$

Core Practical 3 Plotting a temperature time graph for a change of state.

Place crushed ice from the freezer in a boiling tube and place this in a beaker of water. Gently heat with a Bunsen. Take the temperature using a thermometer, every 30 seconds until the ice has completely melted and reached room temperature. Plot a graph of temperature on the Y axis against time on the X axis. The **plateau** on the graph is the melting point of ice.



Todmorden High Combined Science Physics 15 Forces and Matter

Core Practical 4 Hooke's Law (Force and extension).

V. Set up the equipment as shown in the diagram and vary the force applied to the spring by adding known weights.

I. Use weights from 1N to 8N.

C. Keep the same spring throughout the investigation.

S. Wear safety glasses. Ensure the clamp-stand is secured to the bench.

M. For each force applied determine the extension of the spring. Measure the original length and the loaded length using the ruler. Calculate extension using the equation;

$$\text{extension} = \text{loaded length} - \text{original length}$$

A. For accuracy ensure,

1. the ruler is clamped in a vertical position by using a spirit level or plumb line,
2. a pointer is fixed from the spring to the ruler.

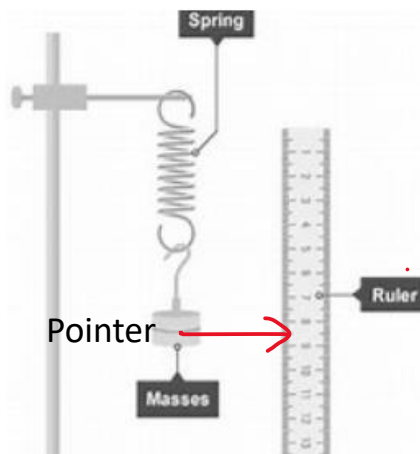
R. Repeat the measurements and take an average value for extension.

G. Plot a graph of Force on the Y axis against extension (X) on the X axis. The gradient of the straight-line portion only is the spring constant.
 a pointer used.

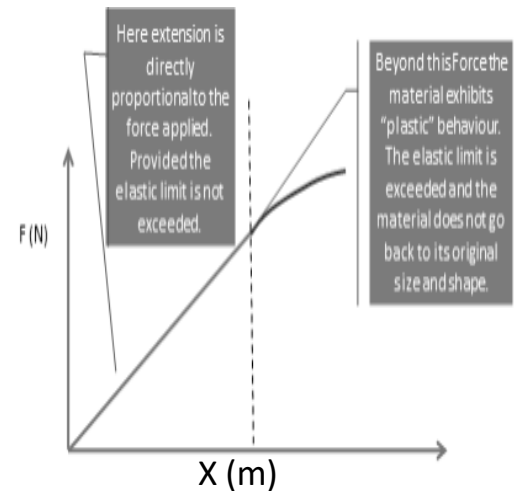
E. $K = F/x$ and $\text{extension} = \text{loaded length} - \text{original length}$.

Key Terms / Words	Definition
Hooke's Law	The extension of a spring is directly proportional to the force applied, provided the limit of proportionality is not exceeded.
Elastic deformation	The object goes back to its original size and shape when the force is removed.
Plastic deformation	The object does not go back to its original size when the force is removed i.e. it is permanently stretched.

Hooke's Law equation	$F = kx$ F, force applied, (N) K, spring constant (N/kg) X, extension of the spring (m)
Energy in a spring	$E = 0.5 k (x)^2$ E, energy stores in the spring in joules (J) K, spring constant (N/kg) X, extension of the spring (m)



137



Spanish – Mis estudios

School subjects	Estudio – I study		el arte dramático/el teatro – drama el dibujo – art el español – Spanish el inglés – English la biología – biology la educación física – pe la física – physics el francés – French el alemán - German la geografía – geography la historia – history la informática – computing la química – chemistry la religión – RS la tecnología – technology la sociología – sociology las matemáticas – maths las ciencias – science las empresariales – business las lenguas/los idiomas – languages	porque – because es – it is son – they are	me interesa – interests me me aburre - bores me me fascina – fascinates me me importa – is important to me fácil – easy difícil – difficult duro – hard útil – useful inútil – useless práctico – practical creativo – creative relevante – relevant relajante – relaxing exacto – precise lógico – logical exigente – demanding me aburre como una ostra – it bores me to death es pan comido – it’s a piece of cake mejor que... - better than peor que... - worse than tan...como... - as...as...	Estudio diez asignaturas incluso	I study 10 subjects including	
	Mi asignatura preferida es... - My favourite subject is...					La biología ya que me fascina	El inglés, las matemáticas, las ciencias y el dibujo.	English, maths, science and art.
	Me chifla – I’m crazy about					La biología ya que me fascina	Mi asignatura preferida es	My favourite subject is
	Prefiero – I prefer					La biología ya que me fascina	La biología ya que me fascina	biology because it fascinates me
						La biología ya que me fascina	y me gustaría trabajar como biólogo marino en el futuro.	and I would like to work as a marine biologist in the future
						La biología ya que me fascina	aunque puede ser muy difícil	although it can be very hard.
						La biología ya que me fascina	Además me chifla el dibujo porque	Moreover I’m crazy about art because
						La biología ya que me fascina	soy una persona creativa y lo encuentro relajante	I’m a creative person and I find it relaxing
Teachers	El/la profesor/a de (ciencias) – My (science) teacher		es - is	paciente – patient – tolerant – clever hardworking simpático – nice	impaciente – impatient tolerante severo/estricto – harsh/strict listo tonto – silly/stupid trabajador(a) – perezoso – lazy antipático – mean/unpleasant	y la profe es paciente	and the teacher is patient	
				enseña bien – teaches well explica bien –explains well tiene buen sentido del humor – has a good sense of humor tiene expectativas altas – has high expectations crea un buen ambiente de trabajo – creates a good working atmosphere nunca se enfada – never gets angry me hace pensar – makes me think nos da consejos/estrategias – gives us advice/strategies nos pone muchos deberes – gives us a lot of homework		y crea un buen ambiente de trabajo	and creates a good working atmosphere	
							mientras que mi profe de matemáticas se enfada mucho	whereas my maths teacher gets angry loads
							y nos pone muchos deberes.	and gives us lots of homework.
							También, no aguanto el inglés dado que	Also I can’t stand English because
Uniform	Tengo/tenemos que llevar... - I/we have to wear (No) llevo/llevamos – I/we (don’t) wear Es obligatorio llevar... – it’s compulsory to wear No me gusta llevar – I don’t like wearing		un jersey – a jumper un vestido – a dress una camisa – a shirt una corbata – a tie una falda – a skirt unos zapatos – shoes unos calcetines – socks unas medias – tights	blanco – white negro – black morado – purple	porque/ya que/ dado que - because	mejora la disciplina – improves discipline limita la individualidad – limits individuality da un imagen positiva del insti – gives a positive impression of the school ahorra tiempo por la mañana – saves time in the morning	me aburre como una ostra.	it bores me to death.
					Cuando era más joven estudiaba la tecnología	When I was younger I used to study technology		
					pero no me gustaba ya que	but I didn’t like it because		
				Ojalá pudiera llevar... - If only I could wear...	unos vaqueros – jeans zapatillas de deporte – trainers	una sudadera – a hoody	era duro e inútil it was hard and useless	

Spanish – El colegio

School facilities	<p>En mi instituto hay... - in my school there is mi insti tiene – my school has Mi escuela primaria tenía – my primary school had En mi escuela primaria había – in my primary school there was...</p>	<p>un salón de actos – a hall un comedor – a canteen un campo de fútbol – a football pitch un patio – a yard/playground un gimnasio – a gym una piscina – a pool una biblioteca – a library una pista de tenis – a tennis court unos laboratorios – some science labs muchas aulas – lots of classrooms menos/más exámenes – more/less exams más oportunidades para hacer deporte – more sports opportunities</p>	<p>Mi insti es mixto y está situado</p>	<p>My school is mixed and it's located</p>	
	<p>Mi insti es... - my school is...</p>	<p>mixto – mixed masculino – all boys privado – private</p> <p>feminino – all girls público – state school</p>	<p>y un poco aburrido</p>	<p>en Liverpool, en el noroeste de Inglaterra.</p>	<p>in Liverpool, in the Northwest of England.</p>
	<p>Las clases comienzan a las _____ - classes start at ___ o'clock Las clases terminan a las _____ - classes end at ___ o'clock La hora de comer/el recreo dura ___ minutos – lunch/break lasts ___ minutes El día escolar es muy largo – the school day is really long</p>		<p>pero trabajo como un burro.</p>	<p>Las clases comienzan a las nueve menos cuarto</p>	<p>Lessons start at quarter to 8</p>
			<p>Me encanta mi insti porque tiene muchas instalaciones</p>	<p>y terminan a las tres y cinco.</p>	<p>and finish at 5 past 3.</p>

School rules	<p>No se debe – you mustn't Está prohibido - it's not allowed No se permite – you're not allowed</p>	<p>dañar las instalaciones – damage the facilities ser agresivo o grosero – be aggressive or rude correr en los pasillos – run in the corridors usar el móvil en clase – use your phone in lessons llevar zapatillas de deporte – wear trainers comer chicle – chew gum llevar joyas/maquillaje – wear jewellery/make up</p>	<p>como una biblioteca, una piscina y un campo de fútbol enorme.</p>	<p>I love my school because it has lots of facilities</p>
	<p>Se debe – you must Hay que – you have to Tienes que – you have to Se permite – you're allowed to</p>	<p>ser puntual – be on time respetar el turno de palabra – wait your turn to speak respetar a los demás – respect others trabajar duro – work hard escuchar en clase – listen in class hacer los deberes – do your homework</p>	<p>Mi escuela primaria era más pequeña</p>	<p>such as a library, a pool and an enormous football pitch.</p>
	<p>Las normas – the rules</p>	<p>son -are demasiado estrictas – too strict necesarias – necessary importantes - important</p>	<p>y no tenía una piscina</p>	<p>My primary school was smaller</p>
		<p>fomentan la buena disciplina – promote good discipline limitan la individualidad – limit individuality fastidian a los alumnos – annoy the pupils</p>	<p>pero había menos exámenes.</p>	<p>and it didn't have a pool</p>
			<p>Hay muchas reglas en mi insti</p>	<p>and I think that they promote good discipline</p>
			<p>por ejemplo no se debe ser agresivo o dañar las instalaciones</p>	<p>for example you mustn't be aggressive or damage the facilities</p>

Random	<p>Mi horario – my timetable La educación infantil/primaria – pre-school/primary education La educación secundaria – secondary education El bachillerato – A-Level equivalent in Spain La formación profesional – vocational training El instituto – secondary school Suspender/aprobar un examen – to fail/pass an exam</p>
--------	---

<p>A mi parecer puede ser muy útil.</p>	<p>In my opinion, it can be really useful.</p>
--	---

Spanish – La vía escolar			En mi opinión hay muchos problemas en la vida escolar de los jóvenes.	In my opinion there are lots of problems in the school life of young people.	
Extra curricular activities	Voy al club de... - I go/have been going to _____ club Soy miembro del club de... - I am/have been a member of _____ club	ajedrez – chess teatro – drama periodismo – journalism lectores – reading fotografía – photography ecoescuela – eco-schools	La presión del grupo y el acoso escolar	Peer pressure and bullying	
	Toco la trompeta/la batería/el piano/la guitarra – I play the trumpet/drums/piano/guitar Canto en el coro – I sing in the choir Participar en una competición nacional – to participate in a national competition Montar una obra de teatro – to put on a show		son problemas grandes y hay alumnos que sufren intimidación.	are big problems and there are pupils that suffer intimidation.	
	Las actividades extraescolares – extra- curricular activities	son un éxito – are an achievement te ayudan a olvidar las presiones del colegio – help you to forget school pressures te ayudan a desarrollar tus talentos – they help you to develop your talents te ayudan a hacer nuevos amigos – it helps you to make new friends te dan una sensación de logro – they give you a sense of achievement te dan más confianza – they give you more confidence te dan la oportunidad de expresarte – they give you the opportunity to express yourself		Sin embargo, el peor problema es el estrés de los exámenes.	However, the worst problem is exam stress.
	Acabo de ir a _____ con el insti – I have just been to _____ with school	donde – where	visitamos muchos monumentos – we visited lots of monuments sacamos muchas fotos – we took loads of photos probamos comida típica – we tried local food experimentamos la cultura – we experienced the culture aprendimos sobre... - we learnt about...	Hay mucha presión de sacar buenas notas y ir a la Universidad.	There is lots of pressure to get good grades and go to university.
	El estrés de los exámenes – the stress of exams El acoso escolar – bullying La presión del grupo – peer pressure		es un gran problema en mi insti – is a big problem in my school	participar en clase y hacer los deberes	participate in class and do your homework
Problems	Hay alumnos que... - there are students who...		y es esencial que asistas a todas las clases.	and it's essential that you attend all your lessons.	
	Hay alumnos que... - there are students who...		se burlan de otros – make fun of others hacen novillos – skip lessons son una mala influencia – are a bad influence sufren intimidación – are victims of intimidation	Además es importante que pidas apoyo cuando sea necesario.	Moreover, it's important that you ask for help when necessary.
Being a good student	Tienes que – you have to Hay que – you have to Se debe – you must	participar en clase – participate in lessons completar tus tareas – complete your homework estudiar mucho – study a lot hacer los deberes – do your homework organizar tu tiempo – organise your time pedir apoyo – ask for help repasar para los exámenes – revise for your exams asistir a todas las clases – attend all your lessons	...aunque sea difícil - ...although it's difficult ...cuando sea necesario - ...when it's necessary ...cuando tengas tiempo - ...when you have time	Para evitar el estrés voy al club de fotografía porque	To avoid stress I go to photography club because
	Es esencial que – it's essential that Es importante que – it's important that Es necesario que – it's necessary that	hagas tus deberes – you do your homework participes en clase – you participate in class repases para los exámenes – you revise for your exams tengas tiempo para estudiar – you have time to study estudies mucho – you study a lot pidas apoyo – you ask for help asistas a todas las clases – you attend all your lessons	140	las actividades extraescolares te ayudan a olvidar las presiones del colegio.	extracurricular activities help you to forget school pressures.
	Acabo de ir a Barcelona con mi insti		I have just been to Barcelona with school	donde visitamos muchos monumentos y	where we visited lots of monuments and
	experimentamos la cultura.		experienced the culture	Fue relajante y lo pasé bomba.	It was relaxing and I had a great time.

Spanish – Los trabajos						
Jobs	Soy - I am es - he/she is Me gustaría ser - I would like to be Voy a ser – I'm going to be Voy a trabajar como – I'm going to work as	abogado/a – lawyer albañil – bricklayer azafato/a – flight attendant engineer bailarín/a – dancer bombero/a – firefighter mechanic camarero/a – waiter/ess cantante – singer cocinero/a – cook contable – accountant dependiente/a – shop assistant electricista – electrician enfermero/a – nurse receptionist escritor/a – writer fontanero/a – plumber fotógrafo/a – photographer	funcionario/a – civil servant guía turístico/a – tour guide ingeniero/a – jardinero/a – gardener mecánico/a – músico/a – musician médico/a – doctor peluquero/a – hairdresser periodista – journalist periodista – journalist policía – police officer electricista – profesor/a – teacher recepcionista – socorrista – lifeguard soldado – lifeguard veterinario/a – vet	(porque es un trabajo...) (because) it is a ___ job	artístico – artistic emocionante – exciting exigente – demanding importante - important fácil – easy difícil – hard variado – varied repetitivo - repetitive con responsabilidad – with responsibility con buenas perspectivas – with good prospects con un buen sueldo – with a good salary	Si sacó buenas notas he decidido que If I get good grades I have decided that
	Tengo que... - I have to... Suelo... – I usually	cuidar a los clientes/pacientes – look after clients/patients contestar llamadas enseñar/vigilar a los niños – teach/look after the children reparar los coches – repair cars servir comida y bebida – serve food and drinks viajar por todo el mundo – travel the world				voy a trabajar como médico I'm going to work as a doctor
	Creo que soy... - I think that I am... Sería un(a) buen(a)... porque soy... - I would be a good... because I am...	ambicioso – ambitious creativo – creative fuerte – strong organizado – organised práctico – practical trabajador – hardworking	comprensivo – understanding extrovertido – extroverted/outgoing inteligente – clever paciente – patient serio – serious valiente – brave	ya que soy trabajador y comprensivo because I am hardworking and understanding	y es un trabajo con responsabilidad y con buen sueldo and it's a job with responsibility and a good salary	aunque puede ser muy exigente. although it can be very demanding.
Personality	Tengo un trabajo a tiempo parcial – I have a part time job Reparto periódicos – I deliver papers Trabajo de cajero/a – I work as a cashier housework Cocino – I cook Paso la aspiradora – I Hoover Pongo y quito la mesa – I set and clear the table Corto el césped – I cut the grass Mi jefe es amable – my boss is nice El horario es flexible – the hours are flexible	Hago de canguro – I babysit Ayudo con las tareas domésticas – I help with the housework Lavo los platos – I do the dishes Plancho la ropa – I iron Paseo al perro – I walk the dog	tengo que servir comida y bebida I have to serve food and drink	y cuidar a los clientes. and look after the clients.	Mi jefe es amable y el horario es flexible My boss is nice and the hours are flexible	ahora tengo un trabajo a tiempo parcial. Now I have a part time job.
	Se busca... - required Se requiere.... – required Una entrevista – an interview (No) hace falta experiencia – Experience (not) needed	Le escribo para solicitar el puesto de – I'm writing to apply for the post of... Le adjunto mi CV – I attach my CV (No) tengo experiencia previa – I (don't) have previous experience He estudiado/trabajado – I've studied/worked He hecho un curso de... - I've done a course in... Tengo buenas capacidades en comunicación – I have good communication skills	pero he estudiado las ciencias but I have studied science	trabajo en un restaurante como camarero y I work in a restaurant as a waiter and	pero he estudiado las ciencias but I have studied science	Trabajo en un restaurante como camarero y I work in a restaurant as a waiter and
	Le escribo para solicitar el puesto de – I'm writing to apply for the post of... Le adjunto mi CV – I attach my CV (No) tengo experiencia previa – I (don't) have previous experience He estudiado/trabajado – I've studied/worked He hecho un curso de... - I've done a course in... Tengo buenas capacidades en comunicación – I have good communication skills	y he hecho un curso de primeros auxilios. and I have done a first aid course.	Mi madre es enfermera y le encanta su trabajo My mum is a nurse and she loves her job	sin embargo dice que es un poco difícil. however she says it is a bit difficult.	pero he estudiado las ciencias but I have studied science	pero he estudiado las ciencias but I have studied science
Applying for a job	Se busca... - required Se requiere.... – required Una entrevista – an interview (No) hace falta experiencia – Experience (not) needed	Le escribo para solicitar el puesto de – I'm writing to apply for the post of... Le adjunto mi CV – I attach my CV (No) tengo experiencia previa – I (don't) have previous experience He estudiado/trabajado – I've studied/worked He hecho un curso de... - I've done a course in... Tengo buenas capacidades en comunicación – I have good communication skills	y he hecho un curso de primeros auxilios. and I have done a first aid course.	Mi madre es enfermera y le encanta su trabajo My mum is a nurse and she loves her job	pero he estudiado las ciencias but I have studied science	
	Se busca... - required Se requiere.... – required Una entrevista – an interview (No) hace falta experiencia – Experience (not) needed	Le escribo para solicitar el puesto de – I'm writing to apply for the post of... Le adjunto mi CV – I attach my CV (No) tengo experiencia previa – I (don't) have previous experience He estudiado/trabajado – I've studied/worked He hecho un curso de... - I've done a course in... Tengo buenas capacidades en comunicación – I have good communication skills	y he hecho un curso de primeros auxilios. and I have done a first aid course.	Mi madre es enfermera y le encanta su trabajo My mum is a nurse and she loves her job	pero he estudiado las ciencias but I have studied science	pero he estudiado las ciencias but I have studied science

Spanish – Los trabajos			
Work experience	Hice mis practicas laborales en... - I did my work experience in... Pasé quince días trabajando en... - I spend a fortnight working in...	un polideportivo – a sports centre una granja – a farm una agencia de viajes – a travel agents una escuela – a school una fábrica de juguetes – a toy factory una oficina – an office una tienda benéfica/solidaria – a charity shop la empresa de mi madre – my mum’s company	El año pasado hice mis practicas laborales en Last year I did my work experience in
			la empresa de mi tío. my uncle’s company.
			Aprendí muchas nuevas habilidades porque I learned lots of new skills because
	Cada día/todos los días... - every day	cogía el autobús/el metro – I got the bus/metro empezaba/terminaba a... - I started/finished at... hacía una variedad de tareas – I did a variety of tasks llevaba ropa elegante – I wore smart clothes sacaba fotocopias – I did photocopying ponía folletos en los estantes – I put leaflets on the shelves	cada día hacía una variedad de tareas y every day I did a variety of tasks and
Aprendí – I learned	muchas nuevas habilidades –lots of new skills a trabajar en equipo –to work in a team a usar – I to use	por eso yo sé que en el futuro, therefore, I know that in the future	
A gap year	Si pudiera tomarme un año sabático – If I could take a gap year... Si tuviera bastante dinero – If I had enough money...	apoyaría un proyecto mediambiental – I would support an environmental project aprendería a esquiar – I would learn to ski ayudaría a construir un colegio – I would help to build a school buscaría un trabajo – I would look for a job enseñaría inglés – I would teach English ganaría mucho dinero – I would earn a lot of money iría a España donde... - I would go to Spain where... mejoraría mi nivel de español – I would improve my level of Spanish nunca olvidaría la experiencia – I would never forget the experience trabajaría en un orfanato – I would work in an orphanage viajaría con mochila por todo el mundo – I would go backpacking around the world.	quiero montar mi propio negocio I want to open my own business
			porque el éxito y el dinero me importan mucho. because success and money are really important to me.
			Tengo la intención de aprobar mis exámenes I intend to pass my exams
			y ir a la universidad para estudiar los empresariales. and go to uni to study business.
The future	El desempleo/el paro – unemployment El dinero – money El éxito – success El fracaso – failure El matrimonio – marriage La independencia - independence	me interesa - interests me me importa - matters to me me preocupa - worries me	Antes, si pudiera, tomaría un año sabático y buscaría un trabajo Before, if I could, I would take a gap year and I would look for a job
	Espero... - I hope to... me gustaría – I would like to... Pienso – I plan to/intend to quiero – I want to Tengo la intención de – I intend to Voy a – I’m going to	aprender a conducir – learn to drive aprobar mis exámenes – pass my exams casarme – get married conseguir un buen empleo – get a good job montar mi propio negocio – set up my own business tener hijos – have children	para ganar mucho dinero. to earn lots of money.
	Buscaré un trabajo – I will look for a job Compartiré piso con... - I will share a flat with Me iré de casa – I will leave home Me casaré – I will get married Seguiré estudiando en mi insti – I will carry on studying in my school Trabajaré como... - I will work as... No sé que hacer en el futuro – I don’t know what to do in the future		Espero casarme y tener hijos I hope to get married and have children
			sin embargo voy a dedicarme a mi trabajo however I’m going to focus on my job
		porque el paro me preocupa mucho. because unemployment really worries me.	

Spanish – Mi Casa

My house	<p>Vivo en – I live in</p> <p>Vive en – he/she lives in</p> <p>Vivimos en – we live in</p> <p>Viven en – they live in</p>	<p>una casa – a house</p> <p>una casa individual – a detached house</p> <p>una casa adosada – a semi detached house</p> <p>un chalet/chaleté – a bungalow</p> <p>un piso/un apartamento – a flat/apartment</p> <p>un bloque de pisos – a block of flats</p> <p>una residencia de ancianos – an old people's home</p> <p>una finca/una granja – a farm</p>	<p>que – which</p>	<p>está en... - it's in...</p>	<p>el campo – the countryside</p> <p>la costa – the coast</p> <p>las montañas/la sierra – the mountains</p> <p>las afueras – the suburbs/outskirts</p> <p>un barrio de la ciudad – a district/suburb of the city</p> <p>el primer/segundo/tercer/cuarto piso de un edificio antiguo – it's on the first/second/third/fourth floor of an old building.</p> <p>el norte – the north</p> <p>el este – the east</p> <p>el oeste – the west</p> <p>el sur – the south</p>	<p>Vivo en una casa adosada que</p> <p>está en las afueras de Liverpool</p> <p>en el noroeste de Inglaterra.</p> <p>En la casa hay ocho habitaciones.</p> <p>Abajo hay una cocina, un comedor y un salón enorme</p> <p>y arriba hay cuatro dormitorios y un cuarto de baño.</p> <p>Me encanta mi casa ya que es hermosa y espaciosa</p> <p>aunque es un poco viejo.</p> <p>Lo que más me gusta es que tengo mi propio dormitorio</p> <p>sin embargo mi dormitorio puede ser muy desordenado</p> <p>y necesita una reforma</p> <p>aunque cuando era niño vivía en un piso pequeño</p> <p>y tenía que compartir mi dormitorio con mi hermano menor.</p> <p>¡Fue un desastre!</p> <p>Discutíamos todos los días.</p> <p>Cuando sea mayor me gustaría vivir</p> <p>en una casa más grande en la costa</p>	<p>I live in a semi-detached house which</p> <p>is in the outskirts of Liverpool</p> <p>in the Northwest of England.</p> <p>In the house there are 8 rooms.</p> <p>Downstairs there is a kitchen, a dining room and an enormous living room</p> <p>and upstairs there are four bedrooms and a bathroom.</p> <p>I love my house because it's pretty and spacious</p> <p>although it's a bit old.</p> <p>The thing I like the most is that I have my own room</p> <p>however my room can be very messy</p> <p>and it needs redecorating</p> <p>although when I was a child I used to live in a small flat</p> <p>and I had to share a room with my younger brother.</p> <p>It was a disaster!</p> <p>We used to argue every day.</p> <p>When I'm older I would like to live</p> <p>in a bigger house on the coast.</p>
	<p>En la casa (no)hay... - in the house there is(n't)</p> <p>Tiene... - it has...</p> <p>Arriba hay – upstairs there is</p> <p>Abajo hay – downstairs there is</p> <p>Afuera hay - outside there is</p>	<p>cinco habitaciones/salas – five rooms</p> <p>dormitorios – three bedrooms</p> <p>cuartos de baño – two bathrooms</p> <p>una cocina – a kitchen</p> <p>un comedor – a dining room</p> <p>un estudio/un despacho/una oficina – an office</p> <p>un comedor – a dining room</p> <p>un sótano – a basement</p>	<p>un salón – a living room</p> <p>un aseo – a toilet (room)</p> <p>una entrada – an entrance</p> <p>una terraza – a terrace/patio</p> <p>un garaje – a garage</p> <p>jardín – a garden</p> <p>el césped – the lawn</p>	<p>acogedor/a – comfy/cosy</p> <p>espacioso/a – spacious</p> <p>lujoso/a – luxurious</p> <p>limpio - clean</p> <p>bien equipada – well equipped</p> <p>recien renovado – recently renovated</p>	<p>Me encanta mi casa ya que es hermosa y espaciosa</p> <p>aunque es un poco viejo.</p> <p>Lo que más me gusta es que tengo mi propio dormitorio</p> <p>sin embargo mi dormitorio puede ser muy desordenado</p> <p>y necesita una reforma</p> <p>aunque cuando era niño vivía en un piso pequeño</p> <p>y tenía que compartir mi dormitorio con mi hermano menor.</p> <p>¡Fue un desastre!</p> <p>Discutíamos todos los días.</p> <p>Cuando sea mayor me gustaría vivir</p> <p>en una casa más grande en la costa</p>	<p>I love my house because it's pretty and spacious</p> <p>although it's a bit old.</p> <p>The thing I like the most is that I have my own room</p> <p>however my room can be very messy</p> <p>and it needs redecorating</p> <p>although when I was a child I used to live in a small flat</p> <p>and I had to share a room with my younger brother.</p> <p>It was a disaster!</p> <p>We used to argue every day.</p> <p>When I'm older I would like to live</p> <p>in a bigger house on the coast.</p>	
	<p>Mi casa/piso es... - My house/flat is...</p>	<p>moderno/a – modern</p> <p>antiguo/a – old fashioned</p> <p>pequeño/a – small</p> <p>– enormous</p> <p>nuevo/a – new</p> <p>viejo/a – old</p>	<p>caro/a – expensive</p> <p>barato/a – cheap</p> <p>hermoso/a – beautiful</p> <p>bonito/a – pretty</p> <p>feo/a – ugly</p> <p>cómodo/a – comfy</p>	<p>acogedor/a – comfy/cosy</p> <p>espacioso/a – spacious</p> <p>lujoso/a – luxurious</p> <p>limpio - clean</p> <p>bien equipada – well equipped</p> <p>recien renovado – recently renovated</p>	<p>Me encanta mi casa ya que es hermosa y espaciosa</p> <p>aunque es un poco viejo.</p> <p>Lo que más me gusta es que tengo mi propio dormitorio</p> <p>sin embargo mi dormitorio puede ser muy desordenado</p> <p>y necesita una reforma</p> <p>aunque cuando era niño vivía en un piso pequeño</p> <p>y tenía que compartir mi dormitorio con mi hermano menor.</p> <p>¡Fue un desastre!</p> <p>Discutíamos todos los días.</p> <p>Cuando sea mayor me gustaría vivir</p> <p>en una casa más grande en la costa</p>	<p>I love my house because it's pretty and spacious</p> <p>although it's a bit old.</p> <p>The thing I like the most is that I have my own room</p> <p>however my room can be very messy</p> <p>and it needs redecorating</p> <p>although when I was a child I used to live in a small flat</p> <p>and I had to share a room with my younger brother.</p> <p>It was a disaster!</p> <p>We used to argue every day.</p> <p>When I'm older I would like to live</p> <p>in a bigger house on the coast.</p>	
	Furniture	<p>una mesa – a table</p> <p>un ascensor – a lift</p> <p>sillas – some chairs</p> <p>una butaca/un sillón – an armchair</p> <p>una alfombra – a rug</p> <p>una cama – a bed</p> <p>un armario – a wardrobe</p> <p>una luz - a light</p> <p>calefacción – heating</p>	<p>una librería – a bookcase</p> <p>una ducha – a shower</p> <p>un espejo – a mirror</p> <p>las cortinas – the curtains</p> <p>una moqueta – a carpet</p> <p>las paredes – the walls</p> <p>la escalera – the stairs</p> <p>un fregadero – a sink</p> <p>un lavabo – a wash basin</p>	<p>una lavadora – a washing machine</p> <p>un lavaplatos – a dishwasher</p> <p>un microondas – a microwave</p> <p>un horno – an oven</p> <p>muebles – furniture</p> <p>la puerta – the door</p> <p>la ventana – the window</p> <p>una nevera/un frigorífico – a fridge</p> <p>el congelador – a freezer</p>	<p>Me encanta mi casa ya que es hermosa y espaciosa</p> <p>aunque es un poco viejo.</p> <p>Lo que más me gusta es que tengo mi propio dormitorio</p> <p>sin embargo mi dormitorio puede ser muy desordenado</p> <p>y necesita una reforma</p> <p>aunque cuando era niño vivía en un piso pequeño</p> <p>y tenía que compartir mi dormitorio con mi hermano menor.</p> <p>¡Fue un desastre!</p> <p>Discutíamos todos los días.</p> <p>Cuando sea mayor me gustaría vivir</p> <p>en una casa más grande en la costa</p>	<p>I love my house because it's pretty and spacious</p> <p>although it's a bit old.</p> <p>The thing I like the most is that I have my own room</p> <p>however my room can be very messy</p> <p>and it needs redecorating</p> <p>although when I was a child I used to live in a small flat</p> <p>and I had to share a room with my younger brother.</p> <p>It was a disaster!</p> <p>We used to argue every day.</p> <p>When I'm older I would like to live</p> <p>in a bigger house on the coast.</p>	
		<p>delante de – in front of</p> <p>detrás de – behind</p> <p>al lado de – next to</p> <p>cerca de – near</p> <p>lejos de – far from</p> <p>debajo de – under</p> <p>encima de – above/on top of</p> <p>en – in/on</p> <p>a la derecha de – to the right of</p> <p>a la izquierda de – to the left of</p>	<p>Tengo mi propio dormitorio – I have my own room</p> <p>(No) tengo que compartir mi dormitorio – I (don't) have to share my room</p> <p>La habitación que más me gusta es... - the room I like the most is...</p> <p>El aseo necesita una reforma – the toilet needs remodelling/redecorating</p> <p>Mi dormitorio puede ser muy desordenado – my room can be very messy</p> <p>A mi hermano no le gusta nuestra casa porque... - my brother doesn't like our house because...</p>	<p>Me encanta mi casa ya que es hermosa y espaciosa</p> <p>aunque es un poco viejo.</p> <p>Lo que más me gusta es que tengo mi propio dormitorio</p> <p>sin embargo mi dormitorio puede ser muy desordenado</p> <p>y necesita una reforma</p> <p>aunque cuando era niño vivía en un piso pequeño</p> <p>y tenía que compartir mi dormitorio con mi hermano menor.</p> <p>¡Fue un desastre!</p> <p>Discutíamos todos los días.</p> <p>Cuando sea mayor me gustaría vivir</p> <p>en una casa más grande en la costa</p>	<p>I love my house because it's pretty and spacious</p> <p>although it's a bit old.</p> <p>The thing I like the most is that I have my own room</p> <p>however my room can be very messy</p> <p>and it needs redecorating</p> <p>although when I was a child I used to live in a small flat</p> <p>and I had to share a room with my younger brother.</p> <p>It was a disaster!</p> <p>We used to argue every day.</p> <p>When I'm older I would like to live</p> <p>in a bigger house on the coast.</p>		
		<p>delante de – in front of</p> <p>detrás de – behind</p> <p>al lado de – next to</p> <p>cerca de – near</p> <p>lejos de – far from</p> <p>debajo de – under</p> <p>encima de – above/on top of</p> <p>en – in/on</p> <p>a la derecha de – to the right of</p> <p>a la izquierda de – to the left of</p>	<p>Tengo mi propio dormitorio – I have my own room</p> <p>(No) tengo que compartir mi dormitorio – I (don't) have to share my room</p> <p>La habitación que más me gusta es... - the room I like the most is...</p> <p>El aseo necesita una reforma – the toilet needs remodelling/redecorating</p> <p>Mi dormitorio puede ser muy desordenado – my room can be very messy</p> <p>A mi hermano no le gusta nuestra casa porque... - my brother doesn't like our house because...</p>	<p>Me encanta mi casa ya que es hermosa y espaciosa</p> <p>aunque es un poco viejo.</p> <p>Lo que más me gusta es que tengo mi propio dormitorio</p> <p>sin embargo mi dormitorio puede ser muy desordenado</p> <p>y necesita una reforma</p> <p>aunque cuando era niño vivía en un piso pequeño</p> <p>y tenía que compartir mi dormitorio con mi hermano menor.</p> <p>¡Fue un desastre!</p> <p>Discutíamos todos los días.</p> <p>Cuando sea mayor me gustaría vivir</p> <p>en una casa más grande en la costa</p>	<p>I love my house because it's pretty and spacious</p> <p>although it's a bit old.</p> <p>The thing I like the most is that I have my own room</p> <p>however my room can be very messy</p> <p>and it needs redecorating</p> <p>although when I was a child I used to live in a small flat</p> <p>and I had to share a room with my younger brother.</p> <p>It was a disaster!</p> <p>We used to argue every day.</p> <p>When I'm older I would like to live</p> <p>in a bigger house on the coast.</p>		
		<p>delante de – in front of</p> <p>detrás de – behind</p> <p>al lado de – next to</p> <p>cerca de – near</p> <p>lejos de – far from</p> <p>debajo de – under</p> <p>encima de – above/on top of</p> <p>en – in/on</p> <p>a la derecha de – to the right of</p> <p>a la izquierda de – to the left of</p>	<p>Tengo mi propio dormitorio – I have my own room</p> <p>(No) tengo que compartir mi dormitorio – I (don't) have to share my room</p> <p>La habitación que más me gusta es... - the room I like the most is...</p> <p>El aseo necesita una reforma – the toilet needs remodelling/redecorating</p> <p>Mi dormitorio puede ser muy desordenado – my room can be very messy</p> <p>A mi hermano no le gusta nuestra casa porque... - my brother doesn't like our house because...</p>	<p>Me encanta mi casa ya que es hermosa y espaciosa</p> <p>aunque es un poco viejo.</p> <p>Lo que más me gusta es que tengo mi propio dormitorio</p> <p>sin embargo mi dormitorio puede ser muy desordenado</p> <p>y necesita una reforma</p> <p>aunque cuando era niño vivía en un piso pequeño</p> <p>y tenía que compartir mi dormitorio con mi hermano menor.</p> <p>¡Fue un desastre!</p> <p>Discutíamos todos los días.</p> <p>Cuando sea mayor me gustaría vivir</p> <p>en una casa más grande en la costa</p>	<p>I love my house because it's pretty and spacious</p> <p>although it's a bit old.</p> <p>The thing I like the most is that I have my own room</p> <p>however my room can be very messy</p> <p>and it needs redecorating</p> <p>although when I was a child I used to live in a small flat</p> <p>and I had to share a room with my younger brother.</p> <p>It was a disaster!</p> <p>We used to argue every day.</p> <p>When I'm older I would like to live</p> <p>in a bigger house on the coast.</p>		

Prepositions

OCR Sports studies - Contemporary Issues in Sport- Learning Outcome 1 - Understand the issues which affect participation in Sport

Learning Outcome 1	Key Elements that must be covered	Key Terms	Explanation
Understand the issues which affect participation in sport	The different user groups who participate in sport	User Groups	E.g. ethnic minorities, retired people/people over 50, families with young children, single parents, children, teenagers, disabled, unemployed/economically disadvantaged, working singles and couples.
	The possible barriers which affect participation in sport (with reference to the different user groups)	Employment/time Work restrictions and family commitments Disposable income Accessibility of facilities/equipment Lack of role models Provision of activities Awareness of activity provision Portrayal of gender issues by the media	Not much free time available. Women still seen as bringing up the family and not being involved in sport. Cannot afford cost of participation. Transport not available, no disabled access. Few ethnic role models, few female role models. Limited activities on offer. What is currently available. Mainly male sports shown on TV.
	The solutions to barriers which affect participation in sport	Provision Promotion Access Participation Environment Spectatorship Media Coverage Success for teams and individuals Role Models Acceptability	Programming, providing and planning of times. Targeted promotions, using role models and initiatives. Access to facilities, equipment, sensible pricing. Football has widespread mass participation. Snow sport involve trips away or artificial terrain. Live professional rugby matches readily available. BBC1 sole coverage of Wimbledon – but Ashes not on free to air TV. Sir Hoy’s success at the Olympics has increased participation in cycling. Lack of role models e.g. lack of Asian footballers. For example, opposition to horse racing due to perceived animal cruelty.
	How the factors which can impact upon the popularity of sport in the UK relate to specific sporting	Current trends in the popularity of different sports in the UK Growth of new/emerging sports in the UK	Studies and statistics show that fishing, cycling and swimming are the most popular growing sports in the UK. For example, Ultimate Frisbee is increasing in popularity.

Contemporary Issues in Sport- Learning Outcome 2 – Know about the role of sport in promoting values			
Learning Outcome 2	Key Elements that must be covered	Key Terms	Explanation
Know about the role of sport in promoting values	Values which can be promoted through sport	Team Spirit	Learning how to work together and support others by playing as part of a team
		Fair Play	Learning the importance of adhering to rules and being fair to others through playing sport
		Citizenship	Get involved in your local community through sport
		Tolerance	Developing understanding of different countries and cultures through sport
		Inclusion	Initiatives to get under-represented social groups involved in sport
		National Pride	Supporters and performers unite behind country in international events
		Excellence	Striving to be the best that you can in your favourite sport
	The Olympic and Paralympic movement	The Creed	“The most important thing is not to win but to take part, just as the most important thing in life is not the triumph but the struggle. The essential thing is not to have conquered, but to have fought well.” Pierre De Coubertin
		The Symbol	Five interlocking rings represent the union of the five continents
		The Olympic and Paralympic values	Respect, Excellence, Friendship, Courage, Determination, Inspiration and Equality
	Other initiatives and events which promote values through sport (e.g. FIFA’s ‘Football for Hope’ campaign	Examples	ECB’s “Chance to Shine” Sport Relief Premier League’s Creating Chances initiative £10m Sport England Scheme
	The importance of etiquette and sporting behaviour of both performers and spectators	Reasons for observing etiquette and sporting behaviour	Fairness, promoting values, safety of participants etc.
		Sportsmanship	E.g. football giving the ball to the opposition when they have kicked it out when an injury occurs to your team
		Gamesmanship	E.g. time wasting
		Spectator Etiquette	E.g. quiet during rallies at Wimbledon, quiet during play in snooker, quiet during the playing of national anthems
		Sports Initiative to break down barriers	E.g. Kick Racism out of Football
	The use of performance-enhancing drugs in sport	Reason why they are used	Pressure to succeed, pressure to succeed as a Nation
		Reasons against use	Long term ill health, consequences when found guilty, unfair advantage
		World Anti-Doping Agency (WADA) – whereabouts rule. Testing methods	Blood sample, urine sample, hair sample, nail sample
		Current initiatives	Sanctions
		Drug offences by elite performers	E.g. Dwain Chambers & David Millar

Contemporary Issues in Sport- Learning Outcome 3 – Know about the role of sport in promoting values			
Learning Outcome 3	Key Elements that must be covered	Key Terms	Explanation
Understand the importance of hosting major sporting events	The features of major sporting events	o Regularity/scheduling, i.e.	– ‘one-off’ (e.g. hosting the Olympic and Paralympic Games will only happen in any given country/ city once in a generation) – regular (e.g. UEFA Champions League final is an annual event which a city could host more than once in a relatively short period of time but it is shared around as a rule)
		o Regular and recurring	(e.g. hosting a Formula 1 Grand Prix would be annual and is normally contracted for a period of years to the host country/city)
		o International element	i.e. involves competitors, and therefore supporters/interest, from more than one country (e.g. the Olympic and Paralympic Games; FIFA World Cup; Rugby Union Heineken Cup)
	Level of investment	– required – which may be attracted	Depending if the bid is won, host and create a potential legacy for the country
	Potential ‘legacy’	– sporting, social, economic	Money, tourism, new facilities etc.
	The potential benefits and drawbacks of cities/countries hosting major sporting events	Benefits	– investment in developing/improving transport system – increased direct and indirect tourism – commercial benefits (e.g. money from sponsors, external investment which would not otherwise have been attracted) – participation may increase in some sports – infrastructure/social facilities built can be used by people who live in the area where the events have been held – sports facilities will be improved or new facilities built – raise the status of the country/‘shop window effect’ – morale of the country is raised
	The potential benefits and drawbacks of cities/countries hosting major sporting events	Drawbacks	– bidding to host can be expensive and you may not be awarded the event – event can cost hosts more than it raises in revenue – facilities can end up not being used after the event if not planned properly – can have negative impact on the status of the country if event runs poorly/is disorganised – while hosting the event will help to promote one area of sport, others may suffer. – can cause divisions in the country if the specific area which hosted (e.g. one city) is perceived to have been the only beneficiary
	The links between potential benefits and drawbacks and legacy	- Many of the benefits and drawbacks are relevant to more than one of the legacy areas (sporting, social, economic)	(E.g. sports facilities could have both sporting and social legacy).
			146

Contemporary Issues in Sport- Learning Outcome 4 – Know about the role of national governing bodies in sport			
Learning Outcome 4	Key Elements that must be covered	Key Terms	Explanation
Know about the role of national governing bodies in sport	Promotion	<ul style="list-style-type: none"> – promoting participation – increasing the popularity of the sport – exposure in the media 	<ul style="list-style-type: none"> – (e.g. equal opportunities policies) – (e.g. schemes for schools) – (e.g. press releases, public relations)
	Development	<ul style="list-style-type: none"> – elite training and development – coaching awards) – training of officials 	<ul style="list-style-type: none"> – (e.g. national performance squads and national teams in many sports) – (e.g. England Netball UK Coaching Certificate coaching awards from Level 1 upwards – (e.g. the Rugby Football Union has a young officials award which can be used as a starting point to becoming an official)
	Infrastructure	<ul style="list-style-type: none"> – competitions and tournaments (e.g. England Basketball organise national competitions for over 500 teams from senior to under-13 level) – rule-making and disciplinary procedures (e.g. the Football Association has a disciplinary procedure for any individual or team connected with the sport) – providing a national directive and vision – providing guidelines, support and insurance to members – assist with facility developments 	<ul style="list-style-type: none"> – (e.g. England Basketball organise national competitions for over 500 teams from senior to under-13 level) – (e.g. the Football Association has a disciplinary procedure for any individual or team connected with the sport)
	Policies and initiatives	<ul style="list-style-type: none"> – anti-doping policies – promoting etiquette and fair play – community programmes – information and guidance on safeguarding 	<ul style="list-style-type: none"> – (e.g. the England and Wales Cricket Board has an anti-doping policy and has a list of all substances which are permitted and those that are banned) – (e.g. The Football Association’s ‘Respect’ campaign) – (e.g. Amateur Swimming Association’s ‘Swimfit’)
	Funding	<ul style="list-style-type: none"> – lobby for, and receive, funding – distribution of funds 	<ul style="list-style-type: none"> i.e. – grants – government, non-government – membership – subscriptions/match fees – lottery funding – income from media/ sponsorship/advertising – private investment and donations – merchandising – admission charges – fund raising events – provide members with advice about funding
	Support	<ul style="list-style-type: none"> – providing technical advice – providing location and contact details for local clubs, how to get started in the sport etc. 	<ul style="list-style-type: none"> (e.g. England Hockey provide information about playing surfaces)
			147