Essential Knowledge Book

All Subjects (Maths Foundation)

Year 10

Academic Year 2023/24

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

Todmorden High School
"Enabling individuals to unlock their unique potential"

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

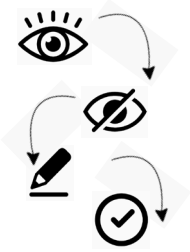
In lesson

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.

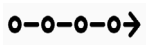
When planning your written answers in lessons, refer to your knowledge organiser for that subject to ensure you have correct and detailed knowledge.

As revision



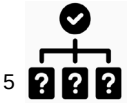
Look-Cover-Write-Check

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.

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

Isolation
Where does Scrooge live and how is he described as he walks through the streets of London?

Christmas
How is it presented in different homes and places?

Charity
Which characters are charitable, and why, in the 1840s, was charity particularly important?

Social injustice
Was society fair and equal? What does Dickens feel about this?

Ghosts / supernatural
How many different examples are there and why did this appeal to the Victorians?

Family
Think about the different examples of family shown and how they are presented.

Poverty
Which characters are poor? What are their lives like?

Death
Who's deaths do we see? How does Dickens show us these deaths?

Redemption
Is Scrooge saved from sin or evil? When? How?

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.

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	◯	Marriage	◯
Religion	◯	Honour	◯
Family	◯	Fate	◯
Gender	◯	Conflict	◯
Age	◯		

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.

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 happed 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 *Tennyson, 1854*	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 *Owen, 1917-18*	An authentic poem based on Owens' own experience on the front line when in the war, he specifically refers the horrendous winter when living in the trenches.	Alliteration - **'f**lowing **f**lakes that **f**lock'
Bayonet Charge *Hughes, 1957*	The poem focuses on a single solder'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.	**Personfification – '**Bullets smacking the belly out of the air'
Poppies *Weir, 2009*	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, **like** a treasure chest'
War Photographer *Duffy, 1985*	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 *Armitage, 2008*	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 *Garland, 2013*	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 *Shelley, 1817*	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 *Blake, 1794*	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 *Wordsworth, 1850*	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 *Browning, 1842*	A Duke is showing a visitor a portrait of his Duchess (former wife) who is now dead. Whilst observing the painting he tells the visitor that the Duchess was flirtatious & displeased him. The Duke is insanely jealous and probably had the Duchess killed.	Euphemism - I gave commands; then all smiles stopped together
Storm on the Island *Heaney, 1966*	The narrator describes how a community are waiting to be hit by a storm. It is obvious that they have been hit before because of the landscape of the island. 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 *Dharker, 2006*	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 *Rumens, 1993*	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 *Agard, 2007*	The narrator discusses his identity & emphasises how identity is closely linked to history & understanding your own history. In school he was taught British history & not about his Caribbean roots. 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)	• 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)	• 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)	• 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)	DESCRIBE: • Looking into the distance there is… • Beyond… • The colours of the… • Hidden behind… NARRATE: • 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:

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

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)	• 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)	• 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)	• 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)	• 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...

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**

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

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 **Don't forget to PLAN**	Speech: to persuade, inform and entertain • A clear address to an audience • Effective/fluently 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. • 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. • 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. • 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. • An effective introduction and convincing conclusion • Effectively/fluently 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 don 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.

Place Value – what the digits represent in a number

Decimal places – the digits after the decimal point

Multiplying by 10 – all digits move one place to the left

Dividing by 10 – all digits move one place to the right

Multiplying by 100 – all digits move two places to the left

Dividing by 100 – all digits move two place to the right

Rounding – making the number simpler but keeping it close to what it was.

Eg) 34 + 29, 89 – 23,
82 x 21 and 114 ÷ 6

The 4 Operations – These are +, -, x and ÷. You can answer questions involving **whole** numbers and these four operations.

Even Number – Can be divided exactly by 2. They end in **2, 4, 6, 8, 0.**

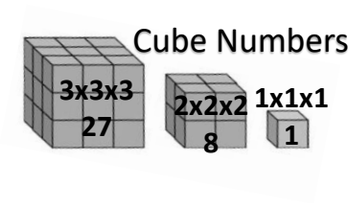
Odd Numbers – Can not be divided exactly by 2. They end in **1, 3, 5, 7, 9.**

Factors – Numbers that divide into a number exactly.

Multiples – Extended times tables

Square Numbers – A number has been multiplied by itself.

Cube Numbers – A number has been multiplied by itself three times.



Midpoint – You need to be able to find the midpoint value between two numbers.

Foundation – Unit 1 - Number

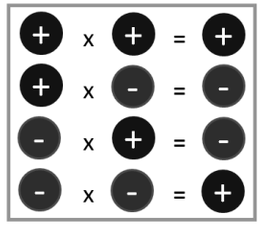
BIDMAS	What we use to do a calculation its called the priority of operations.
Not equal sign	The not equal to sign is an equal sign with a line through it.
Function	A rule that changes an input to an output
Inverse Function	The rule that changes the number back again (reverses the function)
Roots	Square root is the inverse of squaring Cube root is the inverse of cubing.
Decimal places (d.p.)	To round to 1 d.p. look at the 2nd d.p. To round to 2 d.p. look at the 3rd d.p.
Dividing by a decimal	Write as a fraction then multiply both numbers by (10, 100,...) until you have a whole number to divide by.
Converting units	1m=100cm, 1km=1000m etc…..
Significant figures (s.f.)	Digits that carry meaningful contributions To round to 3 s.f. look at the 4th s.f. etc…
Estimating	Rounding before doing the calculation.
Dealing with a fraction in BIDMAS	For $\frac{calculation\ 1}{calculation\ 2}$ work out (calculation 1)÷(calculation 2) using the priority of operations (BIDMAS).
Prime Number	Prime has only two factors, 1 and itself.
Highest Common Factor	HCF –– the largest number that is a factor of both numbers.
Lowest Common Multiple	LCM –– the smallest number that is a multiple of both numbers.
Surd	A number that still has a square root in, its an exact value – its not been rounded.
Base number	This is the number that is being multiplied by itself.
Index (Power)	The small number written above the base
Multiplying powers	Add the indices if base numbers the same
Dividing powers	Subtract the indices
Prefix	Some powers of 10 have a prefix – e.g. 1000 is kilo
Prime factor decomposition	All numbers can be written as a product of prime factors.

Foundation – Unit 2 - Algebra

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.

Highest Common Factor (HCF): the biggest factor in both lists.

Lowest Common Multiple (LCM): the smallest number in both lists.

Square Numbers – when an integer has been multiplied by itself.

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

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

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

Substitution: Swapping an algebraic letter for its value.

Variable	The letters used in algebraic expressions to stand for numbers. Called a variable because they vary.
Multiplying powers	Add the indices if base numbers the same
Dividing powers	Subtract the indices if base numbers the same
Anything to the power zero	Is one
Substitution	Swapping an algebraic letter for its value.
Expanding a Single Bracket	Multiply each term inside the bracket by the term outside.
Factors	Numbers or letters that divide into a term exactly.
Common Factors	A factor of two or more terms.
Identity ≡	Two expressions are equal for all values of the variable.
Not equal ≠	Used to show that two expressions are not equal.
Multiply Algebraic Terms	Multiply the numbers first and then the letters.
Divide Algebraic Terms	Divide the numbers first and then the letters.
Simplifying Terms	• Write numbers before letters (for coefficients). • Write letters in alphabetical order. • Write higher power terms first.

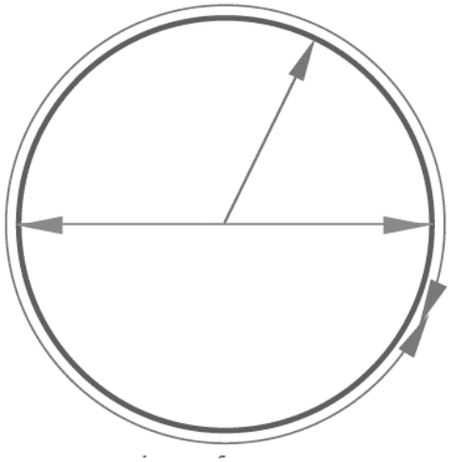
Foundation – Unit 3 – Graphs, Tables and Charts

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

$$M = \frac{x_1 + x_2}{2}$$

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

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



Discrete Data	Only take particular values. You can write groups such as 1-5, 6-10.
Continuous Data	Measured, can have any value. Write inequalities for the groups with no gaps between them.
Data Collection Sheet	A table to record data as you collect it.
Distance Chart	Show the distance between several places.
Line Graph	Useful for identifying trends.
Trend	The general direction of change.
Histogram	Type of frequency diagram used for grouped continuous data. There are no gaps between the bars.
Stem and Leaf Diagram	Numerical data split into “stems” and “leaves”. The numbers are placed in order.
Outlier	A value that does not fit the pattern of the data. You can ignore an outlier if it due to a measuring or recording error.
Back-to-back stem and leaf diagram	Compares two sets of data. Needs to have two keys.
Frequency Polygon	Plot the midpoint against the frequency using straight lines.
Correlation	Shows that there may be a link/relationship between two events. Correlation does not show causation (does not show that one event caused the other).

To simplify a fraction, divide the numerator and denominator by the greatest common factor.

Percentage of a quantity:
Find 1% by dividing by 100, then multiply by required percentage.
OR Use combinations of 10% (divide by 10) and 1% (divide by 100) to find required amount.

1000 grams = 1 kilogram

To add or subtract fractions, they must have the same denominators. Use the LCM to find equivalent fractions with the same denominator.

1 million = 1,000,000

Foundation – Unit 4 – Fractions and Percentages

Comparing Fractions	To compare fractions, write them with the same denominator then compare numerators.
Multiply Fractions	Multiply the numerators and multiply the denominators.
Add or Subtract Fractions	Write them with a common denominator then add or subtract the numerators.
Fraction of an Amount	Divide by the denominator, multiply by the numerator.
Unit Fraction	A unit fraction has a numerator of 1.
Reciprocal	The reciprocal of a fraction is the “upside down” fraction.
Decimal to a fraction	The denominator is the smallest place value.
Fraction to a percentage	Convert the fraction to one with the denominator of 100, then the numerator is the percentage.
Deposit	First payment towards the cost of something.
Balance	The remaining amount which is owing after a deposit.
Increase by a percentage	Work out the increase and add to the original number.
Decrease by a percentage	Work out the decrease and subtract from the original number.
VAT (Value Added Tax)	VAT is tax charged at 20% on most goods and services.

I**nverse operations** are opposite **operations**. They are the **operation** that reverses the effect of another **operation.**

To solve a single step equation, use the inverse operation and a balancing method.

Substitution means putting numbers in place of letters to calculate the value of an expression.

To work out the **term to term rule**, give the starting number of the sequence and then describe the pattern of the numbers.

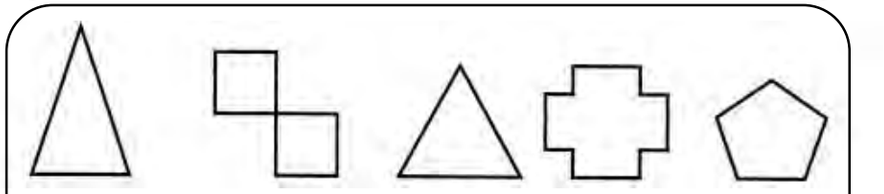
Arithmetic sequences are where terms increase (or decrease) by a fixed number (common difference).

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

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

Subject	`The subject of a formula is the letter on its own on one side of the equals sign.
Equation	Contains an unknown number (a letter) and an = sign.
Solve an equation	Work out the value of the unknown number by using inverse operations.
Solve an inequality	Solve in the same way as a linear equation: use inverse operations to work out the unknown value.
Substitution	Replace values in a formula to solve the resulting equation.
Formula	Shows the relationship between two or more variables (letters).
Sequence	Pattern of numbers or shapes that follows a rule.
Term	The numbers in a sequence.
Term-to-term rule	Describes how to get from one term to the next.
Arithmetic Sequence	Goes up or down in equal steps of a common difference. Term-to-term rule is add or subtract.
Geometric Sequence	The term-to-term rule is multiply or divide by a number.

An object's degree of **rotational symmetry** is the number of distinct orientations in which it looks exactly the same for each **rotation**.



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.

Angles in a triangle add to 180^o.

Angles in a quadrilateral add to 360^o.

Foundation – Unit 6 - Angles

Congruent Shapes	Exact same shape and size, but reflected, rotated or translated.
Similar Shapes	Same shape but enlarged (bigger or smaller). Sides are in the same ratios.
Polygon	2-dimensional shape bound by straight sides.
Regular Polygon	All equal side lengths and all equal angles.
Irregular Polygon	Unequal side lengths and unequal angles.
Tessellation	Shapes fitting together. For shapes to tesselate, all angles at the point where the shapes meet must add to 360^o.
Angle sum	Sum of the interior angles of a polygon.
Interior Angle	An Interior Angle is an angle inside a shape.
Exterior Angle	The Exterior Angle is the angle between any side of a shape, and a line extended from the next side.
Straight Line	Angles on a straight line add up to 180^o.

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

$$M = \frac{x_1 + x_2}{2}$$

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.

Foundation – Unit 7 – Averages and Range

Mean	Total of the values divided by the number of values.
Frequency	The total number of values.
Median	Middle value when the n data is written in order. When n data values are written in order, the median is (n+1)/2 th value.
Outlier	An extreme value that doesn't fit the overall pattern.
Modal class	Class with the highest frequency.
Mode	Data value with the highest frequency.
Sample	A selection taken from a larger group that will, hopefully, let you find out things about the larger group.
Population	The whole group that is being studied.
Bias	A sample is biased if individuals or groups from the population are not represented in the sample.
Ratings	Number of people who watched a programme.
Appreciation Figure	The percentage of viewers who describe it as "good" or "excellent".
Range	Shows the spread of the data. The difference between the largest and smallest value.

Foundation – Unit 8 – Perimeter, Area and Volume 1

If a shape has two dimensions, it means there are 2 ways it can be measured in space.

A 3D shape can be defined as a solid figure or an object or shape that has three dimensions – length, width and height. Unlike two-dimensional shapes, 3D shapes have thickness or depth.

Perimeter is the distance around the outside of a shape. **Area** measures the space inside a shape.

A **vertex** is a corner. An **edge** is a line segment between faces. A **face** is a single flat surface.

To convert centimetres to millimetres, multiply by 10 , centimetres x 10 = millimetres.

1 Square centimetre is equal to 100 square millimetres.

To find the **area** of any **trapezium**, add together the parallel sides and multiply by the height. Then halve your answer.

A **power of 10** is any of the integer **powers** of the number **ten**; in other words, **ten** multiplied by itself a certain number of times (when the **power** is a positive integer).

Dimensions	Rectangle: length and width. Cuboid: length, width and height.
Prism	A 3D solid that has the same cross-section all through its length.
Volume	Volume of a 3D solid is the amount of space inside it. Measure in cubic units, mm^3, cm^3, m^3.
Volume of a cuboid	Length x width x height lwh
Volume of a prism	Area of cross-section x length
Surface Area	Surface Area of a 3D solid it the total area of all its faces. Sketch the net and work out all the face.
Capacity	The amount of liquid a 3D object can hold.. It is measure in litres and ml.
Compound Shape	Made up of simple shapes. To find the area, split it into simple shapes like rectangles and triangles, find the areas and add them together.

Foundation – Unit 9 - Graphs

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

Coordinates are numbers which determine the position of a point or a shape in a particular space (a map or a graph).
Points are marked by how far along they are on the x
axis (the horizontal axis) and how far up they are on the y
axis (the vertical axis).

A **linear equation** is an equation that describes a straight line on a graph. You can remember this by the "line" part of the name **linear equation**.

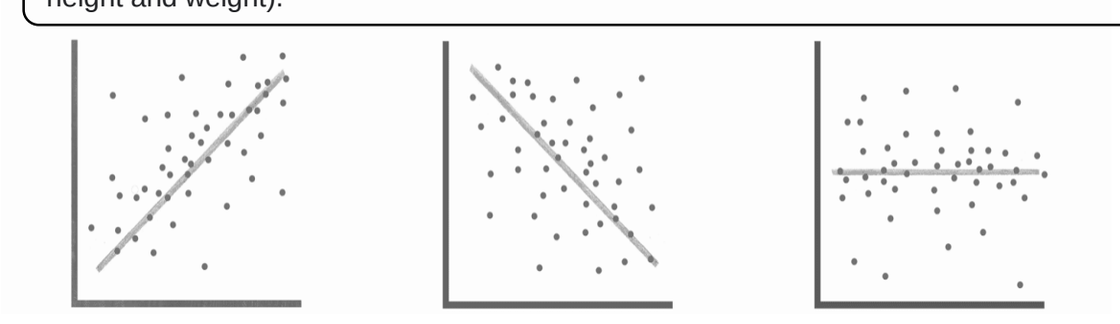
The **gradient** tells us how steep **a line** is, therefore the bigger the **gradient** the steeper the **line** is.

A positive **gradient** is **a straight line** which slopes up to the right.
A negative **gradient** is **a straight line** which slopes down to the right.

Lines are parallel if they are always the same distance apart (called "equidistant") .

Distance = speed x time

Correlation is used to **describe** the linear relationship between two continuous variables (e.g., height and weight).



Gradient	The steepness of a graph.
Linear Equation	Produces a straight line graph.
Average Speed	$\frac{distance\ travelled}{time\ taken}$
Line Segment	Has a start and end point.
Midpoint	Exactly in the middle of a line segment.
Rate of Change	Describes how a quantity changes over time.
Velocity	Speed in a particular direction.
Y-intercept	Where the graph crosses the y-axis.
Parallel Lines	Same distance apart and will never cross each other. They have the same gradient.
Line of best fit	Refers to a line through a scatter plot of data points that best expresses the relationship between those points.
Trend	A pattern in a set of results displayed in a graph.
Correlation	Refers to the degree of correspondence or relationship between two variables.

There are 4 types of transformations: reflection, rotation, enlargement and translation.

Perpendicular lines cross each other at right angles.

Coordinates can be plotted in all four quadrants.

Rotations require an angle and centre. Aside from 180° (1/2 turn), they should also have a direction – clockwise or anticlockwise.

When completing a reflection, make sure each vertex of the image is the same distance from the mirror line as its corresponding vertex on the object.

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

As long as you know that the two shapes are similar, you can use one dimension on both figures to calculate the **scale factor**.

Key Concepts

Transformation	A transformation is a way of changing the size or position of a shape.
Enlargement	An increase or decrease in size. Multiply all the side lengths by the same number (scale factor).
Scale Factor	Describes the size of an enlargement or reduction.
Translation	Slide/move – all the points on the shape move the same distance in the same direction.
Column Vector	Used to describe a translation. Gives direction and magnitude.
Congruent	Two figures or objects are congruent if they have the same shape and size, or if one has the same shape and size as the mirror image of the other.
Similar	When two figures are similar, the ratios of the lengths of their corresponding sides are equal.
Object	An original shape.
Image	When the object is transformed, the resulting shape is the image.
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 the line. The mirror line may require an equation.
Describing a rotation	State it is a rotation and give the coordinate of the centre of rotation, and the angle and direction.

Foundation – Unit 11 – Ratio and Proportion

The equation of a straight line uses (x,y) coordinates with the gradient and y-intercept.

A table of values is used to graph a line according to its equation. The x value is substituted into the equation, then the equation is solved for y.

A **bar chart** or **bar graph** is a chart or graph that presents categorical data with rectangular bars with heights or lengths pro portional to the values that they represent. The bars can be plotted vertically or horizontally.

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

Index notation is the short way of writing repeated multiplications by the same number.

The exponent (or index or power) of a number says how many times to use the number in a multiplication.

Ratio	A way to compare two or more quantities.
Simplest Form	You cannot divide the values any further and have them still be integers..
Integers	Whole numbers.
Highest Common Factor	The largest integer which is a factor of both.
Equivalent Ratios	Represent the same quantities, or have the same simplest form.
Proportion	Compares a part with a whole.
Unit Ratios	One of the numbers is n. This makes it easier to compare ratios.
Direct Proportion	When one is a multiple of the other.
Indirect/Inverse Proportion	When one value increases and the other decreases.

Foundation – Unit 12 – Right-angled Triangles

Angles in a triangle add to 180^o.

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

Finding the **square root** of a number is the inverse operation of squaring that number. Remember, the **square** of a number is that number times itself.

The **not equal sign** (≠) is used to denote items where they don't **equal** to each other, for example 1 ≠ 2.

Surds are numbers left in square root form that are used when detailed accuracy is required in a calculation. They are numbers which, when written in decimal form, would go on forever.

To convert a fraction to a decimal, divide the numerator by the denominator.

The hypotenuse is the longest side of a right triangle.

An "**opposite**" side is the one across from a given angle, and an "**adjacent**" side is next to a given angle.

Sin, Cos and Tan buttons are on scientific calculators. Press shift then the button to access the inverse functions.

Right-angled triangle	Contains an angle which is 90 degrees.
Hypotenuse	The longest side, opposite the right angle.
Opposite Side	The side opposite the angle θ. (does not touch the right angle)
Adjacent Side	The side next to the angle θ. (joins the right angle to θ)
Theta	Θ, used to represent the angle.
Sine (sin)	The ratio of the opposite side to the hypotenuse.
Cosine (cos)	The ratio of the adjacent side to the hypotenuse.
Tangent (tan)	The ratio of the adjacent side to the hypotenuse.
Angle of elevation	The angle measured upwards from the horizontal.
Angle of depression	The angle measured downwards from the horizontal.
Inverse functions	Sin^{-1}, cos^{-1} and tan^{-1} are the inverse functions, used to calculate missing angles.

Foundation – Unit 13 - Probability

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

Prime numbers are whole numbers greater than 1, that have only two factors – 1 and the number itself.

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

A **two-way table** is a way to organise data about two specific variables.

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.

Frequency tree	Show the number of options for different choices.
Dependent Events	When the outcome of one event changes the possible outcomes of the next event. The second event is dependent on the first.
Mutually Exclusive	Events which cannot happen at the same time.
Relative Frequency	An estimate of the probability.
Exhaustive List	All the possible outcomes. Probabilities of an exhaustive set of mutually exclusive events sum to 1.
Sample Space Diagram	Shows all the possible outcomes. You can use it to find a theoretical probability, based on equally likely outcomes.
Independent Events	When the results of one do not affect the results of the other.
A ∩ B	The intersection of A and B. This is the elements that are in A and in B.
A U B	The union of A and B. This is the elements that are in A or in B or in both.
A’	The elements not in A.

Foundation – Unit 14 – Multiplicative Reasoning

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.

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

Mass = density x volume.
Density is normally measured using units of g/cm^3 for smaller amounts, and kg/m^3 for larger amounts.

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.
Volume = area of cross section x length

Index notation is a way of representing repeated multiplications of the same number, by writing the number as a base with the number of repeats.

A **ratio** shows how much of one thing there is compared to another. **Ratios** are usually written in the form a:b.

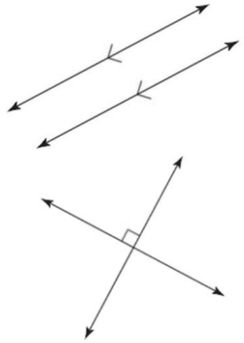
Y=x
Direct Proportion

Velocity and initial velocity are vector quantities.

Velocity is the speed in a given direction. Possible units are m/s.

Direct Proportion	Pairs of values in the same ratio. When one value is 0, so it the other (passes through (0,0).
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.
Final Velocity, v	The velocity which the object has at the end of the given time period.
Initial velocity, u	Speed in a given direction at the start of the motion.
Acceleration, a	Rate of change of velocity, m/s^2

Foundation – Unit 15 – Constructions, Loci and Bearings



Parallel lines are in the same plane that never intersect. They are always the same distance apart.

Perpendicular lines are lines that meet at a right angle, that is, at an angle that measures 90°.

A scale factor is the number by which all the dimensions of an object are multiplied in order to create a proportion enlargement or reduction.

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

A line which intersects a pair of parallel lines is called a **transversal**.

On parallel lines, alternate (or Z) angles are equal.

On parallel lines, corresponding (or F) angles are equal.

On parallel lines, interior (or C) angles add up to 180°.

8-point compass includes the four cardinal directions (N, E, S, W) plus the four "intercardinal" or "ordinal directions" (NE, SE, SW, NW), at angles of difference of 45°.

Region	An area bounded by loci.
Net	A 2D shape that folds to make a 3D shape.
Scale	A ratio that shows the relationship between a length on a map or drawing and the actual length.
Locus (Loci)	A set of points the obey a given rule. This produces a path followed by the points.
Construct	Means to draw accurately using a ruler and compasses.
Bisect a line	Cut a line exactly in half.
Perpendicular bisector	Cuts a line in half at right angles.
Plan View	View from above an object.
Front Elevation	View of the front of an object.
Side Elevation	View of the side of an object.
Plane	A flat 2D surface.
Plane of Symmetry	When a plane cuts the shape in half so that the part of the shape on one side of the plane is an identical reflection of the part on the other side of the plane.
Bearing	An angle measured in degrees clockwise from North. A bearing is always written using three digits.
Angle Bisector	Cuts an angle exactly in half.

Foundation – Unit 16 – Quadratic equations and graphs

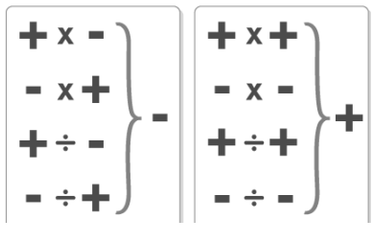
Substitution – replace the letter with a value and complete the calculation.

Factor – a number that does into another number. Eg Factors of 12: 1, 12, 2, 6, 3, 4

Multiple – a number that is in the times table. Eg multiples of 3: 3, 6, 9, 12, 15…..

A **line** of **symmetry** is a **line** that cuts a shape exactly in half. This means that if you were to fold the shape along the **line**, both halves would match exactly.

Coordinates display the position of a certain point. These positions are marked according to numbers of the horizontal axis (x-axis) and the vertical axis (y-axis).

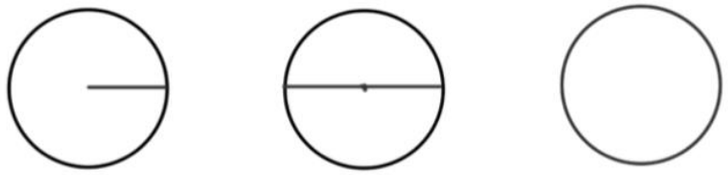


Factorising is the reverse of expanding brackets.

To solve an equation, use inverse operations (and the balancing method) to find the value of 1 unknown variable.

Expand Double Brackets	Multiply each term in one bracket by each term in the other.
Square a bracket	Multiply it by itself.
Quadratic Expression	Always has a squared term. It cannot have a power higher than 2. It may also have a term with a power of 1. It may also have a constant.
Quadratic Function	Has a symmetrical U shape curve called a parabola. A ($-x^2$) term has a symmetrical n-shaped curve.
Turning Point	A quadratic curve always has a maximum or minimum turning point. This is where the graph changes direction.
Factorise quadratics	To factorise a quadratic ax^2+bx+c, you need two numbers whose product is c and whose sum is b.
Difference of Two Squares	A quadratic expression with two squared terms, and one is subtracted from the other.

Foundation – Unit 17 – Perimeter, Area and Volume 2



Substitution – replace the letter with a value and complete the calculation.

Rearranging formulae / changing the subject: use inverse operations to rearrange.

Circumference of a circle	The perimeter of a circle.
Area of a circle	The space inside a circle.
Chord	A line through a circle that touches the circumference at each end.
Arc	A part of the circumference.
Tangent	A line outside a circle that touches the circle at only one point.
Sector	A slice of a circle between an arc and two radii.
Segment	A part of a circle between an arc and a chord.
Cylinders	Volume = $\pi r^2 h$ Surface Area = $2\pi r^2 + \pi d$

Surface area of an object is the total area of all of the 2D face.

Volume of prisms: area of cross section x length

To simplify a fraction, Divide the numerator and denominator by the greatest common factor.

Multiplying by 10 – all digits move one place to the left

Multiplying by 100 – all digits move two places to the left

Dividing by 10 – all digits move one place to the right

Dividing by 100 – all digits move two place to the right

Ordering Directed Numbers – You need to be able to put negative and positive numbers in size order.

Rules for x and ÷ directed numbers - You need to know and use the rules when you multiply and divide by positive and negative numbers.

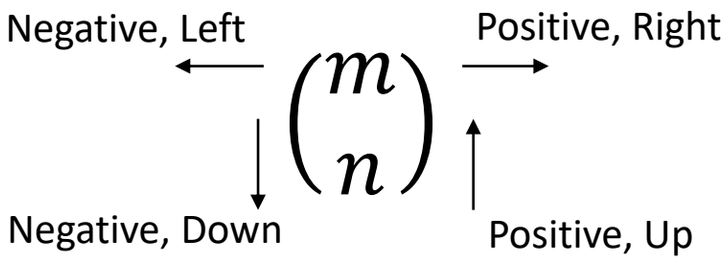
Foundation – Unit 18 – Fractions, Indices and Standard Form

Comparing Fractions	To compare fractions, write them with the same denominator then compare numerators.
Multiply Fractions	Multiply the numerators and multiply the denominators.
Add or Subtract Fractions	Write them with a common denominator then add or subtract the numerators.
Fraction of an Amount	Divide by the denominator, multiply by the numerator.
Unit Fraction	A unit fraction has a numerator of 1.
Base number	This is the number that is being multiplied by itself.
Index (Power)	The small number written above the base
Standard Form	Used to write big numbers quickly or small numbers quickly.

Foundation – Unit 19 – Congruence, Similarity and Vectors

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

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



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

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^o.

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.
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 the angles in matching corners are called corresponding angles.

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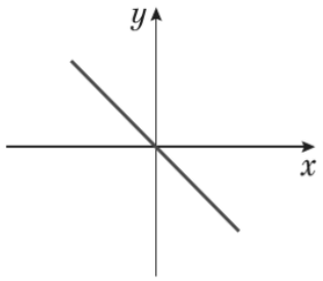

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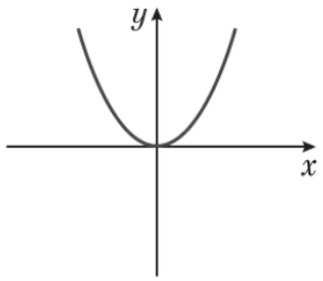

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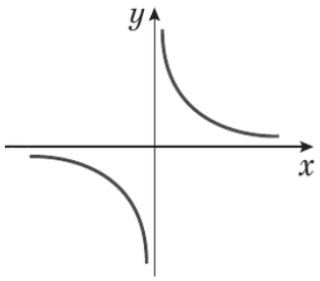

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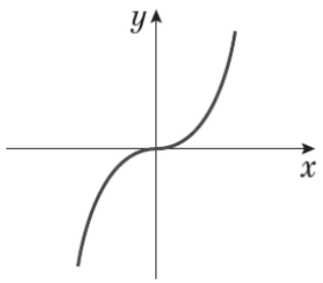

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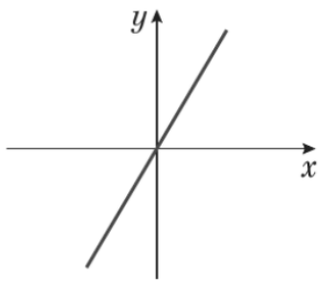

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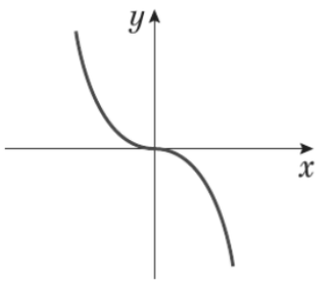


Solving Simultaneous Equations Graphically: find the coordinate where the graphs cross.

sum	Add the values
difference	Subtract the values
product	Multiply the values
Cubic function	Contains x^3 but no higher power of x.
Reciprocal function	Obtained by finding the inverse of a given function.
Asymptote	A line that the graph gets closer and closer to but never touches.

Combined Science – Biology – Topic 5 Health and Disease

Key Terms / Words	Definition
Pathogen	A microorganism that causes disease – fungi, bacteria, virus, protist.
Communicable disease	A disease that can be spread from person to person e.g. ebola, flu, HIV.
Non-communicable disease	A disease that cannot be spread from person to person, is non-infectious e.g. heart disease, diabetes, cancer.
BMI	Body Mass Index (BMI) – a number that determines obesity. BMI = mass ÷ height2.
Aseptic	A sterile technique that prevents contamination , used during testing of antibiotic effectiveness.
B-Lymphocytes	Type of specific white blood cell involved in the immune system that produces antibodies.
Immune system	The bodies second line of defence against pathogens. Involves white blood cells.
antibody	A protein produced by lymphocytes. It attaches to a specific antigen on a microorganism and helps to destroy it
antigen	A protein on the surface of a cell. White blood cells are able to recognise pathogens because of their antigens.
antibiotics	A type of medication that can be used to treat bacterial infections only.
Cardiovascular disease	A disease in which the heart or circulatory system does not function properly.

Communicable diseases

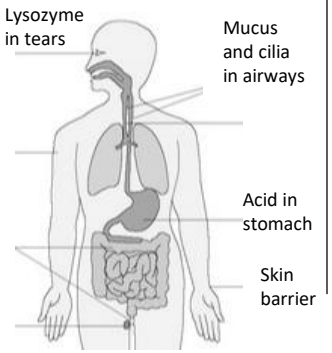
Disease	Pathogen	Symptoms	Spread
Cholera	Bacteria	Diarrhoea	Water
Tuberculosis	Bacteria	Lung damage	Airborne
HIV (STI)	Virus	Destroys white blood cells	Body fluids, sexual intercourse
Malaria	Protist	Damage to blood and liver	Mosquito (vector)
Chalara ash dieback	Plant fungi	Damage to plant leaves.	Airborne

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.

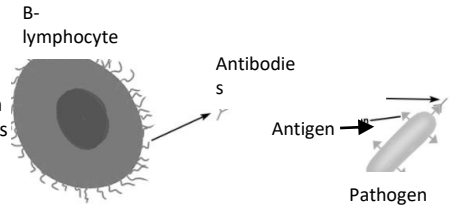
Physical and chemical defences



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

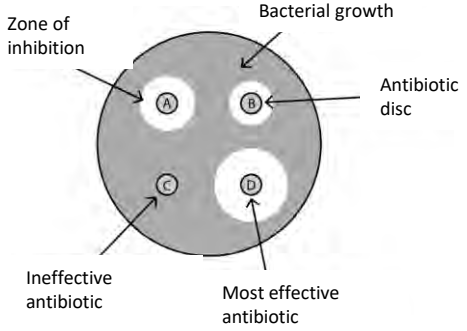
Body produces many B-lymphocytes that produce antibodies that fit onto antigen from pathogen. This destroys pathogen.



Vaccinations

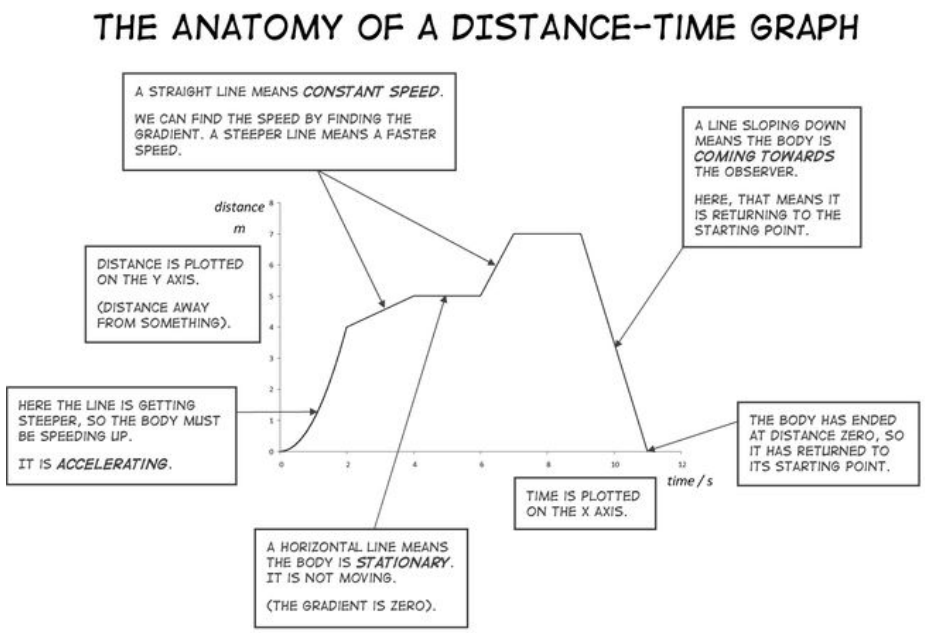
Vaccines allow a dead or altered form of the disease causing pathogen to be introduced into the body, which contain a specific **antigen**. This causes the immune system, specifically the **white blood cells**, to produce complementary **antibodies**, which target and attach to the antigen, this destroys the pathogen.

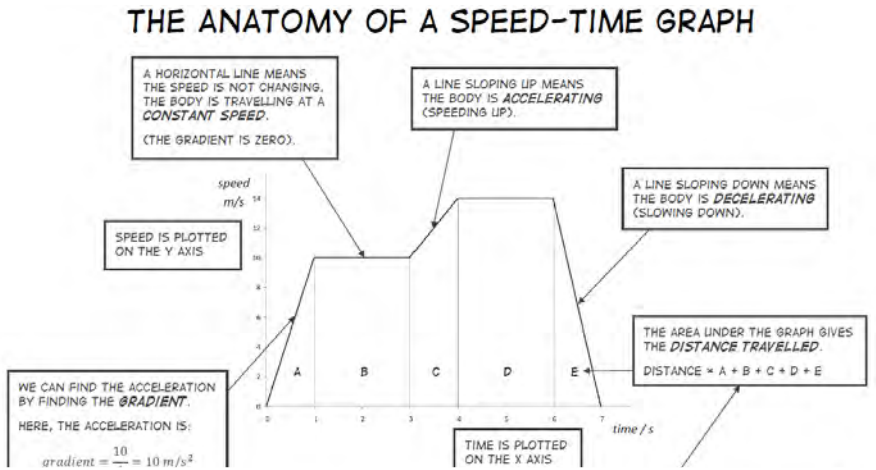
Required Practical – Aseptic Techniques



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.



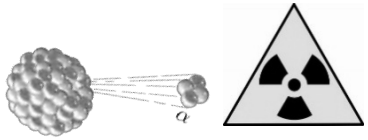


Key Term	Definition
Vector quantities	Have magnitude and direction e.g. force, velocity, displacement, and weight
Scalar quantities	Have magnitude only e.g. distance, speed ,mass and energy
velocity	Speed in a stated direction. (m/s)
Weight	W=mg (g is 10N/kg on Earth) W, weight (N) m, mass (kg) g, gravitational field strength (N/kg)
Average speed	Speed = distance travelled / time taken

Key Term	Definition
Resultant force	The overall force acting on an object,i.e. the vector sum of all the forces acting on an object.
Acceleration	$a = \frac{v - u}{t}$ a, acceleration (m/s2) v, final velocity (m/s) u initial velocity (m/s) t, time taken (s)
Suvat equation	$v^2 - u^2 = 2\,a\,x$ X is the displacement of the object. NB this equation only apply for constant acceleration.
Resultant force	$F = ma$ F, force (N) M, mass (kg) a, acceleration (m/s^2)

Todmorden High Combined Science Physics Topic 6 Radioactivity

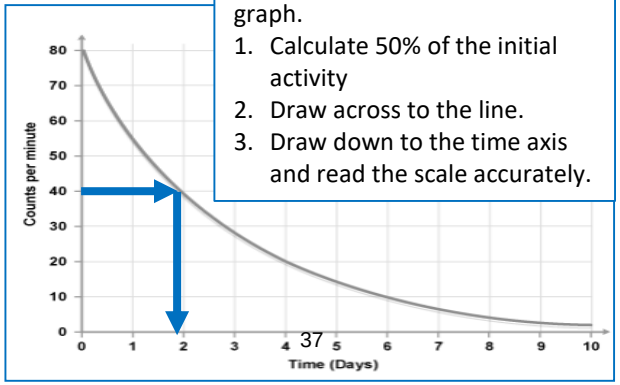
Key Term	Definition
Isotope	Atoms of the same element, with the same number of protons, but a different number of neutrons, in their nuclei.
Activity	The number of radioactive decays per second from a radioactive source.
Background radiation	Ionising radiation from the environment, food and drink, Earth, space, and man-made sources e.g. medical uses.
becquerel (Bq)	The unit for activity 1Bq is 1 decay per second.
Contamination (vs irradiation)	**Unwanted radioactive isotopes are on or in a material or living organism (e.g. person)** Irradiation is when the radiation from a radioactive isotope is absorbed by a material, note that the radioactive isotope does not come into contact or contaminate the material for irradiation to happen.
decay	The release of particles and or energy in the form of nuclear radiation from the nucleus of an atom that changes the nucleus making it more stable. eg. beta- decay of C-14. $^{14}_{6}C \rightarrow {}^{0}_{-1}B^{-} + {}^{14}_{7}N$
Geiger-Muller tube	A device to count the radiations from any source.
Half-life (definition 1)	The time taken for the activity of a source to halve.
Half-life (definition 2)	The time it takes for half the radioactive nuclei in a sample to decay.
Random decay	It is not possible to predict **which** nuclei in a radioactive isotope will decay or **when** they will decay. The half-life of a radioactive isotope cannot be increased or decreased e.g. by heating or chemical reactions.



Safety Precautions.
1. Limit time exposure.
2. Limit the distance,.
3. Stay behind a shield / use protective handling equipment.

Properties of radiation				
Type	Description	Ionising ability	Range in air	Stopped by
Alpha $^{4}_{2}\alpha^{2+}$	helium nucleus, (2 protons and 2 neutrons)	highly ionising	A few cm	Paper or skin
Beta⁻ $^{0}_{-1}B^{-}$	high speed electron from the nucleus	moderately ionising	A few metres (typically 1 m)	A few (3) mm of aluminium
Gamma $^{0}_{0}\gamma^{0}$	electromagnetic wave (like visible light)	weakly ionising	A few km.	Thick lead or concrete

Other nuclide notations needed for balanced nuclear equations.
positron $^{0}_{1}B^{+}$ neutron $^{1}_{0}n^{0}$



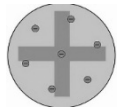
How to find half-life from a decay graph.
1. Calculate 50% of the initial activity
2. Draw across to the line.
3. Draw down to the time axis and read the scale accurately.

History of the Model of the Atom.

When the evidence changes the model changes.

Dalton's model saw the atom as solid, indivisible spheres.

But...JJ Thompson discovered **electrons can be separated from atoms,** so atoms are not indivisible.

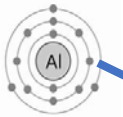


Plum pudding model – solid, positive, mass with negative electrons embedded throughout it.

But...Rutherford's **alpha scattering investigation (learn it)** showed that the atom was mostly empty space, because most alpha particles went straight through the gold foil but a tiny number rebounded backwards.

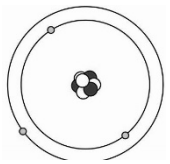
Nuclear model – **mostly empty space, a tiny, dense nucleus** with electrons around it.

But...Niels Bohr analysed data from flame tests and explained that electrons could only exist at set distances from the nucleus. **When electrons move between energy levels electromagnetic radiation is absorbed or emitted.**



Bohr model – the **electrons** only exist at **set distances** from the nucleus.

But...20 years after Rutherford, Chadwick finally discovers the neutron.



Modern nuclear model – the nucleus contains protons and **neutrons.**

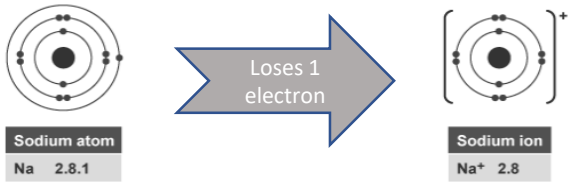
Combined science Chemistry Topic 1_Key concepts - Ionic and covalent bonding

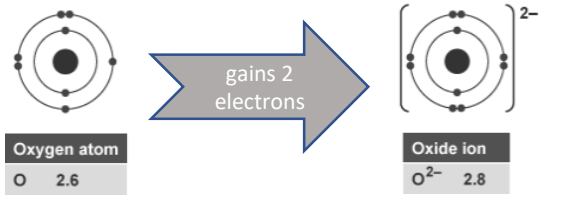
Key information	
bond	Forces that hold atoms together. There are three types: ionic, covalent and metallic
ion	Atom or group of atoms with a positive or negative charge.
cation	Positively charged ion, usually metals. More protons than electrons.
anion	Negatively charged ion, usually non-metals. More electrons than protons.
Ionic bond	Strong electrostatic force of attraction between oppositely charged ions
Ionic compound	Type of substance containing a regular arrangement of oppositely charged ions held together by ionic bonds.
Lattice structure	Regular arrangement of particles such as ions, atoms or molecules.
Molten	A liquid formed from heating a solid
Solution	Formed by dissolving a solute (e.g. ionic compound) into water, with a symbol, aq.
Covalent bond	Shared pair of electrons between two atoms
Simple molecular	Type of substance made up of molecules held together by weak forces of attraction
Molecule	Small group of atoms covalently bonded together.
Intermolecular forces	Weak forces of attraction between molecules.
Giant covalent	Type of substance made up of many atoms covalently bonded together
Delocalised electron	An electron that is no longer attached to an atom that can move freely through a structure.
Metallic bond	Strong electrostatic attraction between positive metal ions and negative delocalised electrons
Metal	Type of substance made up of metals atoms held together metallic bonds

Ionic bonding

- **Formation of cations (positive ions)** → metal atoms → lose electrons → more protons than electrons → full outer shell
- Number of electrons lost by the metal atoms is the same as the group number (only groups 1 and 2)

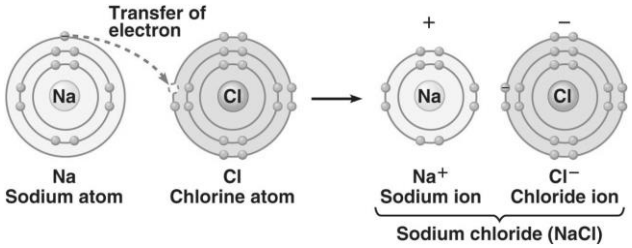
- **Formation of anions (negative ions)** → non-metal atoms → gain electrons → more electrons than protons → full outer shell
- Number of electrons gained by the non-metal atoms is the same as the group number (only group6 and 7)





P =	11	Loses 1 electron	P =	11	P =	8	gains 2 electrons	P =	8
E =	**11**		**E =**	**10**	**E =**	**8**		**E =**	**10**
N =	12		N =	12	N =	8		N =	8

Dot and cross diagrams – used to show formation ionic bonds



Ionic compounds structure

Ioninc compounds have a lattice structure consisting a regular arrangement of oppositely charged ions held together by strong electrostatic forces of attraction

Ionic compound formulae

All ionic compounds have a neutral charge this means the charges from the cations are balanced by the charges from the anions:

Sodium Chloride - NaCl - Sodium ion Na^+ Chloride ion Cl^-

(charges on the ions are equal and opposite)

Covalent bonding

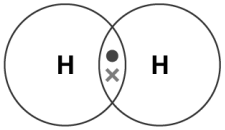
A covalent bond is a **shared pair of electrons** between two atoms, usually non-metals

A molecule consists of a group of two or atoms joined together by covalent bonds.

Dot and cross diagrams

Dot and cross diagrams can be used to model the bonding in a simple molecule:

- The outer shell of each atoms is drawn as a circle.
- The circles overlap where there is covalent bond.
- Electrons from one atoms are drawn as a cross and
- the from the other atom as a dot.



Drawing the structure

A structure can also be drawn to represent a molecule:

Each atoms is represented by its symbol.

Each covalent bond is represented by a straight line.

H — H

A hydrogen molecule contains a single covalent bond so has just one line between the symbols.

Simple molecular, covalent structures

You need to be able to draw dot and cross diagrams for the following:

Hydrogen (H_2)
Hydrogen Chloride (HCl)
Methane (CH_4)
Water (H_2O)
Oxygen (O_2)
Carbon dioxide (CO_2)

Giant covalent structure –

covalent bonds between all atoms

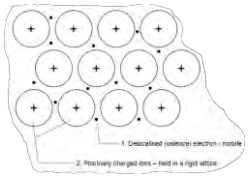
Diamond
Graphite
Graphene

Combined science – Chemistry – Topic 1 Key concepts – Metallic bonding and types of substance

Type of substance	Type of bonding	Example	Description of structure	Key Properties	Explanation of properties
Ionic compound	Ionic	Sodium chloride	Ioninc compounds have a giant lattice structure consisting a regular arrangement of oppositely charged ions held together by strong electrostatic forces of attraction	High melting and boiling points	A lot of energy is needed to overcome the strong forces of attraction between ions.
				Do not conduct electricity when solid	Ions are in a fixed position so cannot move around freely.
				Do conduct when molten or in solution	Ions are free to move and carry the charge.
Giant covalent	Covalent between all atoms	Diamond (form of carbon)	Giant covalent structure in which each carbon atom is covalently bonded to four other carbon atoms, forming a rigid network containing many strong covalent bonds.	Hard (used in cutting tools)	Made up of a rigid network of many strong covalent bonds,
				High melting point	Contain many strong covalent bonds that require large amounts of energy to break.
				Poor conductor of electricity	Do not contain delocalised electrons to cannot form a current.
		Graphite (form of carbon)	Giant covalent structure **c**ontaining delocalised electrons because each carbon atom is bonded to three others. The carbon atoms are arranged in layers. There are weak forces between the layers	Can conduct electricity (used to make electrodes)	Contains delocalised electrons that carry charge and form a current.
				Slippery (used as a lubricant)	The layers have weak forces between them so slide past each easily, when a force is applied.
Simple molecular (covalent)	Covalent	Water (H_2O)	Small groups of atoms are covalently bonded together to form molecules. Between the molecules are weak forces of attraction (weak intermolecular forces)	Poor conductor of electricity	Do not contain any delocalised electrons so cannot form a current.
				Low melting and boiling points	Only a small amount of energy is needed to overcome the weak forces of attraction between molecules.
Metallic	Metallic	Zinc	A lattice of positive metal ions surrounded by a sea of negative delocalised electrons from the outer shells of the metal ions.	High melting points	A lot of energy is needed to overcome the strong attraction between the metal ions an delocalised electrons
				Malleable	Layers of ions can slide over each other when a force is applied.
				Good conductors of electricity	When there is a potential difference across a metal the delocalised electrons can travel through the lattice structure and form an electric current

Metallic bonding

A metallic bond is the strong electrostatic attraction between the positive metal ions and the negative delocalised electrons.
Malleable – bend or shape easily without breaking



Graphene is another form of carbon. Its structure resembles a single layer of **graphite**. Graphene has a very high **melting point** and is very strong because of its large regular arrangement of carbon **atoms** joined by **covalent bonds**. Like graphite it **conducts** electricity well because it has **delocalised electrons** that are free to move across its surface.

A **fullerene** is a **molecular** form of the carbon. Two examples of fullerenes are **nanotubes** and **Buckminster fullerene (C_{60})**

Combined science – Chemistry – Topic 1 – Key concepts – Calculations Involving Masses

Key information	
Relative atomic mass (A_r)	**The mean relative mass of the atoms of different isotopes in an element.** **e.g. For Na, Ar = 23. For Cl, Ar = 35.5**
Relative formula mass (M_r)	**The sum of the relative masses of each atom present in a compound.** e.g. For NaCl, 23 + 35.5 = 58.5
Empirical Formula	**The simplest whole-number ratio of atoms of each element present in a compound.** e.g. the EF of C_2H_4 is CH_2.
Molecular Formula	**The molecular formula shows the actual number of atoms present in a compound.** e.g. For ethene, MF is C_2H_4
Law for the Conservation of Mass	**The law for the conservation of mass states that mass is conserved. The total mass of reactants is always equal to the total mass of products. This is because atoms are not lost or gained. They are only rearranged.**
Avogadro's Constant (N_A)	**The number of particles present in 1 mol of a substance (6.02×10^{23} particles).**
Moles	**The amount of substance containing the same number of chemical units as 12g of a Carbon-12 atom.**
Solvent	**A liquid that can dissolve a solute.**
Solute	**A dissolved substance.**
Solution	**A liquid containing solute dissolved in solvent.**
Concentration	**The amount of solute dissolved in a stated volume of solution.**

Relative formula mass (M_r):

Calculate the **M_r of $CaCl_2$**

Stage 1 – count the how many there of each type of atom

Ca x 1

Cl x 2

Stage 2 – use the periodic table to find the relative atomic masses of the atoms and substitute in place of the symbol and calculate the total mass of each type of atom.

40 x 1 = 40

35.5 x 2 = 71

Stage 3 – calculate total relative formula mass

M_r $CaCl_2$ = 40 + 71

= 111

Empirical Formula:

Calculate the empirical formula of calcium chloride when 10.0g of Calcium reacts with 17.8g of Chlorine:

Symbol for element	Ca	Cl
Mass (g)	10.0	17.8
Relative atomic mass, A_r	40	35.5
Divide the mass of each element by its relative atomic mass	$\frac{10.0}{40} = 0.25$	$\frac{17.8}{35.5} = 0.5$
Divide the answers by the smallest number to find the simplest ratio	$\frac{0.25}{0.25} = 1$	$\frac{0.5}{0.25} = 2$
Empirical formula	$CaCl_2$	

Percentage Composition:

$$\%\ composition = \frac{A_r\ desired\ element}{M_r\ compound}\ x100$$

Concentration of solution

$cm^3 \rightarrow \div 1000 \rightarrow dm^3$

$$Concentration\ (g/dm^3) = mass\ (g) \div volume\ (dm^3)$$

Example

1. Calculate the concentration of a solution that has 21 g of phosphoric acid in 300 cm^3 water.

Mass 21 g

Volume 300 cm^3

Concentration ??

Stage 1: Convert volume to dm^3

$300cm^3 \div 1000 =$ **0.3 dm^3**

Stage 2: Calculate concentration using converted volume

Concentration = Mass ÷ Volume = 21 ÷ 0.3 = **70 g/dm^3**

Calculating the number of moles:

Number of moles (mol) = mass (g) ÷ Relative atomic/formula mass

$$n = m \div A_r/M_r$$

Question: Calculate the number of moles of 7g HCl.

Mass (g)	7g
M_r	1+35.5=36.5
n (mol)	n

$n = m \div A_r/M_r$

$n = 7 \div 36.5$

$n =$ **0.19 mol**

Conservation of mass

Atoms cannot be created or destroyed therefore:
The total mass of reactants = Total mass of products

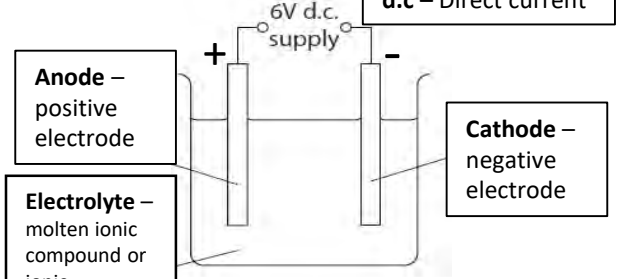
	Reactants (left of arrow)				Product(s) (right of arrow)
Balanced Equation	2Mg	+	O_2	→	2MgO
No. atoms	2 x Mg	+	2 x O	→	(2x Mg) + (2 x O)
Relative formula mass	2 x24 = 48	+	2x16 = 32	→	(2x24)+(2x16) = 80
Mass (g)	12g	+	4g	→	16g

Combined science – Chemistry - Topic 3 - Electrolytic processes

Word	Meaning
electrolysis	The process in which energy transferred by a direct electrical current decomposes electrolytes.
anion	A negatively charged ion, formed by gaining electrons (usually a non-metal ion). Move to the anode.
anode	Positive electrode.
cathode	Negative electrode.
cation	A positively charged ion formed by losing electrons. Move towards the cathode
electrode	A rod made of a metal or graphite that carries the current into or out of the electrolyte.
electrolyte	A liquid containing charge particles or ions that can move through it carrying current. They are either molten ionic compounds or ionic compounds in solution.
half equation	An ionic equation showing the electrons gained or lost in oxidation or reduction reactions.
oxidation	Is Loss of electrons – occurs at the anode OIL
reduction	Is Gaining electrons – occurs at the cathode RIG
discharged	In electrolysis, an ion is discharged when it gains or loses electrons to form an atom or molecule.
Inert electrode	An electrode that is unreactive, such as graphite or platinum.

Standard electrolysis set-up (electrolytic cell) and apparatus

d.c – Direct current



A bulb/ammeter can be added to the circuit to show the flow of current.

The electrolysis of molten ionic compounds or dissolved ionic compounds in solution is carried out using inert (unreactive) electrodes (graphite or platinum). Ions are discharged at the electrodes to form atoms or molecules.

Electrolysis of molten ionic compounds

Molten ionic compounds decompose into their elements.

- The metal ions move to the cathode and are discharged to form metal atoms IN REDUCTION
- The negative ions move to the anode and are discharged to form non-metal atoms/molecules in OXIDATION

Molten Lead Bromide ($PbBr_2$)

Ions	Pb^{2+}	Br^-
Electrode	Cathode	Anode
Explanation	Pb^{2+} ions move to cathode and are reduced to form Pb atoms. (grey liquid)	Br^- ions move to the anode and are oxidized to form Br_2 molecules (brown gas)
Half equations	$Pb^{2+}(l) + 2e \rightarrow Pb(l)$	$2Br^-(l) \rightarrow Br_2(g) + 2e$

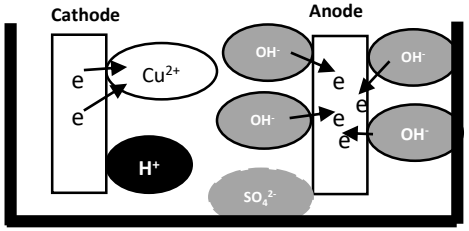
Electrolysis of ionic compounds in solution

An ionic compound in solution will contain four types of ion. There will be two types of ions from the ionic compound along with Hydrogen ions (H^+) and Hydroxide ions (OH^-) from water. You need to be familiar with electrolysis of the following solutions: Copper Chloride, Sodium Sulphate, Sodium Chloride and acidified water.

Core practical: Electrolysis of Copper Sulphate solution ($CuSO_4$) with inert electrodes

Ions	H^+ and Cu^{2+}	OH^- and SO_4^{2-}
Electrode	Cathode	Anode
Explanation	H^+ and Cu^{2+} are attracted to the cathode. Copper ions are discharged more easily. A brown solid of Copper atoms forms	OH^- and SO_4^{2-} are attracted to the anode. Hydroxide ions discharged more readily to form Oxygen gas (and water)
½ equations	$Cu^{+2+}(aq) + 2e \rightarrow Cu(s)$	$4OH^-(aq) \rightarrow 2H_20(l) + O_2(g) + 4e$

Ions at the electrodes



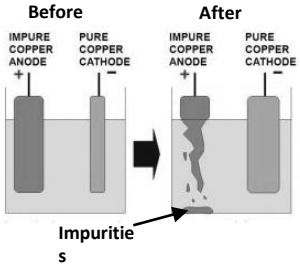
Core practical: Electrolysis of Copper Sulphate solution ($CuSO_4$) with copper electrodes

Copper is purified by **electrolysis**. Electricity is passed through solutions containing copper compounds The **anode** is made from impure copper and the **cathode** is made from pure copper.

During electrolysis, the anode loses mass as copper dissolves, and the cathode gains mass as copper is deposited.

These are the half-equations:

- **anode: $Cu \rightarrow Cu^{2+} + 2e$ (oxidation)**
- **cathode: $Cu^{2+} + 2e \rightarrow Cu$ (reduction)**



- The electrodes should be cleaned with emery paper prior to use so that the copper atoms can adhere to the surface of the cathode.
- The mass increase mass of the cathode may not be the same as the mast lost by the anode due to some copper atoms not adhering to the cathode.

Year 10 - Combined science CC11-12
Reactivity of metals and equilibrium

Word	Meaning
reactivity series	A list of metals in order of reactivity with the most reactive at the top.
displacement reaction	A reaction where a more reactive element takes the place of a less reactive element in a compound.
redox reaction	A reaction in which oxidation and reduction take place.
bioleaching	Using bacteria to extract metals from their ores.
extraction	A process in which a metal is obtained from its ore.
ore	A rock that contains a high concentration of a metal or metal compound.
rusting	The reaction between iron, air and water to form hydrated iron(III) oxide (rust).
life cycle assessment (LCA)	A process used to assess the environmental impact of a product
recycling	Converting waste materials into new products.
closed system	When substances cannot enter or leave an observed environment, e.g. a stoppered test tube.
endothermic	A type of reaction in which energy from the surroundings is transferred to the products.
exothermic	A type of reaction in which energy is transferred to the surroundings from the reactants.
reversible reaction	A chemical reaction in which there is a forward and backward reaction. Products can reform reactants.

Biological methods of extraction – Bioleaching and phytoextraction are both examples of biological extraction.

Bioleaching advantages – Doesn't require high temperatures or lots of energy.

Phytoextraction advantages – Reduces need for mining and conserves natural ores

Corrosion – Occurs when a metal reacts with oxygen and is oxidized causing the metal to weaken.

- The corrosion of iron requires BOTH oxygen and water and is called rusting.
- Unreactive metals corrode less slowly e.g gold. This is a reason why gold is used in jewellery.
- Some more reactive metals do not corrode because they form a protective oxide layer knows as a tarnish.

Reactivity of metals
The order has been decided based upon the **metal's reactions with water, acids and salt solutions**.

Metal	Reaction with water	Reaction with dilute acid	Method of extraction	Reactivity
Potassium	Will react with cold water. They will **fizz and produce hydrogen gas** and a metal hydroxide	React violently.	ELECTROLYSIS – direct current (D.C) passed through a molten compound containing the metal. REQUIRES A LOT OF ENERGY MAKING IT EXPENSIVE. Reduction of metal ions takes place at the cathode and oxidation of non-metal ions at the anode.	MOST REACTIVE
Sodium				
Calcium		React to form hydrogen and salt solution.		
Magnesium	They will react very slowly with cold water producing **only a small amount of bubbles of hydrogen.**			
Aluminium				
(Carbon)				
Zinc	React with steam to form hydrogen and a solid metal oxide.		REDUCTION WITH CARBON- Their metal oxide is heated with carbon. This is a redox reaction. Iron oxide reduced and carbon oxidised. **Iron oxide + Carbon → Iron + Carbon dioxide**	Increasing ability of metal atoms to form positive ions (by losing electrons)
Iron				
Copper	Do not react with cold water or steam	Do not react.		
Silver			Found in their NATIVE STATE – uncombined with other elements.	
Gold				LEAST REACTIVE

Metals and displacement reactions

A more **reactive metal** can **displace** a less reactive metal from its **compounds**. For example, magnesium is more reactive than copper. It displaces copper from copper sulfate **solution**:

magnesium + copper sulfate → magnesium sulfate + copper

$Mg(s) + CuSO_4(aq) \rightarrow MgSO_4(aq) + Cu(s)$

Recycling and Life cycle assessment (LCA)

Recycling:

Advantages:

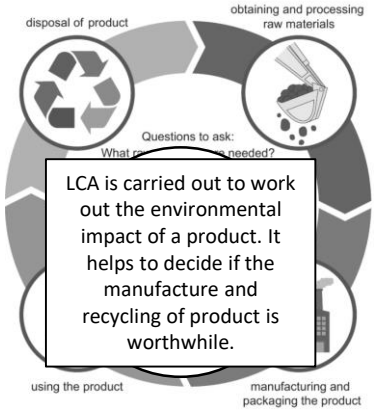
Natural reserves of ores last longer.

Less energy is needed for recycling than extraction from ores.

Need to mine for ores is reduced.

Disadvantages:

The cost and energy of collection, transporting, and sorting of materials are high.

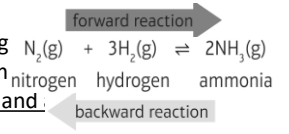


Reversible reactions and dynamic equilibrium

In some chemical reactions the products react to reform reactants – these are reversible reactions and can be identified by the ⇌ symbol.

THE HABER PROCESS

Reversible reaction between Nitrogen (from the air) and Hydrog (from natural gas) that forms Amm



Conditions: temp. 450°C, 200 atm and Iron catalyst.

- **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 can be altered by changes in temperature, pressure and concentration. The equilibrium position moves to reduce the effect of changes to the system.

Combined Science – 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 in 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.
rate	How quickly something happens.
limiting factor	A single factor that, when in short supply, can limit the rate of a process such as photosynthesis.
root hair cell	A cell found on the surface of plant roots that has a large surface area to absorb water and dissolved mineral salts quickly from the soil.
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

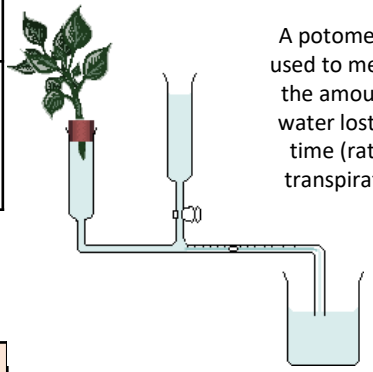
Photosynthesis	***Plants make use of light energy from the environment (ENDOTHERMIC) to make food (glucose)***	Carbon dioxide + Water → Oxygen + Glucose
		$CO_2 + H_2O \rightarrow O_2 + C_6H_{12}O_6$

Rate of photosynthesis

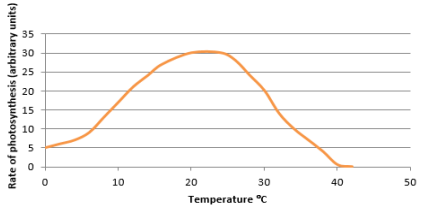
The rate of photosynthesis is affected by temperature, light intensity, carbon dioxide concentration.

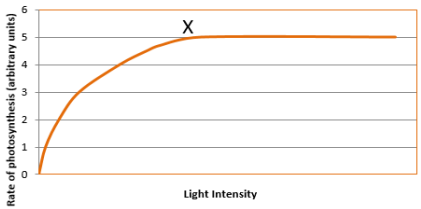
Factors affecting the rate of photosynthesis	Factor	How the rate is affected	Limiting factors (why the rate stops going up)
	Temperature	***As the temperature of the environment the plant is in increases rate of photosynthesis increases (up to a point) as there is more energy for the chemical reaction.***	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

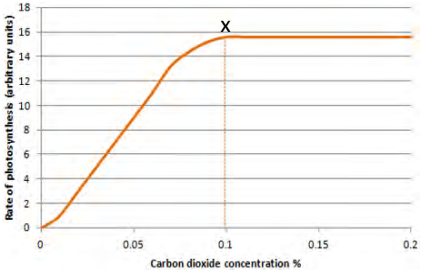
Transpiration



A potometer is used to measure the amount of water lost over time (rate of transpiration)

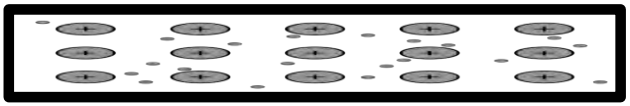






Todmorden High Combined Science Physics Topic 10 Electrical Circuits

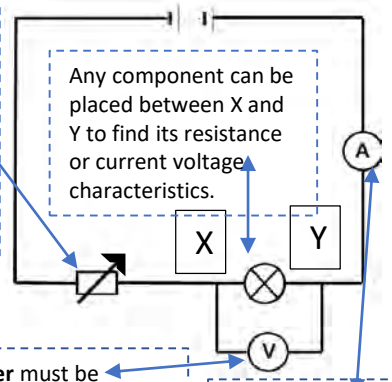
Key term	Definition
Current (I) (through)	The rate of **flow of charge per second**, measured in **amperes (A). I** stands for current in equations.
potential difference (V) (across)	The **energy transferred per unit of charge** that flows across two points, measured in **volts (V).** A potential difference causes a current to flow.
resistance (of)	The **ratio of potential difference to current**, measured in **ohms (W)** A larger resistance gives a smaller current for the same potential difference.
Power (P)	is the energy transferred per second measured in **watts (W).**
Charge (Q)	is measured in **coulombs (C).** Electrons have a relative charge of -1. Ions in solution have relative charge too e.g. Cu^{2+}.



Circuit Rules	Series (_one_ loop)	Parallel (two or more loops))
I	SAME $I_1 = I_2 = I_3 = \ldots I_n$	SHARED $I_{out} = I_1 + I_2 + \ldots I_n$
V	SHARED (proportional to R) $V_{in} = V_1 + V_2 + V_3 + \ldots V_n$	SAME (across each branch) $V_{in} = V_1 = V_2 = V_3 = \ldots V_n$
ΣR	Adding resistors in series **increases** net (effective) resistance $\Sigma R = R_1 + R_2 + \ldots R_n$	Adding resistors in parallel **decreases** net (effective) resistance Because there are more pathways for the current to flow.
V=IR	Always obeyed!	Always obeyed!

The **TEST circuit** is used in all electricity investigations. **Make sure you can draw one**.

The **variable resistor** controls the potential difference across the test component.



The **voltmeter** must be connected **across** the test component (**"in parallel"),** to measure potential difference **across** the test component in volts (V).

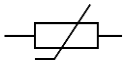
The **ammeter** is wired "**in series**" to measure the current **through** the test component in amperes (A).

Equations to Learn. Make sure you know what each term stands for and the units!

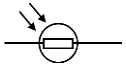
V = I × R		
$V = \frac{E}{Q}$	$I = \frac{Q}{t}$	$R = \frac{V}{I}$
$P = \frac{E}{t}$	$P = IV$	$P = I^2R$
$E = I\,V\,t$		

← **Think of a metal wire as fixed metal ions in a sea of free electrons. When a potential difference is applied the free electrons can flow – that's a current.**

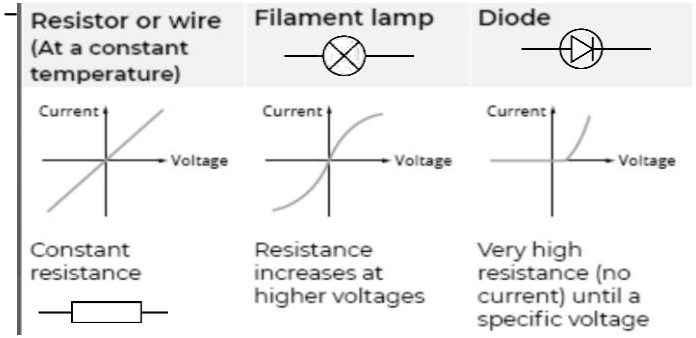
Useful Components.



Thermistors are useful because their resistance **reduces** as temperature increases. They can be used in automatic temperature controlled circuits e.g. incubators, central heating circuits etc.



Light Dependent Resistors (LDRs) are useful because their resistance **reduces** as light intensity increases. They can be used in automatic street lighting.



Year 10 – Art – TERM 1 - PORTRAITURE

During this project, students will learn the process of creating a GCSE project and the journey you take. Students will learn about a range of different portraiture artists and tips to creating accurate artist copies.

Students will then learn how to develop their work with use of first hand photographs but using the style of the artist to create unique pieces of work.

The students will learn about the following artists: February James, Boris Schmitz, Banksy, David Flores and Marion Bolegnesi. This range of artists will help the students to develop their understanding of a range of materials including pencil, pen, ink, watercolour, oil pastel and Photoshop.

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.

Each project must have:

- 2 x copies of artist work.
- Analysis of artist's study.
- 5 x relevant photographs.
- 2 x work inspired by photography.
- 4 x development work.
- Analysis of development work.
- 1 x final piece.
- Evaluation of final piece.

Assessment Objective 1 includes artist research and showing an understanding and a clear link to other artists' work. This is 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 – to press down lightly with your pencil.

Tone - the particular quality of brightness, deepness, or hue of a shade of a colour.

Proportion - adjust or regulate areas of your drawing so that it has a particular or suitable relationship to the rest of your work.

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 finishing touches.

Year 10 – 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).

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Year 10 – Art – TERM 3

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.

Each project must have:

- 2 x Copies of artist work.
- Analysis of artist's study.
- 5 x Relevant photographs.
- 2 x Work inspired by photography.
- 4 x Development work.
- Analysis of development work.
- 1 x Final piece.
- Evaluation of final piece.

Assessment Objective 1 includes artist research and showing an understanding and a clear link to other artists' work. This is shown through artist research pages and copies of the artist's work.
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Starting a new business

Three main questions;
Why ?
Who?
How?

Why new business ideas come about

Changes in what customers want.
Products and services becoming obsolete.

Changes in technology.

New technology	New products/uses
GPS (Global positioning system)	• Sat Nav. • Pet monitoring collar. • Self driving cars.
3D Printing	• Made to measure printed shoes. • One off prototypes to test new product ideas.

New ideas and competitive advantage

Competitive advantage is a term given to any factors that help a business to succeed when competing against direct rivals.

Adapting existing products and services

The overwhelming majority of new products launches are derived from an existing product's success.

Key words

Dynamic nature of business — The idea that business is ever changing because of external factors, such as technology, are always changing.

Venture capital — Risk capital provided by an investor willing to take a risk in return for a share in any later profits; the venture capital provider will take share stake in the business.

Demand — The number of units that customers want – and can afford – to buy.

Entrepreneurs — Business people who see opportunities and are willing to take risks in making them happen.

Obsolete — A product or service with sales that have declined or come to an end as customers find something new.

Competitive advantage — A feature of a business that helps it to succeed against rivals.

Independence — The need by many business owners to make their decisions and be their own boss.

Customer needs — The product or services people need to make life comfortable.

Customer wants — What people choose to spend their money on, once weekly bills have been paid.

Goods — Products that may be fresh, such a apples or manufactured, such as Heinz baked beans.

Services — Providing useful ways to help people live their lives for example shops, restaurants and hospitals.

Unique selling point (USP) — An original feature of a product that rivals aren't offering.

Value Added — The difference between the selling price and the cost of bought in goods and services (the difference that creates the possibility of profit).

Risk taking — Making decisions where unknown factors or chances of failure loom large in the decision-makers minds.

Risk and Reward

Risk is about chance. What is the chance that a particular outcome will occur? Large firms know that, over the years, only one in five new products are a success so the chance of failure is four out of five. Does that mean firms should never launch new products?

Risk can mean business failure, financial loss or lack of security. Whereas reward can mean business success, profit and wealth and independence

Adding value

Many shops sell Walkers crisps at 50p per pack. The pack weighs 35g which is about 2p of potatoes. Oil, salt and flavouring are also used , but even adding in the packaging, the total cost per unit is only 4p. So turning potatoes into crisps is adding value.

Chicken curry and rice	Price per person
Cook your own	£2.00
Add Sherwood's bottled sauce to chicken	£2.50
Buy supermarket ready meal	£2.75
Buy a takeaway	£4.75
Go to a restaurant	£7.75

The role of entrepreneurship

An entrepreneur is a risk-taker who wants to create an organisation that makes a difference

An entrepreneur;

Takes risks.
Makes business decisions.
Organises recourses.

Customer needs

The ability to meet customer needs is important as it will encourage repeat purchase and attract new customers

The 5 strands of the customer needs

1. Quality
2. Choice
3. Price
4. Convenience
5. Customer service

Market Research

The purpose of market research is :

- Fill gaps in the market
- Identify competitors
- Understand trends
- Reduce risks and inform decisions

Limitations of customer feedback

- Expensive
- Time consuming
- Sample size may be too small and therefore not reliable

Primary market research – research done first hand by the business wanting the information.

1	Surveys	Analysis • More accurate • Up to date • Specific to needs • Effective for qualitative data • Direct customer contact
2	Focus groups	
3	Observations	
4	Experiments	
5	Questionnaires	
6	Social Media	

Secondary market research – research that already exists and is therefore second hand information

1	Internet sites	Analysis • More accurate • Up to date • Specific to needs • Effective for qualitative data • Direct customer contact
2	Local newspapers	
3	Government reports	
4	Market reports	
5	Sales data	

Competitive market

A market where there are lots of competitors and rivals all trying to attract customers and become the market leader.

Customer needs

Choice, convenience, customer service, price and quality are all customer needs. If businesses are able to meet these needs they are likely to be successful.

Demographics

A breakdown of the market into specific groups according to age and family situation. For example, 16-21 year olds who are single or families with young children.

Differentiation

Techniques and methods used by businesses to show that their product is different from other products. This can increase sales, but also allow businesses to charge higher prices.

Gap in the market

An opportunity in the market that has not yet been exploited by other firms or products. Gaps in the market can be found using market mapping.

Market

A place where buyers and sellers come together. A market will consist of consumers, competitors and different distribution channels.

Market map

Using variables to plot where different competitors or products are placed within a market. The idea is to identify gaps that can then be exploited with new brands or products. Variables are quite often price, and quality, or luxury versus economy.

Market segment

A group of buyers with similar characteristics and buying habits.

Questionnaire

Document containing a series of questions designed to discover information about consumers' needs and wants.

Repeat purchase

Where a new buyer of a product (product trial) buys the product again, the hope being that they may become a loyal customer.

Unique selling point

A feature of a product that is different, and therefore can differentiate it from any other product in the market. For example, the first water-proof smart phone, the only cyclone technology vacuum.

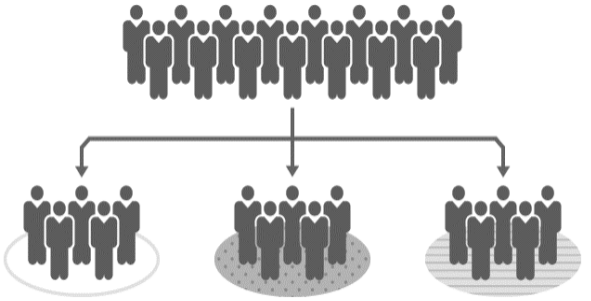
Qualitative Data - Information about people's opinions, judgements and attitudes.

Advantages	Disadvantages
Provides depth and detail from an actual customer	A small sample – data could be bias
Helps a business listen to what exactly a customer wants	Responses can be subjective – based on one person

Qualitative Data – Data that can be expressed as numbers and statistically analysed

Advantages	Disadvantages
Provides depth and detail from an actual customer	A small sample – data could be bias
Helps a business listen to what exactly a customer wants	Responses can be subjective – based on one person

Market segmentation is the process of splitting a business' target market into different groups. Businesses use these groups to make it easier for them to develop products aimed at certain people and to help them target their marketing. Small businesses generally split up their target market based on location, demographics, behaviour, lifestyle, income and age.



Customer needs

1	Quality
2	Choice
3	Price
4	Convenience
5	Customer Service

The ability to meet customer needs is important as it will encourage repeat purchase and attract new customers.

Product life cycle

Development
Introduction
Growth
Maturity
Decline

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: Advertising is communicating with an audience on mass and 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 promoting, 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

Key words

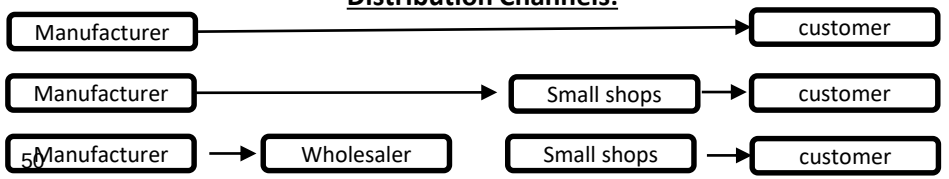
Retailer Retailers are companies which sell directly to consumers. A business may decide to cut 'the middle man' to maximise their profits by selling directly to retailers OR by opening their own retail stores.

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 less over heads 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:



Options when starting up Ownership and liability

Sole trader – A business run by one person; that person has unlimited liability for any business debts. Usually sole traders are smaller businesses that open locally, like; florists, plumbers, handymen, dog walkers, market stall holders

Advantages	Disadvantages
- Registration, quick, simple, cheap - Keep all profits - Easy to dissolve	- Unlimited liability - Not a separate legal entity - Lonely – no support

Partnership – A business with several owners, usually 2-20 . In this situation, ownership is shared between all partners Quite often used by vets, lawyers, GP's

Advantages	Disadvantages
- Shares responsibility with someone else - Expertise shared - Prevents loneliness	- Unlimited liability - Not a separate legal entity - Shared profits

Franchise – paying a franchise owner for the right to use an established business name, branding and business methods.
Royalties - percentage of the sales revenue to be paid to the franchise owner.

Advantages	Disadvantages
- Support from franchisor - Known brand and products - Training & advice	- Expensive to start -Must be run one way - Royalties & Fees to be paid

Limited – **Public limited company -** A public limited company ('PLC') is a company that is **able to offer its shares to the public**. They don't have to offer those shares to the public, but they can.
Private limited company = LTD - a small family business in which shareholders enjoy limited liability

Advantages	Disadvantages
- Limited liability of owners - Easy to register - Clear succession	- Rules and compliance – must publish records - Shared ownership and shared profits

Cost-plus pricing	Setting a price by adding a fixed amount or percentage to cost of making product
Penetration pricing	Setting a very low price to gain as many sales as possible
Price skimming	Setting a very low price to knock out all other competition
Competitor pricing	Setting a price based on competitors' prices
Price discrimination	Setting different prices for same good, but to different markets e.g. peak and off-peak mobile phone calls
Psychological pricing	Setting a price just below a large number to make it seem cheaper e.g. £9.99 not £10

Key words

Bankrupt – When an individual is unable to pay their debts, even after all personal assets have been sold for cash.

Limited liability – Restricting the losses suffered By owners/shareholders to the sum they invested in the business.

Entrepreneur – A person who sets up a business and takes on financial risks in the hope of profit.

Fixed premises – Buildings that have to be where they are (for example, the highstreet); ecommerce buildings can be located anywhere.

Proximity – Nearness; whether a business wants to be close to a factor such as 'materials.

Business location

Market – Want to be close if selling everyday items (convenience). If selling something unique or special customers will be willing to travel.

Labour – Some goods will require specialist skills to make. Therefore you might locate where the population have these skills (computing skills inside the M26)

Materials – If you are bulk reducing, locate close to materials to reduce transport cost. If bulk – increasing locate closer to customers to reduce transport costs

1. Proximity to Market	51	**3. Proximity to Materials**
2. Proximity to Labour		4. Proximity to Competitors

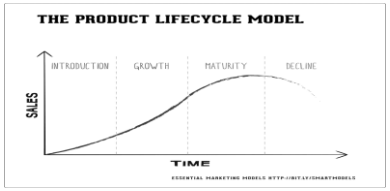
The Marketing Mix

Place – How and where the supplier is going to get the product or service to the consumer; it includes selling products to retailers and getting the products displayed in prominent positions.

Price – Setting the price that retailers must pay, which in turn affects the consumer price.

Product – Targeting customers with a product that has the right blend of functional and aesthetic benefits without being too expensive to produce.

Product life cycle – A graph that show the introduction, growth, maturity and decline of a product



Function
FAC
Aesthetics
Cost

The design mix refers to three aspects of design that companies need to consider when developing a product; functions, costs, and aesthetics.

Promotion – Within the 4Ps promotion means all the methods that a business uses to persuade customers to buy, for example branding, packaging, advertising to boost the long-term image of the product and short-term offers.

Stakeholders

Stake-holder	Different objectives of each stakeholder group
Share-holders (owners)	Shareholders in family-run, private limited companies usually focus on long-term organic growth. Shareholders in public limited companies (plcs) are more likely to care mainly about the short-term share price – they may be delighted to sell at a big profit if the company is bought by a rival, or to see sharp cost-cutting to boost profits
Employees	Security of employment; opportunities for career development (so organic growth is a key objective); fair pay and good 'fringe benefits' such as pensions, holidays and perhaps a company car
Customers	Consistently high-quality products and service; honest and fair dealing from the company; bright, innovative new products that make life better (or more fun)
Managers	Security of employment; opportunities for career development (so organic growth is a key objective); fair pay and good 'fringe benefits' such as pensions, holidays and perhaps a company car
Suppliers	Honest and fair dealing from the company, especially on prices and credit terms; good communication about future plans; strong organic growth meaning rising demand for supplies
Local community	Honest and fair dealing from the company, especially on plans that affect local employment and the environment; some locals may want to see the business grow, others may not
Pressure groups	Honest and fair dealing from the company, especially on plans that affect customers and the environment; often pressure groups seem to be against growth, perhaps focusing overly on the downside of business activity
The governmen t	Honest and fair dealing from the company, especially on tax arrangements, employment plans and location plans (HSBC threatened to leave the UK to try to water down legislation controlling banking practices;

Employment legislation

Recruitment – This legislation outlines what employers can and cannot do when recruiting staff, and responsibilities are once a job offer is made.

Pay – This legislation covers pay and is designed to ensure that the pay workers receive is above a set minimum level

Discrimination – This area of employment law is designed to ensure that employers treat all people fairly

Health and safety – Legislation around health and safety is designed to keep employees safe while they are at work

Legislation and business

Consumer law – Acts of Parliament that are intended to protect customers from misleading or dangerous practices by companies.

Consumer rights: – Laws that empower the consumer to demand certain minimum standards from every business supplier.

Legislation – Laws passed by acts of Parliament; breaking these laws may result in a fine or even a prison sentence.

Red tape – The term given to laws that (some people say) tie the hands of businesspeople, making it hard to act entrepreneurially.

Consumer Rights Act 2015

- ◆ Goods must be fit for the purpose for which they are sold; relevant aspects of 'fit for purpose' include freedom from defects and the appearance, finish, safety and long-lasting nature of the product
- ◆ The buyer has a right to get their money back, or could have it repaired at the seller's expense
- ◆ The person responsible for correcting any problem is the seller (the shop), not the manufacturer.

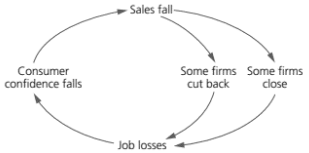
Trade Descriptions Act 1968

- ◆ It is an offence for a trader to use false or misleading statements.
- ◆ It is an offence to misleadingly label goods and services.
- ◆ The act carries criminal penalties and can therefore lead to a jail sentence.

Introduction to the economy

Recession – A downturn in sales and output throughout the economy, often leading to rising unemployment.

Boom – A boom is a period of rapid economic expansion resulting in higher GDP, lower unemployment, a higher inflation rate and rising asset prices.



The economy in business

Consumer incomes – Amount households have available to spend after income taxes are deducted.

Inflation – Rate of increase in the average price level.

Economic climate – Like the weather, the economy can run cold or hot; the economic climate is a measurement of the current economic outlook, which might be promising or worrying.

Exchange rate – The value of one currency measured by how much it will buy of other currencies.

Unemployment – When someone of working age wants a job but cannot get one.

Taxation – Charges placed by government on goods, imported goods and the incomes of individuals and companies.

External influences on business

This decision making has to cover changes in technology, legislation and the economic climate - as the economy is changing constantly, all established businesses become used to the need to respond to economic ups and downs.

PD

Physical Development :Fine Motor skills (small movements), Gross Motor Skills (large movements)

Age	Physical Development: Gross Motor	Physical Development: Fine Motor
12 months	Sits from standing Stands alone May walk a few steps Throws toys intentionally	Clasps hands together. Uses sophisticated pincer grasp and releases hold intentionally. Feeds self with a spoon and finger foods.
15 months	Walks independently. Crawls upstairs. Crawls downstairs feet first. Sits in a child sized chair independently.	Tries to turn the pages of a book. Makes a tower of two blocks. Makes marks with crayons. Holds own cup to drink.
18 months	Walks confidently and attempts to run. Walks up and down stairs with hand held by adult. Bends from the waist without falling forwards. Balances in the squat position. Pushes and pulls wheeled toys. Propels ride on toys with legs. Rolls and throws balls, attempts to kick them.	Uses delicate pincer grasp to thread cotton reels. Makes a tower of three blocks. Makes big scribbles with crayons. Can use door handles.
2 years	Runs confidently. Climbs low apparatus. Walks up and down stairs alone, holding handrail. Rides large wheeled toys (without pedals). Kicks stationary balls.	Makes a tower of six blocks. Joins and separates interlocking toys. a Draws circles, lines and dots with a pencil. Puts on shoes.
3 years	Walks and runs on tip-toes. Walks up and down stairs confidently. Rides large wheeled toys using pedals and steering Kicks moving balls forward. Enjoys climbing and sliding on small apparatus.	Makes a tower of nine blocks. Turns the pages of a book reliably. Draws a face with a pencil, using the preferred hand Attempts to write letters. Puts on and removes coat. Fastens large, easy zips.
4 years	Changes direction while running. Walks in a straight line successfully. Confidently climbs and slides on apparatus. Hops safely. Can bounce and catch balls, and take aim	Makes a tower of ten blocks. Learning to fasten buttons and zips. Learning to use children's scissors and cuts out basic shapes. Draws people with heads, bodies and limbs.. Writes names and letters in play - begins to develop awareness that print carries meaning
5 years	Co-ordination increases. Controls a ball well. Plays ball games with rules. Rides a bike with stabilisers. Balance is good, uses low stilts confidently. Sense of rhythm has developed. Enjoys dance and movement activities,	Controls mark making materials well le.g. pencils, felt-tip pens). Writing is more legible. Writes letters and short familiar words. Learns to sew with children's sewing materials.

ID

Intellectual Development :Language, Reading and writing, communication, number skills

Age	Intellectual Development
12 months	Looks for objects that fall out of sight. Understanding that they still exist but cannot be seen. Remembering a past event enables anticipation of future events (e.g. may show excitement when placed in highchair for lunch). Begins to anticipate what comes next in the daily routine (e.g. a bath before bed). Can respond to basic instructions. Babbling sounds increasingly like speech, leading to first single words being spoken. Shows understanding that particular words are associated with people and objects by using a few single words in context
15 months	Will put away/look for familiar objects in the right place. Uses toys for their purpose (e.g. puts a doll in pram. Shows a keener interest in the activities of peers. Understands the concepts of labels such as you', 'me, 'mine and yours. Use of single words increase and more words are learned.
18 months	Uses trial and error in exploration. Understands a great deal of what carers say. More words continue to be spoken and learned. Begins to use other people's names.
2 years	Completes simple jigsaw puzzles. Understands that actions have consequences. Builds towers of bricks. Will often name objects on sight (e.g. may point and say 'dog' or 'chair'). Vocabulary increases. Joins two words together (e.g. 'shoes on' or 'all gone').Short sentences used by 30 months, with some words used incorrectly (e.g. I goed in rather than I went in').
3 years	Child is frequently asking 'what' and 'why' questions. Uses language for thinking and reporting. Can name colours. Enjoys stories and rhyme. Vocabulary increasing quickly. Use of plurals, pronouns, adjectives, possessives and tenses. Longer sentences used. By 43 months, most language is used correctly. Can match and sort into simple sets (e.g. by colour). Counts to 10 by rote. Can count out 3 or 4 objects from a group. Beginning to recognise own written name. Creativity is used in imaginary and creative play.
4 years	Completes puzzles of 12 pieces. Memory develops, recalls many songs and stories. Attention span increases .Fantasy and reality may be confused. Imagination and creativity increases. Problem solves ('I wonder what will happen if ...") and makes hypotheses ('I think this will happen if...') Sorts objects into more complex sets. Number correspondence (counting out) improves. Begins to do simple number operations. Uses language more fluently. As understanding of language increases, so does enjoyment of rhymes and stories. Speech is clear and understood by those who do not know the child. Begins to recognise more written words, and begins to be interested in books and electronic devices. Writes own name and copies other words and letters
5 years	Opinions and knowledge of subjects are shared using language. Vocabulary is also still growing fast. Enjoyment of books and electronic devices increases further as they learn to read. Spends longer periods engaged in activities and shows perseverance. Learns from new experiences at school. Learning style preferences may become apparent.

S
D

Social Development : communicating with others, acceptable behaviour, sharing, independence, self-esteem

Age	Social Development
12 months	The sense of self-identity increases, as self-esteem and self-confidence develop. Waves goodbye (when prompted at first, and then spontaneously). Content to play alone or alongside other children for increasing periods of time.
15 months	Become curious and want to explore the world around them. May show signs of separation anxiety (e.g. upset when left at nursery). May show off to entertain carers. Can be jealous of attention/toys given to another child. Emotions can change suddenly - quickly alternates between wanting to do things alone being happy to be dependent on carers. May respond with anger when told off or may throw toys or have a tantrum. Can be distracted from inappropriate behaviour. Possessive of toys and carers - reluctant to share. Child is busy or into everything.
18 months	Has a better understanding of being an individual. Very curious and more confident to explore. Becomes frustrated easily if incapable of doing something. Follows carers, keen to join in with their activities. Plays alongside peers (not interacting with them) and may imitate them, still very changeable emotionally. May show sympathy for others (e.g. putting arm around a crying child). Can be restless and very determined, quickly growing irritated or angry. May assert will strongly, showing angry defiance to adults. Can still be distracted from inappropriate behaviour.
2 years	Begins to understand own feelings. Identifies happy and sad faces. Experiences a range of changeable feelings that are expressed in various behaviours. More responsive to the feelings of others. Often responds to carers lovingly and may initiate a loving gesture (e.g. a cuddle). Peals of laughter and sounds of excitement are common for some. May use growing language to protest verbally. May get angry with peers and lash out on occasion (e.g. pushing and even biting them).
3 years	Can tell adults how they are feeling. Empathises with the feelings of others. Uses the toilet independently and washes own hands. Can put on clothes. Imaginary and creative play is enjoyed. Enjoys the company of peers and making friends. Wants adult approval. Is affected by the mood of carers/peers. Less rebellious. Less likely to physically express anger because words can be used.
4 years	May be confident socially. Self-esteem is apparent. Aware of gender roles if exposed to them. Friendships with peers are increasingly valued. Enjoys playing with groups of children. Control over emotion increases. Can wait to have needs met by carers. As imagination increases, child may become fearful (e.g. of the dark or monsters) Learning to negotiate and get along with others through experimenting with behaviour. Some considerate, caring behaviour shown to others. Experiences being in/out of control, feeling power, having quarrels with peers. Distracting the child works less often, but they increasingly understand reasoning. Co-operative behaviour is shown. Responds well to praise for behaviour, encouragement and responsibility.
5 years	Starting school may be unsettling. Enjoys group play and co-operative activities. Increasingly understands rules of social conduct and rules of games, but may have difficultly accepting losing. Increasing sense of own personality and gender. Keen to 'fit in with others - approval from adults and peers desired. Friends are important and many are made at school. Many children will have new experiences out of school (e.g. clubs, friends coming for tea) Increasingly independent, undertaking most of their own physical care needs. May seek attention, showing off in front of peers. Often responds to the 'time out' method of managing behaviour.

Stages	Solitary	Parallel	Associative	Co-operative
	When a child plays alone. Timeline	When children play alongside one another but do not play together.	When children communicate and play with the same type of toy or activity.	When children play together, actively working towards a common goal.
Examples	Imaginary play (e.g. role play, small world play.	Playing with dough.	riding a bicycle alongside another child.	Imaginary role play (may include props such as dressing-up clothes, imaginary areas such as a home corner, or toys such as teddies or tea sets.
	Puzzles books video/computer games.	Making things.	Games with few rules, such as rolling a ball back and forth.	Board games (e.g. Lotto, snakes and ladders)
	Construction play (e.g. blocks and interlocking bricks).	Complete a puzzle	Building with bricks alongside each other	Playground games (e.g. 'What's the time, Mr Wolf?', 'Traffic lights')
	Mark making drawing, painting and writing)	Painting	Playing at the sand tray water play.	Construction activities. Circle games (e.g. 'Here we go round the mulberry bush', 'The farmer's in his den')

Types	Manipulative	Co-operative	Imaginative	Physical	Creative
	Activities that involve making delicate operating movements with their hands and fingers	Two or more children play together interacting with each other with shared goals in mind. Usually from age three.	When a child acts out an experience they have had in play, or where they pretend to act out an experience that interests them.	Activities that require children to use their gross motor skills - the movements they make with their arms, legs, feet or their entire bodies develop balance and/or co-ordination develop the senses exercise the body and limbs (promoting fitness).	When children express themselves by responding to something that sparks their imagination
Examples	Mark making, such as drawing, painting, writing and chalking.	Board games (snakes and ladders)	Story boards, story bags, puppets.	Ball games (e.g. involving kicking, throwing, catching, bouncing]	Making music, dancing...
	Malleable materials - materials that can be squeezed and shaped (e.g. clay, play dough, cornflour paste, jelly and modelling clay)	Circle games (here we go round the Mulberry bush)	Play with small world toys (e.g. cars and a road play mat, a farmyard set, toy figures, a doll's house	Different ways of travelling (e.g. running, jumping, skipping, hopping, rolling, crawling, climbing)	Mark making with a variety of different things e.g. pens, pencil, chalk, paint, sticks and mud
	Craft activities using recycled materials such as empty bozes and milk cartons.	Group imaginary games	Role play may include props such as dressing-up clothes, imaginary areas such as a home corner, or dolls.	Playground equipment (e.g. slides, swings, climbing frames)	Sand and water play
	Construction toys (e.g. blocks and tools)	Partner dancing.		Feely bag games (based on touch)sound Lotto	Exploring nature
	Activities that require tools such as scissors, a computer mouse, utensils and cutlery.	Playing games (e.g. 'What's the time, Mr Wolf?)		Push and pull toys	Stories and imaginative play

OCR CamNat Child Development Year 10 #5 RO59 Topic Area 2.3

Textbook pages 153-159

Timeline	Resources	Activities	Vocabulary
Physical Development 	For fine motor skills: Tools scissors, brushes, rolling pins, cutters. Computer mouse. Threading beads. Modelling clay/cornflour paste/play dough/jelly. Dressing-up clothes with buttons to fasten. For gross motor skills: Different-sized balls and hoops. Large wheeled toys including ride on toys such as tricycles to promote balance and co-ordination. Tunnels and parachutes. Carts to push and pull. Low stilts. Skittles, hoopla, bats. Slide, climbing frame, balance beam, swing, stepping stones.	Playground games (e.g. 'What's the time, Mr Wolf?', 'Traffic lights') for movement such as creeping, running. Negotiating a chalk-drawn 'road' for awareness of space. Obstacle course for travelling around, under, over and through. Pretending to go on a bear hunt' for moving with confidence and imagination.	Fine manipulative skills Gross motor skills Hand eye co-ordination Increase fitness
Intellectual Development 	Counting beads, sorting toys, scales, weights. Rulers, height chart. Number lines/cards, magnetic numbers and letters, shape sorters, puzzles. Construction resources of different shapes. Clocks. Play money. Varied range of mark making materials (pencils felt tips, paint etc.).Letter frieze (e.g. letter line or poster) and alphabet line. Books, comfortable book area, talking books an computers. Musical recordings. Signs and labels.	Counting how many they need (cups, for example), sharing out for calculating. Singing number songs and rhymes. Tidying up for sorting objects/positioning (e.g. 'That goes on the shelf next to the bricks').Cooking for recognising ingredients, weighing and following instructions. Completing puzzles for developing problem solving skills. Story time. Retelling stories with props for understanding. Feely bags to promote descriptive language. Role play. Rhymes, songs, poems. Mark making opportunities in role play areas for starting to 'write' shopping lists in their play.	Mental stimulation Problem solving Communication
Social Skills 	Puppets, dolls and soft toys (with expressions, for exploring feelings).Table-top games (e.g. Lotto, snakes and ladders).Dressing-up clothes. Range of dolls/figures showing representation of people in the world (in terms of ethnicity, age, gender, disability).Well-equipped imaginary areas including a home corner and comfortable quiet area for resting and talking, cultural artefacts (e.g. representing food and cooking from around the world in the home corner resources).	New activities to build confidence, excitement and motivation to participate and learn (e.g. waves in the water tray or earth to dig instead of sand).Games for rules and turn-taking. Celebrating festivals for awareness and respect of the wider world. Pouring drinks and putting on clothes for independence. Circle time for talking about home.	Independence Confidence Sharing Self-esteem Communication skills
Creative Skills 	Wide range of art and craft resources including different colours and textures (e.g. paper, card, tissue, cellophane, paint, glue, felt tips, crayons, craft feathers, lollipop sticks, sequins, buttons, pipe cleaners). Musical recordings and musical instruments. Equipped role play areas. Dolls.	Wide range of art, drawing and craft activities (e.g. painting outside with water and large brushes for expression and imagination).Making textured collages. Music and movement. Music time with dancing/singing/playing instruments. Puzzles for problem solving. Child-led activities that encourage creative thought and problem solving (e.g. how to cross the room without stepping on the floor using a range of resources).	Imagination Problem solving Creative thought

Child Development: Key terminology

Todmorden High School

Physical Development

Spatial awareness	Understanding where you are in relation to the objects in your environment. Children gain control of eye movements with hand movements **(hand-eye co-ordination)**.
Staying healthy	Children should be taught about staying healthy, this includes getting exercise, being hygienic and eating the right foods.
Taking care of yourself	Involving children in **self-care routines** from a young age supports this. As they grow children should help cleaning their teeth, toilet train and learn to dress themselves.
Gross motor skills	The movement of larger muscles. **Body management** skills are used to control the body. **Body co-ordination** is the movement of different areas of the body.
Fine motor control	Control over small muscles, particularly in the hands. Movements become more **accurate** and children are better at **manipulating** objects.

Intellectual development

Problem solving	Children are naturally **inquisitive (curious)**. They love solving problems. This supports their **resilience** and **perseverance**.
Imagination and creativity	Using your mind to be creative opens children up to new ideas. **Pretend play** is an important part of this.
Listening and attention skills	Children build up their ability to listen and **concentrate** for longer periods of time. Children learn when to speak and social skills of **turn taking** in a conversation.
Numeracy skills	The foundation of mathematics children learn about **more and less** and **counting**. **Shape, weight, money** and **number patterns** are also part of numeracy.
Exploring environments	This includes **indoor and outdoor play**. Children should be able to safely explore indoor and outdoor environments.
Confidence using Technology	Technology is an important part of our lives. Children should learn about the technology around them and be taught how to use it safely.

Intellectual development - communication

Listening Skills	Listening develops communication. Children learn new words and what they mean. This starts with understanding what other people say and leads to being able to talk themselves.
Building Vocabulary and literacy	The number of words a child knows, understands and can use builds over time. Reading books and listening to others talk supports this.
Expressing feelings	Children find ways to communicate their feelings before they can talk. As they grow older their **vocabulary** increases so they can express their emotions.
Understanding others' experiences	Children first develop a sense of self, that they are separate from their parents. This then moves to understanding that **other people are different from them**. They will ask questions when this is not the 'norm' for them.

Social (and emotional) Development

Developing relationships	Children's relationships change as they grow. They make strong **social and emotional bonds** with care givers and can feel **separation anxiety** when these people go away from them. As they get older they develop friendships and choose who they play with.
Sharing, turn taking and compromise	These are key social skills that need to be taught. They develop in interactions with other children and children need to be supported by adults to learn these skills.
Understanding culture and values	Children need to understand about **diversity of cultures**. Different play activities and themes can support with this.
Expression of feelings	It is important that children express their feelings and learn about healthy and appropriate ways to do this.
Self-confidence, self-esteem, self-awareness	Children first develop self-awareness, (a sense of who they are). Self-confidence and self-esteem come from this as they feel **secure** in who they are.
Promoting independence	Independence is an **essential life skil**l. Children learn to be gradually less reliant on adults and are confident to do things for themselves. Sometimes a desire to be confident leads to **frustration**.

Observation Methods

Timeline

Narrative

Narrative observation is when a child's natural spontaneous behaviour is observed for a set period of time. During this time, other adults in the room will not lead or prompt the child, but they will respond if the child approaches them. This means that the child will most likely be engaged in a child-led activity, such as any type of freely chosen play.

Checklist.

A form reminds the observer to look for particular skills or reflexes that the child has. The observer ticks these off as they are seen and records the date.

Snapshot

This type of observation is when a practitioner notices a child doing something interesting and spontaneously observes them very briefly, often just for a minute or two.

Time sample

The observer decides on a period of time for the observation, perhaps two hours or the length of a session. The child's activity is recorded on a form at set intervals - perhaps every 10 or 15 minutes. This tracks the child's activity over the period of time.

Participative

This occurs when the observer deliberately interacts with the child during the observation.

Non-participative

This occurs when the observer does not interact with the child at all. This gives an authentic picture of the child's natural behaviour. The practitioner will settle in a spot where they can see the child well without the child realising they are being observed.

Safe Environment

Problems	Solutions
Environment	Mitigation and prevention
Lack of supervision: ratios	Health and Safety risk assessment
Untrained staff	Different areas
Safety Equipment	Safety equipment
Taking risks in play	Placement/location Supervision Staff training Visual plan with reasons

Types of Accidents

Choking
Suffocation
Burns
Falls
Electric Shock
Drowning
Poisoning
Cuts
Grazes
Trapped fingers

Car Seat Categories

Timeline

0 kg to 9 kg
Lie-flat or 'lateral' baby carrier,
*rear-facing baby carrier, or
*rear-facing baby seat using a harness

0 kg to 13 kg
*Rear-facing baby carrier or
*rear-facing baby seat using a harness

9 kg to 18 kg
Rear- or forward-facing baby seat using a harness or safety shield

15 kg to 36 kg
Rear- or forward-facing child seat (highbacked booster seat or booster cushion) using a seat belt, harness or safety shield

You must also:
deactivate any front airbags before fitting a rear-facing baby seat in a front seat not fit a child car seat in side-facing seats.

Factors to consider:

Design Durability Cost

Safety
- Label
- Features
- Checks

Flammability
Stability
Hygiene
- Material
- Wipeable

Choosing Essential equipment Birth- 5 years

Travelling
- Pram
- Buggie/ Stroller
- Reins
- Car seat
- Carrier/Sling

Sleeping
- Moses basket
- Side-along
- Cot/Cotbed
- Matress
- Bed guard
- Sleeping Bag
- Duvets
- Rest mats
- Bean bag

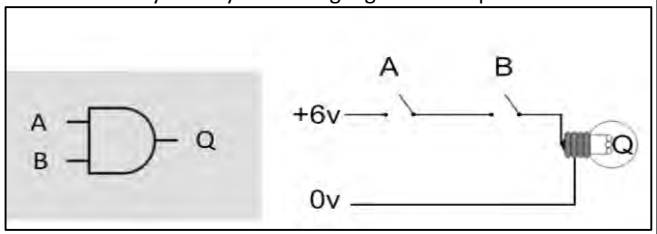
Feeding
- Steriliser
- Bottle
- Breast
- Trainer cup
- Cutlery
- Sectioned plates
- Weaning bib
- Highchair
- Trip trap

Changing
- Mat
- Bin
- Disposable Nappies
- Reusable Nappies

Computer Science GCSE J277 2.4 & 1.2 Logic Gates Memory and Storage **Half Term 1**

SWITCH

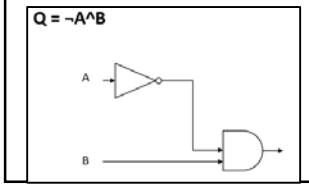
A transistor is a switch that allows electricity to pass. If a switch is closed this is a 1 if a switch is open this is a 0. This is referred to as binary. Binary is the language of a computer.



SIMPLE LOGIC GATES

AND	∧	A	B	Q
		0	0	0
		0	1	0
		1	0	0
		1	1	1
OR	∨	A	B	Q
		0	0	0
		0	1	1
		1	0	1
		1	1	1
NOT	¬	A	B	
		1	0	
		0	1	

LOGIC GATE EXPRESSION



HEX TO DENARY

16^1	16^0
16	1
B	A
11 * 16 = 176	10 * 1 = 10
176 + 10 = 186	

Denary	Hex
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	A
11	B
12	C
13	D
14	E
15	F

DENARY TO HEX

Divide the number by 16:
167/16= 10(A)
Record the remainder:
Remainder = 7
Therefore the answer = A7

DENARY TO BINARY

128	64	32	16	8	4	2	1
0	1	1	0	1	0	1	0

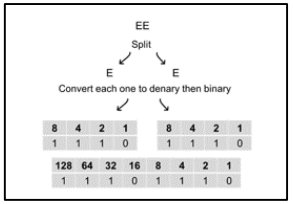
Does 128 go into 108? No, add 0

BINARY TO DENARY

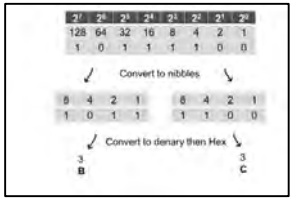
128	64	32	16	8	4	2	1
0	1	1	0	1	0	1	0

64 + 32 + 8 + 2 = 108

HEX TO BINARY



BINARY TO HEX



COMPRESSION

Lossy –reduces the colours within an image or the number of samples in a sound file. Destructive compression as the colours and samples that have been removed can never be replaced. Not suitable for text.

Lossless- compresses files while being transmitted, then reassembles them to their original quality. Non-destructive. Suitable for text files

Bit, nibble, byte, kilobyte, megabyte, gigabyte, terabyte, petabyte

CHARACTER ENCODING

Encoding standard	Bits	Values
ASCII	7	128
Extended ASCII	8	256
Unicode	16-32	4billion +

A character set is, *the characters a computer understands.* Can be represented in Hex so it is easier for humans to understand for example – Unicode character 1F64A. In binary this would be 0001111011001001010

IMAGE

File size = w x h x bit depth

SOUND

File size= sample rate x sample resolution x duration

UNITS

GB to MB	X 1000
GB to MB	X 1000 X 1000
KB to MB	/ 1000
KB to GB	/1000/1000

Computer Science GCSE J277 2.4 & 1.1 Architecture of the CPU **Half Term 2**

KEY VOCABULARY	
Central Processing Unit	This component repeatedly fetches, decodes and executes instructions. Often abbreviated to CPU
CU	*Control Unit.* - Part of the CPU that manages the functions of all other parts of the CPU
Main Memory	Also known as RAM or Primary Storage, this is where data and instructions are stored in the Von Neumann architecture
MAR	*Memory Address Register* -The register that contains an address in RAM of the next instruction or the next data item to be used, it sets up the address bus ready for a memory read or write operation.
MDR	*Memory Data Register* - Small, fast memory used to store the information collected from the RAM before processing
PC	A register that holds the address of the next instruction to be fetched during the fetch-execute cycle
Accumulator	Small, fast memory, used to keep track of the data currently being processed
ALU	*Arithmetic and Logic Unit* - Does the basic mathematics and comparisons during processing
Cache	Incredibly fast, but very expensive volatile memory using in the CPU
Fetch / Decode / Execute Cycle	Basis of the von Neumann architecture – the repeated process where instructions are fetched from RAM, decoded into tasks and data, then carried out.
Clock Speed	The number of FDE cycles that a CPU can carry out per second. Measured in Ghz (1 Ghz = 10^9 cycles per second or 1,000,000,000hz)
Cores	Some processors have multiple CPUs which can work in parallel, sequentially or can multitask. Dual and Quad cores are common in modern PCs. Each core can complete their own FDE cycle

KNOWLEDGE

Computer Systems

A computer system is one that is able to take a set of inputs, process them and create a set of outputs. This is done by a combination of hardware and software.

The Fetch-Decode-Execute Cycle

The CPU follows three steps in order to process data:

It is known as the ***Fetch - Decode - Execute*** cycle (aka Fetch-Execute Cycle).

Fetch – Instructions or Data from main memory (RAM)

Decode – Control Unit decodes instructions

Execute – Control Unit directs other components to carry-out the instructions

CPU Performance

Is affected by and can be improved by changes to ***clock speeds*** – ***no. of cores*** and size of ***CPU Cache***

Embedded Systems

Computers that are built within other devices to perform a single specific task within a larger electrical or mechanical system. Runs programs which are held in ROM and cannot be changed. E.g. Cooking instructions for a microwave oven. They have limited operating systems and may be linked to a user interface – E.g. Washing Machine (Control Panel)

Computer Science GCSE J277 1.2 Memory and Storage **Half Term 3**

KEY VOCABULARY	
Volatile	Memory which requires constant electrical charge. If the power is turned off, then the data is lost
Non-volatile	Memory which can retain its data when the power is turned off
RAM	*Random Access Memory*
ROM	*Read-Only Memory*
Cache	Very fast memory, on, or very close to the CPU
Virtual Memory	A section of the HDD which can be used as RAM for very memory intensive processes
Flash Memory	A type of dynamic (changeable) ROM
Boot Process	The instructions needed to start the computer and to initialize the operating system.
POST	*Power On Startup Test* A series of checks done on the hardware of the computer to ensure the machine can run.

TYPE	VOLATILE?	DYNAMIC?	RELATIVE SPEED
Cache	YES	YES	Very Fast
RAM	YES	YES	Fast
ROM	NO	NO	Slow
Flash	NO	YES	Slow
Virtual	YES	YES	Very Slow

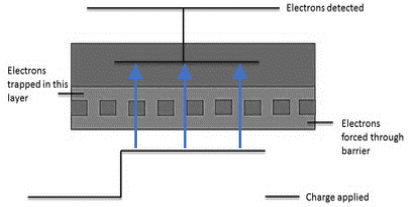
KNOWLEDGE

PRIMARY STORAGE - MEMORY

RAM is *volatile* memory, which stores data in a single transistor and capacitor. This means it needs a constantly recycled charge to hold its data. If the power is turned off, it cannot refresh the data and it is lost. This is known as *DYNAMIC* memory. The computer uses RAM to store the current program or data being used.

ROM is non-volatile. The data is hardcoded onto the chip by the manufacturer and cannot be overwritten by the user. Because it holds its information even when the power is turned off, this makes ROM ideal for storing the instructions needed to get the computer started up – the *BOOT PROCESS, and POST.*

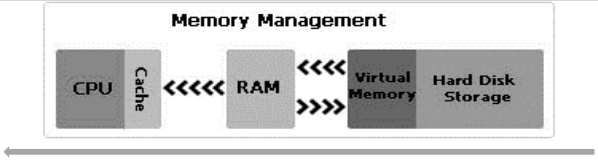
Flash Memory is a new type of ROM chip which holds its data when there is no power making it *non-volatile* but that can be rewritten easily by the user. By using a relatively large electric current, electrons can be *forced* through a barrier and into the *storage layer.* The pattern of electrons can be read as data without affecting the data.

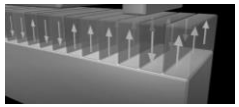
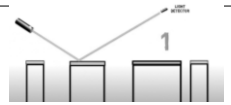
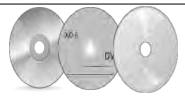
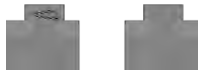
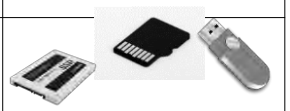
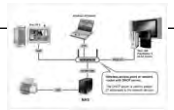


VIRTUAL MEMORY

To increase the speed and efficiency of RAM, most machines allocate a small portion of the Hard Disk to *VIRTUAL MEMORY.* The contents of the RAM are moved between the slower Virtual Memory and RAM as and when they are needed.

Using / Increasing Virtual Memory does not improve the speed of the computer, but rather using Virtual Memory increases the threshold at which a computer locks, by increasing the usable memory, and preventing deadlock due to filling the available primary memory.



KEY VOCABULARY			
Magnetic	Consists of tiny little magnets on the surface. The magnets can be in one of two positions. A reader can hover over the magnets and detect their position. These positions can be read as a 1 or 0		
Optical	Whilst the disc is spinning, a laser that points at the disc, will detect little pits(holes). These pits will be read as a 0. Areas with no pits will be read as a 1.		
Solid State	Traps a small amount of electricity inside a tiny cell. If electricity is present, this is a 1 and not present is a 0. No moving parts like above, hence the name, "Solid State".		
NAS Network Attached Storage	A solid state drive that is connected to your local network. It allows you to increase your storage capacity. It is intelligent and can be accessed outside of your LAN		
Cloud storage	Increase your storage capacity online. Can be accessed from any location. Reliant on a broadband connection. The online servers will use magnetic and SSD storage.		

Device	Capacity	Speed	Portability	Durability	Reliability	Cost
Optical	3	3	2	2	3	2
Magnetic	1	2	3	3	2	1
Solid State	2	1	1	1	1	3

The table has '1' as being the best – '3' is least good.

KNOWLEDGE

SECONDARY STORAGE

Computers use primary **memory** such as random-access memory **(RAM)** and **cache** to hold **data** that is being processed. However, this type of memory is **volatile**, which means it loses its contents when the computer is switched off. **General purpose computers**, such as personal computers and tablets, need to be able to store programs and data for later use.

Secondary storage is **non-volatile**, long-term storage. It is used to keep programs and data indefinitely. Without secondary storage all programs and data would be lost the moment the computer is switched off.

There are 3 main ways to store data and programs:

- Magnetic
- Optical
- Solid State

Each has its own advantages and disadvantages as you can see in the table opposite.

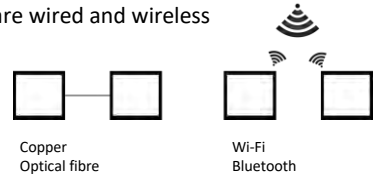
Computer Science GCSE J277 1.3 Computer Networks, Connections and Protocols **Half Term 5**

KEY VOCABULARY	
LAN	Local Area Network. Covers a small geographical area. Equipment is owned by the organisation/individual
WAN	Wide Area Network. Covers a large geographical area. Equipment (phone lines / satellites) is usually owed by third party telecommunication companies
URL	Uniform Resource Locator. A website address, for example, www.bbc.com
WAP	Wireless Access Point . Allows devices to connect to a network wirelessly
Router	Intelligent node. Directs packets on a LAN and between LANs. Provides a WAP.
NIC	Network Interface Card. A piece of hardware within a computer, which connects the computer to a network, through cable of a wireless transceiver. Also contains the MAC address
Node	The name given to any device attached to a network –computer, router, switch
Switch	Intelligent node. Directs packets to the correct device on a LAN
Packet	When a file is being sent across a network, it is split into smaller, more manageable chunks, called, packets. When they reach their destination, they are assembled again
Server	A special computer which holds files in one centralised place
DNS	Domain Name Server- a URL is sent to the DNS. The DNS sends back the IP address.
IP	Internet Protocol. The address of a computer or server on the world wide web. Can be written as 4 blocks of numbers. E.g. 192.168.0.1. Dynamic – can change
MAC	Media Access Control. The address of a computer on a LAN. Static – doesn't change
TCP	Transmission Control Protocol. Breaks down files into packets and assembles them in the correct order at their destinations. Requests new packets to replace packets that have been lost or involved in collisions

KNOWLEDGE

WIRED/WIRELESS

In order for two or more computer devices to exchange information, they will need to be connected in some way. Two ways to connect computer devices are wired and wireless



CABLES

Copper: packets are sent as electrical signals which can suffer interference. Slower and Cheaper than Optical.

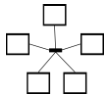
Optical fibre: packets are sent as pulses of light. Does not suffer interferenc Faster and more expensive than copper.

FACTORS AFFECTING PERFORMANCE

The more devices on a network, the higher the network traffic. The more traffic, the more packet collisions. Videos will take longer to transmit than text. Optical fibre will provide a higher bandwidth than copper.

TOPOLOGY

How you connect devices together on a network can have different advantages and disadvantages

Star	Advantages/disadvantages
	Needs fewer cables, therefore cheaper to set up. If central node fails, the whole network fails
Mesh	**Advantages/disadvantages**
	More cables required, therefore, more expensive to set up. If a node fails, the network still works

CLIENT SERVER/PEER-TO-PEER

Client-server: all files or printer services are accessed through a server. Powerful servers are costly due to having to serve many computers. Files can be accessed from different nodes. Backups are easy due to being in one place. More secure, due to a firewall or antivirus in one place.

Peer-to-peer: files are accessed from other computers. Cheaper, due to not needing an expensive central server. Each computer acts as a server of files. Files are saved on the computer so you will have to log into the computer every time. Backups more difficult as each computer has to be backed up individually. Less secure, as Antivirus has to be installed on all computers

KEY VOCABULARY – Vulnerabilities	
Hacking	Attempting to bypass a system's security features to gain unauthorised access to a computer
Malware	Malware is malicious software, loaded onto a computer with the intention to cause damage or to steal information. Viruses are a type of malware
Passive Attack	Is where someone monitors data travelling on a network and intercepts that data (E.g. Packet Sniffing)
Active Attack	Where someone attacks a network with malware
Phishing	Phishing is a common way to try to steal information like passwords. Emails are sent, requesting the user logs into a website, but the site is a fake, and the users details are logged
Social engineering	People are the weakest point of any system. If a hacker can convince a user to give over their data, this is the easiest way into a secure system
Brute force attack	Using and algorithm to try every possible combination of characters to 'guess' the users password.
Data interception	Data interception, or *Man in the Middle attacks* are hacks that use 'packet sniffer' software to look at every piece of data being transmitted in the local area to find ones that meet the hacker's criteria. Often done by creating 'fake' wireless networks to record users details
SQL injection	Using SQL statements to trick a database management system (DBMS) into providing large amounts of data to the hacker
Denial of Service Attack	Hackers flood a network with huge amounts of fake data and requests in an attempt to overload the system so that it crashes

KNOWLEDGE

Preventative Measures

Measure	Description	Prevents (**Vulnerabilities**)
Firewall	Scans incoming and outgoing network traffic to check if its legitimate	Stops potential ***Malware*** from entering the network
User level access	Controls what files/folder or areas of the network different groups of users can access	Restricts the use of **social engineering** as a method to gain access to data and sensitive information
Encryption	Coding data so it can only be decrypted using the correct key	Protects against **data interception** when data is being sent across a network
Penetration Testing	Uses ethical (white hat) hackers to test the network for vulnerabilities.	Helps to prevent **hacking** and **DDOS attacks**.
Network Policy	A set of rules and procedures users must follow to ensure the network is secure. (E.g. Must encrypt sensitive data)	Ensures the security of the whole network from both **active**, **passive** attacks as well as **human error**

Types of Malware

Virus	Type of malware spread as an attachment to a file
Worm	A type of virus capable of replicating itself
Trojan Horse	Malware disguised as legitimate software
Ransomware	Uses encryption techniques to lock users out of files.
Malware – Can be used to delete or change files. It can also be used to lock files – in a ransomware attack. It can also be used to monitor network traffic and intercept sensitive data.	

Creative iMedia- Sectors and Roles

Sectors in the media industry	Products used in different sectors	Roles in the media industry
Timeline • Traditional media: film; television; radio; print publishing • New media: computer games; interactive media; Internet; digital publishing	• Video, Audio, Music, Animation, Multimedia • Special effects (SFX, VFX) • Digital imaging and graphics • Websites, Social media platforms/apps • Digital games • Comics and graphic novels, eBooks • AR/VR	• Creative roles: animator, content creator, copy writer, graphic designer, illustrator, graphic artist, photographer, script writer, web designer • Technical roles: camera operator, games programmer/developer, sound editor, audio technician, video editor, web developer • Senior roles: Campaign manager, creative director, director, editor, production manager

Interactive media	**Computer games**	**Augmented reality**	**Digital publishing**
Interactive media is any type of media that the user interacts with. The media types include audio, video, graphics, animation and text. Interactive media is seen in mobile apps, websites, games and social media. To be interactive, the user must interact with the media in some way. For instance, a video screen in a shop that advertises a product is not interactive media. However, a tablet in a shop that shows a web page with product details and images that the user can select would be an example of interactive media.	Computer games are games played on or using electronic devices, such as gaming consoles, smartphones, tablets, virtual reality headsets, or personal computers. They can be played on the internet, local area networks, or offline. Like games, computer games vary widely and include complex online worlds with multiple players (known as massively multiplayer online [MMO] games), through to simple single-player puzzles.	Works by superimposing information or 3D models over live video footage. The camera and smartphone/tablet process information from the camera to work out how large/small the virtual objects should be when placed in the real environment along with their orientation as the camera is moved. For games such as Pokémon GO/Peridot, games are more immersive. In Pokémon GO, the user is able to hunt for Pokémon (pocket monsters) that have been placed in the real world. This took gaming from being solely inside a computer screen to combining the real world with virtual characters making it a more compelling experience for the player.	Digital publishing, also called electronic or online publishing, is the distribution of a variety of online content, such as journals, magazines, newspapers, and eBooks. Through this process, any company or publisher can digitize documents and information that people can view online, download, sometimes manipulate, and even print out or share otherwise, if they choose. People can access digital content on different devices, such as: Computers e-Readers Tablets Smartphones
Digital images and graphics	**Social media**	**AR and VR**	**Apps**
A digital graphic is an electronic image that can be used for a variety of different things, however the image does not always have to be used on electronic devices as it can be printed and used. Some examples of a digital graphic are magazines, posters, logos.	Social media is a collective term for websites and applications that focus on communication, community-based input, interaction, content-sharing and collaboration. People use social media to stay in touch and interact with friends, family and various communities. Businesses use social applications to market and promote their products and track customer concerns.	Augmented reality (AR) augments your surroundings by adding digital elements to a live view, often by using the camera on a smartphone. Virtual reality (VR) is a completely immersive experience that replaces a real-life environment with a simulated one.	Apps are short for 'applications' and are programmes that can be purchased for your portable device whether you have an iPhone or an android phone – these can be free or cost up to a few pounds. There are apps for almost everything – from apps that monitor the way you sleep to apps that help you discover new cities.

Creative iMedia - Brief and Target Audience

Client Brief

Brief is produced for a design team, client or for your own work
Client Requirements:
- Outline information and constraints
- Clear statement of what is to be produced
- To identify what is hoped to be achieved

What would you find in the client requirements

- What media product is needed
- Purpose of the media product (advertise, inform, educate, promote)
- Target audience
- Content required for the media product
- Timescale/deadline
- Constraints and restrictions, for example time, target audience and house style
- House style Consistent with the organisation's own branding and recognised style

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

Who is the Target Audience?

Product:
Final viewer or consumer (user) of the product that is to be created

Pre- production documents: Designer, developer or client developing or approving the product from your ideas and designs.

Categories of target audience (user)

- Age- Give an age range,16-20 11-14
- Gender- male and female, but also consider transgender
- location -local, national or international.
- Ethnicity- Groups of people that have a common background or culture
- Income- How much money will they earn
- Interests- Common interests- sports, film, gaming, fashion, music etc
- Accessibility- Issues to consider include age, gender, disability, English

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 digitalcopy using a scanner or digital camera.
You will have a physical copy as a back up and you can send electronic version as well

Types of research

Primary:
The original source is the most accurate and specific to your product.

Secondary:
Information is collected from someone else, it is not as accurate or specific to what you need.

File formats

Word = .doc,.docx Photoshop = .ps,.eps
Publisher= .pub Powerpoint = .ppt,.pptx

Portable Document Format= PDF

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

Version: Advert_storyboard_Vl
Advert_storyboard_V2

Date:
Advert_storyboard15_09-2018
Advert_storyboard20_09-2018

Software

Image editing Software/ Desk top Publishing Visualisation Diagram, Mood board, Storyboard
- Adobe Photoshop r:"-1
- Microsoft Publisher 1&11
- Illustrator

Word processing
Mind Map/Story board
- Microsoft Word
- Apple Pages

Presentation Software
Mood board/Mind map/Story board
- PowerPoint

Web Browsers
Searchfor ideas and images
- Google Chrome
- Internet Explorer
- Safari
- Firefox

Dedicated software
Mindmup (mind map)
Storyboard That (storyboard)
Toon Boom Storyboard (storyboard)

Proximity

Grouping related items together, move them physically close to each other so the related items are seen as one cohesive group rather than a bunch of unrelated bits.

Alignment

New designers tend to put text and graphics on the page wherever there happens to be space, often without regard to any other items on the page. The Principle of Alignment states, "Nothing should be placed on the page arbitrarily. Every item should have a visual connection with something else on the page." When items are aligned, the result is a stronger cohesive unit. The basic purpose of alignment is to unify and organize the page.

Contrast

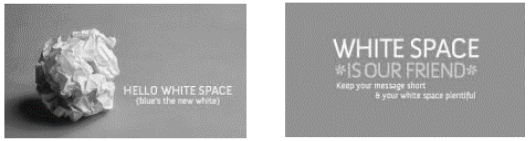
Contrast is the most effective way to add visual interest to your page. Contrast is also crucial to the organization of information - a reader should always be able to glance at a document and instantly understand what's going on. Add contrast through your typeface choices, line thicknesses, colors, shapes, sizes, space, etc. The Principle of Contrast states, "If two items are not exactly the same, then make them different. Really different."

Repetition

The Principle of Repetition states, "Repeat some aspect of the design throughout the entire piece." The repetitive element may be a bold font, a thick line, a certain bullet, color, design element, particular format, spatial relationship, etc. It can be anything that a reader will visually recognize as being a “theme.” Repetition can be thought of as consistency - it is a conscious effort to unify all parts of a design.

White space

“White space is the art of nothing. White space is the absence of text and graphics.” It breaks up the elements on the page. It provides visual breathing room for the eye. Add white space to make a page less cramped, confusing, or overwhelming. White space doesn’t actually have to be white. It gets its name from the early days of graphic design where most printing was done on white paper. White space can be black, blue, red, etc. what ever color the background is. White space is also referred to as “negative space”.



Creative iMedia - Cameras and Lighting

Cinematic Techniques Cheat Sheet

Shots & Framing	Camera Angles	Camera Movements	Lighting	Editing	Music & Sound
Shot: a single piece of film uninterrupted by cuts **Long Shot**: a shot from a distance; if filming a person, the full body is shown; may show the isolation or vulnerability of the character **Medium Shot**: most common shot; shows the person from the waist up; effects is to ground the story **Close-up**: the image takes up at least 80 percent of the frame **Extreme Close-Up**: the image being shot is a part of a whole i.e. an eye or a hand **Two Shot**: a scene between two people shot exclusively from an angle that includes both characters more or less equally. equally. It is used in love scenes where interaction between the two characters is important.	**Eye Level**: a shot taken from the character's eye level; the most natural **High Angle**: camera is ABOVE the subject; makes the subject look smaller than normal/gives them the appearance of being weak, powerless and trapped **Low Angle**: camera is BELOW the subject; makes the subject look larger than normal/gives them the appearance of being strong, powerful, and threatening	**Pan**: a stationary camera moves from side to side (left/right) **Tilt**: a stationary camera moves up or down **Zoom**: a stationary camera where the lens moves to make an object seem to move closer/farther away from the camera moving in personal or revealing movement moving out distances or separates the audience from the character **Dolly/Tracking**: the camera is on a track that allows it to move with the action; also refers to a camera mounted on a car, truck, or helicopter **Boom/Crane**: the camera is on a crane over the action; used to create overhead shots	**High Key**: the scene is flooded with light; creates a bright and open-looking scene **Low Key**: the scene is flooded with shadows and darkness; creates suspense or suspicion **Bottom or Side Lighting**: direct lighting from below or the side; often makes the subject appear dangerous or evil ex.. kid with a flashlight underneath his face **Front or Back Lighting**: soft light on the actor's face or from behind; gives the appearance of innocence or goodness a.k.a. the "halo" effect	**Cut**: most common editing technique; two pieces of film are spliced together to "cut" to another image **Fade**: an editing technique that often implies that time has passed or may signify the end of a scene; can be to or from black or white **Dissolve**: a kind of fade in which one image is SLOWLY replaced by another **Flashback**: cut or dissolve to action that happened in the past **Shot-Reverse-Shot**: a shot of one subject, then another, then back to the first; often used for conversation or reaction shots **Cross Cutting**: cut into action that is happening simultaneously; creates tension or suspense and forms a connection between scenes; also called parallel editing **Eye-Line Match**: cut to an object, then to a person; shows what a person seems to be looking at and can reveal a character's thoughts	**Diegetic**: sound that could logically be heard by the characters in the film **Non-Diegetic**: sound that cannot be heard by the characters but is designated for audience reaction only; i.e. background music

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).

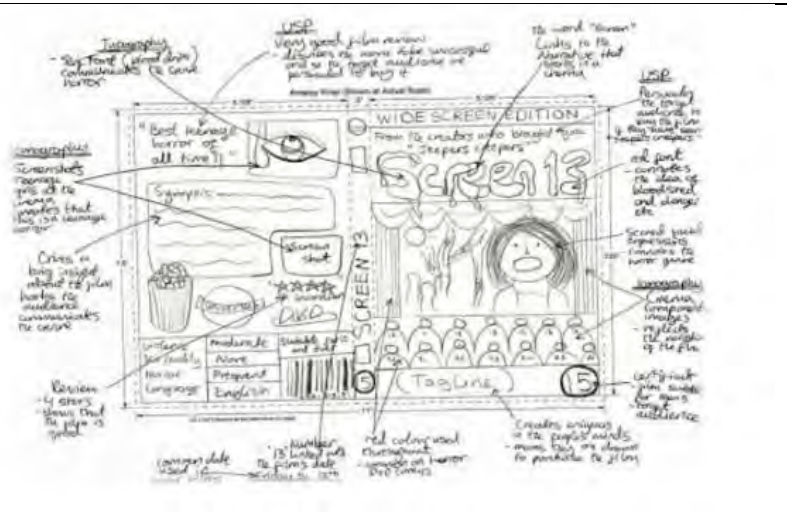
The purpose and content of pre-production

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 compatiable 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 Compresess well Sharp edges	Not compatiable 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

What is a visualization diagram?

It is a rough drawing or a sketch or what a final still image media product is intended to look like. (not used for a moving product, that has timelines, such as a movie or animation. This would require a story board)



Purpose of a visualization diagram

- To plan the layout of a static or still image in a visual manner - this could be used by the production team/ developer when creating the final product
- To show how a finished media product might look - the client might want to approve this before the product is created
- To show how a finished item might look, to show to a focus group who would be asked for feedback, any changes can be made to a version before the time and resources are used to create the final product

Visual diagram content

- Multiple images and graphics (their size and placement on the media product)
- Colours and colour scheme
- Positions and style of text and fonts
- Annotations to provide more detail to the developer, production team or clients where needed

How does a visualization diagram differ from a mood board?

These are not the same. Keep in mind for each:

- Purpose: MB - generating ideas, this is not the final product, VD- final idea of what product looks like
- Layout: MB - no specific layout, VD - everything has to be in the exact place that it would be in the final product
- Content: MB - not necessarily the content that will be in the first product, VD - the exact content (images, text, fonts, colours) that will be in the final product
- Image permissions: MB - not for public domain so no need to worry about legislation, VD - all images (including logos and taglines) could be copyright, trademark, registered, therefore permission must be given to use them

Visualization diagrams are normally hand drawn (you don't have to be an artist to create a good one)

The most appropriate software to create a digital version is image editing software or desktop publishing software such as Microsoft publisher It is the concept (plan or idea), layout and content for the media product. Images don't have to be fully drawn, just know where they are and what size. The actual size of the visualization diagram also needs to be appropriate, may be square landscape or portrait.

It needs to meet the client requirements and be fit for purpose

Annotations

- Annotations are labels to give more information to the development team of the client
- If you are asked to use annotations to justify your decisions, you need to explain why you have used that image why is it in the place that it is and why it is the colour you have chosen

YEAR 10 -Design and Technology

Design Briefs

A Design Brief is the statement of how you will solve the Design Problem. It will often include:

•Constraints/ limitations

•What the product is

•Materials/processes

•Any key information you know

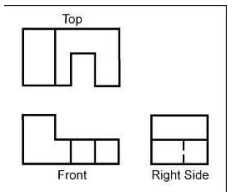
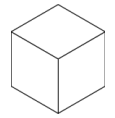
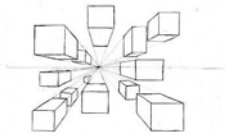
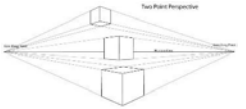
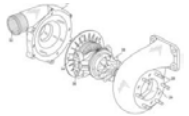
Design Specifications

A Design Specification is a list of requirements your product has to meet in order to be successful. It is also useful for evaluation. If your product hasn't met the specification, then it gives you a starting point for improvements.

Product Analysis

A Product analysis involves examining product features, costs, availability, quality, appearance and other aspects. Product analysis is conducted by potential buyers, by product managers attempting to understand competitors and by third party reviewers.

Aesthetics	What the product looks like? Style? Colour Scheme? Design Movement?
Customer	Who would buy it? (Age, gender, socio-economic, personality) How does the design appeal to them?
Cost	How much will it cost? (min-max) Why?
Environment	Where will it be used? Why? How will you make it suitable?
Safety	How is it safe? How will it be checked? Why must it be safe?
Size	What is the maximum or minimum size? Why?
Function	What does the product do? What features make it do that function well? How is it unique from similar products?
Materials	What is it made from? Why?
Manufacture	How might it be made? Why? What scale of production? Why?

Technique	Description/ notes	Diagram
Orthographic Projection/ Working Drawings	• Includes "Front", "Plan" and "End" 2D Views, and often an Isometric 3D View • Standardised method for scale, dimensions and line types •Great for manufacturing	
Isometric	•Common 3D sketching method • Can be drawn free-hand or using isometric paper and ruler •Angles are at 30 degrees •Great for seeing most of the products	
1-Point Perspective	•A 3D drawing method •Often used by interior designers and architects •Gives drawings depth •Only uses 1 vanishing point	
2-Point Perspective	•Used for 3D designs •Exaggerates the 3D effect • Objects can be drawn above of below the horizon line but must go to the 2 vanishing points	
Annotated Drawings/ Free and Sketches	•Quick and easy way of getting ideas down •Range of ideas can be seen •Annotation helps explain designs further	
Exploded View	•Helps see a final design of a product and all it's parts •Can see where all the parts fit •Great for manufacturers	

Modelling and Development

Modelling and development are key to testing and improving products
This can be done physically using materials like; card, foam, clay, man-made boards or virtually in **CAD**
Modelling helps the designer get feedback from the customer, check aesthetics, function,
sizes and even materials and production methods and change them if needed

Natural Timbers

Softwoods are generally cheaper than hardwoods as they are more available, since they grow quicker.
But because man-made boards are manufactured they are cheaper than timbers.
Man-made boards also come in a better variety of sizes since they don't depend on tree growth.

Stock forms for both include; sheets, dowel, planks, etc

Hardwoods come from **Deciduous Trees.** These trees lose leaves in winter and grow fruit and flowers in spring.

Material	Key info	Examples
Ash	Flexible, tough and shock resistant	Sports equipment Tool Handles
Beech	Fine finish, tough and durable	Toys, furniture and veneers
Mahogany	Easily worked, durable, high quality finish	High end furniture
Balsa	Very soft and spongy. Light	Modelling
Oak	Tough, durable and hard	Flooring, furniture and veneers

Softwoods come from **Coniferous Trees.** These have thin, needle-like leaves and grow all year round. Often have pine cones and sometimes nuts and seeds

Material	Key info	Examples
Larch	Durable, tough, good water resistance and finishes well	Furniture, flooring and used outdoors
Pine	Light, easy to work with but can split	Cheap furniture, construction and decking
Spruce	Easy to work with, high stiffness but can decay quickly	Furniture, musical instruments and construction

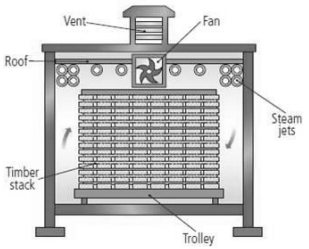
Man-Made Boards

Manufactured boards are made from wood chips/dust/ layers and glue.

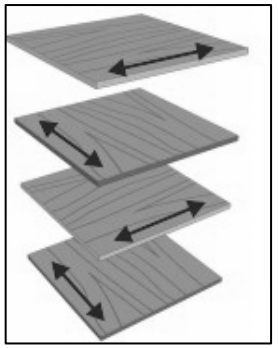
Material	Key info	Examples
Chipboard	Prone to chipping but good compressive strength. Not-water resistant	Flooring, low-end furniture, flat-pack
MDF	Rigid and stable. Easy to finish. Absorbs liquid easily	Flat-pack furniture and kitchen unites
Plywood	Very stable. Exterior veneer can be used from more expensive woods	Shelving, furniture, toys

Primary Processing of Papers and Boards

Trees are cut down and then need debarking. They are then converted into planks by cutting, using saws
It is then seasoned to reduce the moisture in the wood. This is done by either:



Air-drying– Planks are stacked and air allowed to circulate; causing evaporation
Kiln-drying– Where planks are put into a kiln and dried rapidly. This process is more costly than air-drying

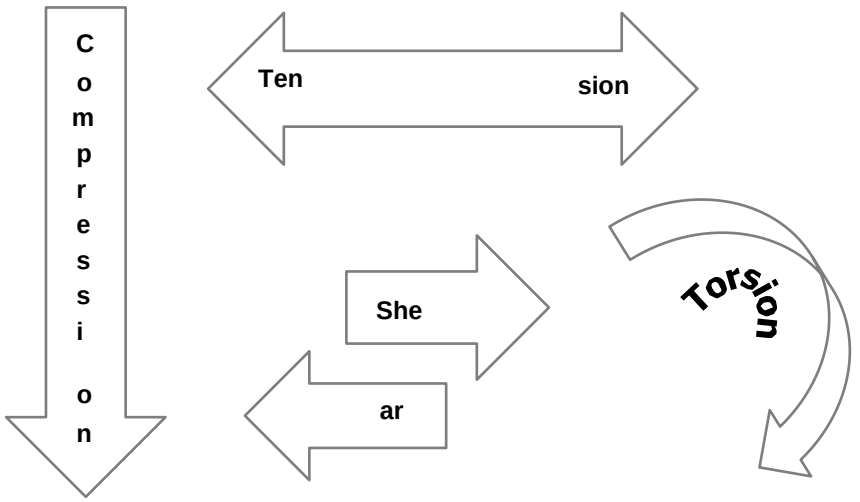


Manufactured boards can be either be made by lamination or compression

Lamination – Layers of woods and adhesive are layered and compressed together. Usually with a more expensive wooden veneer on the top

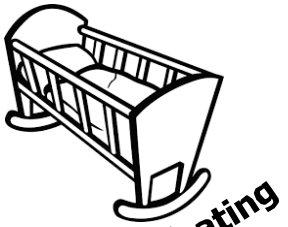
Compression – Wood is shredded, heated and compressed with adhesive under extreme pressure

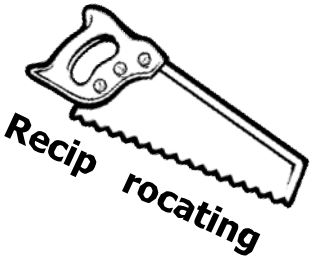
Forces



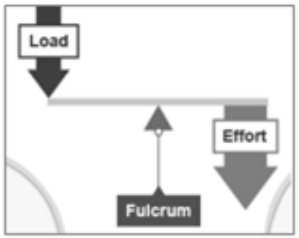
Motion

Linear



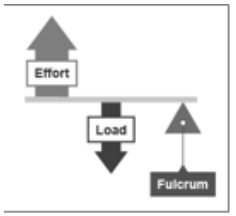


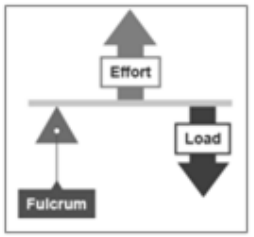
Levers



1st Class Lever:
Fulcrum in the centre
E.g. Scissors

2nd Class Lever:
Load in the centre
E.g. wheelbarrow





3rd Class Lever:
Force in the centre
E.g. Lifting a dumbbell

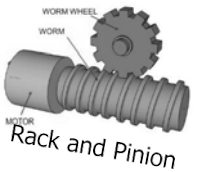
Gears and Pulleys

A Pulley is a grooved wheel, that has a belt running through it

This uses rotary motion and is often used to help with heavy loads, and transfer force from a motor to a tool in machines like drills, etc

Gears have teeth that mesh together with each other (like teeth on a zip)

They mainly focus on rotary motion on tools and machinery e.g. car steering and pillar drills



YEAR 10 -Design and Technology

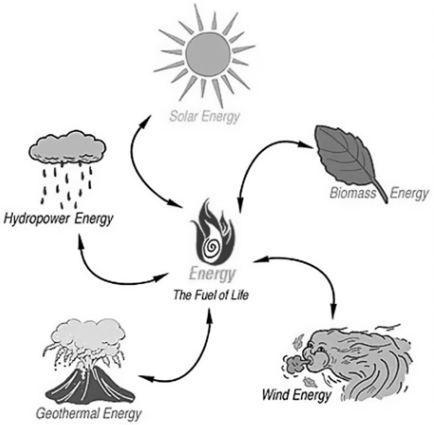
Environment

Carbon footprint

The amount of carbon dioxide released into the atmosphere as a result of the activities of a particular individual, organization, or community.

renewable energy

Sources such as solar, tidal, hydropower and wind, are renewable sources of energy.

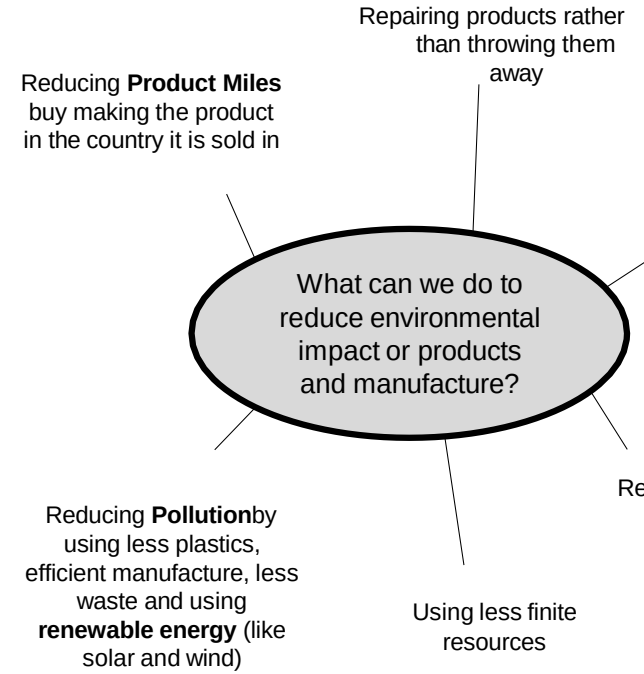


The 6Rs	Meaning
Reuse	To use a product again either for the same purpose or for a different one.
Reduce	To have less of material/packaging/pollution when making products, by making them more efficient.
Recycle	Breaking down and forming the material into another product.
Refuse	Customers not buying or supporting products that make an environmental impact.
Rethink	Designers and customer rethinking their decisions when making and buying products.
Repair	Fixing a product rather than throwing it away. Extending its life rather than using more resources to make another. Often products are **Designed for Maintenance** so can easily be repaired. E.g. Using screws so even non-specialists can take a product apart, or using components that can easily be replaced like fuses or batteries.

Life Cycle Assessment

This is when a designer looks at the environmental impact a product makes over its life time and how it could be reduced. Including:

- Impact of materials
- Impact of processes
  - Product Miles (how far a product has to travel to get from factory to consumer)
- Impact while in use
- Impact when disposed of (6Rs)



Sustainability is maintaining our planet and its resources and making a minimal negative impact

Finite Resources *Will run out of eventually*	**Infinite Resources** *Can be re-grown and re-bread. Will not run out of*
Plastics	Paper
Metals	Boards
Polymers (Textiles)	Natural Timbers
	Cotton
	Leather

Planned Obsolescence	This is where products "die" after a certain amount of time. e.g. disposable cups, phones, lightbulbs, printer ink, etc This can have a big environmental impact as customers are throwing away lots of products, and resources are being used to create new ones.

YEAR 10 -Design and Technology

Finishes, Standard Components

Accuracy and Process Orders

Finishes

Finishes are used to improve the **aesthetics** and **durability** of products

Material Type	Finishes Used
Papers and Boards	•Paints •Varnishes •Laminating •Plastic coating •Wax coating
Timbers and Boards	•Paints •Varnishes •Wax and Polish •Staining •Oil
Metals and Alloys	•Painting •Lacquering •Electroplating •Galvanzing •Polishing •Plastic Coating •Powder Coating
Plastics	•Polishing •Painting •Decals (stickers)

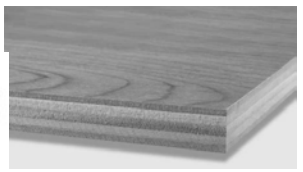
Standard Components

Standard components are parts or components manufactured in the 1000s+
They are readily available, don't require specialist knowledge or tools to replace them and are universally recognised

Material Type	Components used
Papers and Boards	•Staples •Clips •Split pins
Timbers and Boards	•Nails •Screws •Panel Pins •Hinges
Metals and Alloys	•Nuts and bolts •Screw •Rivet •Washer
Plastics	• Plastic hinges

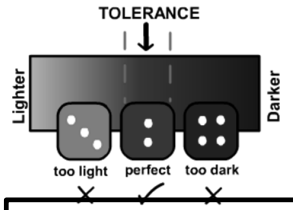
Finishes on Manufactured boards

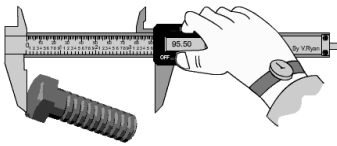
Most manufactured boards are not aesthetically pleasing to look at. They are not attractive. They can be covered by thin slices of high quality wood known as veneer to make it look aesthetically pleasing.

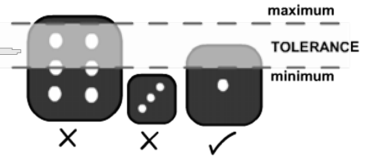


Tolerances

The total amount a specific dimension or property is permitted to vary
This can apply to hole depth, length, angle, thickness, weight and elasticity A gauge can be inserted into a gap or hole to check if the sizes fall within tolerance
If parts do not fit within the specified tolerances they are discarded or recycled







Quality Control and Quality Assurance

•QC is ***product*** oriented
Quality control is where products are regularly tested (during and after manufacture) to ensure they meet the defined set of quality criteria

•QA is ***process*** oriented
Quality assurance is ensuring that the processes used to test the product have been done correctly and consistently
You can test a product all you like, but if the tests are wrong/ inconsistent with each other than the results are invalid

•Below are examples of Quality Assurance symbols:

European Conformity

BSI Kitemark

Lion Mark

Registration Mark

Process Orders

An Input is information/ stimuli that enters a PC

An example would be keyboard, sensor, mouse, etc

A Process is process of transforming information into an Output
An example would be a PC

An Output is a response to the stimuli

An example would be speakers, text on a screen, alarm, lights, etc

YEAR 10 -Design and Technology

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 and infinite amount of times		
Material	**Key info**	**Examples**
PET	Easily **blow moulded,** food safe and easily recycled	Bottles, packaging, etc
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 Formalehyde	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 processes into different types of fuels, etc. This is called **Fractional Distillation**

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

Key terms

Atonement	Paying off the debt of sin/ making up for something
Crucifixion	A Roman method of punishment/ the way Jesus was killed
Denomination	A type of Christian i.e. Catholic/ Protestant/ Baptist/ Methodist/ Pentecostal
Eucharist	Holy Communion that has become the actual body and blood of Jesus through transubstantiation
Genesis	The first book of the Bible. Includes Creation and Adam and Eve
Messiah	The anointed one who came to save
Grace	The idea that God loves us even though we don't deserve it
Ministry	When Jesus performed miracles and taught people through parables
Nativity	The whole birth story of Jesus including the prophecy (of Isaiah) annunciation through Gabriel and the incarnation
Incarnation	When God became flesh (Jesus)
Salvation	Being saved from sin (can be done through grace or the law of God)
Trinity	The idea that God is 3 persons in 1 (Father, Son and Spirit). **Consubstantial (one substance)**
Eternal	Has no beginning or end
Omnibenevolent	God is all loving
Personal	God wants us to have a personal relationship with him
Judgement Day	The day when our bodies will be raised up and God will send us to heaven, hell or purgatory
Resurrection	When Jesus came back to life
Immanent	God is with us 'here and now'
Transcendent	God is beyond time and space and existed before it

Key teachings

The Nativity

This is the birth story of Jesus which is made up of the Prophecy (of Isaiah), the Annunciation (of Gabriel to Mary) and the Incarnation (where Jesus was born).

The Ministry of Jesus

After his baptism in the river Jordan, Jesus told parables to teach people how God wanted them to live and performed miracles as a sign he was part of the Trinity (The Son of God). His teachings and 37 miracles are recorded in the Gospels (Matthew, Mark, Luke & John).

The Crucifixion

After his trial before Pilate and Herod, Jesus was killed on a cross. He died to pay for sin (atonement) and he fixed our relationship with God. This was shown through the Temple Curtain tearing from 'top to bottom' (Gospels). This happened on 'Good Friday.'

The Resurrection

On the 3rd Day of Easter (Easter Sunday), Jesus rose from the dead. Over the next 40 days he appeared to his disciples in different places such as on the Road to Emmaus, at the Tomb and on Lake Tiberius.

The Ascension

On the 40th Day of Easter, Jesus ascended from the Mt. of Olives. He said 'God and make disciples of all nations.' This instruction is called the Great Commission.

Pentecost

On the 50th Day of Easter the Holy Spirit 'came upon' the disciples in the Upper Room like a 'rushing wind.' They gained the ability to speak different languages and perform miracles. They convinced people of Christianity and baptised 3000 people that very day.

Afterlife

Most Christians believe that, on Judgement Day, we will all be judged on our actions and sent to heaven or hell. Catholics also believe in Purgatory which is a temporary state where the individual endures 'purifying fire' (Catechism), pays off their sin and then reaches heaven.

The Nature of God

His nature means 'what he is like.' In Christianity this includes omniscient, omnipotent, omnibenevolent, transcendent, eternal, 3 in one (Trinity), a just judge, imminent and personal.

Key Quotes

Book of John (Bible)

'In the beginning was the word…the word was God…through him all things were made.'

Genesis

God made the world in '7 days' ex nihilo.

'Let there be light'

Creation is God's 'handiwork'

'The Spirit of God hovered over the water'

God 'walked in the Garden' (of Eden) with Adam and Eve.

Exodus

'Do not lie' Ten Commandments.

Moses saw God as the 'Burning Bush.'

Moses Saw the back of God on Mt. Sinai- God 'passed before' Moses.

Jesus

Hell is the 'gnashing of teeth' and the 'lake of fire'.

'love your neighbour as yourself' (Greatest Commandment/ Good Samaritan)

'Now you are in torment' (Lazarus and the Rich Man).

'Today you will be with me in paradise' (Jesus to the Penitent Thief).

St Paul

At the Rapture we will be 'snatched away.'

Key terms

Liturgical worship	**A worship service with a set order**
Non-liturgical worship	A worship service with no set order
Informal worship	A worship service that is Charismatic and spontaneous
Private worship	When a believer worships God alone
Prayer	Communicating with God silently or through using words
Set prayers	Prayers that have been written down to be repeated like the Lord's Prayer
Informal prayer	Prayers that believer makes up using their own words- It can be like a conversation
Baptism	Where water is used to wash away sin. At this point you officially become a member of the Church
Believer's baptism	Baptism as an adult where you are fully immersed in water like Jesus
Infant baptism	Where a child has their original sin removed by holy water from the font. They join the Church- a loving Christian family
Eucharist	Communion with bread and wine that has transubstantiated into the flesh and blood of Jesus.
Symbolic Communion	Bread and wine thought to be a memory meal reflecting the Last Supper. It does not transform.
Worship	Acts of religious devotion and praise
Pilgrimage	A religious journey to show devotion to God
Persecution	Hostility and ill treatment because of race, religion or beliefs.
Evangelism	Spreading the word of Jesus and converting through preaching or personal witness.
Agape	Self-sacrificial love

Key teachings

Liturgical Worship
This kind of worship is the same every week. For example, Catholic Mass. It will always contain the Penitential Rite (saying sorry for sin), Set Prayers (like the Lord's Prayer), the recitation of the Creed (Nicaean Creed) and the Eucharist (the consumption of the transubstantiated body and blood of Christ).

Non liturgical Worship
This type of worship has no order. It can be sitting in silence waiting for god, or it can be spontaneous. It could included the singing of worship songs, being slain in the spirit, holy laughter or even speaking in tongues.

Prayer
Communicating with God. It can be done as a group using set prayers (eg the Lord's Prayer), or by using spontaneous prayer where you pray using regular speech. Jesus prayed informally in Gethsemane when he called God 'Abba Father' or 'daddy.' Prayer can be used to ask God for things, thank him or simply build relationship.

Sacraments
These are 'outward symbols' of what God is doing on the inside, eg in Baptism you see water being poured, on the inside sin is being cleansed. There are 7 Sacraments in the Catholic Church and they include Baptism, Eucharist and Reconciliation.

Baptism
Catholics perform infant baptism to cleanse original sin and to welcome the child into the family of the Church as early as possible. Baptists will only baptise adults when they have a choice. Baptists use full immersion while Catholics do infant baptism with a font.

Eucharist/ Communion
Catholics believe the Eucharist (bread and wine) go through transubstantiation and actually change into the body and blood of Jesus as he said 'this is my body…this is my blood' t the Last Supper. Baptists believe it is just a symbol as after that he said 'do this in memory of me' meaning it is a memory meal.

Festivals
The two main Christian festivals are Christmas & Easter. At Christians celebrate the birth story of Jesus. They will read passages from Isaiah and on the birth from the Gospels, attend midnight mass and be especially generous as God was with us. At Easter they celebrate the death and resurrection. They will complete activities of remembrance across Holy Week (Palm Sunday, Maundy Thursday, Good Friday and Easter Sunday) and give thanks!

The role of the local Church (Community)
The Church will serve others by having food banks, job cafes, sending our street pastors and by holding alpha courses to evangelise.

The role of the global Church
The Church will serve others by sending out missionaries to evangelise, by smuggling Bibles into other countries to share the gospel and by raising money to rescue those who are being persecuted. They will also support the poor abroad by sending medical help, educating people and lobbying the govt. to help them financially.

Key Quotes

Serving others

'Love your neighbour' **Good Samaritan/Jesus**

'Treat others like you want to be treated' **Jesus**

'That which you do to the least of my brothers you do to me' **Sheep & Goats/ Jesus**

' Am I my brother's keeper?' **Cain and Abel/ Old Testament**

Prayer

'Ask and you will receive' **Jesus**

'And when you pray, don't babble like the pagans' **Jesus**

'Forgive us our trespasses as we forgive those who trespass against us' **Jesus/ Lord's Prayer**

Sacraments

'Repent and be baptized…all of you' **St Peter**

'Faith should precede [come before] baptism' **St Paul**

'Let the little children come to me' **Jesus**

'I will be with you until the end of the age' **Jesus**

' This is my body…this is my blood' **Jesus at the Last Super**

' Do this in memory of me' **Jesus at the Last Supper**

Christian Organisations

Trussell Trust

Provides 3 day emergency food packages

Oasis Project

Methodist Church which has a food bank and a job café teachings Maths/ICT & English to help people get jobs to feed themselves.

Street Pastors

Volunteers from churches who help people who are on the streets at night. They help find accommodation, book taxis, provide first aid, remove bottles which could be used as weapons and talk down fights.

The Barnabas Fund

Smuggles Bibles into countries to spread the Gospel, provides wages to Christians 'sacked' from jobs due to persecution and rescues persecuted Christians from abroad.

Open Doors

Produce a world persecution map to alert governments who can then act.

World Vision

Financially adopt a child and build a water pump, schools and send medical teams to the village.

Christian Aid

Send money and resources aboard to fight the causes of poverty. They teach enhanced farming techniques to prevent food poverty, teach about hygiene, sanitation and disease to prevent children being orphaned and give training on alternative methods of making money if a crop fails (such as jewellery making).

Alpha Course

A course whereby a meeting is held, non- Christians invited and barriers to the faith are discussed in order to convert/ evangelise. It can happen in a church or at a home and involves dialogue and having a meal together.

Mercy Ships

Have a ship with doctors that sails to places of poverty to remove facial tumours as an act of evangelism.

St Vincent De Paul (SVP)

Catholic organisation that looks after homeless. They find accommodation, upcycle furniture for homes they find for families and pay to send them on short breaks.

Corrymeela Community

Founded by Ray Davies in Ireland, this community seeks to help people reconcile with each other so they can reconcile with God. It brings conflicting groups together to have dialogue to sort out their differences. It has a residential centre.

Key terms

Dharma	**The teaching of the** Buddha
Dukkha	Suffering
Anicca	Impermanence (things don't last)
Anatta	No permanent soul
Jataka	Book containing stories about the life of Buddha
Buddha	An enlightened being
Ascetic	Harming your body to free your mind- IE starving yourself
Enlightenment	Finding out & understanding the truth about the universe and existence
Siddharta Gautama	The birth name of the Buddha
Mahayana	A branch of Buddhism associated with Tibet and China
Therevada	The 'original' Buddhism that starter in India
Paticca Samuppada	Dependent origination- each life/ origin depends on the one before
Meditation	Focussing deeply
The 4 Sights	Old man, sick man, dead man and holy man
Tanha	Craving
Nirvana	Escape from the cycle of rebirth and dukkha
Rebirth	After you die, your karma will begin another person's life
Buddha-nature	The idea that we all have what it takes to be a Buddha!
Samsara	The trap of rebirth (shown visually by the wheel
Arhat	The final life where you become a Buddha in Therevada
Bodhisattva	Where you choose to 'reincarnate' and return to Samsara instead of going to Nirvana in order to help others.

Key teachings

The 8 Fold Path
8 things that must be done 'right' to gain good karma to get to Nirvana. Buddha called it a 'raft' to escape Samsara (UT-SAL-EMC)

The 4 Noble Truths
The first thing Buddha taught to the ascetics who became the first converts. Dukka (suffering), Tanha (craving), Nirvana (non-existence), Magga (The 8 Fold Path) DTNM

The 5 Skandhas
The 5 parts that make up a person. When we die, these piles fall apart and the next life starts as we have no soul and do not carry on (anatta). The Skandhas are taught using the chariot analogy from Nagasena II. Mental Form (thoughts), Consciousness (awareness), Physical Form (your body), Sensations (the 5 senses), Perception (recognition) MC PSP

The 3 Marks of Existence
Three things that harm us simply because we exist.
Dukkha (suffering is inevitable such as getting old, sick and dying), Anicca (things are impermanent like relationships and possessions) and anatta (we have no soul- we cease when our skandhas fall apart) DAA

The 5 Precepts of the Laity
Vows of regular Buddhists- No killing, no stealing, no sexual misconduct, no substances that cloud the mind, no false speech (lies).

The 5 Precepts of the Sangha (monks)
Vows of monks (bikkhus) Own nothing, no sex, no high bed, no self-beautification, no eating after mid-day.

The 6 Realms of Existence
The 6 Realms (mindsets) you can be born into including the Hungry Ghosts, Animals, Angry Gods, Gods, Hell and Humans. You can only reach enlightenment from the Human Realm on the Wheel of Dependent Origination.

The 12 Niddanas
12 images on the outside of the Wheel of Dependent Origination that show how dukkha is caused (eg, the monkey eating fruit is craving).

The 3 Poisons
Shown in the middle of the wheel, hatred (snake), green (board and arrogance/ ignorance (cockerel) need extinguishing to escape rebirth.

Key Quotes

Walpola Rahula

Nirvana is 'cool water that calms the fever'
Do no engage in 'foolish babble and gossip'
Escape the 'round of rebirth'

Buddha

Nirvana is 'the end'
The 8 Fold Path is a 'raft' from Samsara to Nirvana.
Meditation 'frees us from Mara's fetter'

Nagasena II

The Chariot Analogy
The Candle Analogy
The turtle Analogy'

Ninian Smart

Nirvana is 'the end'

Jataka

Siddhartha has '3 mansions'
His 'legs were like bamboo, his back was like a rope'

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.

Zen Meditation
This is 'sitting meditation' where the Buddhists sits on a zazen cushion. It is neither too comfy (like Palace life) or too un-comfy (like ascetic life), thus is reminds Buddhists of the middle way. The Buddha was enlightened in a similar way. Some variations include Zen archery or walking meditation so believers can learn to meditate while doing everyday activities.

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 (such as 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 commited 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 out 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**

Paper 1: Glacial landscapes in the UK

EROSION + WEATHERING

Erosion	Rock are broken down and transported e.g. abrasion and plucking
Abrasion	Sandpaper effect of glaciers load
Plucking	Glacier freezing round are ripping out rocks
Weathering	Rocks are broken down 'in situ' e.g. freeze-thaw
Freeze-thaw	Repeated freezing and expansion of water breaking rock down

MOVEMENT + TRANSPORT

Flow	Glaciers flow like a frozen river
Rotational Slip	Glaciers rotate within hollows to steepen back wall and deepen hollow into corrie
Subglacial material	Material frozen in a glacier
Bulldozing	Glacier pushes material, moraine, in front of its snout as it moves

DEPOSITION

Moraine / Till	Unsorted Material deposited by glacier so will be unsorted.
Outwash	Material deposited by outwash streams so will be sorted.

UPLAND GLACIATED AREA

Lake District	Example of an upland glaciated area in the UK, Cumbria, NW England
Key land users	Farming – mainly sheep farmers own over 95% of the land. Tourism – main economic driver – over 21 million tourists creates over £3bn revenue and emply over 16,000 people. Quarrying – slate. Forestry – approx. 10% forests.
Conflicts	Tourists/Farmers – erosion & dogs/sheep. Congestion as 95% tourists arrive by car.
Management	'Fix The Fells' Charity that works with farmers to repair eroded land and install rigorous footpaths. 'Go Lakes' traffic management – more public transport and bike lanes.

FEATURES OF EROSION

Corrie	Rotational slip deepens hollows in mountain, creates armchair shaped hollow often with a tarn – Red Tarn.
Arête	Thin + steep ridge formed as two corries erode back – Striding Edge
Pyramidal Peak	Pointed mountain formed as three, or more, corries erode back - Helvellyn
Truncated Spur	Cliff edges on valley side where interlocking spurs have been ripped off - Grisedale
Glacial trough / U-shaped valley	Wide flat valley with steep sides, U- shaped.
Ribbon Lake	Long thin lakes where softer rock has been eroded more - Windermere
Hanging Valley	Smaller valley high above glacial trough formed as tributary valley wasn't eroded as deeply.

FEATURES OF DEPOSITION

Lateral moraine	Glacial deposit at the side of the valley
Medial moraine	Glacial deposit down the middle of a valley
Terminal moraine	Glacial deposit at the glacial snout
Ground moraine	Glacial deposit all over the valley floor
Drumlin	Elongated hills made from moraine with steep stoss slope and gentle lee slope
Erratic	Rocks deposited out of place by glacier.
Lake District example	Langdale shows examples of eratics and moraine. Swarms of drumlins are found in Swindale

UPLAND GLACIATED AREA

Examples of tourist activities	Grizedale Forest – mountain bike centre, sculpture park, Go Ape, café, campsite, gallery. Beatrix Potter – museums, homes, gardens that link to creator of Peter Rabbit. Boat tours, spa's, hiking and watersports.
Social Impact	Ghost Towns – 2nd home owners raise house prices and locals leave, services close and villages empty of people.
Economic Vs Environmental	Should focus be on biodiversity and wilderness like Germany or economic development?

Paper 1: The Living World

ECOSYSTEM

Biotic	Living elements of an ecosystem
Abiotic	Non-living elements of an ecosystem
Ecosystem	Interactions of all living and non-living elements [UK small scale ecosystem = Hardcastle Craggs]
Producer	Converts sunlight into simple sugar [energy] through photosynthesis [UK Oak Tree]
Consumer	Feeds on producer or other consumer [UK Squirrel]
Decomposer	Breaks down complex organism [UK Earthworm]
Food Chain	Energy moving through ecosystem [UK Squirrel eats acorn]
Food Web	All different food chains in an ecosystem
Nutrient cycle	Nutrients moving from dead decomposed animals and plants into soil ready to be used again
Biodiversity	Number and type of organisms in an ecosystem

DIFFERENT BIOMES

Biome	Large ecosystem
Polar Ice	North and South Pole, Extreme cold & little sun therefore few plants and animals.
Tundra	Borders Polar regions, similar climate but slightly less extreme.
Temperate deciduous forest	UK climate with seasons and trees that drop leaves, eg Hardcastle Crags.
Tropical Rainforest	High rainfall + temp all year therefore huge biodiversity
Desert	Covers 1/5 of Earth's land, <200mm annual ppt, extreme temps, limited plants and animals.
Adaptation	How life evolves to find a niche in a new biome.

TROPICAL RAINFOREST

Emergent	Fast growing trees, sit above canopy to maximise sunlight
Canopy	Top and thick layer of trees
Drip tip	Allows heavy rain to run off, prevents leaf breaking under weight
Lianas	Creepers that use other trees to reach sun
Buttress roots	Thick above ground root to stabilise tall trees in thin soil
Deforestation	Cutting down trees for other land use, usually for economic reasons

TRF CASE STUDY = MALAYSIA

Malaysia	1960 nearly totally forested, now 50%. Swapped rainforest for economic growth. 1960 GNI $2bn. 2020 GNI over $400bn.
Commercial farming	Malaysia is largest global exporter of palm oil, 50% of all deforestation. Large rubber plantations.
Population pressure	31.7 million population and one of most rapidly growing globally
Other causes of deforestation	Logging, removing trees for roads and wood for manufacture. Mineral extraction, Gold and iron mined, 31% of global tin comes from Malaysia. **Energy, b**uild dams for HEP.
Effects	+ Economic Growth, Multiplier Effect, improved HDI – now 0.75. - Total environmental destruction, biodiversity loss, air pollution causes respiratory problems and death to 10,000's, climate change.
Management	Ecotourism – conserves rainforest and empowers locals. Selective logging – just take the treed you need. FSC – illegal to sell unsustainable TRF produce in UK. Debt for conservation – USA & Costa Rica.

COLD ENVIRONMENT

Svalbard	Between Norway and North Pole in Arctic Ocean, Pop 2700, 1 small airport
Economic Opportunities	Main industry – tourism, 180 000 annual tourists. Fishing, 150 species. Energy 300 employed in mines, move to geothermal.
Challenges	Permafrost – layer of permanently frozen ground beneath the thin soil. Extreme cold (-30C), frostbite and 3 months of light/3 months night.
Fragile ecosystem With low biodiversity	Due to short growing season and general harsh environment any disturbance to these ecosystems is difficult to recover from as everything takes such a long time to grow in the harsh environment.
Threats	Climate Change. Erosion and disturbance of ecosystem by tourists.
Management	Paris Climate Agreement, renewable energy & e-vehicles, National Park System and conservation tax.

Paper 2: Urban Issues and Challenges

URBAN CHANGE

Urban/Rural	City/Country
Urbanisation	Process of more people living in urban areas compared to rural areas
HIC urbanisation	Slow rate as majority of population already live in urban areas
LIC urbanisation	Fastest rates of urbanisation as majority of population live in rural areas and are migrating
Rural to urban migration	Movement from rural to urban areas
Push factor	Reason causing someone to want to leave an area
Pull factor	Reason causing someone to want to move to an area
Natural Increase	Birth rate higher than death rate in some urban areas
Megacity	City with a population of more than 10 million
NEE	Newly Emerging Economy – country experiencing rapid economic development

LAGOS

Location and importance	Largest city in Nigeria, centre of African cultural industry, eg Nollywood. 60% of Nigeria's GNI is generated there making it the financial centre for West Africa
Growth	1960 less than a million lived in Lagos, now 21 million. Growth Rate 85 people per hour.
Pull	Industrialising now - employment opportunities – employment empowers communites to improve Q of L. Education – 95% girls in Lagos complete primary – only 30% in NW Nigeria.
Social challenges	60% of population live in squatter settlements. Eg Makoko. Makoko has no access to sanitation, clean water, only 1 fee paying school, only fee paying hospitals.
Economic challenges	Not enough formal jobs, unemployment = inequality = crime = Area Boys.
Environmental challenges	Lagos lagoon is most polluted aquatic ecosystem in the world. Human waste and industrial pollution has killed biodiversity.
Urban planning for urban poor	Mokoko floating school; up to 100 student educated in floating structure with solar power.

MANCHESTER

Location and importance	Located in north west of UK off M62. 2nd biggest cultural industry hub in Europe.
Impacts of national and international migration	National. Young people move to Manchester for work and learn from surrounding areas, creates vibrant city. International. 1960's South Asian migration – now 10% population has created 'Curry Mile.'
Social opportunities	Diverse cultural mix. Great exposure to music, food, festivals, sporting events. 3 universities.
Economic opportunities	15,000 jobs in Media City. Largest financial centre outside London. Contributes to 4% of UK GDP
Environmental opportunities	Urban Greening – Piccadilly – living walls, green rooves, more trees and green space – increase biodiversity, reduces air pollution eg CO2.
Transport opportunities	Manchester has a multi modal integrated system with rail, tram and airport successfully linked. Go App ticket cap, Bee Bikes.
Urban re-generation project	Salford Quays has been successfully regenerated with The Lowry Theatre and Shopping Centre and Media City. Seen social, economic and environmental improvements.
Social and economic challenges	Manchester has high levels of urban **deprivation and inequality.** Rochdale life expectancy 66, unemployment rates over 10%, low educational attainment – only 15% access university. Trafford life expectancy 83, unemployment rate 2%, 85% students access university.
Environmental challenges	**Dereliction**. This post industrial city has a significant number of derelict buildings around Manchester which take time and money to clean up and either make safe or demolish. Green field development – urban sprawl – Littleborough – 'hands off our greenbelt' prevented 3000 new homes being built.
Sustainability	Manchester is working towards being more sustainable and focusing on water conservation, waste recycling, reduction of congestion, energy conservation schemes and creating green spaces. No 1 Angel Square – Coop Bank HQ is the most sustainable business building in Europe.

Paper 1: River landscapes in the UK

EROSION

Vertical erosion	Deepens valley into V shape
Lateral erosion	Widens river valley
Hydraulic Action	Sheer force of water
Abrasion	Sandpaper effect of river's load
Attrition	River's load colliding and breaking down
Solution	River dissolving material

FEATURES OF EROSION

Waterfall	Hard rock overlays soft rock. Soft rock erodes. Hard rock overhangs and eventually collapses as unsupported into plunge pool eg Gorpley waterfall
Gorge	Steep sided ravine caused by retreating waterfall eg Gorpley gorge
Interlocking spurs	River erodes vertically cutting into land creating a V-shaped valley eg Between Todmorden and Hebden Bridge

TRANSPORTATION

Traction	Heavy rocks are rolled along river bed
Saltation	Small stones are bounced on river bed
Suspension	Very small particles are suspended in water
Solution	Smallest particles are dissolved

DEPOSITION

Deposition	River puts down load when it looses energy / competence

FEATURES OF DEPOSITION

Flood plain	Wide valley floor, occasionally gets flooded and has silt deposited over it.
Levees	Raised river bank with heaviest material deposited first as flood water falls.
Estuaries	Mouth of river where deposits can build into mud flats e.g. Humber Estuary

FEATURES OF EROSION & DEPOSITION

Meander	Fastest current on outside causing erosion, material is deposited on inside of the bend where flow is slow. Neck of bend narrows over time e.g. Sowerby Bridge.
Ox-bow lake	During flood river cuts through neck and shortens its course, load deposited in old river channel leaving lake

RIVER MANAGEMENT

Where is scheme & why required	Upper Calder Valley, NW England. Significant flood risk to over 5000 homes. Climate change means extreme rainfall event every year, used to be every 20 years.
Hard Engineering Strategies	Man-made structures that control the flow of rivers and reduce flooding. Upper Calder examples – Channelisation on Burnley Road, River Walls at Tipside.
Soft Engineering Strategies	Schemes using knowledge of a river and its processes to reduce effects of flooding. Upper Calder examples, Treesponsibility afforestation of over 60,000 trees in drainage basin. Flood plain zoning on Calder Homes Park. Flood Sirens.
Issues with management strategy	Economic. Expensive – over £67m. Businesses have had to adapt to occasional flooding – tanked walls, raised electrics, stone floors. Social. Loss of community space in park. Environmental. Loss of aquatic ecosystem due to channelization. However, without mgt strategy the town would die as businesses and home owners would not invest.

STORM HYDROGRAPH

Discharge	Volume of water [CUMECS]
Peak rainfall	Highest rainfall
Peak Discharge	Highest discharge
Lag time	Time difference between peak rainfall and peak discharge
Rising limb	Increase in discharge as river levels rise
Falling limb	Decease in discharge as river levels fall

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.

Water

Why is water important?	• 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	• 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.

Food

Why is food important?	• 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: icreased 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)

Energy

Why is energy important?	• 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 Management

Strategies to increase water supply	• Diverting supplies and increasing storage. • Dams and reservoirs. • Water transfer schemes • Desalinisation
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 damn. 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	• 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.

Health and Social Care Y10

RO33 Supporting individuals through life events

Topic Area 1 – Life stages

Life stages and key milestones of growth and development for age groups

- 4-10 years (childhood)
- 11-18 years (adolescence)
- 19-45 years (young adulthood)
- 46-65 years (middle adulthood)
- 65+ years (older adulthood)

PIES development across the life stages

- Physical – fine and gross motor skills, mobility, characteristic body changes, sexual characteristics, puberty, menopause, ageing characteristics
- Intellectual – language development, sentence construction, logical thinking, problem solving, decision making, deterioration of mental abilities
- Emotional – bonding, different attachments, independence, self-confidence, self-image, selfesteem, love, affection
- Social – relationships, social skills, responsibilities

Factors affecting growth and development across the life stages

- Physical factors
- Social factors
- Emotional factors
- Economic factors
- Cultural factors
- Environmental factors

How the growth and development of an individual is affected by:

- Physical factors
- Social factors
- Emotional factors
- Economic factors
- Cultural factors
- Environmental factors

Topic Area 2: Impacts of life events

Expected and unexpected life events

- Physical events
- Relationship changes
- Life circumstances

Impacts that life events have on individuals

- Physical
- Intellectual
- Emotional
- Social
- Financial

Identifying individual's needs based on the impacts of life events

- Physical: illness/tiredness, pain, weight loss/gain, mobility, appearance.
- Intellectual: adapting to change, learning new skills, learning impairment.
- Emotional: mental health, grief, anxiety, stress, depression, self-esteem/self-image.
- Social: lifestyle choices, personal relationships with friends and family.
- Financial: change in income, increased costs, change in wealth.

Topic Area 3: Sources of support

Sources of support

• Formal: hospitals, health centres, care homes, day centres, children's services, hospices, respite care, rehabilitation centres (addiction or injury).
• Informal: family/friends, religion/culture.
• Charities: Relate, Gingerbread, Cruse, Age UK, Mind, specialist charities.

The roles of practitioners in providing support

The roles of informal care givers in providing support

How practitioners meet individual needs

- enable/promote independence
- medical/mental health support
- care support
- respite care
- financial support
- advice and guidance

Research and recommend personalised support based on individual needs

- Match support provision to specific individual needs Offer coordinated care and treatment
- Justify choices made
- Apply person-centred values

Health and Social Care Y10

RO34 Creative and therapeutic activities

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

History: Health and the People

Hospitals

Islamic Hospitals *Bimaristans* treat patients using advanced medical knowledge of Golden Age Islam.

Christian Hospitals "Care not cure". Hospitals funded by wealthy patrons. 10% cared for the sick.

New hospitals set up specialising in venereal, mental health and maternity care. Between 1720-50 5 new hospitals in London.

Voluntary hospitals are established using inheritance or private subscription.

Florence Nightingale pioneers new approaches in hospital care with *'Notes on Hospitals'* and *'Notes on Nursing'.*

By 1860 there were 36 new hospitals in London, including Great Ormond Street. In 1870, the London Hospital Saturday Fund was set up to collect donations. Dispensaries gave medicine to the poor.

Cottage hospitals are built in rural towns and villages, meaning more people accessed healthcare; still paid private doctors.

Nationalised hospitals as part of NHS. Governments control the running of hospitals. By 2022 there are 1,250 hospitals in UK, costing government £160bn.

Medieval (1000-1450)

1298 – First public toilets in York.
1330 – Laws to stop butchers dumping waste onto London's streets.

Governments take no action in improving public health. It is the role of individual towns.

1388 – Law passed giving £20 fine for dropping waste in the street.

Black Death (1348-1351) - A combination of *bubonic* ***and*** *pneumonic* plague that swept through Europe. The **epidemic** killed between 1/3-1/2 of England's population (approx. 2-3 million).

Monasteries and Abbeys – monks and nuns practiced "cleanliness is close to godliness" and good sanitation. They were often positioned next to rivers, had privies and were isolated from towns.

Renaissance (1450-1750)

Great Plague (1665) – London saw the return of the Plague with approx. 75,000 deaths. The government were more effective in controlling the epidemic by:

- Quarantining victims of Plague with 'X' on the doors of infected houses.
- Watchmen employed to ensure compliance.
- Bodies removed at night.
- Taverns and theatres are shut.

Governments begin to take some account for public health. Miasma theory led to more cleaning. Cess-pits were cleaned regularly. **Bills of Mortality** are introduced following the Great Plague to more accurately track death rates.

1798 – Edward Jenner – Jenner's discovery of the vaccine for smallpox is funded by the English government. £10,000 is given to develop an effective vaccine.

Public Health

Industrial (1750-1900)

Industrial towns are breeding grounds for diseases as cities like Manchester develop with large populations of workers. Crowded housing and poor sanitation lead to outbreaks of Typhoid and Tuberculosis. **Cholera** is the big killer; **1831** Cholera kills 50,000 in London.

1842 - Chadwick Report - says miasma causes but urges for cleaner streets.

1854 – John Snow – epidemiologist John Snow uses a Voronoi diagram to map cholera outbreak. It resulted in the Broad St. pump shut off. Though he blamed 'water miasma' his methods of tracking disease are still used today.

1848 – First Public Health Act – councils given power to improve towns but it is not compulsory and only 50 towns have medical officers by 1872.

1858 – 'Great Stink' – heatwaves cause government to relocate. Bazalgette is given £3million by the government to build 83 miles of sewers which are completed in 1866. Cholera never returns to London.

1875 – Second Public Health Act – made some features of 1848 Act compulsory for towns to take responsibility for public health.

Modern (1900-present)

1899 – Boer War – 40% volunteers for the army unfit to serve.
1899 - Charles Booth – *'Life and labour of the People'* – 35% of Londoners living in poverty
1901 – Seebohm Rowntree – *'A Study in Town Life'* – 50% of York in poverty.

Liberal Health Reforms introduced by David Lloyd-George's Liberal Government;
1906 – School meals introduced.
1908 – Old-Aged Pensions Act.
1911 – National Insurance Act.

1946 – The Welfare State – Clement Attlee's Labour Government introduced a series of reforms. Minister for Health, Aneurin (Nye) Bevan, created the National Health Service (NHS). Before 1940, 8 million people had not seen a doctor because they couldn't afford.

1942 – Beveridge Report – William Beveridge identified 'Five Giants' (Want, Squalor, Ignorance, Disease, Idleness).

National Health Service – still stands today, serving millions. In 2018/19 £129 billion was spent on NHS.
2021 – COVID vaccination

History: Health and the People

Public Health over time

Medieval (1000-1450)

Keywords

Public Health	Government intervention in the health of the public
Black Death	Name given to 14th century bubonic plague
Epidemic	A widespread outbreak of a disease
Miasma	'Cursed air' believed to cause disease
Monastery	Religious building used as a hospital
Mortality	Death-rate usually measured per 1,000

Key Individuals

Edward III	(1327-1377) King during the Black Death. Oversaw largest epidemic seen in human history.
Richard II	(1367-1400) King following the Black Death who introduced the Statute of Labourers (1381) limiting the freedom of English peasants.

Key Information

- Governments and Kings took no responsibility for public health. It was left largely to the local governments to make laws and intervene.
- However, historians have recently found that medieval people washed and exercised; many towns had bath houses and towns paid 'gong farmers' to clear out human waste from cesspits.

Black Death

- There were both supernatural and natural explanations for it, for example, some people said that God had sent it as a punishment, others that the planets were in the wrong conjunction, or that it was caused by 'foul air'.
- Many towns had quarantine laws, boarded up the houses of plague victims, and isolated people with leprosy in 'lazar houses'.
- The impact of this epidemic was long lasting; laws were passed to try and restore order. The Statute of Labourers (1351) put limits on wages to keep the feudal system in order.

Renaissance (1450-1750)

Inoculation	Introducing mild/dead form of disease to make person immune
Vaccination	Injection of living/similar disease to build immunity
Laissez-faire	Governments not interfering
Mortality Bill	Parish document in London showing cause of deaths
Pesthouse	Hospital for infectious diseases

King Charles II	(1630-1685) King during the Great Plague. Advocate of scientific discovery.
Edward Jenner	(1749-1823) Discovered first vaccine for smallpox using Cowpox and published *'On Vaccination'* in 1798.

- Public health is still largely unregulated by governments; towns still filthy with no real sanitation or waste management.

Great Plague

- Some attempt to stop spread of plague using quarantine, watchmen and 'X' on the doors of infected people.

Vaccination

- Government fund Edward Jenner £10,000 to develop an effective vaccine.
- Vaccination becomes compulsory in 1853, the first act of enforcing vaccines.

Hospital Boom

- New hospitals built – 5 in London between 1720-50. Hospitals began specialising in care. **Voluntary hospitals** were set up using paid subscription.

Industrial (1750-1900)

Cholera	Bacterial infection caught from drinking infected water
Dispensary	Place for poor to get medicine
Medical Officer	Appointed to look after health of an area.
Sanitation	Disposal of waste and clean water
Workhouses	Accommodation for poor

Edwin Chadwick	(1800-1890) Wrote *'On the Sanitary Conditions of the Labouring Population'* linking illness and poverty.
John Snow	(1813-1858) Epidemiologist who traced cholera.
Joseph Bazalgette	(1819-1891) English engineer who modernised London's sewers, eradicating cholera.

- Huge population booms in industrial towns lead to poor public health. As people move to the towns for work, conditions worsen with overcrowding, poor sanitation and disease.
- Cholera is the big killer disease with 50,000 dead during 1831 outbreak

Government intervention

- **1848 First Public Health Act** – not compulsory.
- **1858** – Government paid Bazalgette £3m to improve London's sewers.
- **1875 Second Public Health Act** – towns responsible for public health.

Hospitals

- Florence Nightingale *'Notes on Hospitals'* (1863) improve hospital conditions whilst *'Notes on Nursing'* (1859) made nursing a respected medical profession

Modern (1900-present)

Liberal Health Reform	Series of laws to improve public health (1906-1911)
Social Security	Payment paid in case of unemployment /sickness
Welfare State	Government intervention to improve the public health of the people
National Health Service	Government run healthcare for all people, free on point of entry

Charles Booth & Seebohm Rowntree	Social reformers who wrote reports on poverty in English towns.
David Lloyd-George	(1863-1945) Prime Minister responsible for Liberal Health Reforms 1906-11.
William Beveridge	(1879-1963) Wrote the Beveridge Report (1942) which became basis for Welfare State.

Social Reformers

- **Charles Booth** published *'Life and Labour of People* in 1899 which found 35% London's population lived in poverty. **Seebohm Rowntree** published *'A Study in Town Life'* in 1901 and found half of York's population lived in poverty.

Liberal Health Reforms

- **Liberal government** introduced a series of reforms to improve public health including School Meals, Unemployment Benefit and Old Age Pensions.

The Welfare State

- The Beveridge Report identified '5 Giants' that governments need to tackle.
- **Attlee's Labour government** introduced the Welfare State, looking after Britons from "cradle to grave" including Health, Education and Social Security.

Medieval (1000-1450)

Treatments for disease

Islamic medicine – Golden Age of Islam gave more scientific notions of treating diseases.
Al-Razi – stressed careful observation, distinguished measles and smallpox, write over 150 books including *'Doubts on Galen'*.
Avicenna – wrote encyclopaedia of medicine *'Canon of Medicine'*; this became standard medical textbook in Europe until 17th century.

Treatments centred on rebalancing the humours. Some herbal remedies, provided by **apothecary** or **wise-women**, worked. Others less so; bleeding, leeching, purging generally made things worse while praying, self-flagellation and masking miasma were ineffective.

Ideas about disease

Four Humours – Ancient Greek doctor Hippocrates and Ancient Roman doctor Galen develop the theory of the Four Humours which dominate ideas of disease for centuries. The humours (Yellow Bile, Black Bile, Phlegm and Blood) all had to kept in balance. Because Galen believed in **monotheism** (one God) he was supported by the Catholic Church.

Dissection was banned during medieval era meaning ideas about disease based largely on superstition. Miasma, astrology and the Four Humours were suspected to cause ill-health. Any illness was also seen as punishment from God.

Renaissance (1450-1750)

Voyages of Discovery bring new plants/drugs used to treat illness like tobacco.

King's Touch – Charles II believed to cure 'scrofula'.

1653 – Nicholas Culpepper – publishes *'Complete Herbal'* identifying medical properties of hundreds of plants for ordinary people, written in English rather than Latin.

1753 – James Lind – discovers cure for scurvy as vitamin C.

1798 – Edward Jenner – discovers cure for smallpox using cowpox. Although resistance, the vaccination is successful, event though Jenner cannot explain why it works.

Some understanding of dirt causing disease, as seen with handling of Great Plague.

1600 – first microscope developed

1676 – Thomas Sydenham – known as the 'English Hippocrates', he emphasised importance of observation in *'Observationes medicae'*

Spontaneous Generation – Microscopes allow germs to be seen for the first time. Theory emerges that germs appear as a result of decay.

Industrial (1750-1900)

Pasteur conducts research into animal diseases and discovers cures for chicken Cholera, Anthrax and Rabies. Pasteur successfully trials a vaccine for rabies on humans.

Koch and his team discover the germs responsible for Anthrax, Cholera and Tuberculosis.

1861 - Louis Pasteur - used swan-neck flask experiment to prove germs cause decay. His **Germ Theory** becomes a pivotal moment in detecting germs.

1882 – Robert Koch – developed theory of **specificity** that argues specific diseases are caused by specific germs. Koch uses agar to grow bacteria and techniques for staining and photographing bacteria.

Modern (1900-present)

Ehrlich developed the first 'Magic Bullet', Salvarson 606 successfully treated syphilis.

1941 – Florey and Chain – developed the use of penicillin as a mass produced antibiotic, with the aid of $80m. World War Two made the urgency worse due to number of soldiers dying overseas. By 1945, 250,000 soldiers had been treated.

Alternative Medicine – with an increase in antibacterial resistance, more people are moving to alternative medicine like hypnotherapy, acupuncture and homeopathy.

1909 – Paul Ehrlich - developed Germ Theory further by using specific chemicals to kill specific diseases.

1928 – Alexander Fleming – discovers by chance the antibiotic penicillin kills the bacteria Staphylococcus. He does not develop this further as he could not purify for human consumption.

1953 – Crick and Watson – Discovery of DNA

History: Health and the People

Ideas and Treatments

Medieval (1000-1450)

Keywords

Apothecary	A medieval pharmacist/chemist
Astrology	Study of planets and their affects on health
Miasma	'Cursed air' believed to cause disease
Physician	Male, university-trained doctor
Purging	Rid the body of excess (blood or vomit)
Urine Chart	Used to examine urine to define illness
Wise Woman	Female healer who used herbal remedies

Key Individuals

Hippocrates	Creator of theory of Four Humours
Galen	Dissected animals to develop Four Humours. Favoured by Church.
Al-Razi (Rhazes)	Islamic surgeon stressed observation. Follower of Galen.
Ibn Sina (Avicenna)	Wrote '*Canon of Medicine*' which became medical textbook until 17th century.

Key Information

Ideas about illness
- Hippocrates and Galen's Four Humours dominated Western medicine. Church supports Galen meaning questioning Galen is questioning the Church. In 1277, monk Roger Bacon is arrested for anti-Church views questioning Galen.
- Urine charts, astrology charts and zodiac charts all used to diagnose disease. Major cause of disease is viewed as punishment from God.

Treatment
- Focus on rebalancing the Four Humours.
- Purging, bleeding, leeching, cupping all used to rebalance Humours.
- Prayer and smelling sweet-smelling flowers used to combat miasma.

Renaissance (1450-1750)

Keywords

Midwives Book	Jane Sharp's book combining medical knowledge and argument that women should be midwives
Quack	Sold medicines knowing they don't work
Scrofula	Highly infectious disease
Scurvy	Sailor's disease
Printing Press	William Caxton introduced to England in 1475. Meant quick spread of information

Key Individuals

James Lind	Vitamin C as cure for scurvy.
Nicholas Culpepper	Published *Complete Herbal* in English.
Thomas Sydenham	'English Hippocrates' who emphasised observation.
Edward Jenner	(1749-1823) Discovered first vaccine for smallpox using Cowpox and published *'On Vaccination'* in 1798.

Key Information

Ideas about illness
- Still belief in miasma which leads to scientific research.
- Inventions like the printing press (1475) and microscope (1600) spread medical knowledge.

Treatment
- Still traditional treatments like purging, bleeding and prayer. The touch of a king was still believed to cure scrofula.
- Voyages of Discovery brought new plants and treatments.

Vaccination
- **1798** – Edward Jenner discovers that cowpox can be used as vaccination against smallpox, but cannot explain why.

Industrial (1750-1900)

Keywords

Anti-Contagionist	Dirty environments cause disease
Contagionist	Infection spread by contact with infected
Germ Theory	Germs cause disease
Magic Bullet	Chemical targeting specific bacteria (Salvarsan 606)
Specificity	Specific bacteria cause specific diseases

Key Individuals

Louis Pasteur	Discovered Germ Theory as replacement of miasma.
Robert Koch	Developed theory of specificity.
Paul Ehrlich	Created first 'Magic Bullet' – Salvarsan 606 as cure for syphilis.

Key Information

Ideas about illness
- Miasma still believed, argued as **spontaneous generation,** but gives way to anti-contagionists in early 1800s.
- **1861 –** Pasteur's Germ Theory disproves spontaneous generation and shows existence of germs.
- **1882 –** Koch develops Pasteur's work with theory of specificity

Treatment
- **1853** – Vaccination against smallpox becomes compulsory
- **Pasteur –** vaccine for Chicken Cholera, Anthrax and Rabies
- **Koch –** discover germs responsible for Cholera and Tuberculosis
- **Ehrlich –** creates first 'Magic Bullet' to treat syphilis

Modern (1900-present)

Keywords

Alternative Medicine	Yoga, homeopathy, acupuncture. No chemicals – about balancing humours
Antibiotic	Fights infections – Penicillin is first mass produced antibiotic
Antibiotic resistance	Bacteria grows resistant to chemicals designed to kill them, less effective
Radiotherapy	Radiation treatment for disease like cancer
Staphylococcus	Bacteria causing a range of infection

Key Individuals

Alexander Fleming	Discovered penicillin kills staphylococcus in 1928 but could not purify for human consumption.
Howard Florey & Ernst Chain	Funded by the US government, they led the mass production of penicillin during WWII.
Crick & Watson	Discovered DNA sequencing which led to better understanding of make up of human body.

Key Information

Treatment
- **1928 –** Fleming discovers penicillin kills staphylococcus. He struggles to purify for human testing. Publishes but does not realise its potential.
- **1942** – Florey and Chain are funded $80m by US government to develop and mass produce penicillin. During the war, 250,000 soldiers were treated with the 'Wonder Drug'.
- **Alternative Medicine** – with increased antibiotic resistance, more people are turning to alternative treatments like homeopathy, acupuncture, hypnotherapy. These treatments similar to rebalancing the Humours and do not involve chemicals.

Medieval (1000-1450)

Understanding Anatomy

Galen remains the authority on the human body, based on his experiments with pigs and dogs. His findings include the fact the brain controls the body and that blood is made and destroyed in the liver

Medieval Christian Church bans dissection, meaning doctors and surgeons are unable to understand the inner workings of the body. Knowledge of the body relies on Galen's works. If any findings question Galen's, it is argued the body or surgeon were incorrect.

1267 – Hugh of Lucca argued that pus was not needed for healing. Because this contradicted Galen, it didn't catch on.

Operations

Islamic surgeon Abulcasis is regarded as 'Father of Modern Surgery'. His work *'Al Tasrif'* (c.1000) was a 30-volume medical textbook. He invented 26 new surgical instruments.

Medieval surgery included amputations, blood-letting and trepanning. Wounds were cauterised with hot oil. Most surgery was done by a barber-surgeon. Alcohol, opium and mandrake were all used as mild painkillers.

1376 – John of Arderne, an English surgeon, wrote *Practia* which became a surgical manual based on Greek ad Arab knowledge and his knowledge from war. He tried to separate surgeons from lower-class barbers.

Renaissance (1450-1750)

1543 – Andreas Vesalius publishes *'Fabric of the Human Body'* which used dissections to accurately portray the body. He disproves many of Galen's assumptions.

1628 – William Harvey discovers that blood travels in one direction around the body, pumped by the heart. This disproves Galen's idea that blood is made and destroyed in the liver. His work *'An Anatomical Account of the Motion of the Heart and Blood'.*

1794 – John Hunter developed a museum of 3000 specimens of animals and human, to show the purpose of anatomical research. This altered the perception of science and surgery to the public.

1575 – Ambroise Pare, a French battlefield surgeon, wrote '*Work on Surgery'*. He developed a cauterising ointment using egg whites, turpentine and rose oil, less painful than cauterising oil. He also used ligatures to tie-off blood vessels which stemmed bleeding.

1794 – John Hunter, an English surgeon, learned through dissecting cadavers (often dug from graves). Hunter learnt to restrict blood vessels rather than amputating, tying off aneurisms and the fact that gunshot wounds should not be cut out of skin.

Industrial (1750-1900)

Killer of Surgery – Pain
Ether – numbed pain but caused vomiting & flammable.
Nitrous Oxide – used by dentists but difficult dosage.
1847 – James Simpson, a Scottish doctor discovers the first effective anaesthetic, chloroform. It was popularised by Queen Victoria but still showed difficulties with dosage (as seen with Hannah Greener).

Killer of Surgery – Infection
1867 – Joseph Lister was one of the first doctors to apply Pasteur's Germ Theory to improve surgery. Carbolic acid is used as the first effective antiseptic which dropped mortality rates from 46% to 15%.
1890s – aseptic surgery develops which used antiseptic substances to completely sterilise equipment, gowns and surgeons hands to completely remove any germs.

1895 – X-rays are developed allowing a greater understanding of bone structure. Used on a mass scale during World War I.

Killer of Surgery – Blood Loss
1900 – Karl Landsteiner, Austrian-American biologist, discovers different blood type groups.

Modern (1900-present)

World War One
- Plastic surgery is pioneered by **Harold Gillies**
- Broken bones mended by Army Leg Splint
- Blood transfusions are made possible when **Hustin** develops technique to store blood using sodium, meaning blood banks are possible.
- X-Rays are used to discover shrapnel in gunshot wounds.

World War Two
- **Harken** develops open heart surgery
- Blood banks used on a mass scale
- Penicillin developed as antibiotic

1973 – CAT Scans develop meaning a 3D X-ray of body
1987 – MRI Scans used to monitor brain activity

History: Health and the People — Surgery

Medieval (1000-1450)

Keywords

Barber Surgeon	Untrained surgeon but has completed apprenticeship
Cauterise	Seal a wound with hot instrument/oil to prevent infection
Cupping	Drawing blood to the surface
Leeching	The use of leeches for bloodletting
Trepanning	Cutting hole in the skull to relieve pressure
Vademecum	Medieval medical book carried by doctors

Key Individuals

Abulcasis	Islamic doctor and 'Father of Modern Surgery' who developed 26 surgical instruments.
John of Arderne	English surgeon who specialised in anal abscesses. Mortality rate of 50% due to cauterising ointment.
Hugh of Lucca	Fought against Galen's argument that pus was needed to heal wound. Although correct, his idea did not catch on.

Key Information

- Some progress during Middle Ages as a time of war, meaning battlefield surgeons made significant developments.
- Mild anaesthetics were used such as strong wine and opium but most surgeries were completed with a conscious patient. Surgeons believed that patients being awake showed they were still alive.
- **Islamic medicine** impacted Britain as Abulcasis' *'Al Tasrif'* described surgical procedures including using ligatures to tie blood vessels.
- Most surgery was conducted by barber-surgeons who were viewed as a low-skill job. John of Arderne tried to distinguish surgeons from low-class barbers through Guild of Surgeons in London.
- Anatomical understanding still based largely on Galen's work.

Renaissance (1450-1750)

Keywords

Anatomy	Study of the human body
Cadaver	Dead body used for medical and anatomical study
Circulation	Movement of blood round the body
Royal College of Surgeon	Liscenece to practise surgery, couldn't practice within 7 miles of London without one. Beginning of surgical regulation

Key Individuals

Andreas Vesalius	Carried out own dissections which challenged Galen. Published *'Fabric of the Human Body'.*
Ambroise Pare	Battlefield surgeon who pioneered ligatures, cauterising ointment and prosthetic limbs.
William Harvey	Discovered circulation of blood around the body.
John Hunter	Teacher of anatomy who helped public understand the importance of anatomical study.

Key Information

Understanding anatomy

- **Vesalius'** 1543 work *'Fabric of the Human Body'* emphasised the importance of anatomical understanding. First work to openly and accurately challenge Galen using own dissections.
- **Harvey's** 1628 work *'Motion of the Heart and Blood'* disproved Galenic thinking that blood was made and destroyed in the liver.
- **Hunter's** teachings and museum showed the value of anatomy.

Surgical progress

- **Pare's** 1575 *'Works on Surgery'* used his experience as a battlefield surgeon to develop ligatures, cauterising ointment and prosthetics.
- Still no effective anaesthetic or antiseptic so surgery is still dangerous.

Industrial (1750-1900)

Keywords

Anaesthetic	Drugs used to create unconsciousness
Antiseptic	Chemicals to destroy/prevent infection
Aseptic	Complete removal of all bacteria
Chloroform	Liquid vapour that acts as anaesthetic
Sterile	Completely clean environment where all bacteria has been removed

Key Individuals

James Simpson	Developed Chloroform as first effective anaesthetic.
Joseph Lister	Applied Germ Theory to create first effective antiseptic, carbolic acid.
Karl Landsteiner	Discovered the existence of blood groups.

Key Information

18-19th century surgery had three killers; Pain, Infection and Blood Loss.

Pain

- Use of Ether and Nitrous-Oxide as anaesthetic.
- **1847 – Simpson** accidentally discovers chloroform as an effective anaesthetic. Chloroform is popularised by Queen Victorian. Dosage still important – Hannah Greener died with simple toenail removal.

Infection

- **1867 – Lister** applied Germ Theory to the use of Carbolic Acid as antiseptic. Leads eventually to aseptic and sterile medical surgery.

Blood Loss

- **1899 – Landsteiner** discovers blood groups but no transfusion yet.

Modern (1900-present)

Keywords

DNA	Molecules that genes are made up of
Skin Graft	Taking skin from one area of the body to cover another
Transfusion	Transferring donated blood to someone
Transplant	Replacing damaged organs with ones from another person
X-Ray	Light rays used to locate metal/see broken bones

Key Individuals

Harold Gillies	Pioneer of plastic surgery and skin grafts following facial injuries in World War One.
Albert Hustin	Found mixing blood with sodium citrate preserved for longer, meaning could be used for transfusions.
Dwight Harken	Innovator of heart surgery and intensive care units.

Key Information

World War One

- Plastic surgery is pioneered by **Harold Gillies.**
- Broken bones mended by Army Leg Splint .
- Blood transfusions are made possible when **Hustin** develops technique to store blood using sodium, meaning blood banks are possible.
- X-Rays are used to discover shrapnel in gunshot wounds.

Modern surgery

- With discovery of CAT and MRI scans, understanding of the body increases massively. 21st century surgeons perform advanced and complex procedures every day.

History, Year 10 : Conflict and tension 1918 – 1939, The peace treaties and the League of Nations

Key people

Treaty of Versailles

The 'Big Three'

Woodrow Wilson
President of America at the end of the First World War. The man with the idea of the League of Nations.

David Lloyd George
British Prime Minister at the end of the First World War, keen to make sure that Germany remained able to trade.

Georges Clemenceau
French Prime Minister. He wanted to cripple Germany and make sure they could never threaten France again.

League of Nations

Manchuria

Lord Lytton
British representative of the L of Nsent to Manchuria

Abyssinia

Haile Selassie
Leader of Abyssinia

Mussolini
Fascist leader of Italy

Samuel Hoare
British Foreign Secretary, represented GB in the Hoare-Leval Pact

Pierre Laval
French Prime Minister, represented France in the Hoare-Leval pact

Key words

Clause 231	War guilt – Germany had to take the blame for starting WW1.
Saar	Industrial, coal rich area of land, given to the League of Nations for 15 years.
Rhineland	Border area between Ger and Fr. Demilitarised by the T of V.
Demilitarised	No German military allowed to be in this area.
Reparations	Payment made to victorious countries by Germany. £6,600 million.
Anschluss	Unification of Austria and Germany.
Colony	A country owned by another country.
Mandates	German colonies given to the League of Nations after WW1.
Danzig	Port taken from Germany and made a free city. Near Poland.
Polish Corridor	Land that was given to Poland that split Germany from East Prussia.
Isolationism	US policy of distancing itself from European issues.
Weimar Republic	New German Government set up after the abdication of the Kaiser.
Abdicate	To give up being the king/queen of a country.
USSR	Union of Soviet Socialist Republics – New name for Russia.
Covenant	Document that set out how the League of Nations would deal with any aggressive country.
Moral condemnation	Giving a country a telling off to try and make it behave in line with the covenant of the League of Nations.
Economic sanctions	Members of the League of Nations would not trade with aggressive or war causing countries.
Council	Body that had the power of Veto for certain countries.
Court of Justice	The League of Nations court set up to deal with international arguments.
Assembly	All members represented. Decision had to be unanimous.
Secretariat	Carried out the paper work/administration for the League of Nations.
Unanimous	All must agree to a decision.
Veto	The power to block a decision. The League of Nations Council had the power of veto.

Key events

The 'Big Three'

Clemenceau had seen his country invaded twice by Germany in his life time. Wilson wanted to create a future free from war. America was not as damaged by the war and as such did not have as much hatred for Germany. Lloyd George was the middle man. He wanted Germany to be able to trade but was elected by the public because he promised to 'make Germany pay' and said he would 'hang the Kaiser'.

Peace treaties

Each of the defeated countries had a separate peace treaty.

- ❑ Germany = Versailles
- ❑ Austria = St. Germain
- ❑ Bulgaria = Neuilly
- ❑ Hungary = Trianon
- ❑ Turkey = Sevres and Lausanne

German reaction

The decisions taken at Versailles affected Germany for the following two decades and ultimately led to the rise of Hitler and the slide towards the Second World War. The Germans referred to the Treaty of Versailles as Diktat. Germany lost 16% of coal, 48% of steel and6 million German speakers were displaced.

The Manchurian Crisis

Cause: Japan was suffering from the economic depression, the army was pressuring for more power and murdered the Prime Minster in 1932.

Events: Japan then *staged* an explosion on the South Manchurian railway in China and used this as an excuse to invade. The League sent the Lytton Commission to investigate. It took a year to recommend that Japan should leave China.

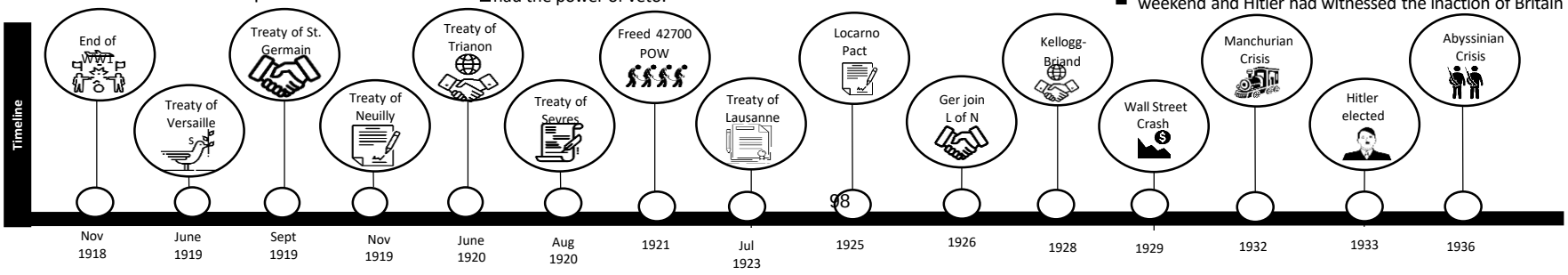
Consequences: Japan ignored the Lytton Commission and left the League. The League was weakened.

The Abyssinian Crisis

Cause: Mussolini invaded Abyssinia to try and recreate the Roman Empire and bring glory to Italy.

Events: Haile Selassie appealed to the League of Nations for help defending his country. The League put weak trade sanctions in place refusing to sanction coal and oil. They also failed to close the Suez Canal. Secretly the Hoare-Leval Pact was negotiated which saw Britain and France trying to give away parts of Abyssinia to Italy.

Consequences: This brought disgrace to France and Britain and showed how unsupported the League was. Again, the League was weekend and Hitler had witnessed the inaction of Britain and France.



History, Year 10 : Conflict and tension 1918 – 1939, Causes of WW2

Key people

Britain	**Neville Chamberlain** British Prime Minster 1937-1940. Most famous for his policy of appeasement.
Czechoslovakia	**Edvard Beneš** Czech politician who was President of Czechoslovakia from 1935 to 1938.
Germany	**Adolf Hitler** Nazi leader of Germany, elected in 1933. Wanted to overturn Versailles.
Austria	**Kurt Schuschnigg** Chancellor of Austria from the 1934 assassination of his predecessor, Dollfuss, until the 1938 Anschluss with Nazi Germany.
	Arthur Seyss-Inquart Austrian Nazi politician who served as Chancellor of Austria in 1938 for two days, before the annexation of Austria by Nazi Germany.

Key words

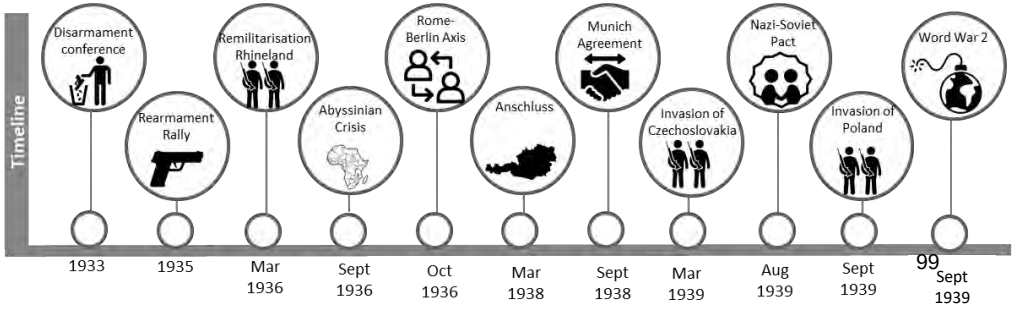
Foreign policy	The way a country deals with and interacts with other countries.
Lebensraum	Translates as *living space in the east.* Hitler wanted to make sure Germany had enough land to live and farm on.
Volksdeutsche	People with German blood who don't live in Germany.
Greater Germany	Bringing back all German people into one country.
Rearmament	Rebuild the German army after the damage done to it by the Treaty of Versailles.
Luftwaffe	The German air force.
Appeasement	A policy of giving Hitler a little of what he wanted in the hope of stopping a full scale war.
Capitalist	A political or economic belief that means you want people and your country to run businesses and make money.
Remilitarisation	Putting military back into an area of land. For example, the Rhineland.
Pact	A formal agreement between people, organisations or countries.
Fuhrer	Name used by Hitler to describe him as the unchallenged leader of Germany.
Anti-Semitic	Hateful thoughts, policies or behaviour towards Jews.
Satirical	Sarcastic or critical of something. Often the case for political cartoons in this period.
Sudetenland	Border and defensive region of Czechoslovakia, a new country created by the Treaty of Versailles.
Soviet	Describing the actions, people or Government of the USSR.

Key events

Hitler's aims	In Mein Kampf, Hitler said he would overturn Versailles and take Lebensraum for the German people. This formed the basis of his aims. These policies meant Hitler would have to invade other countries to fulfil them, and there was a very real risk that these policies would start another war. Hitler also had a clear hatred of Communism. He said he would destroy this.
Remilitarisation of the Rhineland	Hitler defied the Treaty of Versailles and marched his troops back into the Rhineland. Hitler's own military generals warned against this action. They felt that, if France chose to fight Germany would be crushed. In reality, the French were distracted by an internal election and the they were involved in negotiations around the Abyssinian Crisis that took place at the same time.
Anschluss	Unification of Austria and Germany Hitler made it clear that this was an aim. He felt the people were the same and should be united in a Greater Germany. This was compounded by the fact that Hitler himself was Austrian. Nazi action took place in Austria to make it impossible for the country to continue independently. Seyss-Inquart forced Schuschnigg out and took control of the country before inviting the Nazi German army in.
Sudeten Crisis	Appeasement was applied here. Britain and France negotiated with Hitler to give him the Sudeten area of Czechoslovakia. There were 3 million German speakers here, Hitler felt this gave him a claim to the land. President Benes of Czechoslovakia wasn't consulted. This is seen as appeasement in action. Britain and France were only concerned with keeping Hitler happy.
Nazi-Soviet Pact	Stalin had been alienated by Britain and France, he turned to Hitler. The two signed an agreement that publicly stated that the two countries would not go to war again. Privately the agreement said that Germany and the USSR would invade and split Poland between them. This action changed Britain's opinion of Germany. They signed an agreement that stated, if Poland was attacked, Britain would fight. This made war inevitable.
Appeasement	This policy aimed to prevent another war. It was used by Britain and Chamberlain in dealing with Hitler. Many believe Chamberlain made a mistake by trusting Hitler, Britain and France could have stopped Hitler if they had acted earlier. It could be argued that missed opportunities here led to the slide to war that took place. Modern historians accept that appeasement was probably the only option available and that Chamberlain was trying to delay war until a point when Britain would be ready to fight.

Source skills

Content	What can be seen in the source.
Provenance	Who created the source and why?



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

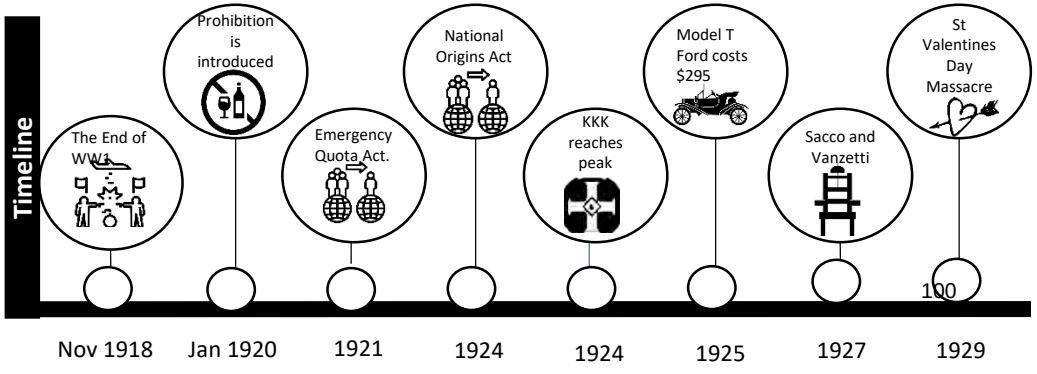
Economic 'Boom' in the 1920s
First World War left America in a stronger position than Europe. American business was able to mass produce goods and sell them meaning more people were employed and so more people had money to spend. Advertising encouraged people to spend not save. Hire purchase gave people 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?

Year 10 Hospitality and Catering Unit 1 – Job Roles

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.

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.

Year 10 Hospitality and Catering

Unit 1 – HACCP

What is H.A.C.C.P

Food hygiene laws state that all business should have a documented HACCP system in place.

The aim of this process is to look at how food is handled and introduce procedures that will ensure that the food is safe to eat.

Food producers need to understand how, why and where food could become contaminated and then put strategies in place to help reduce the risk of contamination occurring.

The HACCP system will help to do this. It is a flow diagram that clearly sets out the relevant steps.

H.A.C.C.P Example

Operation Stage	Potential Hazards	Controls to prevent Food Poisoning
Purchase and delivery of food	Meat delivery van may not be at the correct temperature. (above 5C if chilled)	Check the temperature of the meat and van. If not in acceptable range, then refuse to accept the delivery.

This column refers to the stage of food production. As soon as food arrives, the business is responsible for it.

This column refers to the possible hazard at that stage of the food in the business. There might be many issues. All hazards need to be identified to protect the business and customer
This is the HAZARD ANALYSIS

This column is what the business will do to prevent the identified hazard causing harm.
This is the CRITICAL CONTROL POINT

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.
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- Taking enforcement action, initiating legal proceedings, preparing and giving evidence in court.

Year 10 Hospitality and Catering Unit 1 – Food Safety Legislation

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 handers can obey the law.
- To prevent consumers making false claims about being ill after eating the food.

Food Premises Requirements

Must be	Must have
• Clean and maintained. • Hygienic. • Easy to keep clean. • Free from pests. • Well lit. • Well ventilated.	• 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 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 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.

Year 10 Hospitality and Catering

Towels
Used to handle hot dishes and trays quickly. Not used to wipe up spills

Trousers
Should be loose/baggy to help keep cool. Traditionally checked – disguises any spills

Hat/Torque
Used to prevent hair from falling in food and absorb forehead sweat.
Can be used to announce rank in a traditional kitchen.
Tallest hat = Head Chef.

Apron
Used to keep the uniform clean. Provides an additional layer of protection to the mid body and legs in case of spills/accidents

Shoes
Should be sturdy, non slip and not open on the top. Helps prevent injuries from dropped equipment, hot liquids etc.

Cravat
Used to absorb sweat from the neck and prevent it dripping into food

Chef Jacket
Double breasted to provide multiple layers of protection from spills and burns.
Can be long sleeved to prevent the forearm from burns.

Key rules

1. Uniform should be changed into at work.
2. A clean uniform should be worn each day.
3. Uniform should not be worn in public spaces.
4. Jewellery should not be worn. (unless it is a wedding ring).
5. Heavy make up, false nails, nail varnish should not be worn.
6. Do not wear strong scents.
7. If hair is long then a hair net should be worn.

Year 10 Hospitality and Catering Unit 1 – Allergies and Intolerances

Food Allergy

Serious, possibly life threatening reaction to certain foods and ingredients.
Can occur with medication and insects 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
• 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	• 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, ab 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 Unit 2 – Macro Nutrients

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.

GCSE Latin Vocabulary List – Latin > English (*a-co*)

a, ab	+ ablative (also used as prefix with verbs)	preposition	from, away from, by (as prefix = away)	***bellum***	belli, n	noun 2	war
absum	abesse, afui	verb irregular	be absent, be away, be distant from	***bene***	indeclinable	adverb	well
ac, atque	indeclinable	conjunction	and	***bibo***	bibere, bibi	verb 3	drink
accido	accidere, accidi	verb 3	happen	***bonus***	bona, bonum	adjective	good
accipio	accipere, accepi, acceptus	verb 3	accept, take in, receive	***brevis***	breve	adjective	short, brief
ad	+ accusative (also used as prefix with verbs)	preposition	to, towards, at				
adeo	indeclinable	adverb	so much, so greatly, to such an extent	***cado***	cadere, cecidi, casus	verb 3	fall
adsum	adesse, adfui	verb irregular	be here, be present	***caelum***	caeli, n	noun 2	sky, heaven
advenio	advenire, adveni	verb 4	arrive	***capio***	capere, cepi, captus	verb 3	take, catch, capture, make (a plan)
aedifico	aedificare, aedificavi, aedificatus	verb 1	build	***captivus***	captivi, m	noun 2	captive, prisoner
ager	agri, m	noun 2	field	***caput***	capitis, n	noun 3	head
ago	agere, egi, actus	verb 3	do, act, drive	***castra***	castrorum, n plural	noun 2	camp
alii … alii			some … others	***celer***	celeris, celere	adjective	quick, fast
alius	alia, aliud	pronoun/adjective	other, another, else	***celo***	celare, celavi, celatus	verb 1	hide
alter	altera, alterum	pronoun/adjective	the other, another, one (of two), the second (of two)	***cena***	cenae, f	noun 1	dinner, meal
altus	alta, altum	adjective	high, deep	***ceteri***	ceterae, cetera	adjective	the rest, the others
ambulo	ambulare, ambulavi	verb 1	walk	***cibus***	cibi, m	noun 2	food
amicus	amici, m	noun 2	friend	***circum***	+ accusative	preposition	around
amo	amare, amavi, amatus	verb 1	love, like	***civis***	civis, m and f	noun 3	citizen
amor	amoris, m	noun 3	love	***clamo***	clamare, clamavi, clamatus	verb 1	shout
ancilla	ancillae, f	noun 1	slave-girl, slave-woman	***clamor***	clamoris, m	noun 3	shout, shouting, noise
animus	animi, m	noun 2	spirit, soul, mind	***clarus***	clara, clarum	adjective	famous, clear
annus	anni, m	noun 2	year	***coepi***	coepisse	verb irregular	began
antea	indeclinable	adverb	before	***cogito***	cogitare, cogitavi, cogitatus	verb 1	think, consider
appropinquo	appropinquare, appropinquavi + dative	verb 1	approach, come near to	***cognosco***	cognoscere, cognovi, cognitus	verb 3	get to know, find out
aqua	aquae, f	noun 1	water	***cogo***	cogere, coegi, coactus	verb 3	force, compel
arma	armorum, n plural	noun 2 plural	arms, weapons	***comes***	comitis, m and f	noun 3	comrade, companion
ars	artis, f	noun 3	art, skill	***conficio***	conficere, confeci, confectus	verb 3	finish, wear out
ascendo	ascendere, ascendi, ascensus	verb 3	climb	***conor***	conari, conatus sum	verb 1 deponent	try
audax	audacis	adjective	bold, daring	***consilium***	consilii, n	noun 2	plan, idea, advice
audeo	audere, ausus sum	verb 2	dare	***conspicio***	conspicere, conspexi, conspectus	verb 3	catch sight of, notice
audio	audire, audivi, auditus	verb 4	hear, listen to	***constituo***	constituere, constitui, constitutus	verb 3	decide
aufero	auferre, abstuli, ablatus	verb irregular	take away, carry off, steal	***consul***	consulis, m	noun 3	consul
auxilium	auxilii, n	noun 2	help	***consumo***	consumere, consumpsi, consumptus	verb 3	eat

GCSE Latin Vocabulary List – Latin > English (*co-g)*

contra	+ accusative	preposition	against
convenio	convenire, conveni	verb 4	come together, gather, meet
copiae	copiarum, f plural	noun 1 plural	forces, troops
corpus	corporis, n	noun 3	body
cras	indeclinable	adverb	tomorrow
credo	credere, credidi, creditus + dative	verb 3	believe, trust
crudelis	crudele	adjective	cruel
cum	+ ablative	preposition	with
cum	indeclinable	conjunction	when, since
cupio	cupere, cupivi, cupitus	verb 3	want, desire
cur?	indeclinable	adverb	why?
cura	curae, f	noun 1	care, worry
curro	currere, cucurri, cursus	verb 3	run
custodio	custodire, custodivi, custoditus	verb 4	guard
custos	custodis, m and f	noun 3	guard
de	+ ablative	preposition	from, down from, about
dea	deae, f	noun 1	goddess
debeo	debere, debui, debitus	verb 2	owe, ought, should, must
defendo	defendere, defendi, defensus	verb 3	defend
deinde	indeclinable	adverb	then
deleo	delere, delevi, deletus	verb 2	destroy
descendo	descendere, descendi, descensus	verb 3	go down, come down
deus	dei, m	noun 2	god
dico	dicere, dixi, dictus	verb 3	say, speak, tell
dies	diei, m	noun 5	day
difficilis	difficile	adjective	difficult
diligens	diligentis	adjective	careful
dirus	dira, dirum	adjective	dreadful
discedo	discedere, discessi	verb 3	depart, leave
diu	indeclinable	adverb	for a long time
do	dare, dedi, datus	verb 1	give
doceo	docere, docui, doctus	verb 2	teach
domina	dominae, f	noun 1	mistress
dominus	domini, m	noun 2	master
domus	domus, f (domi = at home)	noun 4	home
donum	doni, n	noun 2	gift, present
dormio	dormire, dormivi	verb 4	Sleep
duco	ducere, duxi, ductus	verb 3	lead, take
dum	indeclinable	conjunction	while, until
dux	ducis, m	noun 3	leader

e, ex	+ ablative	preposition	from, out of, out
ecce!	indeclinable	adverb	look!
effugio	effugere, effugi	verb 3	escape
ego	mei	pronoun	I, me
egredior	egredi, egressus sum	verb 3 deponent	go out
emo	emere, emi, emptus	verb 3	buy
enim	indeclinable	conjunction	for
eo	ire, i(v)i	verb irregular	go
epistula	epistulae, f	noun 1	letter
equus	equi, m	noun 2	horse
et	indeclinable	conjunction	and, even
et ... et	indeclinable		both ... and
etiam	indeclinable	adverb	also, even
exercitus	exercitus, m	noun 4	army
exspecto	exspectare, exspectavi, exspectatus	verb 1	wait for, expect
facilis	facile	adjective	easy
facio	facere, feci, factus	verb 3	make, do
faveo	favere, favi, fautus + dative	verb 2	favour, support
felix	felicis	adjective	fortunate, happy
femina	feminae, f	noun 1	woman
fero	ferre, tuli, latus	verb irregular	bring, carry, bear
ferox	ferocis	adjective	fierce, ferocious
festino	festinare, festinavi	verb 1	hurry
fidelis	fidele	adjective	faithful, loyal
filia	filiae, f	noun 1	daughter
filius	filii, m	noun 2	son
flumen	fluminis, n	noun 3	river
forte	indeclinable	adverb	by chance
fortis	forte	adjective	brave
forum	fori, n	noun 2	forum, market place
frater	fratris, m	noun 3	brother
frustra	indeclinable	adverb	in vain
fugio	fugere, fugi	verb 3	run away, flee
gaudeo	gaudere, gavisus sum	verb 2	be pleased, rejoice
gaudium	gaudii, n	noun 2	joy, pleasure
gens	gentis, f	noun 3	family, tribe, race, people
gero	gerere, gessi, gestus	verb 3	wear (clothes), wage (war)
gladius	gladii, m	noun 2	sword
gravis	grave	adjective	heavy, serious

GCSE Latin Vocabulary List – Latin > English (*h-ma*)

habeo	habere, habui, habitus	verb 2	have, hold
habito	habitare, habitavi, habitatus	verb 1	live
heri	indeclinable	adverb	yesterday
hic	haec, hoc	pronoun	this, he, she, it
hodie	indeclinable	adverb	today
homo	hominis, m	noun 3	man, human being
hora	horae, f	noun 1	hour
hortor	hortari, hortatus sum	verb 1 deponent	encourage, urge
hortus	horti, m	noun 2	garden
hostis	hostis, m	noun 3	enemy
iaceo	iacere, iacui	verb 2	lie
iacio	iacere, ieci, iactus (in compounds -icio)	verb 3	throw
iam	indeclinable	adverb	now, already
ianua	ianuae, f	noun 1	door
ibi	indeclinable	adverb	there
idem	eadem, idem	pronoun	the same
igitur	indeclinable	adverb	therefore, and so
ille	illa, illud	pronoun	that, he, she, it
imperator	imperatoris, m	noun 3	emperor, general, leader
imperium	imperii, n	noun 2	empire, power, command
impero	imperare, imperavi, imperatus + dative	verb 1	order, command
in	+ ablative (also used as prefix with verbs)	preposition	in, on
in	+ accusative (also used as prefix with verbs)	preposition	into, onto
incendo	incendere, incendi, incensus	verb 3	burn, set on fire
infelix	infelicis	adjective	unlucky, unhappy
ingens	ingentis	adjective	huge
ingredior	ingredi, ingressus sum	verb 3 deponent	enter
inimicus	inimici, m	noun 2	enemy
inquit		verb irregular	he/she says, he/she said
insula	insulae, f	noun 1	island, block of flats
intellego	intellegere, intellexi, intellectus	verb 3	understand, realise
inter	+ accusative	preposition	among, between
interea	indeclinable	adverb	meanwhile
interficio	interficere, interfeci, interfectus	verb 3	kill
intro	intrare, intravi, intratus	verb 1	enter
invenio	invenire, inveni, inventus	verb 4	find
invito	invitare, invitavi, invitatus	verb 1	invite
ipse	ipsa, ipsum	pronoun	himself, herself, itself, themselves
ira	irae, f	noun 1	anger
iratus	irata, iratum	adjective	angry
is	ea, id	pronoun	this, that, he, she, it, them
ita	indeclinable	adverb	in this way, to such an extent, so
itaque	indeclinable	adverb	and so, therefore
iter	itineris, n	noun 3	journey
iterum	indeclinable	adverb	again
iubeo	iubere, iussi, iussus	verb 2	order
iuvenis	iuvenis, m	noun 3	young man
labor	laboris, m	noun 3	work, toil
laboro	laborare, laboravi	verb 1	work, toil
lacrimo	lacrimare, lacrimavi	verb 1	weep, cry
laetus	laeta, laetum	adjective	happy
laudo	laudare, laudavi, laudatus	verb 1	praise
legio	legionis, f	noun 3	legion
lego	legere, legi, lectus	verb 3	read, choose
lentus	lenta, lentum	adjective	slow
libenter	indeclinable	adverb	willingly, gladly
liber	libri, m	noun 2	book
liberi	liberorum, m plural	noun 2	children
libero	liberare, liberavi, liberatus	verb 1	set free
libertus	liberti, m	noun 2	freedman, ex-slave
locus	loci, m	noun 2	place
longus	longa, longum	adjective	long
loquor	loqui, locutus sum	verb 3 deponent	speak, talk
lux	lucis, f	noun 3	light, daylight
magnus	magna, magnum	adjective	big, large, great
malo	malle, malui	verb irregular	prefer
malus	mala, malum	adjective	evil, bad
maneo	manere, mansi	verb 2	remain, stay
manus	manus, f	noun 4	hand, group of people
mare	maris, n	noun 3	sea
maritus	mariti, m	noun 2	husband

GCSE Latin Vocabulary List – Latin > English (*ma-pe*)

mater	matris, f	noun 3	mother
maxime	indeclinable	adverb	very greatly
medius	media, medium	adjective	middle
meus	mea, meum	pronoun	my
miles	militis, m	noun 3	soldier
minime	indeclinable	adverb	very little, least, no
miror	mirari, miratus sum	verb 1 dep	wonder at, admire
miser	misera, miserum	Adjective	miserable, wretched, sad
mitto	mittere, misi, missus	verb 3	send
modus	modi, m	noun 2	manner, way, kind
moneo	monere, monui, monitus	verb 2	warn, advise
mons	montis, m	noun 3	mountain
morior	mori, mortuus sum	verb 3 dep.	die
mors	mortis, f	noun 3	death
moveo	movere, movi, motus	verb 2	move
mox	indeclinable	adverb	soon
multo	indeclinable	adverb	much
multus	multa, multum	adjective	much, many
murus	muri, m	noun 2	wall
nam	indeclinable	conjunction	for
narro	narrare, narravi, narratus	verb 1	tell, relate
nauta	nautae, m	noun 1	sailor
navigo	navigare, navigavi	verb 1	sail
navis	navis, f	noun 3	ship
-ne	indeclinable	particle	(introduces question)
ne	indeclinable + subjunctive	conjunction	that ... not, so that ... not, that, lest
nec, neque	indeclinable	conjunction	and not, nor, neither
neco	necare, necavi, necatus	verb 1	kill
nemo	nullius	noun irregular	no one, nobody
nescio	nescire, nescivi	verb 4	not know
nihil	indeclinable	noun irregular	nothing
nisi	indeclinable	conjunction	unless, except
nolo	nolle, nolui	verb irregular	not want, refuse
nomen	nominis, n	noun 3	name
non	indeclinable	adverb	not
nonne …?	indeclinable	adverb	surely … ?

nonnulli	nonnullae, nonnulla	adjective	some, several
nos	nostrum	pronoun	we, us
noster	nostra, nostrum	pronoun	our
novus	nova, novum	adjective	new
nox	noctis, f	noun 3	night
nullus	nulla, nullum	adjective	not any, no
num	indeclinable	particle	whether
num ... ?	indeclinable	particle	surely … not?
numquam	indeclinable	adverb	never
nunc	indeclinable	adverb	now
nuntio	nuntiare, nuntiavi, nuntiatus	verb 1	announce, report
nuntius	nuntii, m	noun 2	messenger, message, news
occido	occidere, occidi, occisus	verb 3	kill
offero	offerre, obtuli, oblatus	verb irregular	offer
olim	indeclinable	adverb	once, some time ago
omnis	omne	adjective	all, every
opprimo	opprimere, oppressi, oppressus	verb 3	crush, overwhelm
oppugno	oppugnare, oppugnavi, oppugnatus	verb 1	attack
oro	orare, oravi, oratus	verb 1	beg
ostendo	ostendere, ostendi, ostentus	verb 3	show
paene	indeclinable	adverb	almost, nearly
paro	parare, paravi, paratus	verb 1	prepare, provide
pars	partis, f	noun 3	part
parvus	parva, parvum	adjective	small
pater	patris, m	noun 3	father
patior	pati, passus sum	verb 3 deponent	suffer, endure
patria	patriae, f	noun 1	country, homeland
pauci	paucae, pauca	adjective plural	few, a few
pax	pacis, f	noun 3	peace
pecunia	pecuniae, f	noun 1	money
pello	pellere, pepuli, pulsus	verb 3	drive
per	+ accusative	preposition	through, along
pereo	perire, perii	verb irregular	die, perish
periculum	periculi, n	noun 2	danger
persuadeo	persuadere, persuasi + dative	verb 2	persuade

GCSE Latin Vocabulary List – Latin > English (*pe-se*)

perterritus	perterrita, perterritum	adjective	terrified
pes	pedis, m	noun 3	foot
peto	petere, petivi, petitus	verb 3	make for, seek, beg/ask for
poena	poenae, f	noun 1	punishment
poenas do			pay the penalty, be punished
pono	ponere, posui, positus	verb 3	put, place, set up
porta	portae, f	noun 1	gate
porto	portare, portavi, portatus	verb 1	carry, bear, take
possum	posse, potui	verb irregular	can, be able
post	+ accusative	preposition	after, behind
postea	indeclinable	adverb	afterwards
postquam	indeclinable	conjunction	after, when
postridie	indeclinable	adverb	on the next day
praemium	praemii, n	noun 2	prize, reward, profit
primo	indeclinable	adverb	at first
primus	prima, primum	adjective	first
princeps	principis, m	noun 3	chief, emperor
pro	+ ablative	preposition	in front of, for, in return for
procedo	procedere, processi	verb 3	advance, proceed
proelium	proelii, n	noun 2	battle
proficiscor	proficisci, profectus sum	verb 3 dep	set out
progredior	progredi, progressus sum	verb 3 dep	advance
promitto	promittere, promisi, promissus	verb 3	promise
prope	+ accusative	preposition	near
propter	+ accusative	preposition	on account of, because of
proximus	proxima, proximum	adjective	nearest, next to
puella	puellae, f	noun 1	girl
puer	pueri, m	noun 2	boy
pugno	pugnare, pugnavi	verb 1	fight
pulcher	pulchra, pulchrum	adjective	beautiful, handsome
punio	punire, punivi, punitus	verb 4	punish
puto	putare, putavi, putatus	verb 1	think
quaero	quaerere, quaesivi, quaesitus	verb 3	search for, look for, ask
qualis?	quale	adjective	what sort of?
quam	+ superlative adverb		as … as possible
quam	indeclinable	adverb	than, how … ? how … !
quamquam	indeclinable	conjunction	although
quando?	indeclinable	adverb	when?
quantus?	quanta? quantum?	adjective	how big? how much?
-que	indeclinable	conjunction	and
qui	quae, quod	pronoun	who, which
quidam	quaedam, quoddam	pronoun	one, a certain, some
quis?	quid?	pronoun	who? what?

quo?	indeclinable	adverb	to where?
quod	indeclinable	conjunction	because
quomodo?	indeclinable	adverb	how?
quoque	indeclinable	conjunction	also, too
quot?	indeclinable	adjective	how many?
rapio	rapere, rapui, raptus	verb 3	seize, grab
re-	(prefix used with verbs)	prefix	- back
reddo	reddere, reddidi, redditus	verb 3	give back, restore
redeo	redire, redii	verb irregular	go back, come back, return
refero	referre, rettuli, relatus	verb irregular	bring/carry back, report, tell
regina	reginae, f	noun 1	queen
regnum	regni, n	noun 2	kingdom
rego	regere, rexi, rectus	verb 3	rule
regredior	regredi, regressus sum	verb 3 dep	go back, return
relinquo	relinquere, reliqui, relictus	verb 3	leave, leave behind
res	rei, f	noun 5	thing, matter, event
resisto	resistere, restiti + dative	verb 3	resist
respondeo	respondere, respondi, responsus	verb 2	reply
rex	regis, m	noun 3	king
rideo	ridere, risi	verb 2	laugh, smile
rogo	rogare, rogavi, rogatus	verb 1	ask, ask for
Roma	Romae, f (Romae: at/in Rome)	noun 1	Rome
Romanus	Romana, Romanum	adjective	Roman
sacer	sacra, sacrum	adjective	sacred
saepe	indeclinable	adverb	often
saevus	saeva, saevum	adjective	savage, cruel
saluto	salutare, salutavi, salutatus	verb 1	greet
sanguis	sanguinis, m	noun 3	blood
scelestus	scelesta, scelestum	adjective	wicked
scelus	sceleris, n	noun 3	crime
scio	scire, scivi, scitus	verb 4	know
scribo	scribere, scripsi, scriptus	verb 3	write
se	sui	pronoun	himself, herself, itself, thems
sed	indeclinable	conjunction	but
sedeo	sedere, sedi	verb 2	sit
semper	indeclinable	adverb	always
senator	senatoris, m	noun 3	senator
senex	senis, m	noun 3	old man
sentio	sentire, sensi, sensus	verb 4	feel, notice
sequor	sequi, secutus sum	verb 3 dep	follow
servo	servare, servavi, servatus	verb 1	save, protect, keep
servus	servi, m	noun 2	slave

GCSE Latin Vocabulary List – Latin > English (*si-v*)

si	indeclinable	conjunction	if
sic	indeclinable	adverb	thus, in this way
silva	silvae, f	noun 1	wood
simul	indeclinable	Adverb	at the same time
simulac,	indeclinable	Conjunction	as soon as
sine	+ ablative	preposition	without
soleo	solere, solitus sum	verb 2	be accustomed
solus	sola, solum	adjective	alone, lonely, only,
specto	spectare, spectavi, spectatus	verb 1	look at, watch
spero	sperare, speravi, speratus	verb 1	hope, expect
spes	spei, f	noun 5	hope
statim	indeclinable	adverb	at once, immediately
sto	stare, steti	verb 1	stand
stultus	stulta, stultum	adjective	stupid, foolish
sub	+ accusative/ablative	preposition	under, beneath
subito	indeclinable	adverb	suddenly
sum	esse, fui	verb irregular	be
summus	summa, summum	adjective	highest, greatest, top (of)
supero	superare, superavi, superatus	verb 1	overcome, overpower
surgo	surgere, surrexi	verb 3	get up, stand up, rise
suus	sua, suum	pronoun	his, her, its, their (own)
taberna	tabernae, f	noun 1	shop, inn
taceo	tacere, tacui, tacitus	verb 2	be silent, be quiet
talis	tale	adjective	such, of such a kind
tam	indeclinable	adverb	so
tamen	indeclinable	adverb	however
tandem	indeclinable	adverb	at last, finally
tantus	tanta, tantum	adjective	so great, such a great
tempestas	tempestatis, f	noun 3	storm
templum	templi, n	noun 2	temple
tempus	temporis, n	noun 3	time
teneo	tenere, tenui, tentus	verb 2	hold
terra	terrae, f	noun 1	ground, land, country
terreo	terrere, terrui, territus	verb 2	frighten
timeo	timere, timui	verb 2	fear, be afraid
tollo	tollere, sustuli, sublatus	verb 3	raise, lift up, hold up
tot	indeclinable	adjective	so many
totus	tota, totum	adjective	whole
trado	tradere, tradidi, traditus	verb 3	hand over, hand down
traho	trahere, traxi, tractus	verb 3	drag
trans	+ accusative (also used as prefix with verbs)	preposition	across
tristis	triste	adjective	sad
tu	tui	pronoun	you (singular)
tum	indeclinable	adverb	then
turba	turbae, f	noun 1	crowd
tuus	tua, tuum	pronoun	your (singular), yours
ubi	indeclinable	adverb	where? where, when
umquam	indeclinable	adverb	ever
unde?	indeclinable	adverb	from where?
urbs	urbis, f	noun 3	city
ut	indeclinable + subjunctive	conjunction	that, so that, in order that
ut	indeclinable + indicative	conjunction	as, when
uxor	uxoris, f	noun 3	wife
validus	valida, validum	adjective	strong
vehementer	indeclinable	adverb	violently, loudly
vendo	vendere, vendidi, venditus	verb 3	sell
venio	venire, veni	verb 4	come
verbum	verbi, n	noun 2	word
verto	vertere, verti, versus	verb 3	turn
vester	vestra, vestrum	pronoun	your (plural), yours
via	viae, f	noun 1	street, road, way
victoria	victoriae, f	noun 1	victory
video	videre, vidi, visus	verb 2	see
videor	videri, visus sum	verb 2 dep	seem, appear
villa	villae, f	noun 1	house, country villa
vinco	vincere, vici, victus	verb 3	conquer, win, be victorious
vinum	vini, n	noun 2	wine
vir	viri, m	noun 2	man
virtus	virtutis, f	noun 3	courage, virtue
vita	vitae, f	noun 1	life
vivo	vivere, vixi	verb 3	live, be alive
voco	vocare, vocavi, vocatus	verb 1	call
volo	velle, volui	verb irregular	want, wish, be willing
vos	vestrum	pronoun	you (plural)
vox	vocis, f	noun 3	voice, shout
vulnero	vulnerare, vulneravi, vulneratus	verb 1	wound, injure
vulnus	vulneris, n	noun 3	wound

GCSE Latin Vocabulary List – English > Latin

a, ab	+ ablative	preposition	from, away from, by
ad	+ accusative	preposition	to, towards, at
advenio	advenire, adveni	verb 4	arrive
aedifico	aedificare, aedificavi, aedificatus	verb 1	build
ager	agri, m	noun 2	field
ambulo	ambulare, ambulavi	verb 1	walk
amicus	amici, m	noun 2	friend
ancilla	ancillae, f	noun 1	slave-girl, slave-woman
annus	anni, m	noun 2	year
aqua	aquae, f	noun 1	water
arma	armorum, n plural	noun 2 plural	arms, weapons
audio	audire, audivi, auditus	verb 4	hear, listen to
auxilium	auxilii, n	noun 2	help
bene	indeclinable	adverb	well
bibo	bibere, bibi	verb 3	drink
bonus	bona, bonum	adjective	good
cado	cadere, cecidi, casus	verb 3	fall
capio	capere, cepi, captus	verb 3	take, catch, capture, make (a plan)
cena	cenae, f	noun 1	dinner, meal
cibus	cibi, m	noun 2	food
clamo	clamare, clamavi, clamatus	verb 1	shout
consilium	consilii, n	noun 2	plan, idea, advice
conspicio	conspicere, conspexi, conspectus	verb 3	catch sight of, notice
constituo	constituere, constitutus	verb 3	decide
contra	+ accusative	preposition	against
cum	+ ablative	preposition	with
cur?	indeclinable	adverb	why?
curro	currere, cucurri, cursus	verb 3	run
custodio	custodire, custodivi, custoditus	verb 4	guard
dea	deae, f	noun 1	goddess
defendo	defendere, defendi, defensus	verb 3	defend
deus	dei, m	noun 2	god
dico	dicere, dixi, dictus	verb 3	say, speak, tell
diu	indeclinable	adverb	for a long time
domina	dominae, f	noun 1	mistress
dominus	domini, m	noun 2	master
donum	doni, n	noun 2	gift, present
dormio	dormire, dormivi	verb 4	sleep
duco	ducere, duxi, ductus	verb 3	lead, take

e, ex	+ ablative	preposition	from, out of, out
epistula	epistulae, f	noun 1	letter
et	indeclinable	conjunction	and, even
facio	facere, feci, factus	verb 3	make, do
femina	feminae, f	noun 1	woman
festino	festinare, festinavi	verb 1	hurry
filia	filiae, f	noun 1	daughter
filius	filii, m	noun 2	son
forum	fori, n	noun 2	forum, market place
fugio	fugere, fugi	verb 3	run away, flee
gladius	gladii, m	noun 2	sword
habeo	habere, habui, habitus	verb 2	have, hold
habito	habitare, habitavi, habitatus	verb 1	live
hora	horae, f	noun 1	hour
hortus	horti, m	noun 2	garden
in	+ ablative (also used as prefix with verbs)	preposition	in, on
in	+ accusative	preposition	into, onto
intro	intrare, intravi, intratus	verb 1	enter
invenio	invenire, inveni, inventus	verb 4	find
invito	invitare, invitavi, invitatus	verb 1	invite
ira	irae, f	noun 1	anger
iratus	irata, iratum	adjective	angry
laboro	laborare, laboravi	verb 1	work, toil
laetus	laeta, laetum	adjective	happy
libertus	liberti, m	noun 2	freedman, ex-slave
longus	longa, longum	adjective	long
magnus	magna, magnum	adjective	big, large, great
malus	mala, malum	adjective	evil, bad
maritus	mariti, m	noun 2	husband
mitto	mittere, misi, missus	verb 3	send
multus	multa, multum	adjective	much, many
murus	muri, m	noun 2	wall
nauta	nautae, m	noun 1	sailor
navigo	navigare, navigavi	verb 1	sail
neco	necare, necavi, necatus	verb 1	kill
non	indeclinable	adverb	not

GCSE Latin Vocabulary List – English > Latin

novus	nova, novum	adjective	new
nuntio	nuntiare, nuntiavi, nuntiatus	verb 1	announce, report
nuntius	nuntii, m	noun 2	messenger, message, news
paro	parare, paravi, paratus	verb 1	prepare, provide
parvus	parva, parvum	adjective	small
patria	patriae, f	noun 1	country, homeland
pecunia	pecuniae, f	noun 1	money
periculum	periculi, n	noun 2	danger
peto	petere, petivi, petitus	verb 3	make for, seek, beg/ask for
pono	ponere, posui, positus	verb 3	put, place, set up
porta	portae, f	noun 1	gate
porto	portare, portavi, portatus	verb 1	carry, bear, take
possum	posse, potui	verb irregular	can, be able
puella	puellae, f	noun 1	girl
puer	pueri, m	noun 2	boy
quando?	indeclinable	adverb	when?
-que	indeclinable	conjunction	and
regina	reginae, f	noun 1	queen
Regnum	regni, n	noun 2	kingdom
rego	regere, rexi, rectus	verb 3	rule
relinquo	relinquere, reliqui, relictus	verb 3	leave, leave behind
rogo	rogare, rogavi, rogatus	verb 1	ask, ask for
saepe	indeclinable	adverb	often
saevus	saeva, saevum	adjective	savage, cruel
saluto	salutare, salutavi, salutatus	verb 1	greet
scribo	scribere, scripsi, scriptus	verb 3	write
semper	indeclinable	adverb	always
servo	servare, servavi, servatus	verb 1	save, protect, keep
servus	servi, m	noun 2	slave
silva	silvae, f	noun 1	wood
statim	indeclinable	adverb	at once, immediately
subito	indeclinable	adverb	suddenly
sum	esse, fui	verb irregular	be
supero	superare, superavi, superatus	verb 1	overcome, overpower
taberna	tabernae, f	noun 1	shop, inn
taceo	tacere, tacui, tacitus	verb 2	be silent, be quiet
tandem	indeclinable	adverb	at last, finally
templum	templi, n	noun 2	temple
teneo	tenere, tenui, tentus	verb 2	hold
terreo	terrere, terrui, territus	verb 2	frighten

timeo	timere, timui	verb 2	fear, be afraid
trado	tradere, tradidi, traditus	verb 3	hand over, hand down
traho	trahere, traxi, tractus	verb 3	drag
venio	venire, veni	verb 4	come
via	viae, f	noun 1	street, road, way
villa	villae, f	noun 1	house, country villa
vinco	vincere, vici, victus	verb 3	conquer, win, be victorious
vinum	vini, n	noun 2	wine
vir	viri, m	noun 2	man
voco	vocare, vocavi, vocatus	verb 1	call

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**	Representing musicians within the music industry
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.		**Health & Safety**	Equipment, first aid, fire safety, access, audience capacity, toilets and parking.

BTEC Music

Composition

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 1st, 3rd and 5th 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.

Music Performance

Artistic intention

Context and style

Mentally prepared

Focused and engaged

Physically prepared

Warmed up

Organisation

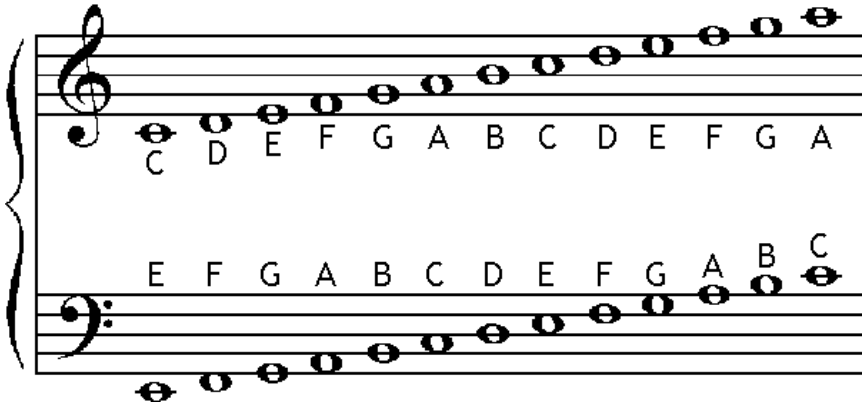
Equipment and music

Meet targets

Refer to SMART targets

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

BTEC Music

Performance

Musical terminology	
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, Donna 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 t 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.

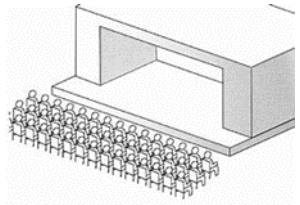
	Funding: Ticket sales aren't enough to sustain most arts projects, therefore, companies apply for funding (money) to support them.
Funding bid 	This is how a company applies for funding. They will need to include detailed information: what the money will be used for, who will benefit, how the participants will benefit, timelines etc.
Private funding 	Sponsorship from local businesses, money from alumni (previous students), charitable trusts and foundations, 02 Think Big, Kickstarter (crowd funding).
Public funding 	Funding from large, publicly funded (through taxes) organisations: Arts Council England (ACE); Regional Arts Boards (in England); Local Authorities National Lottery. Open access funding- the information is openly accessible to the public.
Budgeting	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.
Performing rights & royalties 	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. PPL licence: you need to have a licence to play music in public https://www.ppluk.com/what-we-do/
Programming 	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.
For profit	A for-profit organization is one whose main goal is to make money, i.e., make a profit.
Not-for-profit organisations	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.
Expenditure 	Money spent: wages, rent/mortgage, insurance, bills, materials etc.
Income 	Money received: ticket sales, funding, merchandise, bar etc.
Profit	A financial gain, especially the difference between the amount earned and the amount spent in buying, operating, or producing something.
Public liability insurance	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.

Performing Arts: Areas of the Theatre and Stage Configurations

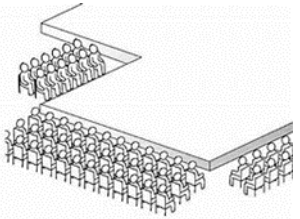
Front of House (FOH): areas that the audience have access to.
Foyer: entrance.
Box office: where tickets are sold.
Auditorium (the house): where the audience sit.
Stalls: seating area in front of stage.
Dress circle: balcony seating.
Upper circle/Gallery/Gods: second balcony.
Orchestra pit: where MD 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.

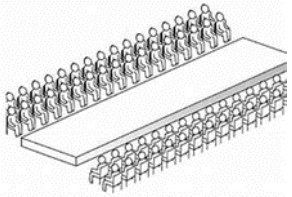
Proscenium Arch



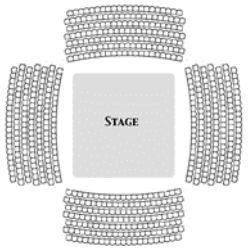
Thrust



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

- **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.

Stage space

- **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?

Vocal

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

Physical

Facial expression
Eye contact
Posture: positioning of the spine.
Movement
Stillness
Gesture
Gait: walk
Timing
Pace

Dance

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

- **Structure:** the sequence of scenes e.g. linear/ non-linear
- **Structural conventions:** cross-cutting, flashback, repetition

Practitioner

- **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.

Evaluate

- 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?

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.

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

Vocal
Pace (fast, slow, controlled, hesitant)
Pitch (high, low, deep)
Pause
Tone (aggressive, harsh, authoritative, proud, nervous, warm)
Volume (loud, quiet, soft)
Emphasis
Intonation
Inflection
Diction
Timing
Accent
Projection

Dance
Style
Motif
Unison/canon/accumulation/contact
Dynamics
Space
Structure
Alignment
Control
Flexibility
Mobility
Strength
Stamina
Extension
Isolation
Projection
Focus

Costume
Colour
Fabric
Accessories
Make up/wigs
Shape
Appropriate fit
Symbolism
Condition
Period detail

Movement constraints

Sound
Volume
Amplification
Fade
Levels
Sound effects
Music
Distortion
Diegetic /Non-diegetic
Echo
Underscore
Direction

Evaluation (making a judgement)

Convincing	Considerable
Believable	Persuasive
Credible	Second-rate
Dissatisfying	Pleasing
Reasonable	Adequate
Appalling	Unbearable
Unconvincing	Successful
Unsuccessful	Ineffective
Effective	Horrendous
Superb	Outstanding
Disappointing	Lack-lustre
Satisfactory	Passionate
Accurate	Innovative
Cleverly crafted	Resounding

Audience response
Intrigued
Shocked
Laughter
Cried
Devastated
Sympathy
Apprehensive
Detest
Irritation
Think/ consider/reflect
Outrage

Physical
Facial expression (angry, cheery)
Eye contact
Posture (relaxed, upright)
Movement/stillness
Body Language
Gesture
Gait (uneven, steady
Proxemics
Stage space
Timing
Pace
Levels
Physical appearance: age, height,

Set
Scale
Texture
Colour
Trucks
Material
Flies
Multi-media
Revolve
Levels
Backdrop

Lighting
Colour
Intensity
Gauze
Gobo
Wash
Spotlight
Follow spot
Floor lamps
Angle
Effect on stage space

Abbreviations

SM (stage manager)

DSM (Deputy Stage Manager)

ASM (Assistant Stage Manager)

LX (Lighting effects)

SFX (special effects)

MD (Musical Director)

CS (Centre Stage)

DSR (Downstage Right) etc

Linking words
In stark contrast
On the other hand
Whereas
However
Similarly
Equally
In comparison
Likewise

Example
For example
For instance
To illustrate this point

Year 10 Photography

Key Vocabulary

Rule of thirds - Description: In photography, the rule of thirds is a type of composition in which an image is divided evenly into thirds, both horizontally and vertically, and the subject of the image is placed at the intersection of those dividing lines, or along one of the lines itself.

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

Composition - The considered layout of a piece of work.

Contrast - Shade or shadow.

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

Scale - the use of symbols to represent ideas or qualities.

Analysis – detailed examination of the elements or structure of something.

Contextual Information

Abba Richman is a photographer, graphic designer and lecturer and consultant in Photography and Graphic Design. He creates photographic collages of the alphabet using everyday items and scenes that show an obvious letter shape. He was born in the UK and has been living in Israel since 1967. He studied Graphic Design and Photography at the Bezalel Academy of Art and Design in Jerusalem. *"I don't photograph glorious sunsets, fantastic landscapes, flowers, animals or beautiful things (or people). I find myself again and again looking at ordinary everyday things, at rubbish, backyards, at the man in the street, looking at things really close up and trying to find beauty in their colour and form."*

Overview

During this project, students will be introduced to the basic elements of composing and editing an effective photograph. Students will be introduced the work of Abba Richman (AO1) and be asked to create a research page in which they analyse his work. Students will learn how to analyse the work of others in a way that is thorough and personal, so they are able to show how this work will influence their later project (AO3).

Through the work of Abba Richman, students will learn how to view the world in a more creative way, looking for letter shapes in everyday objects and scenes. This will teach students how to visualise an interesting shot and also how to compose an image correctly. Students will be taken outside to various locations in order to find all the letters of the alphabet.

Students will then learn the basics of Photoshop editing tools and how to improve the quality of their images (AO2). They will begin to create work to show the steps of their editing journey for specific photographs and annotate these steps to show their understanding (AO3).

This project will conclude by the students creating a final piece in the style of Abba Richman (AO4). This final piece will be a displayed full alphabet using all their editing alphabet images. Students will need to keep their final pieces refined and precise by making sure the composition shows each image being exactly the same size and that each image is effectively edited.

Each project must have:

- Artist research page.
- Annotated contact sheet.
- Photographs that are sharp and high quality.
- Minimum of 5 annotated editing journeys.
- Final piece as a whole slide.
- Evaluation.

1. **Magic Wand Tool -** helps to highlight areas of an image that are similar.
2. **Lasso Tool -** helps you to manually select a specific area of your photograph.
3. **Unsharp Mask -** helps to increase the sharpness of each pixel as well as make the contrast and colours of the image stand out more.
4. **Hue/Saturation Tool -** changes the vibrancy of the colours as well as the overall tone of the colours.
5. **Gaussian Blur –** can be used to blur selected areas of an image.

Year 10 – Photography – Term 2

During this project students will be learning about the work of Wes Anderson. Students will be learning how to use colour and colour theory to create a series of aesthetically pleasing shots. Students will begin by researching Wes Anderson's work and the idea of colour theory in photography(AO1). This process will help develop students' understanding of how harmonious and complimentary colours can be used with props, costumes and backgrounds. After the initial research stage, students will design and implement a photo shoot around the idea of colour, using Wes Anderson still to inspire specific set ups. 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:

- Artist Research Page
- Annotated contact sheet.
- Photographs that are sharp and high quality.
- Minimum of 10 annotated editing journeys.
- Tessellations
- Digital weave
- Evaluation.

Important Vocabulary

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

Complimentary colours – colours that are opposite on the colour wheel.

Symmetry – when an image shows the exact same one both sides of the centre point.

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.

Composition - A considered layout

Contrast – A strong distinction between the darkest areas and the lightest areas of an image.

Focal Point - the center of interest or activity.

Wes Anderson films –

The Grand Budapest Hotel,
Life Aquatic,
Fantastic Mr Fox,
The Royal Tenanbaums

Assessment Objective 1 is around artist research and showing an understanding and clear link to other photographer's 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 10 – Photography – Term 3

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 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:

- Artist Research Page
- Annotated contact sheet.
- Photographs that are sharp and high quality.
- Minimum of 10 annotated editing journeys.
- Tessellations
- Digital weave
- Evaluation.

Assessment Objective 1 is around artist research and showing an understanding and clear link to other photographer's 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.

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 Science – Biology – Topic 5 Health and Disease

Key Terms / Words	Definition
Pathogen	A microorganism that causes disease – fungi, bacteria, virus, protist.
Communicable disease	A disease that can be spread from person to person e.g. ebola, flu, HIV.
Non-communicable disease	A disease that cannot be spread from person to person, is non-infectious e.g. heart disease, diabetes, cancer.
BMI	Body Mass Index (BMI) – a number that determines obesity. BMI = mass ÷ height2.
Aseptic	A sterile technique that prevents contamination , used during testing of antibiotic effectiveness.
B-Lymphocytes	Type of specific white blood cell involved in the immune system that produces antibodies.
Immune system	The bodies second line of defence against pathogens. Involves white blood cells.
antibody	A protein produced by lymphocytes. It attaches to a specific antigen on a microorganism and helps to destroy it
antigen	A protein on the surface of a cell. White blood cells are able to recognise pathogens because of their antigens.
antibiotics	A type of medication that can be used to treat bacterial infections only.
Cardiovascular disease	A disease in which the heart or circulatory system does not function properly.

Communicable diseases

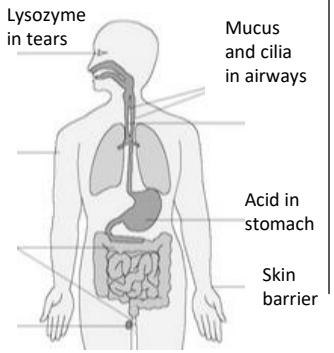
Disease	Pathogen	Symptoms	Spread
Cholera	Bacteria	Diarrhoea	Water
Tuberculosis	Bacteria	Lung damage	Airborne
HIV (STI)	Virus	Destroys white blood cells	Body fluids, sexual intercourse
Malaria	Protist	Damage to blood and liver	Mosquito (vector)
Chalara ash dieback	Plant fungi	Damage to plant leaves.	Airborne

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.

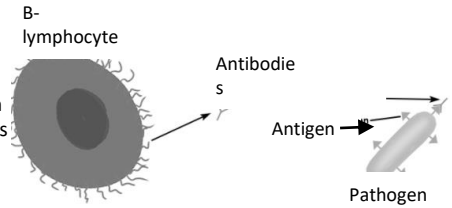
Physical and chemical defences



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

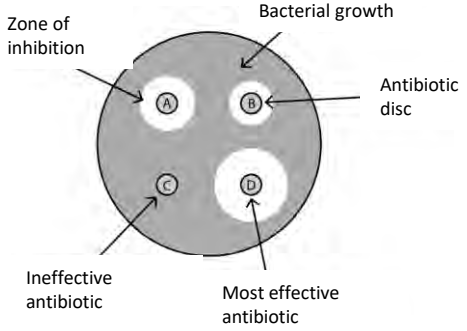
Body produces many B-lymphocytes that produce antibodies that fit onto antigen from pathogen. This destroys pathogen.



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.

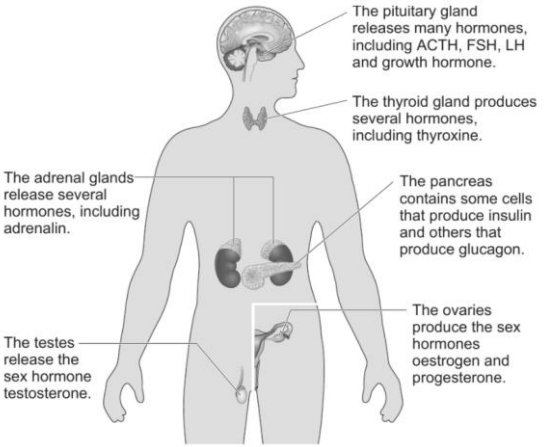
The effectiveness of the chosen antibiotic or antiseptic can be measured numerically by using the formula πr^2, where r is the radius of the zone of inhibition.

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

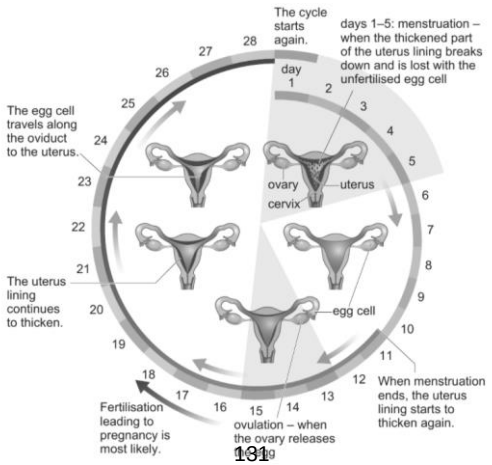
Key Terms / Words	Definition
Hormone	Chemical messenger that is released into the blood from an endocrine gland and causes target cells to change how they work.
Endocrine Gland	An organ that makes and releases hormones into the blood.
Target Organ	An organ on which a hormone has an effect.
Homeostasis	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.

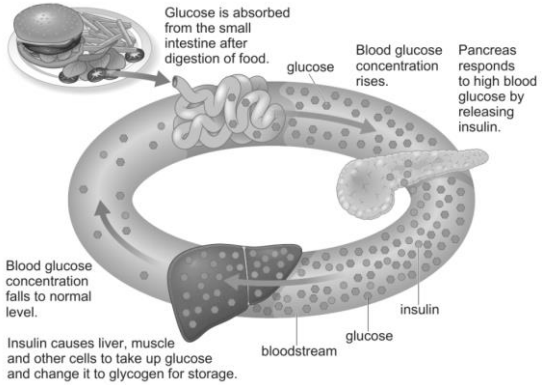


Menstrual Cycle



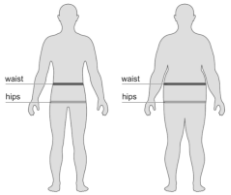
Blood Glucose Concentration

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



Diabetes	
Type 1	*Type 2*
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
$BMI = \frac{\text{mass (kg)}}{\text{height (m)}^2}$	

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_2O → O_2 + $C_6H_{12}O_6$

Rate of photosynthesis

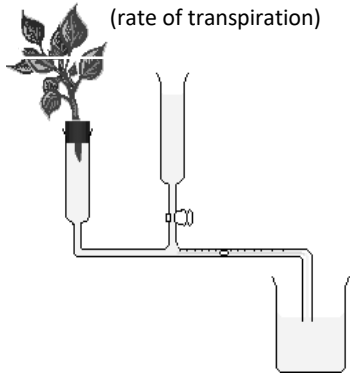
The rate of photosynthesis is affected by temperature, light intensity, carbon dioxide concentration.

Factors affecting the rate of photosynthesis

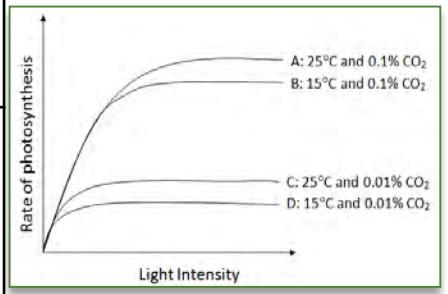
Factor	How the rate is affected	Limiting factors (why the rate stops going up)
Temperature	***As the temperature of the environment the plant is in increases rate of photosynthesis increases (up to a point) as there is more energy for the chemical reaction.***	Photosynthesis is an enzyme controlled reaction. 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 <u>double</u> the distance between the plant and the light source you quarter the light intensity

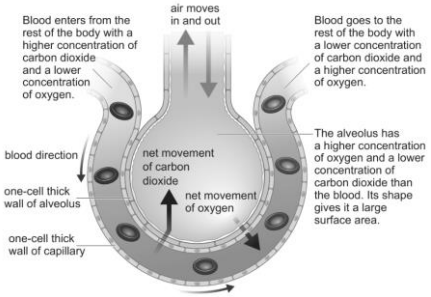


Graph lines A and D: If carbon dioxide concentration and temperature are increased the rate of photosynthesis increases significantly up to a point.

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

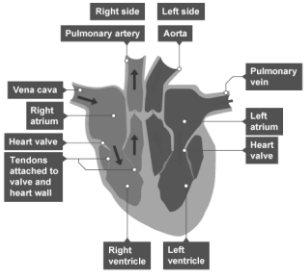
Alveoli are found in the lungs. They are adapted to support gas exchange.



The Heart

Cardiac Output

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



cardiac output = stroke volume × heart rate
(litres/min) (litres/beat) (beats/min)

Aerobic Respiration

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

(energy out)

glucose + oxygen → carbon dioxide + water

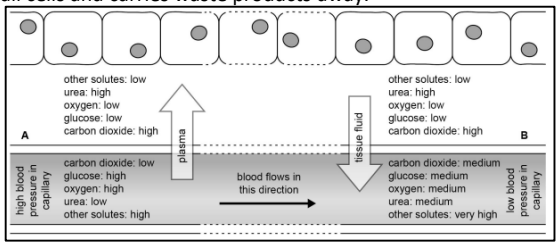
It is an exothermic reaction so some of the energy is transferred out of the cells as heat.

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.

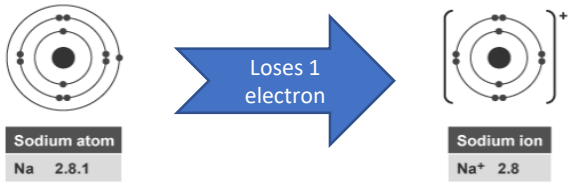
Separate science Chemistry Topic 1_Key concepts - Ionic and covalent bonding

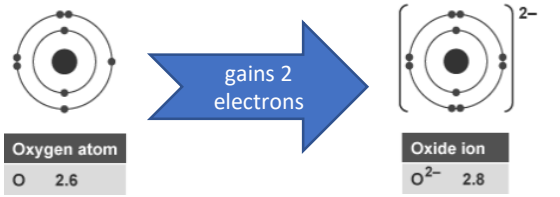
Key information	
bond	Forces that hold atoms together. There are three types: ionic, covalent and metallic
ion	Atom or group of atoms with a positive or negative charge.
cation	Positively charged ion, usually metals. More protons than electrons.
anion	Negatively charged ion, usually non-metals. More electrons than protons.
Ionic bond	Strong electrostatic force of attraction between oppositely charged ions
Ionic compound	Type of substance containing a regular arrangement of oppositely charged ions held together by ionic bonds.
Lattice structure	Regular arrangement of particles such as ions, atoms or molecules.
Molten	A liquid formed from heating a solid
Solution	Formed by dissolving a solute (e.g. ionic compound) into water, with a symbol, aq.
Covalent bond	Shared pair of electrons between two atoms
Simple molecular	Type of substance made up of molecules held together by weak forces of attraction
Molecule	Small group of atoms covalently bonded together.
Intermolecular forces	Weak forces of attraction between molecules.
Giant covalent	Type of substance made up of many atoms covalently bonded together
Delocalised electron	An electron that is no longer attached to an atom that can move freely through a structure.
Metallic bond	Strong electrostatic attraction between positive metal ions and negative delocalised electrons
Metal	Type of substance made up of metals atoms held together metallic bonds

Ionic bonding

- **Formation of cations (positive ions)** → metal atoms → lose electrons → more protons than electrons → full outer shell
- Number of electrons lost by the metal atoms is the same as the group number (only groups 1 and 2)

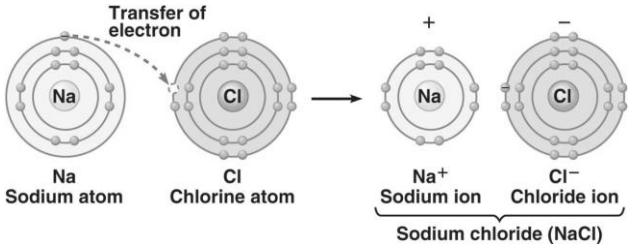
- **Formation of anions (negative ions)** → non-metal atoms → gain electrons → more electrons than protons → full outer shell
- Number of electrons gained by the non-metal atoms is the same as the group number (only group6 and 7)





P =	11	Loses 1 electron	P =	11	P =	8	gains 2 electrons	P =	8
E =	**11**		**E =**	**10**	**E =**	**8**		**E =**	**10**
N =	12		N =	12	N =	8		N =	8

Dot and cross diagrams – used to show formation ionic bonds



Ionic compounds structure

Ioninc compounds have a lattice structure consisting a regular arrangement of oppositely charged ions held together by strong electrostatic forces of attraction

Ionic compound formulae

All ionic compounds have a neutral charge this means the charges from the cations are balanced by the charges from the anions:

Sodium Chloride - NaCl - Sodium ion Na^+ Chloride ion Cl^-

(charges on the ions are equal and opposite)

Covalent bonding

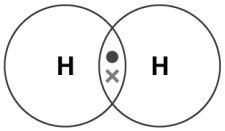
A covalent bond is a **shared pair of electrons** between two atoms, usually non-metals

A molecule consists of a group of two or atoms joined together by covalent bonds.

Dot and cross diagrams

Dot and cross diagrams can be used to model the bonding in a simple molecule:

- The outer shell of each atoms is drawn as a circle.
- The circles overlap where there is covalent bond.
- Electrons from one atoms are drawn as a cross and
- the from the other atom as a dot.



Drawing the structure

A structure can also be drawn to represent a molecule:

Each atoms is represented by its symbol.

Each covalent bond is represented by a straight line

H — H

A hydrogen molecule contains a single covalent bond so has just one line between the symbols.

Simple molecular, covalent structures

You need to be able to draw dot and cross diagrams for the following:

Hydrogen (H_2)
Hydrogen Chloride (HCl)
Methane (CH_4)
Water (H_2O)
Oxygen (O_2)
Carbon dioxide (CO_2)

Giant covalent structure –

covalent bonds between all atoms

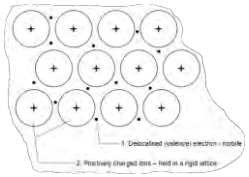
Diamond
Graphite
Graphene

Separate science – Chemistry – Topic 1 Key concepts – Metallic bonding and types of substance

Type of substance	Type of bonding	Example	Description of structure	Key Properties	Explanation of properties
Ionic compound	Ionic	Sodium chloride	Ioninc compounds have a giant lattice structure consisting a regular arrangement of oppositely charged ions held together by strong electrostatic forces of attraction	High melting and boiling points	A lot of energy is needed to overcome the strong forces of attraction between ions.
				Do not conduct electricity when solid	Ions are in a fixed position so cannot move around freely.
				Do conduct when molten or in solution	Ions are free to move and carry the charge.
Giant covalent	Covalent between all atoms	Diamond (form of carbon)	Giant covalent structure in which each carbon atom is covalently bonded to four other carbon atoms, forming a rigid network containing many strong covalent bonds.	Hard (used in cutting tools)	Made up of a rigid network of many strong covalent bonds,
				High melting point	Contain many strong covalent bonds that require large amounts of energy to break.
				Poor conductor of electricity	Do not contain delocalised electrons to cannot form a current.
		Graphite (form of carbon)	Giant covalent structure **c**ontaining delocalised electrons because each carbon atom is bonded to three others. The carbon atoms are arranged in layers. There are weak forces between the layers	Can conduct electricity (used to make electrodes)	Contains delocalised electrons that carry charge and form a current.
				Slippery (used as a lubricant)	The layers have weak forces between them so slide past each easily, when a force is applied.
Simple molecular (covalent)	Covalent	Water (H_2O)	Small groups of atoms are covalently bonded together to form molecules. Between the molecules are weak forces of attraction (weak intermolecular forces)	Poor conductor of electricity	Do not contain any delocalised electrons so cannot form a current.
				Low melting and boiling points	Only a small amount of energy is needed to overcome the weak forces of attraction between molecules.
Metallic	Metallic	Zinc	A lattice of positive metal ions surrounded by a sea of negative delocalised electrons from the outer shells of the metal ions.	High melting points	A lot of energy is needed to overcome the strong attraction between the metal ions an delocalised electrons
				Malleable	Layers of ions can slide over each other when a force is applied.
				Good conductors of electricity	When there is a potential difference across a metal the delocalised electrons can travel through the lattice structure and form an electric current

Metallic bonding

A metallic bond is the strong electrostatic attraction between the positive metal ions and the negative delocalised electrons.
Malleable – bend or shape easily without breaking



Graphene is another form of carbon. Its structure resembles a single layer of **graphite**. Graphene has a very high **melting point** and is very strong because of its large regular arrangement of carbon **atoms** joined by **covalent bonds**. Like graphite it **conducts** electricity well because it has **delocalised electrons** that are free to move across its surface.

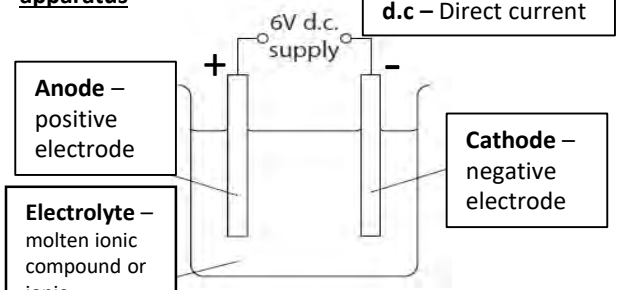
A **fullerene** is a **molecular** form of the carbon. Two examples of fullerenes are **nanotubes** and **Buckminster fullerene (C_{60})**

Separate science – Chemistry - Topic 3 - Electrolytic processes

Word	Meaning
electrolysis	The process in which energy transferred by a direct electrical current decomposes electrolytes.
anion	A negatively charged ion, formed by gaining electrons (usually a non-metal ion). Move to the anode.
anode	Positive electrode.
cathode	Negative electrode.
cation	A positively charged ion formed by losing electrons. Move towards the cathode
electrode	A rod made of a metal or graphite that carries the current into or out of the electrolyte.
electrolyte	A liquid containing charge particles or ions that can move through it carrying current. They are either molten ionic compounds or ionic compounds in solution.
half equation	An ionic equation showing the electrons gained or lost in oxidation or reduction reactions.
oxidation	Is Loss of electrons – occurs at the anode OIL
reduction	Is Gaining electrons – occurs at the cathode RIG
discharged	In electrolysis, an ion is discharged when it gains or loses electrons to form an atom or molecule.
Inert electrode	An electrode that is unreactive, such as graphite or platinum.

Standard electrolysis set-up (electrolytic cell) and apparatus

d.c – Direct current



A bulb/ammeter can be added to the circuit to show the flow of current.

The electrolysis of molten ionic compounds or dissolved ionic compounds in solution is carried out using inert (unreactive) electrodes (graphite or platinum). Ions are discharged at the electrodes to form atoms or molecules.

Electrolysis of molten ionic compounds

Molten ionic compounds decompose into their elements.

- The metal ions move to the cathode and are discharged to form metal atoms IN REDUCTION
- The negative ions move to the anode and are discharged to form non-metal atoms/molecules in OXIDATION

Molten Lead Bromide ($PbBr_2$)

Ions	Pb^{2+}	Br^-
Electrode	Cathode	Anode
Explanation	Pb^{2+} ions move to cathode and are reduced to form Pb atoms. (grey liquid)	Br^- ions move to the anode and are oxidized to form Br_2 molecules (brown gas)
Half equations	$Pb^{2+}(l) + 2e \rightarrow Pb(l)$	$2Br^-(l) \rightarrow Br_2(g) + 2e$

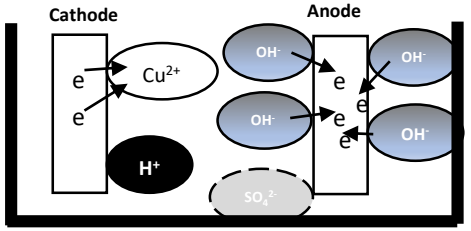
Electrolysis of ionic compounds in solution

An ionic compound in solution will contain four types of ion. There will be two types of ions from the ionic compound along with Hydrogen ions (H^+) and Hydroxide ions (OH^-) from water. You need to be familiar with electrolysis of the following solutions: Copper Chloride, Sodium Sulphate, Sodium Chloride and acidified water.

Core practical: Electrolysis of Copper Sulphate solution ($CuSO_4$) with inert electrodes

Ions	H^+ and Cu^{2+}	OH^- and SO_4^{2-}
Electrode	Cathode	Anode
Explanation	H^+ and Cu^{2+} are attracted to the cathode. Copper ions are discharged more easily. A brown solid of Copper atoms forms	OH^- and SO_4^{2-} are attracted to the anode. Hydroxide ions discharged more readily to form Oxygen gas (and water)
½ equations	$Cu^{+2+}(aq) + 2e \rightarrow Cu(s)$	$4OH^-(aq) \rightarrow 2H_20(l) + O_2(g) + 4e$

Ions at the electrodes



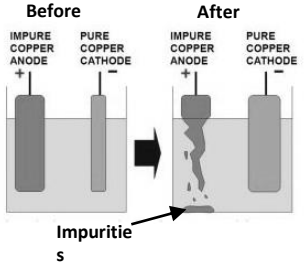
Core practical: Electrolysis of Copper Sulphate solution ($CuSO_4$) with copper electrodes

Copper is purified by **electrolysis**. Electricity is passed through solutions containing copper compounds The **anode** is made from impure copper and the **cathode** is made from pure copper.

During electrolysis, the anode loses mass as copper dissolves, and the cathode gains mass as copper is deposited.

These are the half-equations:

- **anode: $Cu \rightarrow Cu^{2+} + 2e$ (oxidation)**
- **cathode: $Cu^{2+} + 2e \rightarrow Cu$ (reduction)**



- The electrodes should be cleaned with emery paper prior to use so that the copper atoms can adhere to the surface of the cathode.
- The mass increase mass of the cathode may not be the same as the mast lost by the anode due to some copper atoms not adhering to the cathode.

Separate science – chemistry – topic 4 – chemical changes

Word	Meaning
reactivity series	A list of metals in order of reactivity with the most reactive at the top.
displacement reaction	A reaction where a more reactive element takes the place of a less reactive element in a compound.
redox reaction	A reaction in which oxidation and reduction take place.
bioleaching	Using bacteria to extract metals from their ores.
extraction	A process in which a metal is obtained from its ore.
ore	A rock that contains a high concentration of a metal or metal compound.
rusting	The reaction between iron, air and water to form hydrated iron(III) oxide (rust).
life cycle assessment (LCA)	A process used to assess the environmental impact of a product
recycling	Converting waste materials into new products.
closed system	When substances cannot enter or leave an observed environment, e.g. a stoppered test tube.
endothermic	A type of reaction in which energy from the surroundings is transferred to the products.
exothermic	A type of reaction in which energy is transferred to the surroundings from the reactants.
reversible reaction	A chemical reaction in which there is a forward and backward reaction. Products can reform reactants.

Reactivity of metals

The order has been decided based upon the **metal's reactions with water, acids and salt solutions**.

Metal	Reaction with water	Reaction with dilute acid	Method of extraction	Reactivity
Potassium	Will react with cold water. They will **fizz and produce hydrogen gas** and a metal hydroxide	React violently.	ELECTROLYSIS – direct current (D.C) passed through a molten compound containing the metal. REQUIRES A LOT OF ENERGY MAKING IT EXPENSIVE. Reduction of metal ions takes place at the cathode and oxidation of non-metal ions at the anode.	MOST REACTIVE
Sodium				
Calcium		React to form hydrogen and salt solution.		
Magnesium	They will react very slowly with cold water producing **only a small amount of bubbles of hydrogen.**			
Aluminium				
(Carbon)			REDUCTION WITH CARBON- Their metal oxide is heated with carbon. This is a redox reaction. Iron oxide reduced and carbon oxidised. **Iron oxide + Carbon → Iron + Carbon dioxide**	
Zinc	React with steam to form hydrogen and a solid metal oxide.			
Iron				
Copper	Do not react with cold water or steam	Do not react.		
Silver			Found in their NATIVE STATE – uncombined with other elements.	
Gold				LEAST REACTIVE

Increasing ability of metal atoms to form positive ions (by losing electrons)

Metals and displacement reactions

A more **reactive metal** can **displace** a less reactive metal from its **compounds**. For example, magnesium is more reactive than copper. It displaces copper from copper sulfate **solution**:

magnesium + copper sulfate → magnesium sulfate + copper

$Mg(s) + CuSO_4(aq) \rightarrow MgSO_4(aq) + Cu(s)$

Biological methods of extraction – Bioleaching and phytoextraction are both examples of biological extraction.

Bioleaching advantages – Doesn't require high temperatures or lots of energy.

Phytoextraction advantages – Reduces need for mining and conserves natural ores

Corrosion – Occurs when a metal reacts with oxygen and is oxidized causing the metal to weaken.

- The corrosion of iron requires BOTH oxygen and water and is called rusting.
- Unreactive metals corrode less slowly e.g gold. This is a reason why gold is used in jewellery.
- Some more reactive metals do not corrode because they form a protective oxide layer knows as a tarnish.

Recycling and Life cycle assessment (LCA)

Recycling:

Advantages:

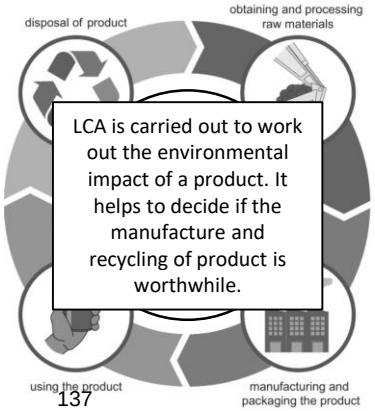
Natural reserves of ores last longer.

Less energy is needed for recycling than extraction from ores.

Need to mine for ores is reduced.

Disadvantages:

The cost and energy of collection, transporting, and sorting of materials are high.



Reversible reactions and dynamic equilibrium

In some chemical reactions the products react to reform reactants – these are reversible reactions and can be identified by the symbol. ⇌

THE HABER PROCESS

Reversible reaction between Nitrogen (from the air) and Hydrogen (from natural gas) that forms Ammonia.

Conditions: temp. 450°C, 200 atm and an Iron catalyst.

forward reaction

$N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$

nitrogen hydrogen ammonia

backward reaction

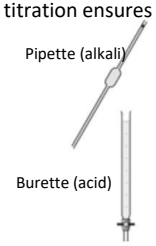
- **Dynamic equilibrium is when the forward and backward are occurring at the same rate, but the percentages of reactants and products remains the same.**
- **Dynamic equilibrium only occurs in a closed system.**

The equilibrium position can be altered by changes in temperature, pressure and concentration. The equilibrium position always moves to reduce the effect of any changes to the system.

Separate science – Chemistry - Topic 5 - Separate chemistry 1 - Quantitative analysis

Titration – Core practical

Titrations are used to obtain a neutral solution in a reaction between an alkali (soluble base) and an acid.
A titration ensures that the correct proportions of acid and alkali mix together to form a neutral solution that contains only salt and water.



Rinse burette with acid and rinse pipette with alkali to prevent contamination.

Measure a 25cm³ of alkali and add to a conical flask along with a few drops of indicator (Methyl orange or phenolphthalein)

Fill burette with acid and take an initial reading from the bottom of the meniscus (usually 0.00cm³). Place conical flask on white tile below burette

Add acid, continually swirl the conical flask. Do this until a colour change and the end-point of titration is reached. Record volume of acid added and repeat until concordant results are achieved.
Final titration should not involve the indicator

Crystallisation
Pour neutral solution into evaporating dish and heat to evaporate water. Stop heating when reduced by half, leave to cool and crystallise.
Use filter paper to dry salt crystals.

Concentration

Concentration of a solution is the amount of solute dissolved in a stated volume of solvent. Concentration can be calculated and presented in two ways:

Concentration = mass of solute ÷ volume
(g dm^{-3}) (g) (dm^3)

Concentration = number of moles of solute ÷ volume
(mol dm^{-3}) (mol) (dm^3)

It is possible to convert between the two concentration units.

The **relative formula mass (M_r) of the solute is used to do this**, as follows:

• To convert from g dm^{-3} to mol dm^{-3} we divide by the M_r of the solute.
Concentration (mol dm^{-3}) = Concentration (g dm^{-3}) ÷ M_r
• To convert from mol dm^{-3} to g dm^{-3} we times or multiply by the M_r of the solute.
Concentration (g dm^{-3}) = Concentration (mol dm^{-3}) x M_r

Avogadro's law and gas calculations

The volume of a gas depends on; temperature, pressure and the number of molecules of the gas. It does not depend on the relative formula mass of the gas molecules.
Avogadro's law states that equal volumes of different gases contain equal numbers of molecules.

Using Avogadro's law

Hydrogen reacts with chlorine to form hydrogen chloride:

$$H_2(g) + Cl_2(g) \rightarrow 2HCl(g)$$

The **mole ratio** of hydrogen to chlorine is 1:1. This means, for example:
•1 cm³ of hydrogen reacts exactly with 1 cm³ of chlorine
•250 cm³ of hydrogen reacts exactly with 250 cm³ of chlorine

The mole ratio of hydrogen to hydrogen chloride is 1:2. This means, for example:
•1 cm³ of hydrogen produces 2 cm³ of hydrogen chloride
•250 cm³ of hydrogen produces 500 cm³ of hydrogen chloride

Avogadro's Law

Avogadro realised that at room temperature and pressure (rtp):
1 mole of any gas occupies a molar volume of 24 dm³

This led him to develop the equation:

Gas volume = number of moles of gas x 24
(dm³) (mol)

Fertilisers

Fertilisers – replace mineral ions, in soil, needed for plant growth
Nitrogen (N), Phosphorous (P) and Potassium (K) are important elements that can be added as part of soluble compounds to the soil.

Nitrogenous fertilisers (source of soluble nitrogen compounds)
Ammonia, manufactured in the Haber process, plays a critical role in the production of nitrogenous fertilisers.

Ammonium Nitrate
Ammonia + oxygen → Nitric acid + water

Nitric acid + ammonia → Ammonium nitrate

Ammonium Sulphate
Sulphuric acid + Ammonia → Ammonium sulphate

Production	Laboratory	Industrial
Scale	Small	Large
Starting materials	Ammonia and sulphuric acid	Raw materials for making ammonia and sulphuric acid
Method	Titration and crystallisation	Multi-stage
Type of process	Batch	Continuous

Yield

Actual yield – The actual amount of product formed in a chemical recation.
Theoretical yield – the maximum **calculated** amount of product formed.
Percentage yield – a comparison between actual and theoretical yield.

Percentage yield calculation

Percentage yield = (actual yield ÷ theoretical yield) x100

Reasons why actual yield is less than the theoretical yield:
1. *The reaction is incomplete or a reversible reaction*
2. *There are unwanted side reactions*
3. *Practical losses during the experiment when transferring chemcial from one piece of equipment to another.*

Atom economy

Atom economy can be used to show how efficiently a reaction uses the atoms in reactants, to form products:

$$\text{atom economy} = \frac{\text{relative formula mass } (M_r) \text{ of the useful product}}{\text{sum of relative formula masses of all the reactants}} \times 100\%$$

Atom economy for making ethanol

$$\underset{(M_r = 180)}{C_6H_{12}O_6} \rightarrow \underset{(M_r = 46)}{2C_2H_5OH} + 2CO_2$$

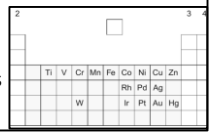
$$\text{Atom economy} = \frac{2 \times 46}{180} \times 100 = 51.1\%$$

Separate science - Chemistry - Topic 5 - Separate chemistry 1 - Transition metals, alloys and corrosion

Transition metals

Found between groups 2 and 3 in the periodic table. Typical properties:

- High melting points
- High density
- Form coloured compounds
- Make useful catalysts



Oxidation of metals

Metals can react with oxygen, from the air, to form metal oxides. The more reactive a metal, the more rapidly it oxidises: **Metal + Oxygen → Metal Oxide**

Metals form a thin layer of metal oxide on their surface when they oxidise, this is protective layer of tarnish, that prevents further oxidation.

Corrosion – this is when a metal continues to oxidise and the metal becomes weaker

Rusting – corrosion of iron or steel

Rusting occurs when iron is exposed to *both oxygen and water*.

Preventing rusting:

Exclusion of oxygen	Exclusion of both oxygen and water	Exclusion of water
Store metal in an unreactive atmosphere e.g. argon	Paint metal, coat metal with plastic, cover metal in oil or grease.	Use a desiccant powder to absorb water vapour

Sacrificial protection

Prevents rusting but DOES NOT rely upon the exclusion of oxygen or water.

- **A more reactive metal, like zinc or magnesium, is attached to the steel or iron object.**
- **The more reactive metal oxidises more easily than iron, so the oxygen reacts with that instead**.
- **The more reactive metal loses electrons more easily than iron.**

The sacrificial protection continues until the more reactive metal has fully corroded.

Electroplating

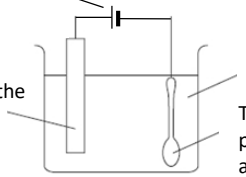
Electroplating coats the surface of a metal object with a thin layer of another metal.

Electroplating can be used to:

1. Improve the appearance of an object
2. Help prevent corrosion
3. Improve electrical conductivity

A direct current is always used.

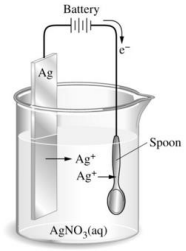
The plating metal is always attached to the anode.



The electrolyte should always contain ions of the plating metal.

The objecting being plated is always attached to the cathode.

Electroplating with silver



- Silver atoms at the anode lose electrons, in oxidation, to form silver ions.
  Anode: $Ag_{(s)} \rightarrow Ag^{+}_{(aq)} + e^{-}$
- Silver ions are attracted from the anode, and from the electrolyte, to the cathode.
- Silver ions gain electrons, at the cathode, in reduction to form silver atoms on the surface of the spoon.
  Cathode: $Ag^{+}_{(aq)} + e^{-} \rightarrow Ag_{(s)}$

Galvanising

Iron or steel objects covered with zinc, have been galvanised.

The thin layer of zinc, prevents corrosion by preventing water and oxygen reaching the iron or steel.

The zinc also acts as a sacrificial metal should the iron or steel underneath be exposed.

Galvanising can be carried out by electroplating or by dipping the iron or steel into molten zinc.

Uses of metals their alloys

The use of a metal or its alloys depends upon its properties.

Metal	Alloy
Gold Resistant to corrosion so stays shiny, malleable, ductile and an excellent conductor of electricity. Very expensive.	Jewellery gold – alloy of gold and copper. Is stronger than pure gold but is also unreactive so remains shiny.
Aluminium Resists corrosion, has a low density and is malleable. Does not conduct electricity as well as copper or gold.	Magnalium – alloy of aluminium and magnesium. Much stronger than aluminium yet still lightweight.
Copper Resists corrosion, and is a good conductor of electricity. Cheaper than gold. Weaker than brass.	Brass Stronger than copper and resists corrosion. Not as good electrical conductor as copper.

Alloy steels

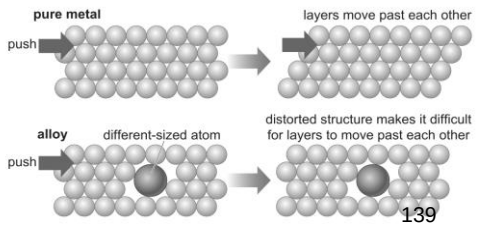
Allow steels are created by adding other elemenst to iron.

Stainless steel – Iron and chromium alloy – Chromium oxidises to form a tarnish layer of chromium oxide that prevents air and water reaching the steel.

Tool steels – Iron combined with tungsten and molybdenum – Very strong and often used to make drill bits.

Mild steel – steel with a low carbon content and manganese – Used as a building material and for car body panels.

Alloys – a mixture of a metal element with one or more other elements, usually metals.



- Alloys are often stronger than the pure metal they contain. Alloys have more useful properties than the metal they contain.

Pure metal – all the atoms are the same size, so the layers of atoms can move past each other easily, if a force is applied.

Alloy – the atoms are usually different sizes, this distorts the regular layers/structure making it more difficult for the layers to move past each other when a force is applied, increasing their strength.

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: ⇌

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.**
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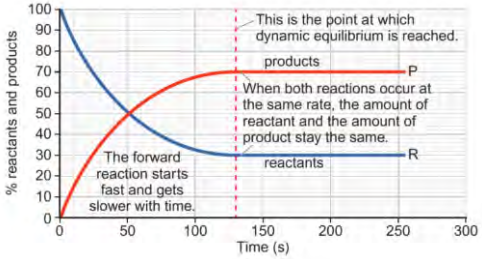

The equilibrium position, and therefore yield of product, can be altered by changes in:

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.

$$N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$$

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 → **Ammonium Nitrate**

Ammonia + Sulphuric acid → **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 *SC8 Acids and Alkalis*), then crystallisation	several stages
type of process	batch	continuous

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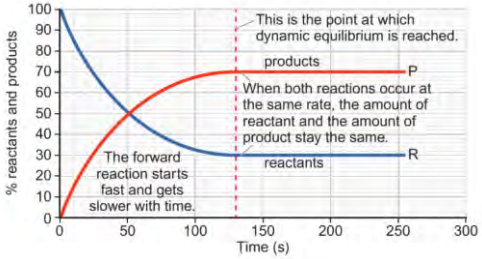

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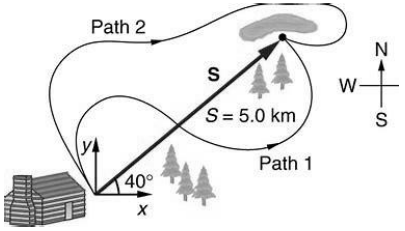
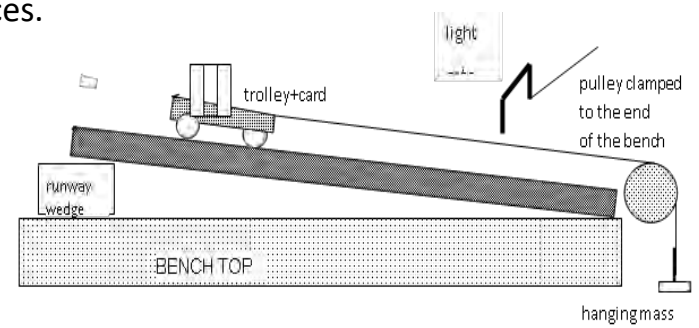
Todmorden High Separate Physics Topic 2 Motion and Forces.

Key Term	Definition
Vector quantities	Have magnitude and direction e.g. force, velocity, displacement, momentum , weight.
Scalar quantities	Have magnitude only e.g. distance, speed mass, energy.
velocity	Speed in a stated direction. (m/s.)
Resultant force	The overall force acting on an object, i.e. the vector sum of all the forces acting on an object.
Inertial mass	A measure of how difficult it is to change the velocity (speed or direction) of an object, i.e. the ratio of F/a. $m = \frac{F}{a}$
Acceleration	$a = \frac{v-u}{t}$ a, acceleration (m/s2) v, final velocity (m/s) u initial velocity (m/s) t, time taken (s)
Weight	W=mg (g is 10N/kg on Earth) W, weight (N) m, mass (kg) g, gravitational field strength (N/kg)
Average speed	Speed = distance travelled / time taken.
Suvat equation	$v^2 - u^2 = 2\,a\,x$ X is the displacement of the object. NB this equation only apply for constant acceleration.
Resultant force	$F = ma$ and $F = \frac{mv-mu}{t}$ F, force (N) v, final velocity (m/s) M, mass (kg) u, initial velocity (m/s) a, acceleration (m/s^2) t, time (s)
momentum	is simply mass x velocity. Momentum is a vector. p=mv p, momentum (kgm/s) m, mass (kg v, velocity (m/s)





The distance of path 1 is a scalar. S 5.0km at 40° is a vector.
Vectors can be combined to find the resultant.

Newton's 1st Law, every body shall continue at rest, or move at a steady speed in a straight line, unless a resultant force acts upon it.
Newton's 2nd Law, the rate of change of momentum is directly proportional to the resultant force applied **so F = ma.**
Newton's 3rd Law. If body A exerts a force on body B, then body B exerts an equal and opposite (reaction) force on body A.

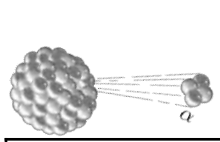
Newton's Laws Decision matrix	Already stopped	Already moving
Zero resultant force F = 0	Stays stopped.	Moves at a steady speed in a straight line.
Some resultant force F ≠ 0	Accelerates. (F=ma)	Accelerates. (F=ma)

Core Practical
Investigate the relationship between F and acceleration for a constant mass.
Vary the mass on the trolley by adding known masses to it
Use 5 different masses, 0.1kg to 0.5kg
Control the force applied by keeping the mass on the hanger constant
Measure the acceleration of the trolley using the light gates and data-logger as shown.
Accuracy – use a friction compensated ramp, set the ramp at an angle so that if the trolley is nudged it will roll at a steady speed.
This will be slightly different for each mass added.
Lubricate the axles to reduce friction.
Repeat the measurements and take an average value of acceleration.
Plot a graph of a on the y axis against 1/m on the X axis. Theory predicts this will be a straight line because a is directly proportional to the inverse of m.

Overall stopping distance = thinking distance + braking distance	
Thinking distance	Braking distance

Todmorden High Separate Physics Topic 6 Radioactivity

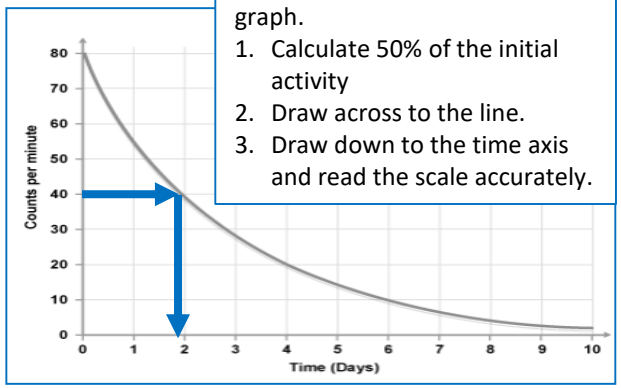
Key Term	Definition
Isotope	Atoms of the same element, with the same number of protons, but a different number of neutrons, in their nuclei.
Activity	The number of radioactive decays per second from a radioactive source.
Background radiation	Ionising radiation from the environment, food and drink, Earth, space, and man-made sources e.g. medical uses.
becquerel (Bq)	The unit for activity 1Bq is 1 decay per second.
Contamination (vs irradiation)	**Unwanted radioactive isotopes are on or in a material or living organism (e.g. person)** Irradiation is when the radiation from a radioactive isotope is absorbed by a material, note that the radioactive isotope does not come into contact or contaminate the material for irradiation to happen.
decay	The release of particles and or energy in the form of nuclear radiation from the nucleus of an atom that changes the nucleus making it more stable. eg. beta- decay of C-14. $^{14}_{6}C \rightarrow {}^{0}_{-1}B^{-} + {}^{14}_{7}N$
Geiger-Muller tube	A device to count the radiations from any source.
Half-life (definition 1)	The time taken for the activity of a source to halve.
Half-life (definition 2)	The time it takes for half the radioactive nuclei in a sample to decay.
Random decay	It is not possible to predict **which** nuclei in a radioactive isotope will decay or **when** they will decay. The half-life of a radioactive isotope cannot be increased or decreased e.g. by heating or chemical reactions.



Safety Precautions.
1. Limit time exposure.
2. Limit the distance,.
3. Stay behind a shield / use protective handling equipment.

Properties of radiation				
Type	Description	Ionising ability	Range in air	Stopped by
Alpha $^{4}_{2}\alpha^{2+}$	helium nucleus, (2 protons and 2 neutrons)	highly ionising	A few cm	Paper or skin
Beta- $^{0}_{-1}B^{-}$	high speed electron from the nucleus	moderately ionising	A few metres (typically 1 m)	A few (3) mm of aluminium
Gamma $^{0}_{0}\gamma^{0}$	electromagnetic wave (like visible light)	weakly ionising	A few km.	Thick lead or concrete

Other nuclide notations needed for balanced nuclear equations.
positron $^{0}_{1}B^{+}$ neutron $^{1}_{0}n^{0}$



How to find half-life from a decay graph.
1. Calculate 50% of the initial activity
2. Draw across to the line.
3. Draw down to the time axis and read the scale accurately.

History of the Model of the Atom.

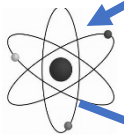
When the evidence changes the model changes.

Dalton's model saw the atom as solid, indivisible spheres.

But...JJ Thompson discovered **electrons can be separated from atoms,** so atoms are not indivisible.

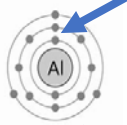
Plum pudding model – solid, positive, mass with negative electrons embedded throughout it.

But...Rutherford's **alpha scattering investigation (learn it)** showed that the atom was mostly empty space, because most alpha particles went straight through the gold foil but a tiny number rebounded backwards.



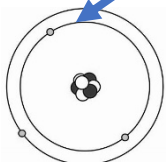
Nuclear model – **mostly empty space, a tiny, dense nucleus** with electrons around it.

But...Niels Bohr analysed data from flame tests and explained that electrons could only exist at set distances from the nucleus. When electrons move between energy levels electromagnetic radiation is absorbed or emitted.



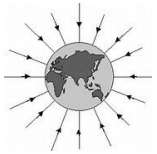
Bohr model – the **electrons** only exist at **<u>set distances</u>** from the nucleus.

But...20 years after Rutherford, Chadwick finally discovers the neutron.



Modern nuclear model – the nucleus contains protons and **<u>neutrons</u>**.

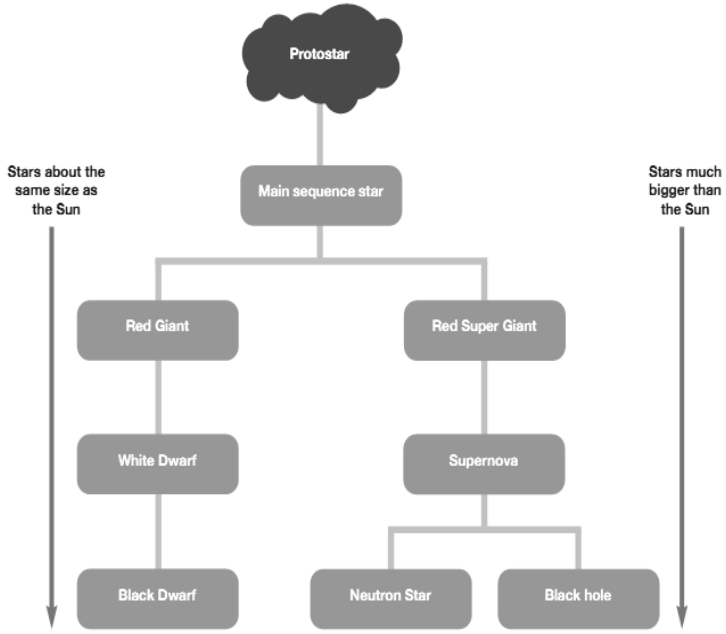
Todmorden High Separate Physics Topic 7 Astronomy



Close to the Earth's surface , g is 10 N/kg , g reduces with distance from the centre of the Earth. The value follows an **inverse square** law.

Term	notes
Big Bang theory	The universe started with an explosion and has expanded from a single point (singularity) . Energy was converted into matter.
Steady state theory	The universe is continually expanding and is continually creating new matter which results in a constant density.
CMBR	Cosmic microwave background radiation is the radiation coming from all regions in space. This is radiation that is the left over radiation from the Big Bang. CMBR can **only** be explained by the Big Bang theory. This is why the Big Bang is the accepted theory.
Red-shift	Red-shift is the **increase** in observed wavelength of light due to the relative movement of the **source** away from the observer.

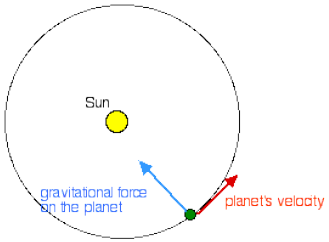
Life Cycle of a star.



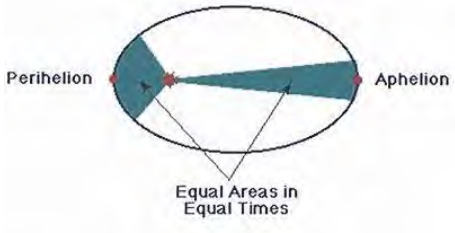
absorption lines of the Sun

similar star red shifted

When an object moves in a circle at a steady speed, it is accelerating because velocity has magnitude and direction and even though the magnitude is not changing the direction is constantly changing.



If the speed of the object travelling in circular motion changes then the orbital radius must also change. Planets move in elliptical orbits around the sun and sweep out equal areas in equal time periods. As the move closer to the sun they speed up, i.e. **they lose gravitational potential energy and gain kinetic energy.**



How ideas about the Solar System have changed. **Ptolemy** put the Earth at the centre with planet and the sun orbiting the Earth. **Copernicus** developed a heliocentric model (sun at the centre), orbiting the sun in perfect circles. **Tycho Brahe** had a mixture of these two. The Sun and the moon orbited the Earth but all the other planets orbited the Sun. **Kepler** in 1609 showed that the heliocentric model was correct and the orbits were elliptical.

Todmorden High Separate Physics Topic 8 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…	are 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	$Efficiency$ = (useful energy out) / (total energy in)
Closed system (a group of objects)	has no energy transfers in our 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 = **(useful energy out) / (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	Δ.G.P.E = m x g x Δh 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 x m x $(v)^2$ K.E. Kinetic energy store (J) m, mass (kg) v, speed or velocity (m/s)
Work done (= energy transferred)	E = F x 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 (I) 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.**

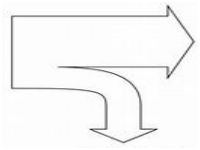
Measure their mass **using a balance.**

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

Δ.G.P.E = m x g x Δh

Sankey Diagrams show energy transfers e.g.

Δ G.P.E = 100J



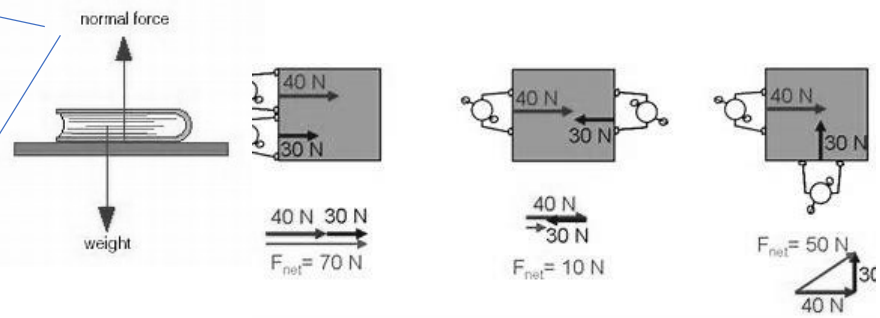
K.E. = 67J

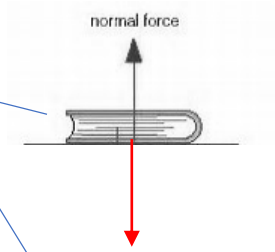
Thermal energy 33J

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

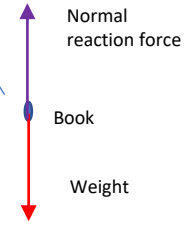
Todmorden High Separate Physics Topic 9 Forces and Their Effects

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 3rd 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.
Moment	A moment is a turning effect. Moment = force x perpendicular distance from point.
Principle of moments	In equilibrium the total clockwise moments about a point equal the total anti-clockwise moments.

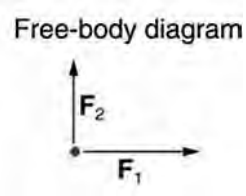


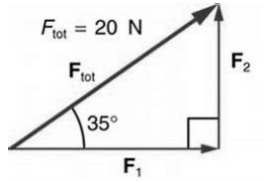


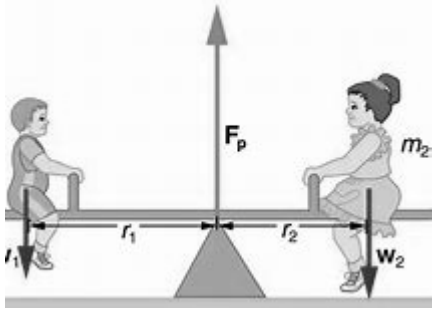
Forces in the same direction are added together.
Forces in the opposite direction are subtracted.
Forces at an angle are combined using scaled drawings

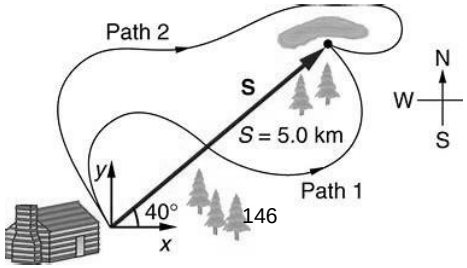


In **scaled vector diagrams** the forces are drawn nose to tail to show the **magnitude and direction** of the resultant.





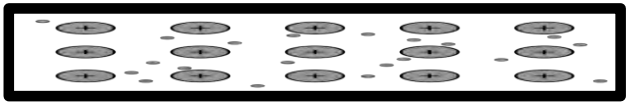




The distance of path 1 is a scalar. S 5.0km at 40° is a vector.
Vectors can be combined using scaled vector diagrams to find the resultant.

Todmorden High Separate Science Physics Topic 10 Electrical Circuits

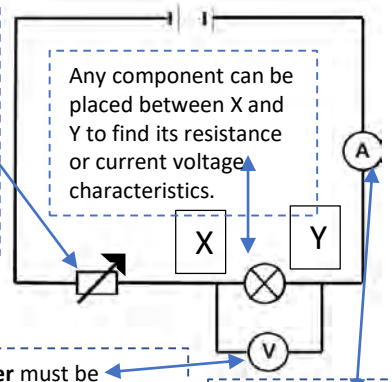
Key term	Definition
Current (I) (through)	The rate of **flow of charge per second**, measured in **amperes (A). I** stands for current in equations.
potential difference (V) (across)	The **energy transferred per unit of charge** that flows across two points, measured in **volts (V).** A potential difference causes a current to flow.
resistance (of)	The **ratio of potential difference to current**, measured in **ohms (W)** A larger resistance gives a smaller current for the same potential difference.
Power (P)	is the energy transferred per second measured in **watts (W).**
Charge (Q)	is measured in **coulombs (C).** Electrons have a relative charge of -1. Ions in solution have relative charge too e.g. Cu^{2+}.



Circuit Rules	Series (_one_ loop)	Parallel (two or more loops))
I	SAME $I_1 = I_2 = I_3 = \ldots I_n$	SHARED $I_{out} = I_1 + I_2 + \ldots I_n$
V	SHARED (proportional to R) $V_{in} = V_1 + V_2 + V_3 + \ldots V_n$	SAME (across each branch) $V_{in} = V_1 = V_2 = V_3 = \ldots V_n$
SR	Adding resistors in series **increases** net (effective) resistance $SR = R_1 + R_2 + \ldots R_n$	Adding resistors in parallel **decreases** net (effective) resistance Because there are more pathways for the current to flow.
V=IR	Always obeyed!	Always obeyed!

The **TEST circuit** is used in all electricity investigations. **Make sure you can draw one**.

The **variable resistor** controls the potential difference across the test component.



The **voltmeter** must be connected **across** the test component (**"in parallel"),** to measure potential difference **across** the test component in volts (V).

The **ammeter** is wired "**in series**" to measure the current **through** the test component in amperes (A).

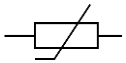
Equations to Learn. Make sure you know what each term stands for and the units!

V = I × R

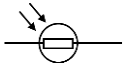
$V = \frac{E}{Q}$	$I = \frac{Q}{t}$	$R = \frac{V}{I}$
$P = \frac{E}{t}$	$P = IV$	$P = I^2R$
$E = I\,V\,t$		

← Think of a metal wire as fixed metal ions in a sea of free electrons. When a potential difference is applied the free electrons can flow – that's a current.

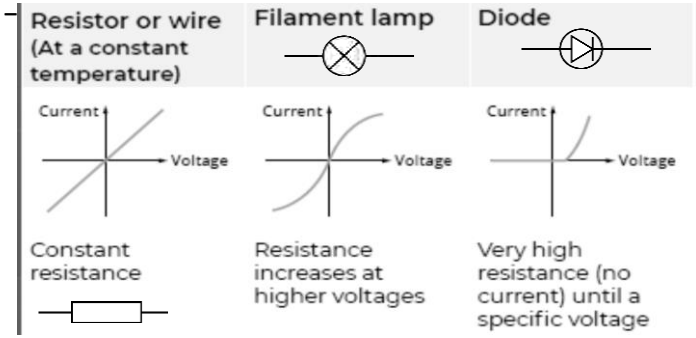
Useful Components.



Thermistors are useful because their resistance **reduces** as temperature increases. They can be used in automatic temperature controlled circuits e.g. incubators, central heating circuits etc.



Light Dependent Resistors (LDRs) are useful because their resistance **reduces** as light intensity increases. They can be used in automatic street lighting.



Spanish – Mi Familia

Family members

padrastro – stepdad
madrastra - stepmum
hermanastro/a – stepbrother/sister
tío – uncle **tía** – aunty
primo – cousin (m) **prima** – cousin (f)
bisabuelo – great-grandad **bisabuela** – great-nan
sobrino – nephew **sobrina** – niece
hijo – son **hija** – daughter
nieto – grandson **nieta** – granddaughter
novio – boyfriend **novia** - girlfriend
marido – husband **mujer** – wife
mis parientes – my relatives

A good friend

Un buen amigo es alguien que… - a good friend is someone who…

te apoya – supports you
te escucha – listens to you
te conoce bien – knows you well
te acepta como eres– accepts you as you are
te quiere mucho – loves you a lot
te da consejos – gives you advice
te hace reír – makes you laugh

Pienso que soy un buen amigo/una buena amiga porque… - I think I am a good friend because…

Physical descriptions

Soy – I am
Es – he/she is
Son – they are

calvo – bald **alto** – tall **bajo** – short **gordo** – fat **delgado** - slim

Tengo – I have
Tiene – he/she has
Tienen - they have

Los ojos - eyes: **azules** – blue **marrones** – brown **verdes** - green

El pelo - hair: **moreno** – dark brown **rubio** – blonde **castaño** – brown **rojo** – red **rizado** – curly **liso** – straight **ondulado** – wavy **corto** – short **largo** – long **fino** – fine **de punta** – spiky

la piel blanca/morena – fair/dark skin **los dientes prominentes** – big teeth
pecas – freckles **Un tatuaje** – a tattoo

Llevo – I wear/ have **Lleva** – he/she wears/has
Llevamos - we wear/have

gafas – glasses
barba – a beard
bigote – a moustache

Family relationships

Me llevo bien con… - I get on well with
Me divierto con… – I have fun with
Echo de menos a… - I miss

Me apoya(n) – he/she supports me
Me acepta(n) como soy – he/she accepts me as I am
Me hace(n) reír – he/she makes me laugh
Me conoce(n) bien – he/she knows me well
Nunca me critica(n) – he/she never criticises me
Guarda(n) todos mis secretos – he/she keeps all my secrets
Tenemos mucho en común – we have a lot in common
Me da(n) consejos – he/she gives me advice
Me dice(n) la verdad – he/she tells me the truth

No me llevo bien con… - I don't get on well with
Me peleo con… - I argue with
Estoy harto de… - I am fed up of

Me juzga(n) – he/she judges me
Me trata(n) como un niño/una niña – he/she treats me like a child
No me deja(n) salir – he/she doesn't let me go out
No me da(n) libertad – he/she doesn't give me freedom
Me critica(n) – he/she criticises me

Wow!

Ojalá tuviera un hermano/una hermana – If only I had a brother/sister
Nos peleamos como el perro y el gato – we fight like cat and dog
Somos uña y carne – we're inseparable
Lo que más me gusta es (que)… - the thing I like the most is (that)…
Lo que menos me gusta es (que)… - the thing I like the least is (that)…

Me llamo María y tengo **quince** años.	My name is Maria and I am **15**.
Tengo el pelo **largo** y **rubio** y no soy ni **alto** ni **bajo**.	I have **long blond** hair and I'm neither **tall** nor **short**.
Si tuviera la opción, quisiera tener **un tatuaje** pero **lo haré cuando sea mayor**.	**If I had the option** I would like to have **a tattoo** but **I will do it when I'm older**.
En mi familia somos **cinco**.	In my family there are **five** people.
En general **diría que** me llevo bien con **mis padres aunque sean estrictos** a veces.	In general **I would say that** I get on well with my **parents even though they are strict** sometimes.
Yo **me parezco mucho** a **mi madre**. Las dos tenemos el pelo **castaño**.	**I look a lot like my mum**. We both have **brown** hair.
También nos llevamos superbien ya que **tenemos mucho en común** y siempre **me apoya**.	Also, we get on really well because **we have a lot in common** and **she** always **supports me.**
Antes adoraba a **mi hermana menor** pero ahora **la encuentro molesta** y **nunca guarda mis secretos**.	Before I loved my **little sister** but now **I find her annoying** and **she never keeps my secrets**.
Para mí un buen amigo **debe ser comprensivo** y creo que **es importante que tengamos intereses en común**, por ejemplo **la música**	For me a good friend **should be understanding** and I believe that **it's important that we have common interests**, for example **music**.
Creo que soy una buen amiga ya que siempre **apoyo** a mis amigos y **doy consejos buenos**.	**I believe that** I am a good friend because I always **support** my friends and **I give good advice**.

Spanish – El Matrimonio

Boy/girlfriends	**Sí, tengo un novio/una novia** – Yes, I have a boyfriend/girlfriend	**porque** – because **ya que** – because **dado que** - because	**soy muy romántico/a** – I'm very romantic **el amor es muy importante** – love is really important
	No, no tengo un novio/una novia – No, I don't have a boyfriend/girlfriend		**no tengo tiempo** – I don't have time **mis amigos dicen que soy feo** - my friends say I'm ugly **los estudios me importan más** – my studies are more important **no me interesa el amor** – I'm not interested in love **no soy muy romántico/a** – I'm not very romantic **prefiero pasar tiempo con mis amigos/mi familia** – I prefer to spend time with my friends/family
My ideal partner	**Mi pareja ideal**… - my ideal partner	**sería** – would be	+ adjectives (physical description/personality)
		tendría – would have	+ descriptions (hair/eyes/age)
			respetaría mis opiniones - would respect my opinions **compartaría mis intereses** – would share my interests **trabajaría duro** – would work hard **ganaría mucho dinero** – would earn a lot of money **pasaría tiempo conmigo** – would spend time with me
	Estaríamos de acuerdo sobre muchas cosas – we would agree on lots of things **Viviríamos**… - we would live **Estaríamos felices** – we would be happy **Tendríamos muchos hijos** – we would have lots of children		
Marriage	**En mi opinión, el matrimonio** – In my opinion marriage	**es importante** – is important	**porque** - because **hay más estabilidad familial** – there is more family stability **soy religioso/a** – I am religious **me gustaría tener hijos** – I would like to have children **siempre he soñado con tener una boda grande** – I've always dreamed of having a big wedding **es una buen manera de demostrar el amor** – it's a good way of showing love
		no es importante – is not important	**preferiría vivir juntos** – I would prefer to live together **no es necesario para tener una familia** – it's not necessary in order to have a family **voy a dedicarme a los estudios/mi trabajo** – I'm going to dedicate myself to my studies/work
General vocab	**casado** – married **jubilado-** retired **un(a) viudo/a** – a widow(er) **el matrimonio** – marriage **tener suerte** – to be lucky **Me voy a casar** – I'm going to get married **Nos casaremos** – we will get married	**divorciado** – divorced **casarse** – to get married **una boda** – a wedding **un beso** – a kiss	**separado** – separated **marido** – husband **el amor** – love **un abrazo** – a hug	**soltero** - single **esposa** – wife **confianza** – trust **comprometido** - engaged

En este momento no tengo **un novio**.	**At the moment** I **don't** have **a boyfriend**.
No tengo tiempo y los **estudios me importan más**	**I don't have time** and **my studies are more important**
no obstante, en el futuro, **voy a casarme**.	**however**, in the future, **I'm going to get married**.
A mi parecer, el matriomonio **es importante**	**In my opinion**, – marriage **is important**
ya que es **una buen manera de demostrar el amor**	**because** it's **a good way of showing love**
y **me gustaría tener hijos**	and **I would like to have children**
aunque otros dicen que **no es necesario para tener una familia.**	**although others say** that **it's not necessary in order to have a family.**
Si pudiera me gustaría casarme en **Grecia**	**If I could** I would like to get married in **Greece**
dado que siempre he soñado con tener **una boda grande al extranjero**.	**since I've always dreamed of** having **a big wedding abroad**.
Mi pareja ideal sería bastante **alta**	My ideal partner would be quite **tall**
pero **la apariencia no me importa mucho**.	but **appearance isn't really important to me**.
Sería **inteligente** y tendría **un buen sentido del humor**.	He/she would be **clever** and would **have a good sense of humour**.
Viviríamos **en la costa** y	We would live **on the coast**
Estaríamos **felices**.	And we would be **happy**.

Spanish – El tirmpo libre

Activities

Suelo – I tend to
Me encanta – I love
Me mola – I like
Me chifla – I'm crazy about
Prefiero – I prefer
Mi pasión es – my passion is

No aguanto – I can't stand
No soporto – I can't stand
Odio – I hate

descansar – relaxing
escuchar música – listening to music
hacer deporte – doing sport
ir al cine – going to the cinema
leer libros/revistas/periódicos – reading books/magazines/papers
salir con mis amigos – going out with friends
quedar con amigos – meeting with friends
ir de compras – going shopping
montar en bici/monopatín – riding my bike/skateboard
usar el ordenador – using the computer
ver la tele – watching tv
jugar con los videojuegos – playing video games
cocinar – cooking

porque – because

ya que – because

dado que – because

es – it is

divertido – fun
entretenido – entertaining
relajante – relaxing
sano – healthy
aburrido – boring
malsano – unhealthy **adictivo** - addictive

soy adicto/a… - I'm addicted
me ayuda a relajarme – it helps me to relax
me hace reír – it makes me laugh
me ayuda a olvidarme de todo – it helps me to forget everything
necesito comunicarme con otra gente – I need to have contact with other people
me aburre como una ostra – it bores me to death
no me interesa – it doesn't interest me

Music

Me encanta escuchar – I love to listen to

Suelo escuchar – I tend to listen to

el soul/el rap/ el dance/ el hip-hop/el pop/el rock/el jazz/

la música

clásica/electrónica la

música de… - …'s music

porque – because
ya que – because
dado que – because

tiene ritmo – it has rhythm
me encanta la letra – I love the lyrics
…**canta bien** - …sings well

Toco – I play
Toca – he/she plays
Tocan – they play

El teclado – the keyboard
La batería – the drums
La guitarra – the guitar

el piano – the piano
la flauta – the flute
la trompeta – the trumpet

Asistir a un concierto – to attend a concert
Cantar – to sing
Una canción – a song
Un cantante – a singer

Mi cantante favorito/a es… - my favourite singer is…
Mi grupo favorito es… - my favourite band is…
un espectáculo – a show
una gira mundial – a world tour

Sport

Soy – I am
Era – I was

aficionado/a de – a fan of
hincha de – a fan of
fanático/a de – a _____ fanatic
miembro de un club de… - a member of a_____club

Random

correr – to run
entrenar – to train
marcar un gol – to score a goal
participar – to participate
un partido – a match
la temporada – the season

Juego - I play

al badminton/fútbol/rugby/tenis/hockey/croquet/béisbol
al balonmano – handball **al baloncesto** – basketball **al voleibol** – volleyball

Hago – I do

judo - judo **karate** – karate **atletismo** – athletics **baile** – dance **boxeo** – boxing
ciclismo – cycling **equitación** – horseriding **escalada** – climbing **gimnasia** – gymnastics
natación – swimming **remo** – rowing **vela** – sailing **patinaje sobre hielo** – ice skating
tiro con arco – archery **piragüismo** – canoeing

En mi tiempo libre **suelo descansar**	In my free time **I tend** to **relax**
o, a veces, **quedar con amigos** en el centro	or, sometimes, **meet my friends** in town
para **ir de compras** ya que es **entretenido**.	to **go shopping** because it's **entertaining**.
En mi opinión, **salir con mis amigos me hace reír**	In my opinion, **going out with my friends makes me laugh**
y **me ayuda olvidarme de todo**	and **helps me to forget everything**
sin embargo nunca **monto en bici**	however I never **ride my bike**
ya que me aburre como una ostra	**because it bores me to death**
aunque sé que es **sano**.	**although I know that** it's **healthy**.
Además, me encanta escuchar música y	**Moreover**, I love listening to music and
suelo escuchar **la música de Adele**	**I tend** to listen to **Adele's music**
dado que canta bien y **me encanta la letra.**	**because she sings well** and **I love the lyrics.**
No toco un instrumento pero en el futuro	I don't play an instrument but in the future
voy a **aprender** tocar la **batería**.	I'm going **to learn** to play the **drums**.
Cuando era joven era hincha de **FC Barcelona**	**When I was younger** I was a fan of **Barcelona FC**
porque jugaba mucho el **fútbol**	because I played loads of **football**
pero **ya no**.	but I **don't anymore**.
Ahora prefiero ver un partido.	Now I prefer to watch a match.

Spanish – La tele y el cine

TV/film

Suelo ver – I tend to watch
Me encantan – I love
Me molan – I like
Me chiflan – I'm crazy about
Prefiero – I prefer

los concursos –gameshows
los programas de deportes – sports programmes
los documentales – documentaries **las series policiaca** – crime series **los realitys** – reality TV shows
los culebrónes/las telenovelas – soaps
las comedias – a comedys
el telediario/las noticias – the news
los dibujo animados – cartoons
el meteo – the weather
los misterios – mysteries
las películas de amor – love films
las películas de terror – horror films
las películas de acción – action films
las películas de aventuras – adventure films **las películas de animación –** animated films **las películas de ciencia – ficción –** sci-fi films **las películas de fantasia –** fantasy films
las películas extranjera – foreign films

porque son – because they are

divertidos/as – fun
entretenidos/as – entertaining
informativos/as – informative
emocionantes – exciting
interesantes – interesting
adictivos/as – addictive

No aguanto – I can't stand
No soporto – I can't stand
Odio – I hate

aburridos/as – boring **tontos/a** – silly **malos/as** – bad/rubbish
infantiles - childish

Pros and cons of cinema

Me gusta ir al cine porque… - I love going to the cinema because…

el ambiente es mejor – the atmosphere is better
la imagen es mejor en la gran pantalla – the picture is better on the big screen
las palomitas están ricas – the popcorn is tasty

Prefiero ver pelis en casa porque… - I prefer to watch film at home because…

en el cine – at the cinema

hay demasiadas personas – there are too many people
las entradas son muy caras – the tickets are very expensive
los asientos no son cómodos – the seats are uncomfortable
los otros espectadores me molestan – other spectators annoy me
si vas al baño te pierdes una parte – if you go to the toilet you miss a part
tienes que hacer cola – you have to queue

se puede hablar de la película – you can talk about the film
se puede pausar la película si quieres – you can pause the film if you want

Role models

Admiro a… - I admire

_____es un buen modelo a seguir - _ is a good role model

Mi inspiración es… - my inspiration is…

Un buen modelo a seguir es alguien que…
- a good role model is someone who…

porque - because

apoya a organizaciones benéficas – supports charities
recauda fondos para… - raises money for…
tiene mucho talento – has a lot of talent
trabaja en defensa de los animales – works in defense of animals
usa su fama para ayudar a los demás - uses his/her fame to help others

lucha por/contra – he/she fights for

la pobreza – poverty
la homofobia – homophobia
los derechos de la mujer/los refugiados – women's/refugee rights

no – he/she doesn't

se comporta mal - behave badly
se emborracha – get drunk
se mete en problemas con la policia – get in trouble with the police

Suelo pasar al menos **cinco** horas enfrente de la tele cada día.	**I tend** to spend at least **5** hours a day in front of the TV.
Me encantan **los realitys** porque son **emocionantes**	I love **reality shows** because they're **exciting**
pero también son **adictivos**.	but they're also **addictive**.
Además me chiflan las **comedias**	**Also**, I'm crazy about **comedies**
sin embargo **los que más me ~~gustan son~~ los documentales**	however **what I like the most are documentaries**
dado que son **informativos** y **educativos**	**~~given~~ that** they are **informative** and **educational**
y me encanta aprender nuevas cosas.	and I like to learn new things.
~~A veces voy al cine~~ porque **dicen que**	Sometimes I go to the cinema because **they say that**
la imagen es mejor en la gran pantalla	**the picture is better on the big screen**
pero prefiero ver pelis en casa, porque en el cine	but I prefer to watch films at home, because at the cinema
hay demasiadas personas y **los asientos no son cómodos**	**there are too many people** and **the seats aren't comfy**
y en casa **se puede pausar la película si quieres**.	and **at home you can pause the film if you want**.
~~Hay~~ muchos actores que me gustan pero mi **actriz** favorita	There are lots of actors that I like but my favourite **actress**
es **Emma Watson ya que apoya a organizaciones benéficas**	is **Emma Watson because she supports charities**
y **lucha por los derechos de la mujer**.	and **fights for womens' rights**.
Es un buen modelo a seguir.	She's a good role model.

Technology

Siempre uso – I always use

Voy a usar – I'm going to use

Me gustaría usar – I would like to use

Prefiero usar – I prefer to use

la tecnología - technology
una consola – a games console **un ordenador** – a computer **un portátil** – a laptop
un móvil – a mobile phone
una tableta – a tablet
una revista – a magazine
el internet – the internet
las redes sociales – social networks
una aplicación – an app
una sala de chat – a chat room
los juegos en línea – online games **altavoz inteligente** – smart speaker (e.g. alexa)

para – for/to

ver mis series favoritas – watch my favourite series
organizar las salidas con mis amigos – organise to go out with my friends
controlar mi actividad física – control my physical activity
contactar con mi familia–contact my family
chatear con mis amigos – chat to my friends
descargar/escuchar música – download/listen to music
pasar el tiempo/el rato – pass time
sacar/editar/personalizar/compartir/ subir fotos- take/edit/personalise/ share/upload photos
mandar mensajes – send messages
navegar la red – browse the internet
controlar la calefacción/las luces – control the heating/lights
grabar – to record

Lo/la uso para… - I use it to…
Es una aplicación/tecnología buena para… - it's a good app/technology for…
Se puede… - you can

Advantages and disadvantages

Hay muchas ventajas de la tecnología/las redes sociales por ejemplo… - there are lots of advantages of technology/social media, for example…

siempre hay alguien para hablar – there's always someone to talk to **puede ser un canal de comunicación buena** – it can be a good channel of communication
es más fácil hacer los deberes – it's easier to do homework
hacer compras en linea es más barato – online shopping is cheaper
se puede hablar con otras personas sobre tus problemas – you can talk to other people about your problems
te deja expresar la individualidad – it lets you express your individuality

Hay muchas desventajas de la tecnología/las redes sociales por ejemplo… - there are lots of disadvantages of technology/social media, for example…

te engancha – it gets you hooked
puede ser malo para la salud mental – it can be bad for your mental health
el ciberacoso es un problema – cyberbullying is a problem
hay demasiadas publicidades en el internet – there are too many adverts on the internet.
hay mucha presión de grupo de tener el último móvil etc… - there's a lot of peer pressure to have the latest mobile etc…
te da falsas expectativas de la vida – it gives you unrealistic expectations of life
tiene muchos riesgos – it has a lot of risks

Using a computer

Borrar – to delete
Adjuntar – to attach
cargar – to load
acceder – to access
La pantalla – the screen
El ratón – the mouse
el teclado – the keyboard
el disco duro – the hard drive
La contraseña – password
el marcador - bookmark
El internauta – internet user
inalámbrico – wireless
El navegador – the search engine

Adjectives

rápido – fast
popular – popular
gratis – free
lento – slow
peligroso - dangerous
práctico – practical
interactivo – interactive
amplio – extensive
cómodo – convenient
fácil de usar – easy to use
útil – useful
ridículo – ridiculous
sencillo – simple

Uso la tecnología **cada día**	I use technology **each day**
ya que es **muy útil**.	**because** it's really **useful**.
Siempre uso **el internet** para **hacer mis deberes**	I always use the **internet** to **do my homework**
y uso **mi tableta** todos los días	and I use **my tablet** every day
para **ver mis series favoritas**	to **watch my favourite series**
pero **lo que uso más** es **mi móvil**.	but **the thing I use the most** is **my mobile**.
Lo uso para contactar con mi familia, **descargar música**	**I use it to contact my family**, **download music**
y **sacar y subir fotos**.	and **take and upload photos**.
Mi aplicación favorita es **Instagram** porque	My favourite app is **Instagram** because
se puede **editar fotos** y **compartirlas** con tus amigos.	you can **edit photos** and **share them** with your friends.
Puede ser un canal de comunicación buena y	**It can be a good channel of communication** and
te deja expresar la individualidad	**it lets you express your individuality**
sin embargo hay muchas desventajas de las redes sociales, por ejemplo	however there are lots of disadvantages of social media, for example
te engancha facilmente y	**it gets you hooked easily** and
puede ser muy malo para la salud mental dado que	**it can be really bad for your mental health because**
te da falsas expectativas de la vida.	**it gives you unrealistic expectations of life**.
Mis padres **dicen que** tienen muchos riesgos.	My parents **say** they have a lot of risks.

Spanish – Las Fiestas

Christmas and New Year

Mi cumpleaños – my birthday
El cumpleaños de mi madre… - my mum's birthday

Navidad/ (el) día de Navidad – Christmas/(on) Christmas day
La Nochebuena – Christmas Eve **La Nochevieja** – New year's Eve
Pascua/ El Domingo de Pascua – Easter/ Easter Sunday
El día de Reyes – 6th January

abro/abrimos/abren regalos – I/we/they open presents
busco/buscamos/buscan huevos de chocolate – I/we/they look for chocolate eggs
canto/cantamos/cantan villancicos – I/we sing Christmas carols
como/comemos/comen dulces navideños/ doce uvas/ pavo – I/we eat Christmas sweets/ 12 grapes/ turkey
me acuesto/nos acostamos/se acuestan muy tarde – I/we/they stay up very late
me levanto/nos levantamos/se levantan muy temprano –I/we/they get up very early
rezo/rezamos/rezan – I/we/they pray
voy/vamos/van a la iglesia/mezquita – I/we/they go to church/mosque

En España – In Spain

Santa no es tan popular como en Inglaterra – Santa isn't as popular as in England
los Reyes Magos traen los regalos el 6 de enero – the 3 kings bring the presents on 6th January
mucha gente va a la Misa de Gallo la Nochebuena – lots of people go to midnight mass on Christmas Eve
la gente come las doce uvas a medianoche la Nochevieja para tener buena suerte – people eat 12 grapes at midnight on NYE for good luck
se come la cena de Navidad en Nochebuena – they eat Christmas dinner on Christmas eve

La fiesta que me interesa más es el **Día de los Muertos**	**The festival that interests me most** is the **Day of the Dead**
que se celebra en **México** en **noviembre**.	which is celebrated in **Mexico** in **November**.
Es una fiesta para **recorder los seres queridos muertes**	It's a festival to **remember dead loved ones**
y ~~la gente~~ **decora las tumbas** y **las casas**	and the people **decorate graves** and **houses**
con altares, velas y ~~flores~~.	with altars, candles and flowers.
La gente **ve desfiles** y **lleva disfraces** y	People **watch processions** and **wear costumes**
me parece una fiesta **con mucha tradición**.	and **it seems like** a very **traditional** festival.
Además, **siempre he soñado con** ir a **España**	Also, **I've always dreamed of** going to **Spain**
para **ver una corrida de toros**	to **watch a bullfight**
sin embargo **pienso que** es un poco **anticuado**	however **I think that** it's a bit **old fashioned**
y **mucha gente dice que** es una tradición cruel.	And **lots of people say** it's a cruel tradition

Pavo trufado de Navidad – turkey stuffed with truffles

Polvorones – almond biscuits

Turrón – nougat usually containing almonds

Roscón de Reyes – traditional cake. Usually contains a coin

Festivals

La fiesta de… - the festival of…

Esta tradición antigua – this old tradition

se celebra en… - is celebrated in…

España – Spain **México** – Mexico

muchos países hispanohablantes – in lots of Spanish speaking countries

Inglaterra - English

donde - where

se queman figuras de madera – wooden figures are burnt
se construyen hogueras – bonfires are built
se disparan fuegos artificiales – fireworks are set off
se lanzan huevos/tomates – eggs/tomatoes are thrown

las calles se llenan de… - the streets are filled with… **niños** – children **jóvenes** – young people **familias** – families

la gente – the people

come manzanas de caramelo – eat toffee apples
decora las casas/las tumbas – decorate houses/graves **con flores/velas** – with flowers/candles
prepara linternas/áltares – prepare lanterns/altars
ve desfiles – watch processions
lleva disfraces – wear costumes
lleva un pañuelo rojo – wear a red scarf
huye de un grupo de toros – run away from a group of bulls

un hombre – a man

lucha contra un toro – fights a bull

Sports Studies Y10

Key components of performance

Skills & techniques

Technique

The way in which a skill is performed.

Skills

Ability to use a combination of movements to produce a co-ordinated action.

Badminton techniques and tactics

- The grip
- Serving (backhand/forehand)
- Footwork/stance
- Drop shot
- Clearing (backhand/forehand)
- Smash (backhand/forehand)

e.g. Stance

- Watch the shuttle.
- Arm pointed to target.
- Knees slightly bent.
- Racket up.

Creativity

This is the ability to generate or react to a certain situation in a particular way. A performer's creativity will depend on what physical activity or sport is being performed. For example:

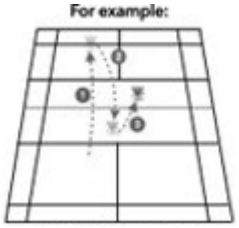
Within badminton a player could be creative in games by changing the speed or direction of specific moves including disguise shots such as an overhead clear disguised as a drop shot. This can also mean a performer doing something different or unexpected. For example, a badminton player changing a way a shot is played by playing it across the court by a slight flick of the wrist rather than hitting it down the line.

Tactics & strategies

A tactic/strategy is an overall plan of how you'll win the game.

Movement pressure

This is a strategy that moves the player around the court to apply pressure in order for you to win the point.



1. Force your opponent to the back.
2. They play a drop shot.
3. You play a net shot to force them to the front.

Other tactics in badminton

- Hitting the corners.
- Deception.
- Hitting an opponent's weakness.

Decision making

This requires the performer to choose the correct skill for a chosen situation. For example, a badminton player may choose to play a drop shot as they have seen the opponent at the back of the court.

Managing and maintaining performance

Performers will need to manage their emotions and anxiety levels during a performance as this will lead to poor performance, e.g. a badminton player losing a key point or a golfer missing an important putt. The player can get over-anxious and angry during a performance.

Key terms – Technique, skills, creativity, tactics, strategy, disguise, decision making, maintaining & managing performance.

Sports Studies Y10

Applying practice methods to support improvement in a sporting activity

Types of skill

Open

Affected by external factors. i.e. the opposition or environmental factors.

Closed

Not affected by external factors. i.e. the opposition or environmental factors.

Simple

Simple to perform. Requires little concentration and simple movements.

Complex

Difficult to learn. Require high concentration and includes complicated sub routines.

Types of practice

Whole practice
This practice involves repeating the whole series of actions. Gymnastic skills and games activities are easier to perform as a whole. The actions can be performed over and over to perfect them.

Part practice
This practice is used when the skill is low in organization, and can be split up into sub routines. If the skill is complex, it can be broken down into sub routines to allow mastery of the 'parts' before putting them all together.

Variable practice
This involves using different methods to achieve a learning goal, or performing a task in different situations. It aims to provide the performer with the ability to adapt a skill to a range of possible circumstances

Fixed practice
This practice involves a stable and predictable environment where conditions remained fixed. Fixed practices are usually employed for closed type skills

Measuring to improve performance

Altering context of performance

Playing and training with better players can help improve performance.

Different types of practice

Using the various types of practice that are suited to a specific skill or sport can help improve performance.

Use of tools to aid evaluation

Match analysis and video analysis can help identify areas for improvement.

Ways to measure improvement

Completion of proficiency awards
Players and performers can complete proficiency to show they are able to compete at the next level.

Peer observation
Team mates and coaches can also observe performances and offer feedback.

Keeping individual logs/diaries
Logs and video diaries can be used to log self evaluations of performances and they can also be used to record results.

Measurements/data
Fitness tests can be repeated and results can be compared to the original data to see if improvements have been made.

Monitoring competition results over time
Results can be monitored over a period of time to see if improvements have been made.

Key terms – strengths, weaknesses, skills, techniques, tactics, practice methods, composition, types of drills, measuring improvement, evaluation tools, monitoring results.

Key considerations when planning sports activity sessions

Objectives for the session

The objectives of the session are what you hope to achieve. When designing objectives, they must be about meeting the needs of the group. Objectives cannot be too ambitious but equally should be challenging and achievable.

Supervision needs

When considering the supervision of a session you should consider:

- If anybody needs additional help.
- How many participants do I have?
- Will I need additional leaders to assist me?

Appropriate venue

The chosen venue for a sports session should be safe, suitably equipped and appropriate to meet the needs of the objective. For example, if the session objective is linked to shooting in basketball there needs to be a hoop to shoot in.

Timing of the activities

When deciding how long to spend on each activity you should consider the following:

- An appropriate amount of time for the age range.
- The experience level of the group.
- The fitness levels of the group.
- The weather conditions on the day.

Equipment needs

The equipment needs of a session should be considered. Equipment may include fixed equipment or portable equipment. Some age ranges can only use certain weights or sizes of equipment so this should be checked in advance.

Basic warm-up and cool down

A warm-up should include; a pulse-raising activity, stretches and familiarization of skill-based activities.

A cool-down should gradually reduce the pulse and breathing rate and should include stretches to reduce muscle soreness (DOMS).

Evaluating a sports activity coaching session