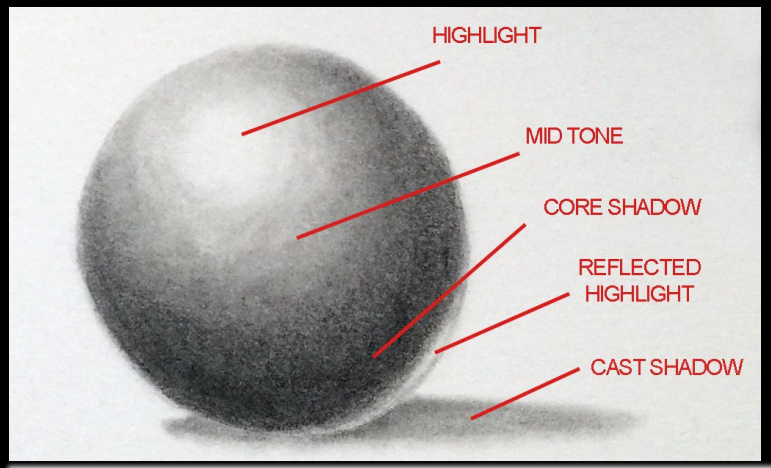
KNOWLEDGE ORGANISER

£2

NAME & FORM

YEAR 9
AUTUMN TERM

Art Knowledge Organiser

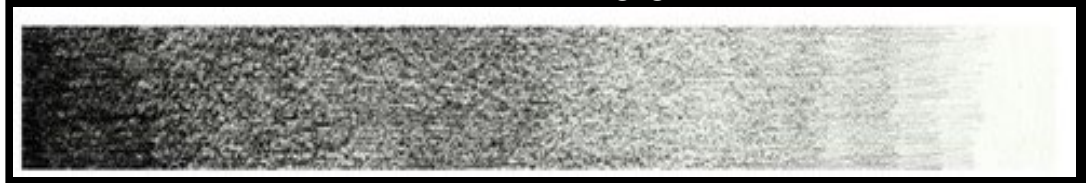


KEY WORDS – test yourself! (definitions on the next page)
Mark making- Blending- Rendering- Shadow- Highlight- Tone- Shape- Form- Line- Detail- Texture- Directional lines- Accuracy- Proportion

Observational drawings

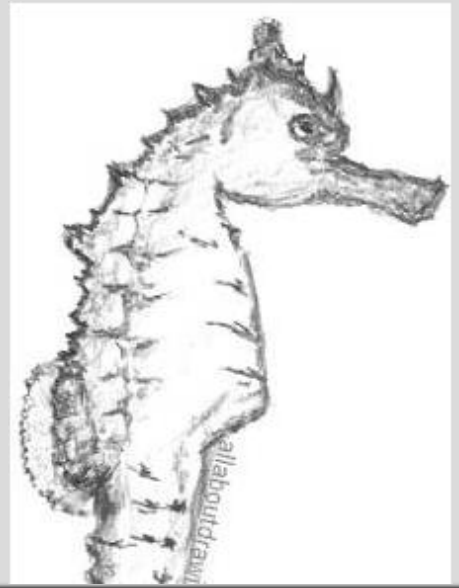
Year 9 Autumn term

Pencil shading gradient



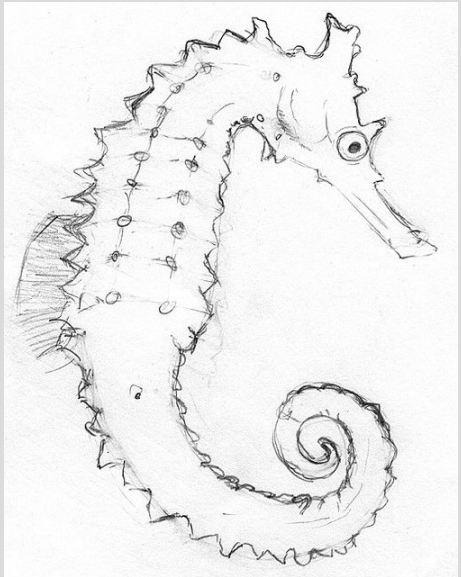
WWW: A fairly accurate shape.
EBI: Consider using a sharp pencil to add intricate detail.

20%-50%



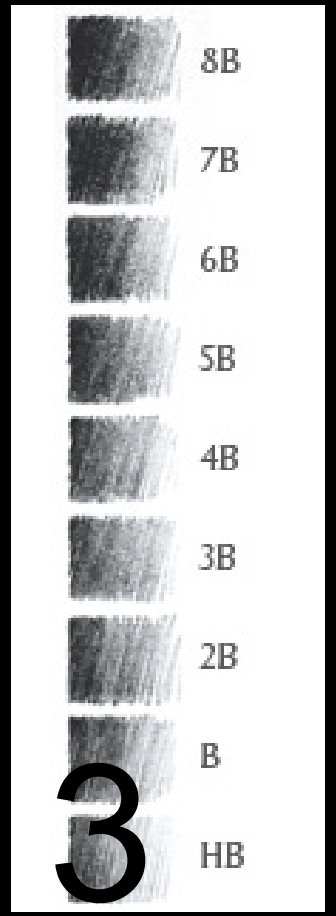
WWW: You've thought about how to show the spikes on an angle
EBI: Apply more pressure to create darker tones

50%-80%



WWW: A highly accurate study showing a range of tones.
EBI: Use a rubber to add highlight.

80%-100%



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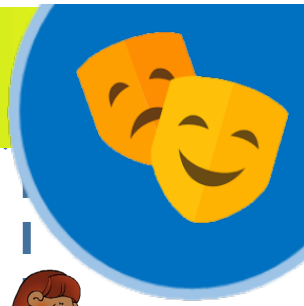
KEY WORDS AND MEANINGS:	
Mark Making	Mark making describes the different lines, dots, marks, patterns, and textures we create in an artwork.
Rendering	Rendering is the process of creating the effects of light, shade and light source to achieve contrast in drawings.
Scumbling	The action of overlapping small circles to create tone.
Directional lines	Lines that direct your eye around the drawn subject to emulate a 3D form.
Hatching	A shading technique which uses a series of thin, parallel lines that give the appearance of shadow in varying degrees.
Tone	How light or dark something is. Tones could refer to black, white and the grey tones in between. It could also refer to how light or dark a colour appears.
Shape	A flat, enclosed area of an artwork created through lines, textures, colours or an area enclosed by other shapes.
Form	Form refers to objects that are 3-Dimensional, or have length, width, and height.
Highlight	The lightest part or one of the lightest parts of a painting, drawing, etc.
Shadow	A dark area where light from a light source is blocked by an opaque object.

Colour code: BLUE= Tier 3 words ORANGE= Tier 2 words Look out for colour coding during lessons!

Drama Knowledge Organiser



EXPLORATIVE STRATEGIES

Role Play – The act of pretending to be somebody else, of taking on a role. Thinking and acting differently to your ordinary self can help you empathise with a person and better understand an issue or theme.

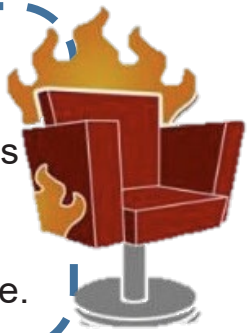
Thought Tracking - when a character steps out of a scene to tell the audience how they're feeling. Sharing thoughts in this way provides deeper insight into the character for an audience.

Narrating - A spoken commentary about the action onstage. A narrator is like a storyteller informing the audience about the plot.

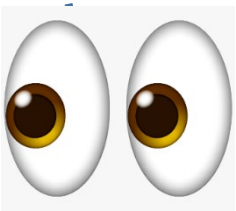
Cross-cutting/Split Focus - a device to move between two or more scenes staged in the space at the same time.

Tableau – A still image which communicates meaning. It can provide insight into character relationships with a clear focus upon use of space, levels, body language and facial expression.

Hot Seating - An actor sits in the hot-seat and is questioned in role, spontaneously answering questions they may not have considered before. Hot-seating helps an actor become more familiar with their role.



Marking the Moment – A way of highlighting the most important moment in a scene in order to draw the audience's attention to its significance. This can be done by using tableau, repetition, slow motion, narration, thought tracking, lighting and sound.



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Drama Knowledge Organiser

Year 9 Theatre Design Knowledge Organiser

Keywords:

Ensemble – A group of actors who work together to create/perform a show

Evaluation - To evaluate something is to measure its worth. To evaluate drama and theatre you must be able to recognise what was and wasn't successful onstage and recognise all the elements that contribute to the impact of a production

Connotations - Refers to a meaning that is implied by a word apart from the thing which it describes explicitly

Lighting

Spotlight Fresnel Birdie Strobe Gels Par can Flood Follow spot Gobo

Stage Configurations

Proscenium Arch
Audience sat on 1 side

Theatre in the Round
Audience sat on all side of the stage

Promenade
Audience are lead around a space e.g. a park or a castle

Traverse
Audience sat on 2 sides, facing each other

Thrust
Audience are sat on 3 sides

Evaluation sentence starters

I thought it was effective…

The piece was successful….

They achieved their objective…

I was unsure about…

I wasn't keen on…

An area to develop is…

A positive aspect was…

A negative aspect was…

Previously learnt keywords and terminology

Synchronisation Monologue Soliloquy Thought tracking Multi-role Flashback Still image Narration Split focus Pitch Pace Pause Tone Volume Accent Gesture Posture Facial Expressions

Roles & responsibilities of the theatre

* Set Designer
* Costume Designer
* Director
* Lighting Designer
* Sound Designer
* Performer
* Stage Manager
* Understudy
* Technician

Stage Positioning

Upstage Right	Upstage Centre	Upstage Left
Centre Stage Right	Centre Stage	Centre Stage Left
Downstage Right	Downstage Centre	Downstage Left

Audience

Music Knowledge Organiser

Year 9 Autumn Term

KEY WORDS – test yourself! (definitions on the next page)

Mento Ska Rock Steady Rastafarian Syncopation Offbeat Lyrics
Strong beats/ Weak beat Riffs Call and Response Triad Tonic/ Dominant/ Subdominant

REGGAE is one of the traditional musical styles from **JAMAICA**. It developed from :

REGGAE

MENTO
A form of Jamaican **FOLK MUSIC** like **CALYPSO** popular in the 1950's.

SKA
Fast dance music that emerged in the 1950's fusing American R&B with **MENTO** rhythms and featuring **ELECTRIC GUITARS, JAZZY HORN SECTIONS** and characteristic **OFFBEAT RHYTHMS.**

ROCK STEADY
A more vocal style of dance music which used **RIFFS, SIMPLE HARMONIES, OFFBEAT RHYTHMS** and a strong **BASS LINE.**

Reggae was first heard in the UK in the 1950's when immigrants began to settle. During the 1960's, people began importing singles from Jamaica to sell in UK shops. Now, Reggae is known as the national music of Jamaica.

Musical features of Reggae:

- Offbeat rhythms and chords
- Syncopated rhythms and melodies
- Sung Lyrics in a verse-chorus song form
- Lead singer often with backing singers sometimes singing in Call and Response
- Reggae band backing – brass instruments, saxophones, electric guitars, bass guitar, keyboards, drums and percussion instruments
- Improvisation
- Slow, relaxed 'chilled' tempo in a 4/4 time signature
- Simple harmonies

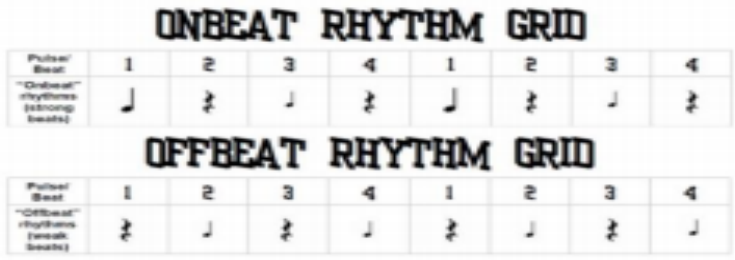
BOB MARLEY was a famous reggae singer, songwriter, and musician who first became famous in his band The Wailers, and later as a SOLO ARTIST. He was born Nesta Robert Marley in 1945 in Nine Mile, Jamaica. Although he grew up in poverty, he surrounded himself with music. Bob Marley became involved in the Rastafarian movement and this influenced his music style greatly. His career flourished and he became a cultural icon and an international star.

What are Reggae songs about?

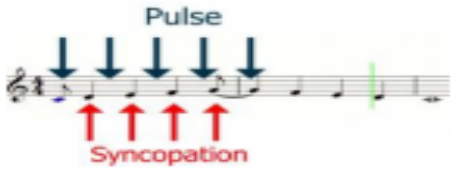
The LYRICS of Reggae songs are closely linked to RASTAFARIANISM and are often political including themes such as love, brotherhood, peace, poverty, anti-racism, optimism and freedom.

Offbeat Rhythms and Syncopation

OFFBEAT RHYTHMS – Rhythms that emphasise or stress the **WEAK BEATS OF A BAR.** In music that is in 4/4 time, the first beat of the bar is the strongest, the third the next strongest and the second and fourth are weaker. Emphasising the second and fourth beats of the bar gives a "missing beat feel" to the rhythm and makes the music sound **OFFBEAT,** often emphasised by the **BASS DRUM** or a **RIM SHOT** (hitting the edge of a **SNARE DRUM**) in much Reggae music.



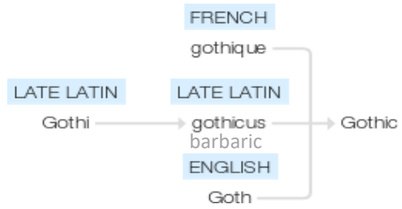
SYNCOPATION – A way of changing a rhythm by making some notes a bit early, often so they cross over the main beat of the music giving the music a further **OFFBEAT** feel – another common feature of Reggae music.



KEY WORDS AND MEANINGS:	
Mento	A form of Jamaican folk music. Popular in the 1950s. Uses acoustic instruments, such as acoustic guitar, banjo, hand drums, and the rhumba box.
Ska	Fast dance music which emerged in the 1950s and fused R&B with Mento. Electric guitar, jazzy horns and offbeat rhythms.
Rock Steady	A more vocal style of dance music. Riffs, simple harmonies, offbeat rhythms and strong bass line.
Rastafarian	A religious movement worshipping Haile Selassie as the Messiah and that black people are the chosen people and will eventually return to their African homeland
Syncopation	A rhythm where the notes sound a little earlier or later than the main beats.
Offbeat	Rhythms that stress the weak beats of the bar e.g. 2 and 4
Lyrics	The words of a song
Strong beats/ Weak beats	STRONG = the main beats e.g. 1 and 3. WEAK = the 'back' beats e.g. beats 2 and 4.
Riffs	A short repeated phrase, typically used as an introduction or refrain in a song.
Call and Response	Two distinct phrases usually written in different parts of the music, where the second phrase is heard in response to the first.
Triad	A chord made up of three notes (the root – or 1st, the 3rd and the 5th)
Tonic/ Dominant/ Subdominant	TONIC – the first note of a scale (the most important note) DOMINANT – the 5th note of a scale (the second most important) SUBDOMINANT – the 4th note of a scale (the third most popular)

English Knowledge Organiser — Autumn 1

Gothic Fiction- A genre of writing that is characterised by its exploration of darker themes, often featuring Gothic architecture, the supernatural, religion, and the past.



Extracts:

Book	Synopsis
The Castle of Otranto (1764) **Horace Walpole**	Manfred, the prince of Otranto, is keen to secure the castle for his descendants in the face of a mysterious curse. The novel begins with the death of Manfred's son, Conrad, who is crushed to death by an enormous helmet on the morning of his wedding to the beautiful princess Isabella. Faced with the extinction of his line, Manfred vows to divorce his wife and marry the terrified Isabella himself.
The Woman in Black (1983) **Susan Hill**	Arthur Kipps, a junior solicitor, is sent to settle the affairs of Alice Drablow. He sees a woman dressed in black at her funeral, though apparently no one else does. At Eel Marsh House, Arthur is haunted by the woman. It is explained that a child dies each time the woman in black is seen. At the end of the story, Arthur sees the woman in black again and his wife and son die.
Frankenstein (1812) **Mary Shelley**	*Frankenstein* tells the story of gifted scientist Victor Frankenstein who succeeds in giving life to a being of his own creation. However, this is not the perfect specimen he imagines that it will be, but rather a hideous creature who is rejected by Victor and mankind in general. The Monster seeks its revenge through murder and terror.
Dracula (1897) **Bram Stoker**	*Dracula* is an epistolary novel which tells the story of Jonathan Harker, who travels to Count Dracula's home in Transylvania, and Dracula imprisons him. Dracula then travels to London, where he targets Harker's fiancé, Mina Murray. Dracula attacks Lucy Westenra, Mina's friend, and turns her into a vampire. The group tracks Dracula back to Transylvania and kills him.
Wuthering Heights (1847) **Emily Bronte**	It details the story of two families on the Yorkshire moors called the Lintons and the Earnshaws. The Earnshaws adopt a boy called Heathcliff who is wild in his temperament. Heathcliff falls in love with Catherine Earnshaw who is torn between wanting to be the proper lady her parents want her to be and wanting to be wild with Heathcliff.
Jane Eyre (1847) **Charlotte Bronte**	The novel follows the story of Jane, a seemingly plain and simple girl as she battles through life's struggles. Jane has many obstacles in her life - her cruel and abusive Aunt Reed, the grim conditions at Lowood school, her love for Rochester and Rochester's marriage to Bertha.
Dr Jekyll and Mr Hyde (1886) **Charlotte Bronte**	A clever scientist, wanting to push the realms of science to its limits, creates a potion and experiments on himself. When he drinks the potion, the respectable Dr Jekyll transforms into a sinister version of himself called Mr Hyde. Mr Hyde is an animalistic and cruel man who commits many sins including murder. Eventually, Mr Hyde gains control over Dr Jekyll and no longer takes the potion.
Jamaica Inn (1936) **Daphne Du Maurier**	Mary Yellan moves to stay at Jamaica Inn with her Aunt Patience and Uncle Joss after the death of her mother. She quickly finds out that the inn is an unsavoury place, mistrusted by the locals, and that her uncle is closely linked with a group of suspicious men who appear to be smugglers.

Analytical (QTA) Sentence Starters:

X (the writer) presents the character/ theme of… as …

For example, when we are told "…"

This (technique) _____ suggests that…

Additionally, it further implies that…

The use of the word (aim to use specific word class), "…" implies…

Perhaps x (the writer) wanted to …

This could make the reader…

Overall, this is typically gothic because…

It is an effective example of ….. in the gothic genre as it shows…

AO1 **AO2** **AO3**

WAGOLL- How is Isabella presented as an archetypal damsel in distress in this extract from The Castle of Otranto?

Walpole presents Isabella as an archetypal damsel in distress because she is confined and in desperate need of outside help. Whilst she is struggling to find a way out of the cloisters, Walpole tells the reader that she "frequently stopped and listened to hear if she was followed. In one of those moments she thought she heard a sigh." This adverbial phrase "frequently stopped" highlights the fact that she is frozen by fear as she does not know if she is still being chased. Additionally, she also checks "if she was followed" with the conditional "if" highlighting her paranoia, but also highlighting that she is totally alone with no hope of escape. Whilst trying to escape, the fact that she also "heard a sigh" suggests she is fearful of the unknown and does not know what fate awaits her. The onomatopoeic "sigh" creates fear as she does not know where Manfred is. Perhaps Walpole wanted to use the gothic convention of the archetypal damsel in distress in order to create sympathy for her. This could make the reader hope that she escapes Manfred's evil clutches because of the vulnerability Walpole has emphasised in her.

Gothic Conventions- An environment of fear; remote locations; the threat of the supernatural; the intrusion of one's past upon the present; feelings of entrapment/claustrophobia; ruined buildings in an otherwise thriving world. Plots often include: vengence, inprisonment and death; Framed narratives, or tales within tales; A damsel in distress, and a Byronic hero.

English Knowledge Organiser

Word Classes

Noun- A person, place or thing, *e.g. class, teacher, canteen.*
Proper Noun- The name of a specific person, place or thing. These need a capital letter at the start! *E.g. Mr Rogers, Sale High School, Manchester.*
Abstract Noun- The name of an idea, feeling or concept which cannot be physically touched, *e.g. love, fun, ennui.*
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Verb- An action or 'doing' word, *e.g. studied, learning, enjoy.*
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Stative Verb- Verbs that describe a state that is unlikely to change and usually refer to things like thoughts, senses or feelings, *e.g. suspected, doubting, loves.*
Adjective- A word that describes a noun, *e.g. triumphant, vulnerable, tenacious.*
Adverb- A word that tells us how/when something is done, *e.g. melancholically, connivingly, today.*
Preposition- A word that shows time, place, location etc, *e.g. in, at, beneath.*
Conjunction- A word used to connect two clauses or ideas, *e.g. and, but, yet.*
Superlative- A word or group of words used to describe something being more than something else in some way, *e.g. biggest, hottest, most sublime.*

Language Techniques (Descriptive)

Simile– A phrase comparing one thing to another, using as or like, *e.g. He felt like an elastic band pulled taut.*
Metaphor– A phrase comparing one thing to another, without using as or like, instead saying it **is** something else, *e.g. He was an elastic band, fully extended, taut and ready to snap.*
Personification– A phrase giving human characteristics to a non-human object, *e.g. Poison ivy climbed up the sides of the once-glorious skyscrapers, reaching towards the sun.*
Imagery– Words or phrases that create visual images, *e.g. The desolate, barren wasteland glared back at her. She was truly alone. All she could see was scorching sand and sun-bleached bones.*
Repetition– A word or phrase that is repeated for emphasis, *e.g. The room was empty. The building was empty. The city was empty.*
Zoomorphism- A phrase giving animal characteristics to something that is not an animal, *e.g. The teacher roared at the class to be quiet immediately!*
Sibilance– Words close together that begin with an 's' sound, *e.g. The air suffused with a sudden, sinister sound.*
Juxtaposition– Two concepts, themes, ideas or characters that are contrasting or opposite, *e.g. love and hate.*
Semantic/Lexical Field– A group of words that follow the same theme, *e.g. ranch, cow, farm, haybale.*
Oxymoron– A phrase using contradictory words, e.g. *The silence deafened her.*

Paragraphing Reminder

Punctuation Reminder

Commas ,- Separate clauses or indicate a pause.
Apostrophes '- Indicate possession or ownership or to show omission in contractions.
Quotation (speech) marks " "- Used to quote from texts or mark out speech.
Semicolon ;- Used to separate two main clauses that are closely related, often replacing a connective.
Colon : - Used to introduce an idea or start a list, *e.g. She packed her hunting kit: gun, pepper spray, smoke bombs.*
Brackets ( )- Used to add additional or non-essential information. The sentence must make sense on its own without the writing in brackets. **Dashes - -** can be used in the same way.
Ellipsis … - Represents a pause or that something has been intentionally left out. Can be used to build tension, *e.g. He tried to wriggle free from his bindings, but then his world suddenly went black…*

Language Techniques (Persuasive)

Direct Address– Using pronouns to directly speak to the audience, *e.g. we, us, you.*
Alliteration– Words close together that begin with the same sound, *e.g. Our planet - our home - is being destroyed, degraded and demolished!*
Facts/Statistics– Using factual evidence to prove points, *e.g. 78.2% of people surveyed agree that footballers are simply paid too much money!*
Rhetorical question– A question that does not require an answer, *e.g. What does 'An eye for an eye' really mean?*
Emotive language– Words that create feeling and emotion, *e.g. These vulnerable, innocent children are being cruelly ejected from their homes.*
Rule of Three- Using three words to describe something or making three statements about something *e.g. Gothic Fiction is eerie, chilling and haunting.*
Cyclical Structure- Introducing an idea at the beginning of your writing which you return to at the end, creating a cycle, *e.g asking the same rhetorical question at the beginning/end of a speech.*

Key Vocabulary- Gothic Fiction

Pastiche- Work that imitates another work, artist, or period.
Byronic Hero- A melancholy and rebellious young man, distressed by a terrible wrong he committed in the past.
Femme Fatale- This means fatal woman in French. The femme fatale is a being of sexuality and femininity, enchantment and mystery. She uses her appeal/sexuality to entrap men.
Melancholy- Feelings of thoughtful sadness, sometimes for no reason.
Archetypal- A stereotypical example of a thing/character.
Damsel in Distress- A lonely, pensive, and oppressed heroine who is often alone and trapped and terrorised by a villain or monster. They are pure, innocent women who often faint/need saving.

English Knowledge Organiser Autumn 2

Dystopian Fiction- Stories set in a futuristic, unjust and nightmarish version of our own world or society.

Dystopia
- **-Dys** – ‘bad, evil, -un’
- **-Topia** – ‘space, place’

Key Conventions of Dystopian Fiction:

- Set in the future
- One unelected person in charge
- Deprivation – not having basic necessities
- Oppression – lack of rights
- Ruled by fear
- An aspect of current society exaggerated to the point of dystopia

Key skills Writers Use to Create a Realistic Dystopian World:

- Expanded noun phrases – including adjectives, prepositional phrases and subordinate clauses, *e.g. [the fires], [the encroaching seas that swallowed up much of the land], [the brutal war for what little sustenance remained].*
- A varied range of synonyms, *e.g. terrifying, chilling, petrifying*.
- Thoughtful use of verb choices, *e.g. lunged, swaggered*.
- Carefully thought out words and phrases for a particular effect, *e.g. words of power, ‘must’, ‘demand’*.
- Descriptive Language features (check the next page for examples!)
- Building a clear timeline/back story.

WAGOLL- Dystopian Fiction

Connor peeped over his tattered teddy’s head, smiling shyly as he took the chocolate and began nibbling it. Maya nodded approvingly and then turned back to the ancient map she had dug out. She was so absorbed in plotting out a route along the faded roads that she did not notice her brother wandering over to the riverbank. Behind it, the skyline was shrouded in thick fog, only small pockets of light seeped through before being quickly strangled.

It was an odd experience to be out in even some semblance of daylight. Connor couldn’t remember the last time he had felt sun; his thin face was bleached bone-white like a vampire’s. Tiptoeing giddily along the bank, he hugged Teddy close, kicking gravel into the muddy water with a giggle, as ripples spread across the surface.

He did not notice at first that the ripples had kept spreading. Suddenly, the water erupted. Connor stumbled back, eyes widening in horror. The – *thing* – slowly turned to him, grey water running off its skeletal face.

Its sightless eyes were corpse white. Skin peeled in rotting strips off its skull. Translucent tendrils stabbed through its skin where the parasite’s infection had spread. Its jaws cranked open monstrously wide, revealing rows of needle teeth and a long flicking tongue as it scented its prey.

Connor was petrified with terror. He trembled, rooted to the spot as it waded towards him.

Then, abruptly, his sister’s voice exploded in his ear, bellowing “Run Connor! Run!”

Writing Skills Tips

When using dialogue, you must:

- Start a new paragraph each time a different person speaks
- Use speech marks around the words spoken
- Include punctuation before the closing speech marks

“I only noticed it after I’d had the bug out for a couple of weeks.”
“How did your parents know you needed a new one?” Asked Joel inquisitively.
“I didn’t need one.”
“How did they know I was gone?”

Vary your sentence openings:

- Use an =ing verb (Running through the obliterated city, she…)
- Use an –ly adverb (Valiantly, she rose from the dingy basement floor…)
- Use two or more adjectives (Malevolent and vindictive, the Leader…)

Use a variety of different sentence types for different effects:

- **Minor** – very short and not actually grammatically correct – ‘Stop!’, ‘Go now!’
- **Simple** – one main clause – ‘You need to leave.’, ‘She’s killing us.’
- **Compound** – two main clauses, linked with either a semi-colon or a connective – ‘The mayor was so evil; she had killed everyone.’, ‘The people were dying because the bombing was overhead.’
- **Complex** – one main clause with one or more subordinate clauses – ‘Slowly, the man rose to his feet - staggered slightly - then tumbled down the stairs, his bones crunching beneath him.’

Different sentence types have different effects:

- Minor/simple sentences = slower pace and more tension
- Compound/complex sentences = faster pace, quick action, detailed description

Use discourse markers to link paragraphs together so your work flows:

It all began when…
Moments later…
From around the corner I could see…
While this was all happening…

English Knowledge Organiser

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Simile– A phrase comparing one thing to another, using as or like, *e.g. He felt like an elastic band pulled taut.*
Metaphor– A phrase comparing one thing to another, without using as or like, instead saying it **is** something else, *e.g. He was an elastic band, fully extended, taut and ready to snap.*
Personification– A phrase giving human characteristics to a non-human object, *e.g. Poison ivy climbed up the sides of the once-glorious skyscrapers, reaching towards the sun.*
Imagery– Words or phrases that create visual images, *e.g. The desolate, barren wasteland glared back at her. She was truly alone. All she could see was scorching sand and sun-bleached bones.*
Repetition– A word or phrase that is repeated for emphasis, *e.g. The room was empty. The building was empty. The city was empty.*
Zoomorphism- A phrase giving animal characteristics to something that is not an animal, *e.g. The teacher roared at the class to be quiet immediately!*
Sibilance– Words close together that begin with an 's' sound, *e.g. The air suffused with a sudden, sinister sound.*
Juxtaposition– Two concepts, themes, ideas or characters that are contrasting or opposite, *e.g. love and hate.*
Semantic/Lexical Field– A group of words that follow the same theme, *e.g. ranch, cow, farm, haybale.*
Oxymoron– A phrase using contradictory words, e.g. *The silence deafened her.*

Paragraphing Reminder

Punctuation Reminder

Commas ,- Separate clauses or indicate a pause.
Apostrophes '- Indicate possession or ownership or to show omission in contractions.
Quotation (speech) marks " "- Used to quote from texts or mark out speech.
Semicolon ;- Used to separate two main clauses that are closely related, often replacing a connective.
Colon : - Used to introduce an idea or start a list, *e.g. She packed her hunting kit: gun, pepper spray, smoke bombs.*
Brackets ( )- Used to add additional or non-essential information. The sentence must make sense on its own without the writing in brackets. **Dashes - -** can be used in the same way.
Ellipsis … - Represents a pause or that something has been intentionally left out. Can be used to build tension, *e.g. He tried to wriggle free from his bindings, but then his world suddenly went black…*

Language Techniques (Persuasive)

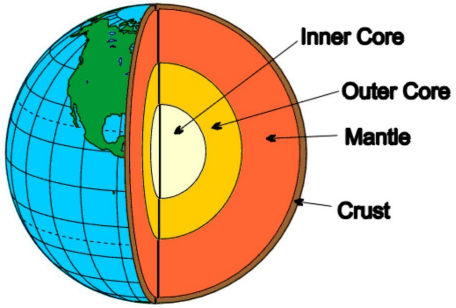
Direct Address– Using pronouns to directly speak to the audience, *e.g. we, us, you.*
Alliteration– Words close together that begin with the same sound, *e.g. Our planet - our home - is being destroyed, degraded and demolished!*
Facts/Statistics– Using factual evidence to prove points, *e.g. 78.2% of people surveyed agree that footballers are simply paid too much money!*
Rhetorical question– A question that does not require an answer, *e.g. What does 'An eye for an eye' really mean?*
Emotive language– Words that create feeling and emotion, *e.g. These vulnerable, innocent children are being cruelly ejected from their homes.*
Rule of Three- Using three words to describe something or making three statements about something *e.g. Dystopian Fiction is nightmarish, thrilling and adrenaline-pumping.*
Cyclical Structure- Introducing an idea at the beginning of your writing which you return to at the end, creating a cycle, *e.g asking the same rhetorical question at the beginning/end of a speech.*

Key Vocabulary- Gothic Fiction

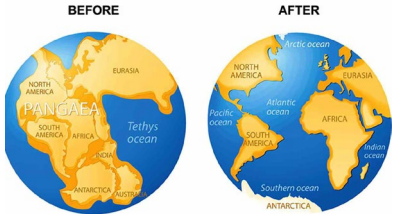
The Uncanny- Something familiar, but with subtle, frightening differences.
Utopia- A vision of an ideal and perfect world where everyone is happy and there is no suffering.
Deprivation- The lack of something usually considered a necessity, such as food, freedom or shelter.
Verisimilitude- Making something seem believable and plausible.
Oppression- Prolonged cruel or unjust treatment or exercise of authority.

Geography Knowledge Organiser: Restless Earth

Structure of the Earth



How has the Earth changed over time?



The theory of continental drift says that long ago, all the continents were one big landmass called Pangaea. Over millions of years, they slowly moved apart to become the separate continents we see today. This idea is supported by how the coastlines of South America and Africa fit together like puzzle pieces and by finding similar rocks and fossils on different continents.

How do tectonic plates move?

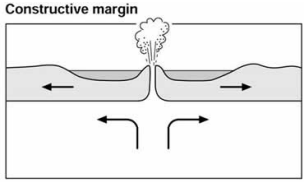
Tectonic plates move because of ridge push and slab pull.

Ridge push – at constructive plate boundaries, where the plates are moving apart, magma rises and cools at the surface. This hardens into rock and pushes the two plates further apart.

Slab pull – At destructive plate boundaries, denser, older plates sink into the mantle. These are pulled down by gravity into the mantle, and the rest of the plate is pulled along behind.

Tectonic plates

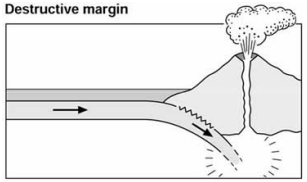
Constructive margin



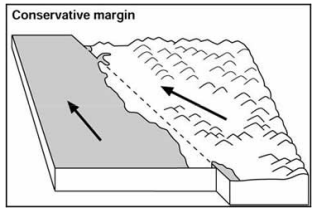
Plates move apart, creating new crust. Magma rises to the surface, leading to volcanic eruptions and earthquakes as the crust fractures and shifts.

Plates collide, causing subduction and destruction of crust. Intense pressure builds up, resulting in explosive volcanic eruptions, powerful earthquakes, and potentially tsunamis.

Destructive margin



Conservative margin



Plates slide past each other horizontally. Friction between the plates builds up, releasing energy in the form of frequent earthquakes, while no new crust is formed and no volcanic activity occurs.

Why do people live at risk of tectonic hazards?

- Volcanic rock and ash provide fertile land which results in a higher crop yield for farmers.
- Tourists are attracted to the volcano, which increases money to the local economy.
- Geothermal energy can be harnessed, which provides cheaper electricity for locals.
- Minerals are contained in lava, eg diamonds - these can be mined to make money.

The risk of tectonic hazards DOES NOT automatically mean a place is cheaper to live. Think of Los Angeles - which often experiences earthquakes, but is very expensive.

Subduction – when one tectonic plate sinks beneath another.
Primary effects – impacts that are a direct result of the hazard.
Secondary effects – impacts that may occur after the hazard, often caused by the primary effects.
Immediate responses – actions taken to reduce the effects of the hazard – minutes or hours afterwards.
Long term responses - actions taken to reduce the effects of the hazard – days/months/years afterwards.

Case Study: Hunga Tonga Volcano

The Hunga Tonga eruption of **2022** was a significant volcanic event that occurred in the South Pacific. On **January 15**, a submarine volcano located near the island of Hunga Tonga-Hunga Ha'apai erupted explosively, sending plumes of ash, steam, and gas high into the atmosphere.

The eruption had significant effects:

- According to a World Bank impact report, the event has caused $90.4 million in economic damage.
- Waves reaching up to 15 metres hit the outer Ha'apia island group, in Tonga's main island, Tongatapu, 56 houses were destroyed or seriously damaged.
- According to the government, at least three people lost their lives in Tonga. Two people drowned off a beach in Peru after unusually high waves were recorded there.
- Ash damaged crops, especially bananas, tomatoes, pineapples and watermelon crops which impacted food supplies and their ability to earn money from selling them.

And required the following responses:

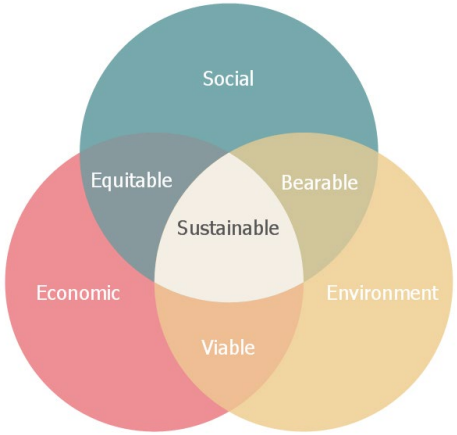
- The Fijian government issued a tsunami warning, telling people in coastal parts to move to higher ground due to "larger than usual waves".
- The Australian defence force sent a surveillance plane on Monday 17th January 2022 to assess damage to critical infrastructure such as roads, ports and power lines.
- After the ash descended on Tonga, young men from villages surrounding the capital travelled to the airport to clear the runways by hand.
- The World Bank provided $8 million to Tonga following the eruption

writing to **analyse**: explain the importance of one thing over another, give evidence for your argument and explain thoroughly how this evidence proves your point.
Writing to **evaluate**: weigh up the advantages and disadvantages equally, then come to a conclusion.

Geography Knowledge Organiser: Development and Aid

What is development and why is it important?

Development is a measure of how advanced a country is socially, economically, or technologically. And countries around the world are at different stages of development. Development must be equitable, viable and bearable to be considered **sustainable development**. This means it satisfies social, economic and environmental needs.



How do we measure development?

There is no single way to measure how developed a country is. However, development indicators can give some idea of a country's development.

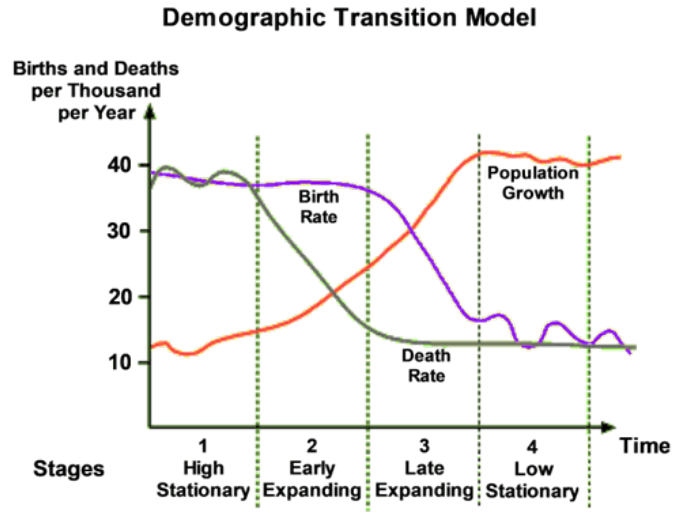
Gross National Income (GNI) per capita
GNI per capita is the total value of all the goods and services produced in a country in a year plus income from abroad, divided by the number of people (per capita) living in that country.

Human Development Index (HDI)
The is made up of a number of important measures - GNI per capita, number of years of education, life expectancy.
HDI values can range from 0 (less developed) to 1 (more developed).

Literacy rates
Literacy rate is the percentage of people aged 15 years and above who can read and write. Literacy rates tell us about the level of education within a country. Children who learn to read and write are more likely to get jobs when they are older.

Birth rate – how many babies are born per 1000 people per year.
Death rate – number of deaths per 1000 people per year.

How is population affected by development?



This model shows how the birth rate, death rate and overall size of the population will change as a country becomes more developed.

Why are some countries poorer than others?

Some countries are poor because their climate prevents economic development. Droughts, poor soils or extreme temperatures can reduce how many crops are grown. Certain temperatures can also increase the spread of diseases such as malaria or tropical illnesses.

Colonisation can also have long lasting impacts on poverty in some countries. Colonising powers often extracted valuable resources from colonised countries, depleting their natural sources. Colonized countries were often structured to serve the economic interests of the colonisers, with limited local industries and markets. This led to these countries depending on selling to their former colonisers to make money.

Aid is assistance given from one country to another. It includes money, equipment, training and loans. It can be foreign aid from the government of one country to another - or from charities to a country or region .

How do aid projects help a country to develop? Example: Goat Aid.

Background: Goats are given by the charity Oxfam to families and villages in countries such as Burundi or Malawi.

Advantages	Disadvantages
- Goat milk and meat can be used as a food source. - Brings village together as they look after the goats. - Goats breed which makes the strategy sustainable. - Manure can be used to fertilise crops. - Milk and babies can be sold to make an income.	- Family needs to provide shelter and food for the goat. - Families may need training how to look after the goat properly. - Veterinary care may be expensive and hard to find. - The income gained from the goats will only be small.

History Knowledge Organiser

Key Events

1919 – Treaty of Versailles Peace settlement. Germany severely punished. German people call it ***DIKTAT*** (dictated peace)

1920 – League of Nations Peace Organisation set up. Germany and the USSR excluded. America refuse to join.

1929 – Worldwide Great Depression.

1933 – Hitler becomes Chancellor of Germany and later becomes ultimate Fuhrer.

Rise of European Dictators

Mussolini was the founder of Fascism and leader of Italy from 1922 to 1943. He allied Italy with Nazi Germany and Japan in World War Two. Called himself ' Il Duce'

Adolf Hitler, the leader of Germany's Nazi Party, was one of the most powerful and notorious dictators of the 20th century. Hitler took advantage of economic woes, popular discontent and political infighting to take absolute power in Germany beginning in 1933. Hitler's poisonous anti-Semitism and obsessive pursuit of Aryan supremacy fuelled the murder of some 6 million Jewish people during the Holocaust.

Stalin was a revolutionary and political leader who ruled the Soviet Union from 1927 until his death in 1953. Once in power, he had potential enemies executed or sent to forced labour camps. Under Stalin, the Soviet Union was transformed from a peasant society into an industrial and military superpower. He ruled by terror, and millions of his own citizens died during his brutal reign. His Red Army helped defeat Nazi Germany during World War II.

International Tension and events that led to the outbreak of the Second World War

Great Depression 1929

- Worldwide economic depression
- Allowed for the rise of extreme political parties in Germany (Nazi Party)
- Countries became selfish and only concerned with their affairs – not interested in keeping peace and the LoN
- Countries became aggressive and attacked each other for land and resources (Manchuria and Abyssinia)

Appeasement - Britain and France allowed Hitler to achieve many of his aims without intervention with the hope of avoiding war.

Remilitarise the Rhineland 1936

- Hitler was allowed to rearm Germany and break the Treaty of Versailles without consequence
- Other countries started to rearm and prepare for war

Anschluss 1938

- Uniting of Germany and Austria – forbidden within the Treaty of Versailles
- Increased Germany's military strength
- Opened up Eastern European borders for example Czechoslovakia. Countries felt threatened and prepared for war.
- Previous attempts had been stopped by Mussolini, Mussolini now allies with Hitler.

Munich Conference and Sudentland 1938

- Hitler given the Sudetenland of Czechoslovakia
- Stalin upset as excluded
- Hitler gained again due to his aggressive demands.
- Czechoslovakia threatened

Nazi Soviet Pact 1939

- An alliance between Hitler and Stalin
- Hitler no longer has to worry about a war on two fronts and is prepared to fight Britain and France.
- Secret agreement to invade Poland.

Invasion of Poland 1939

- Britain and France no longer appease Hitler
- Britain and France had a pact with Poland to protect them from a Nazi invasion.
- Britain declare war on Germany

History Knowledge Organiser:

Control – Nazi Police State	
Gestapo	Gestapo (secret police), which spied on ordinary Germans, and it ran concentration camps where enemies of the state were sent.
SS	**The Schutzstaffel (SS).** This organisation was responsible for ensuring the population remained under control and any potential threats to the Nazis were dealt with.
Control of the legal system	All judges had to swear an oath of loyalty to the Führer and all lawyers had to join the Nazi Lawyers' Association. It was made harder to defend people placed on trial for suspected crimes and the death penalty was used much more widely than before.
Propaganda and censorship	**Propaganda and censorship.** Joseph Goebbels ran the Ministry of Propaganda, whose job it was to convince the German people to embrace Nazi rule. This was achieved through control of the press, radio and the arts, and through rallies and sporting events

Why Hitler appealing?

Propaganda = portrayed Hitler as the saviour and only hope for Germany

Charismatic = great public speaker 'hypnotised' audiences

SA = Disciplined and organised. Intimidated opposition. Publicly beat up Communists

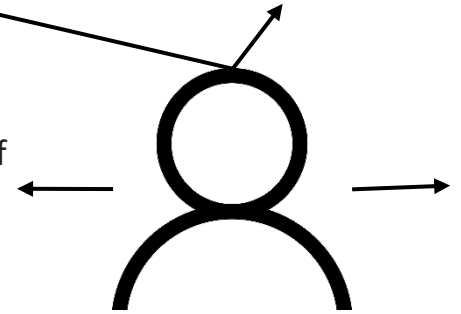
Promises – 'Work and bread' – what people needed

Who voted for the Nazi Party?

Middle-class: worried about the failure of **democracy**, needed a strong government and gave their votes to Hitler

Wealthy businessmen: frightened by the increase in support for the communists who would take their wealth.

Nationalists: they blamed the legacy of the **Treaty of Versailles** and **reparations** for causing the depression and so gave their support to the Nazis



Farmers: Nazi support was particularly strong amongst both middle class shopkeepers and artisans, farmers and agricultural labourers

History Knowledge Organiser:

How Hitler became dictator

In January 1933, Hitler became **Chancellor** of Germany but really wanted to become a dictator. In order to do this he needed to gain enough seats to be in a position strong enough to allow him to make the changes. He convinced President Hindenburg to call a new **Reichstag** election for March 1933. This set off a chain of events that ended with Hitler becoming **Führer**.

How did Hitler turn Germany from a democracy to a dictatorship?

R	E	M	E	N	D	A
Reichstag Fire: on 27 February the Reichstag building was set on fire. A Dutch communist, was caught red-handed in the burning building. Hitler used the fire to persuade Hindenburg to pass an emergency law. 	**Emergency laws / powers:** Hitler used this to restrict personal freedom. This enabled him to imprison many communist leaders, which stopped them campaigning during the election. 	**March Elections:** On 5 March 1933, Reichstag elections were held. Despite the Nazis' attempts to blame communists for the Reichstag fire, they still did not win a majority. This meant Hitler would not be able to rule as he wanted, as new laws he proposed could be outvoted by other parties in the Reichstag. 	**The Enabling Act**: the Reichstag voted to give Hitler the right to make laws without the Reichstag's approval. It gave Hitler absolute power to make laws, which enabled him to destroy all opposition to his rule. This removed the Reichstag as a source of opposition. **Political parties banned**: only the Nazi party was allowed to exist. This made Germany a one-party state and destroyed democracy in the country. This removed other parties as a source of opposition. 	**Night of the Long Knives:** the SS (Hitler's personal bodyguards) murdered around 400 members of the SA, including Röhm, along with a number of Hitler's other opponents like the previous Chancellor, von Schleicher. This destroyed all opposition to Hitler within the Nazi Party and gave power to the brutal SS. It also showed the rest of the world what a tyrant Hitler was and murder was part of his regime. 	**Death of Hindenburg**: when Hindenburg died. No one left to control him. He merge the Chancellor and President roles to become Fuhrer. **Hitler became Führer**, the dictator of Germany. 	**Army Oath:** Members of the armed forces had to swear a personal oath of allegiance not to Germany, but to Hitler. This made Hitler the absolute ruler of Germany. 

Religion and Ethics Knowledge Organiser

YEAR 9 – What is good or challenging about being religious in Britain?

What is a religious identity?

Religious identity is about how you see yourself in relation to your beliefs and practices within a religion. It involves your **connection to a faith**, the rituals you follow, and your sense of belonging to a **religious community**. It's like a part of who you are, shaping how you view the world, what you believe is right or wrong. It's an important aspect of your personal identity and can impact how you live your life and connect with others who share similar and different beliefs.

How is faith expressed in British society?

People in Britain express their faith in different ways. They go to **religious services** in places like churches and mosques or **celebrate festivals** and important events together. Some show their faith through personal practices like **prayers or meditation**. The way people dress, like wearing **religious symbols or clothing**, can also express their beliefs. Many faith communities get involved in helping others and being part of **community activities**. People might also express their faith through **art, music, and literature**.

Why are spiritual practices important?

Spiritual practices are important because they help **people find meaning and purpose in life**. They create a sense of **connection with others** who share similar beliefs and can **reduce stress**, making our minds healthier. Engaging in these practices also helps us learn about values like **kindness and compassion**, guiding us in making good choices. When times get tough, spiritual practices provide **comfort and strength**. They also allow people to feel connected and **directly communicate *with* God**/the divine.

What challenges do religious people face in Britain?

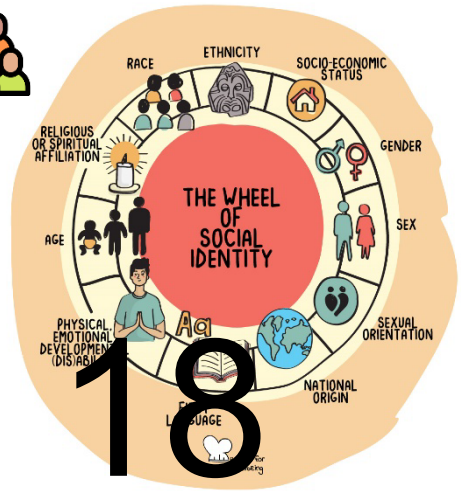
Religious people in Britain might deal with challenges such as **unfair treatment or stereotypes** because of their beliefs. Sometimes, it can be **tough to fit in** or understand each other, especially if people have different religions. Also, there might be **conflicts between what they believe and what society expects**. For example, some people may want to express their religion by wearing an item of clothing but may feel scared of what others may think. However, it's important to remember that people's experiences can be different, and we can all work together to make sure everyone feels respected and included in our diverse community.

What is good about being religious in Britain?

Being religious in Britain is a positive thing because Britain is a **multicultural society** and promotes the **human right** to express religious belief. Britain also safeguards its citizens through the **'Equality Act 2010'** which protects people from prejudice and discrimination based on race or religion. Additionally, Britain is **religiously diverse**, allowing individuals to find a religious community to be a part of. This means that people can connect with a community that supports their spiritual practice and includes them in the celebration of religious festivals or events, fostering a **sense of belonging and shared traditions**. In this way, religious freedom is **not only respected but also celebrated** as a valuable part of British culture.

Key words:

Discrimination: *Unfair treatment based on <u>one</u> characteristic such as sex or race.*
Prejudice: *Pre-judging someone based on <u>one</u> characteristic such as sex or race.*
Multicultural: having many different cultures, backgrounds, or groups living or working together in one place.
Social Pressures: External influences affecting individuals' behaviours and decisions.
Cultural Perspectives: Different viewpoints shaped by cultural backgrounds.
Western Values: Cultural, political, and social principles associated with Western societies.
Social Justice: Pursuit of fairness and equality in society.
Cultural Sensitivity: Awareness and respect for cultural differences.



Religion and Ethics Knowledge Organiser

YEAR 9 – Medical Ethics

What is "Medical Ethics"?

Ethical decision making is an important part of our everyday lives, from how we recycle our bottles to considering when it may be reasonable to take a life. **Medical Ethics**, therefore, is an opportunity for us to discuss some of the **reasons, risks and consequences** around various medical procedures. We will bring in our own worldviews and consider a variety of religious and non-religious worldviews too.

Sanctity of Life vs Quality of Life

One important distinction to make in **Medical Ethics** is between **Sanctity of Life** and the **Quality of Life.**

Sanctity of Life is a belief held by many religions which states that all life is valuable because it is **holy** and made by God.

Others would argue for the **Quality of Life:** the belief that life is most **valuable** when it is satisfying and of a good quality.

This distinction will frame many of our debates around the different medical practices.

How ethical is IVF?

IVF or **In Vitro Fertilisation** refers to the process of helping a couple to become pregnant with medical intervention.

There are a number of reasons why people may opt for IVF: if one or both of the couple have experienced **fertility** issues; if they are a same-sex couple and need to use a donor **egg/sperm** or a **surrogate**; if they are a single person wanting to use a **donor** to get pregnant.

This process also gives way to **genetic screening,** where genes can be tested for genetic risks, abnormalities & disabilities.

How ethical is Abortion?

An **abortion** is the termination of a pregnancy. The law in the UK states that an abortion has to take place before *24* weeks, as it is at this point that the baby could survive outside of the **womb.**

The global conversation around **abortion** is one which has been widely covered by the media during **pro-life** and **pro-choice** rallies and protests.

Pro-life refers to those who believe that abortion should not be allowed as the baby's life is valuable. Pro-choice refers to those who believe that the mother should have the final say over what happens to her body.

How ethical is Organ Donation?

Organ donation is when you decide to give an organ to save or transform the life of someone else. You can donate some organs while you are alive, and this is called **living organ donation**. However, most organ and tissue donations come from people who have died.

We will consider some scenarios and evaluate the process of deciding who should be the recipient of an organ donation.

There has been a recent change in policy (2019) from an opt-in system to an opt-out system. We can consider whether the positives outweigh the negatives.

Key words:

Ethics: A set of moral principles that guide our behaviour.

Sanctity of Life: The belief that life is holy and is created by God.

Quality of Life: *The extent to which life is healthy, happy and fulfilling.*

Conception: When the sperm meets the egg.

IVF: The process of becoming pregnant through medical intervention.

Genetic Screening: Studying DNA to identify genetic abnormalities/disabilities.

Abortion: The termination of a pregnancy.

Organ Donation: Giving your organs to save someone else's life.

Euthanasia: The painless killing of someone suffering from a terminal / incurable illness.

How ethical is Euthanasia?

Euthanasia is the painless killing of someone suffering from a terminal or incurable illness. This is currently illegal in the UK but it is legal in a few counties, such as Switzerland.

There are some who believe that we should have the option to die with **dignity**, without pain and suffering. There are others who believe that this would be classed as **murder** as it requires ending a life. Religious views would often turn to the **sanctity of life** and consider it wrong as only God can take life.

Year 10 Foundation
RELATIVE FREQUENCY/FREQUENCY TREE

Key Concepts

Experimental probability differs to theoretical probability in that it is based upon the **outcomes from experiments**. It may not reflect the outcomes we expect.
Experimental probability is also known as the **relative frequency**.

Estimating the number of times an event will occur:

Probability × no. of trials

A **frequency tree** shows the outcome of two or more events.

A **tree diagram** shows the probabilities of two or more events. It involves multiplying the probabilities along the branches.

Examples

Colour	red	blue	white	black
Prob	x	0.2	0.3	x

A spinner is spun, it has four colours on it.
The relative frequencies of each colour are recorded.
The relative frequency of red and black are the same.

a) What is the relative frequency of red?

$1 - (0.2 + 0.3) = 0.5$

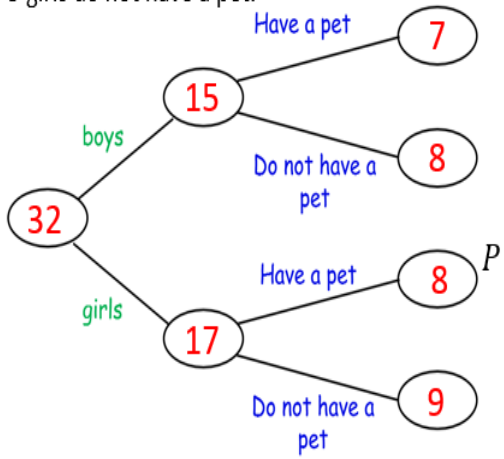
$x = \frac{0.5}{2} = 0.25$

b) If the spinner is spun 300 times, how many times do you expect it to land on white?

$0.3 \times 300 = 90$

Examples

In Hannah's class there are 32 students.
15 of these students are boys.
7 of the boys have a pet.
9 girls do not have a pet.



$P(boy) = \frac{15}{32}$

$P(Girl\ with\ pet) = \frac{8}{32}$

Y9 F/H

Key Words
Experimental
Relative frequency
Expected outcome
Mutually exclusive
Probability
Estimate

Number	1	2	3	4
Prob	x	0.46	0.28	x

A spinner is spun which has 1,2,3,4 on it. The probability that a 1 and a 4 are spun are equal.

a) What is the probability that a 4 is landed on?

b) If the spinner is spun 500 times how many times do we expect it to land on a 2?

ANSWERS: a) 0.13 b) 230

Maths Knowledge Organiser

EXPRESSIONS/EQUATIONS/IDENTITIES AND SUBSTITU

Key Concepts

A **formula** involves two or more letters, where one letter equals an **expression** of other letters.

An **expression** is a sentence in algebra that does NOT have an equals sign.

An **identity** is where one side is the equivalent to the other side.

When **substituting** a number into an expression, replace the letter with the given value.

Examples

1) $5(y + 6) \equiv 5y + 30$ is an identity as when the brackets are expanded we get the answer on the right hand side
2) $5m - 7$ is an expression since there is no equals sign
3) $3x - 6 = 12$ is an equation as it can be solved to give a solution
4) $C = \frac{5(F-32)}{9}$ is a formula (involves more than one letter and includes an equal sign)
5) Find the value of $3x + 2$ when $x = 5$

   $(3 \times 5) + 2 = 17$
6) Where $A = b^2 + c$, find A when $b = 2$ and $c = 3$

   $A = 2^2 + 3$

   $A = 4 + 3$

   $A = 7$

Y9 F/H

Key Words

Substitute
Equation
Formula
Identity
Expression

Questions

1) Identify the equation, expression, identity, formula from the list (a) $v = u + at$ (b) $u^2 - 2as$ (c) $4x(x - 2) = x^2 - 8x$ (d) $5b - 2 = 13$

2) Find the value of $5x - 7$ when $x = 3$

3) Where $A = d^2 + e$, find A when $d = 5$ and e

ANSWERS: 1) (a) formula (b) expression (c) identity (d) equation

2) 8) A = 27

Maths Knowledge Organiser

STANDARD FORM/ROUNDING/ESTIMATION

Key Concepts

We use standard form to write a very large or a very small number in scientific form.

Must be $\times 10$

b is an integer

$$a \times 10^{b}$$

Must be $1 \leq a < 10$

Standard Form

Write the following in **standard form**:

1) 3000 = 3×10^{3}

2) 4580000 = 4.58×10^{6}

3) 0.0006 = 6×10^{-4}

4) 0.00845 = 8.45×10^{-3}

Rounding & Estimation

Round 3.527 to:

a) 1 decimal place

3 . 5 | 2 7 → 3.5

b) 2 decimal places

3 . 5 2 | 7 → 3.53

c) 1 significant figure

3 | . 5 2 7 → 4

Estimate the answer to the following calculation:

$$\frac{46.2 - 9.85}{\sqrt{16.3 + 5.42}}$$

$$\frac{50 - 10}{\sqrt{20 + 5}}$$

$$\frac{40}{5} = 8$$

A value of 5 to 9 rounds the number up.
A value of 5 to 9 rounds the number up.

Y9 F/H

Key Words

Standard form
Base 10
Integers
Negative
Significant figures
Estimate

A) Write the following in standard form:

1) 74 000 2) 1 042 000 3) 0.009 4) 0.000 001 24

B. Round the following numbers to the given degree of accuracy

1) 14.1732 (1 d.p.) 2) 0.0568 (2 d.p.) 3)3418 (1 3)

ANSWERS: A1) 7.4 × 10⁻⁶ 2) 1.042 × 10⁶ 3) 9 × 10⁻³ 4) 1.24 × 10⁻⁶
B1) 1) 14.2 2) 0.06 3) 3000 B 1) 6 2) 24 3) 12 4) 4

Year 9 Higher
REARRANGE AND SOLVE EQUATIONS

Key Concepts

Solving equations:
Working with inverse operations to find the value of a variable.

Rearranging an equation:
Working with inverse operations to isolate a highlighted variable.

In solving and rearranging we **undo the operations** starting from the last one.

Examples

Solve:

$7p - 5 = 3p + 3$

$-3p \qquad -3p$

$4p - 5 = 3$

$+5 \qquad +5$

$4p = 8$

$\div 2 \qquad \div 2$

$p = 2$

Solve:

$5(x - 3) = 4(x + 2)$

expand $\qquad$ expand

$5x - 15 = 4x + 8$

$-4x \qquad -4x$

$x - 15 = 8$

$+15 \qquad +15$

$x = 23$

Rearrange to make r the subject of the formulae :

$$Q = \frac{2r-7}{3}$$

$\times 3 \qquad \times 3$

$3Q = 2r - 7$

$+7 \qquad +7$

$3Q + 7 = 2r$

$\div 2 \qquad \div 2$

$$\frac{3Q+7}{2} = r$$

Rearrange to make c the subject of the formulae :

$2(3a - c) = 5c + 1$

expand

$6a - 2c = 5c + 1$

$+2c \qquad +2c$

$6a = 7c + 1$

$-1 \qquad -1$

$6a - 1 = 7c$

$\div 7 \qquad \div 7$

$$\frac{6a-1}{7} = c$$

Y9 F/H

Key Words
Solve
Rearrange
Term
Inverse

Links
Science

1) Solve $7(x + 2) = 5(x + 4)$
2) Solve $4(2 - x) = 5(x - 2)$
3) Rearrange to make m the subject $2(2p + m) = 3 - 5m$
4) Rearrange to make x the subject $5(x - 3) = y(4 - 3x)$

ANSWERS: 1) $x = 3$ 2) $x = 2$ 3) $m = \frac{3-4p}{7}$ 4) $x = \frac{4y+15}{5+3y}$

Maths Knowledge Organiser

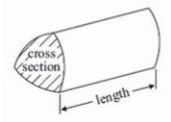
VOLUME AND SURFACE AREA OF PRISMS

Key Concept

The **volume** of an object is the amount of space that it occupies. It is measured in units cubed e.g. cm^3.

To calculate the volume of any prism we use:

$$area\ of\ cross\ section \times length$$



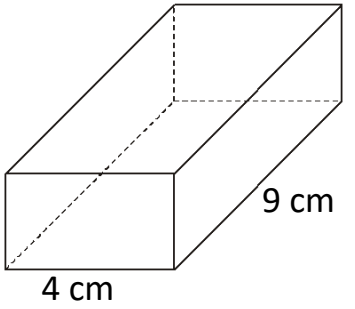
A **prism** is a 3D shape which has a continuous cross-section.

The **surface area** of an object is the sum of the area of all of its faces. It is measured in units squared e.g. cm^2.

Examples

$$\boldsymbol{Volume} = 4 \times 9 \times 2$$

$$= \boldsymbol{72cm^3}$$



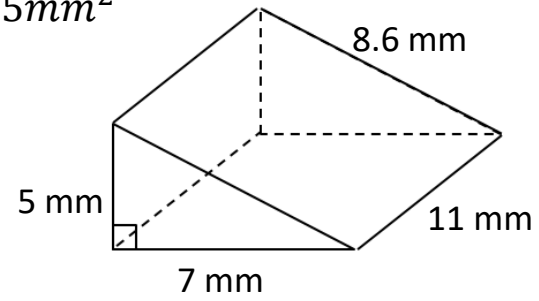
$$\boldsymbol{Surface\ area}:$$
$$Front = 4 \times 2 = 8$$
$$Back = 4 \times 2 = 8$$
$$Side\ 1 = 9 \times 2 = 18$$
$$Side\ 2 = 9 \times 2 = 18$$
$$Bottom = 4 \times 9 = 36$$
$$Top = 4 \times 9 = 36$$
$$Total = \boldsymbol{124cm^2}$$

$$Area\ of\ triangle = \frac{5 \times 7}{2}$$

$$= 17.5mm^2$$

$$\boldsymbol{Volume} = 17.5 \times 11$$

$$= \boldsymbol{192.5mm^3}$$



$$\boldsymbol{Surface\ area}:$$
$$Front = \frac{7 \times 5}{2} = 17.5$$
$$Back = \frac{7 \times 5}{2} = 17.5$$
$$Side = 5 \times 11 = 55$$
$$Bottom = 7 \times 11 = 77$$
$$Top = 11 \times 8.6 = 94.6$$
$$Total = \boldsymbol{261.6cm^2}$$

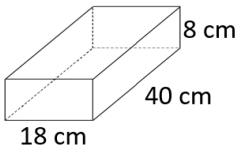
Y9 F/H

Key Words

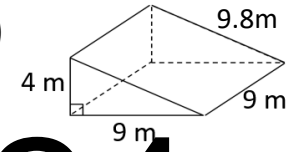
Volume
Capacity
Prism
Surface area
Face
Cylinder

Find the volume and surface area of each of these prisms:

1)



2)



ANSWERS: 1) Volume = 5760 cm^3 Surface area = 2368 cm^2 2) Volume = 162 m^3 Surface area = 241.2 m^2

MFL Knowledge Organiser

Aut 1 yr9 French. La télé

REGULAR PRESENT TENSE

		-ER	-IR	-RE
I	Je	e	is	s
You	Tu	es	is	s
He/she	Il/Elle/On	e	it	
We	Nous	ons	issons	ons
You all	Vous	ez	issez	ez
They	Ils/Elles	ent	issent	ent

How to form the future tense with ALLER…

- You will need to remember one easy formula:

1		2		3
subject	+	present tense of aller	+	infinitive
Je		vais		manger
Tu		vas		jouer
il / elle / on		va		faire
Nous		allons		regarder
Vous		allez		finir
ils/elles		vont		aller

Perfect Tense **Regular Verbs**

	Subject	Avoir	Past participle
I	J’	ai	Take off ending from infinitive:
You	Tu	as	
He/she	Il/elle	a	-er verbs = é
We	Nous	avons	-ir verbs = i
You all	Vous	avez	-re verbs = u
they	Ils/elles	ont	

Irregular verbs with avoir

Eu – had Fait - did
Bu – drank Dit – said
Vu – saw Écrit - wrote

Opinions & Pronouns

Ça m’a amusé – it amusED me

Ça m’a énervé –it GOT on my nerves

Je suis fan de … ***I’m a fan of …***

je ne suis pas fan de … ***I’m not a fan of …***

j’ai une passion pour les … ***I have a passion for …***

j’ai horreur des … ***I really dislike …***

Frequencies

d’abord	*first of all*
Deuxièmement	*secondly*
ensuite/puis	*next/then*
Plus/moins de temps	*most/less of the time*
après	*afterwards*
finalement	*finally*
aujourd’hui	*today*
hier	*yesterday*
avant-hier	*the day before yesterday*
(mardi) dernier	*last (Tuesday)*

Complexity

On peut + inf - you can….
On peut lire - you can lire
On peut voir - you can see
Après avoir mangé – after having eaten
Après avoir visité – after having visited
Avant de visiter – before visiting

Adjectives

C’était comment? What was it like?

C’était … *It was …*
J’ai trouvé ça … *I found it …*

amusant	*funny*
assez bien	*quite good*
barbant	*boring*
chouette	*excellent*
effrayant	*frightening*
émouvant	*moving*
ennuyeux	*boring*
génial	*great*
intéressant	*interesting*
nul	*rubbish*
passionnant	*exciting*
pratique	*practical*
stupide	*stupid*
formidable	*great*
idiot	*stupid*

Le film était plus amusant que lza télé
L’émission de sport était moins amusantE que le film
Les films étaient intéressants

À la télé / les films

Mon émission préférée, c'est …
je ne regarde jamais
je ne rate jamais
je regarde …
mon acteur préféré, c'est …
mon film préféré, c'est …

On TV / films

My favourite programme is …
I never watch
I never miss
I watch …
my favourite actor is …
my favourite film is …

français

Les genres de films :

*Types of movies : *

Une comédie romantique 😍
A romantic comedy

Une comédie dramatique 😭
A dramatic comedy

Un film d'horreur 😱
An horror movie

Un film d'action 🏃
An action movie

Un film d'aventures 🤠
An adventure movie

Un film de science-fiction 🤖
A science fiction movie

Un film fantastique 👼
A fantastic movie

Une comédie 🤣
A comedy

Normalement on peut regarder beaucoup de choses.
J'aime regarder la télé car c'est informative.
Je préfère regarder les infos, parce que c'est utile.

Je suis fan de les films d'action car ils sont passionants.
Mon film préféré, c'est Spiderman car c'est divertissant.

Normalement, le soir après avoir mangé, je joue en ligne. Mais le week-end je fais des quiz et ça me plaît car c'est rigolo .

Hier soir, avant de me coucher, j'ai écouté de la musique et aussi j'ai surfé sur internet. Je pense que c'était nul et ça m'a énervé à mon avis.

Hier soir **Last night**
discuter
écouter la radio.
envoyer des SMS.
jouer à des jeux en ligne.
poster des photos.
regarder la télé/des clips vidéo.
surfer sur Internet.
tchatter sur MSN
télécharger des chansons.

WAGOLL

Plus mots

TOPCAT

MFL Knowledge Organiser

Aut 2 yr9 French. À Paris

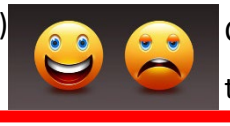
DR. & MRS. VANDERTRAMP

Infinitif	Participe Passé
Devenir	Devenu(e)(s)
Revenir	Revenu(e)(s)
&	&
Monter	Monté(e)(s)
Rentrer	Rentré(e)(s)
Sortir	Sorti(e)(s)
Venir	Venu(e)(s)
Arriver	Arrivé(e)(s)
Naître	Né (e)(s)
Descendre	Descendu(e)(s)
Entrer	Entré(e)(s)
Retourner	Retourné(e)(s)
Tomber	Tombé(e)(s)
Rester	Resté(e)(s)
Aller	Allé(e)(s)
Mourir	Mort(e)(s)
Partir	Parti(e)(s)

Il y avait – there was/were
était – was c'était – it was
étaient – were c'étaient – they were
Il avait – he had
Ils avaient – they had

Opinions & Pronouns

Ça me plait (plaisent)	Ça m'énerve(nt)
Ça m'amuse(nt)	Ça m'ennuie(nt)
Ça m'intéresse(nt)	Ça m'irrite(nt)
Ça me rend(ent) content(e)	Ça me rend(ent) triste



Adjectives

C'était comment? What was it like?

C'était ... *It was ...*
J'ai trouvé ça ... *I found it ...*

bien	*good*
bizarre	*weird*
cool	*cool*
cher	*expensive*
moche/laide	ugly
ennuyeux	*boring*
fabuleux	*wonderful/fantastic*
génial	*great*
peuplé	populated
bondé	crowded
pittoresque	*picturesque*
intéressant	*interesting*
marrant	*funny/a laugh*
nul	*rubbish*

Ce n'était pas mal. *It wasn't bad.*

Connectives

alors./ donc / par conséquent	so, therefore
car / parce que	because
Étant donné que	given that
dernier/dernière	last
beaucoup (de)	a lot (of) + noun
Peu de	few of + Noun
Pas assez (de)	not enough (of) + Noun
Trop (de)	too (much/many) + Noun

Perfect Tense

Subject	Être	Past participle
Je	suis	Take off ending from infinitive: -er verbs = é -ir verbs = i -re verbs = u **Agreement of PP (f) + e (pl) +s (f+pl) + es
Tu	Es	
Il/elle	Est	
Nous	Sommes	
Vous	Êtes	
Ils/elles	sont	

Complexity

Negatives:
Ne…que /seulement – only - je ne vais qu'en France/je vais seulement en France
Ne…plus – not anymore - je ne viste pas l'Espagne
Ne…aucun(e) (oh-can/oh-cune) – not a single
Je n'ai admiré aucun monument / je n'ai vu aucune ville

Il y avait un hotel cher
La ville était grande
Les monuments étaient intéressants

Avoir verbs

gagner un concours.	***To win*** *a competition.*
passer une semaine à Paris.	***To spend*** *a week in Paris.*
visiter la tour Eiffel.	***To visit*** *the Eiffel Tow*
manger au restaurant.	***To eat*** *in a restaurant.*
admirer la Pyramide du Louvre.	***To admire*** *the Louvre Pyramid.*
regarder le feu d'artifice.	***To watch*** *the fireworks.*
acheter des souvenirs.	***To buy*** *some souvenirs.*
rencontrer un beau garçon/une jolie fille	***To meet*** *a good-looking boy/a pretty gir*
envoyer des cartes postales.	***To send*** *some postcards.*
attendre le bus.	***To wait*** *for the bus.*
Dormir très bien.	***To sleep*** *very well.*

Irregular avoir verbs

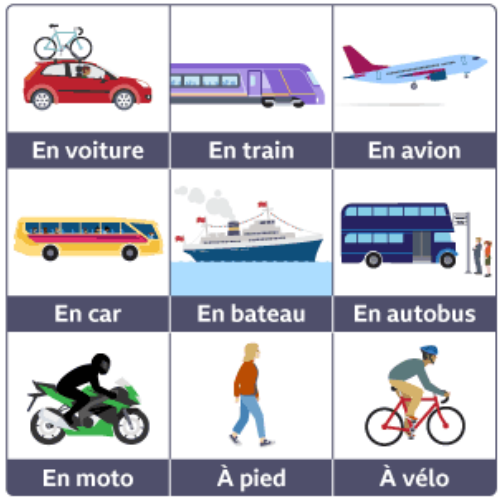
J'ai pris des photos. *(prendre)*	*I took some photos.*
On a fait les magasins. *(faire)*	*We went shopping.*
On a bu un coca. *(boire)*	*We drank a cola.*
On a fait un tour de la ville en segway. *(faire)*	*We did a tour of the town by segway.*
On a fait une balade en bateau-mouche. *(faire)*	*We went on a boat trip.*
J'ai vu la *Joconde* (voir).	*I saw the* Mona Lisa

Être verbs

Je suis allé(e) (à Paris). *(aller)*	*I went (to Paris).*
Je suis parti(e) *(partir)*	*I left*
Je suis arrivé(e) à (dix heures) *(arriver)*	I *arrived at (ten o'clock).*
Le train est parti/arrivé à (huit heures).	*The train left/arrived at (eight o'clock).*
Je suis sorti(e). *-(sortir)*	*I went out.*
Je suis resté(e) (chez moi). *-(rester)*	*I stayed (at home).*
Je suis rentré(e) (chez moi). *-(rentre)*	*I went/got home.*
Je suis monté(e). *-(monter)*	*I went up/climbed.*

Tu as voyagé comment?

How did you travel? Je suis allé(e)… / j'ai pris = I went/ I took



Plus mots

……
……
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WAGOLL

Coucou! T O P C A T

Je suis en vacances à Nice en France. C'est un belle ville et il y a beaucoup de choses à faire.

Hier matin, je suis allée avec ma mère au musée d'art moderne que j'ai adoré était très intéressant cependant c'était un jour long. Pendant l'après-midi j'ai acheté des souvenirs et j'ai fait un tour de la ville en Segway qui était génial mais j'ai pensé que j'avais peur des voitures! Je n'ai visité aucune plage à Nice.
Le soir, j'ai visité dans un nouveau restaurant. J'ai mangé du poulet avec des haricots verts en plus j'ai bu un petit peu du vin, qui était dégoutant. Le soir m'a amusé.
Au revoir!

9F Reactivity

1. Types of Explosion

Explosion	Sudden increase in volume of gas and huge transfer of energy to the surroundings.
Physical Changes	Changes where no new substances were made.
Chemical Reaction	Changes where one or more new substances are made.
Flammable	A substance that catches fire easily.
Reactants	The starting substances- written on left of word equation.
Products	The new substances made- written on right of word equation.
Gas Pressure	The force gas particles exert by hitting the walls of the container they are in.
Increasing Gas Pressure	• Increasing number of particles • Decreasing size of container • Increasing temperature

2. Reactivity

Reactivity Series	List of metals in order of reactivity
Metals & Water	React to form metal hydroxides and hydrogen. *sodium + water → sodium hydroxide + hydrogen*
Metals & Acids Word Equation	metal + acid → salt + hydrogen *magnesium + sulfuric acid → magnesium sulfate + hydrogen*
Naming Salts	The first word in the salt is the metal the second depends on the acid used.
Hydrochloric Acid	Forms salts ending in chloride
Sulfuric Acid	Forms salts ending in sulfate
Nitric Acid	Forms salts ending in nitrate
Metals & Oxygen	React to form metal oxides *Zinc + oxygen → zinc oxide*
Oxidation	Reaction in which a substance gains oxygen.

Reactivity Series

Metal	Reaction with oxygen in air	Reaction with cold water	Reaction with dilute acid
potassium	🔥	🔥	💥
sodium	🔥	✓✓✓	💥
lithium	🔥	✓✓	✓✓✓
calcium	🔥	✓✓	✓✓✓
magnesium	🔥	✓	✓✓
aluminium	✓✓✓	●●●	✓✓
zinc	✓✓	●●●	✓✓
iron	✓✓	●●●	✓
tin	✓	●●●	✓
lead	✓	●●●	✓
copper	✓	✗	✗
mercury	●●●	✗	✗
silver	●●●	✗	✗
gold	✗	✗	✗
platinum	✗	✗	✗

Increasing reactivity

Key

💥 explosive	🔥 can catch fire	✓✓✓ reacts very quickly
✓✓ reacts quickly	✓ reacts	●●● slow or partial reaction
✗ no reaction		

Rust	Formed by the corrosion of iron and steel.
Preventing Rust	Use a barrier such as paint/ plastic/oil to keep away air/water
Sacrificial Protection	More reactive metals are attached to react with water & oxygen instead of the iron.

3. Energy and Reactions

Oxygen	Often needed in many chemical reactions that cause explosions.
Oxidising Agent	A substance that provides oxygen to oxidise another substance.
	**Oxidising** The hazard symbols for substances which are oxidising.
Potassium Nitrate	Oxidising agent mixed with powdered charcoal to make gunpowder.
Oxygen Test	Oxygen will relight a glowing splint.
Surface Area	Small pieces of solid have a greater surface area over which a chemical reaction can occur. Explosives react more quickly if the solid fuel is broken into tiny pieces.
Energy	Cannot be created or destroyed only transferred and stored.
Exothermic Reactions	Energy stored in the reactants is transferred to the surroundings. *e.g. combustion, neutralisation*
Endothermic Reactions	Energy is transferred from the surroundings to the reactants *e.g. thermal decomposition*
Hydrocarbon	Compound containing only hydrogen and carbon. *e.g. methane (CH_4)*

4. Displacement

Displacement Reaction	Reaction where a more reactive metal displaces (takes the place of) a less reactive one.
Displacement Reaction Word Equation	Aluminium + iron oxide→aluminium oxide + iron
Thermite Reaction	Displacement reaction between aluminium and iron oxide.
Energy	Thermite reaction needs an input of energy by lighting a fuse.
Thermite Reaction Uses	Used on a large scale to join two sections of railway track as molten iron runs into the gap and solidifies.
Solutions	Displacement reactions also occur in solutions. *e.g. zinc in copper sulfate*

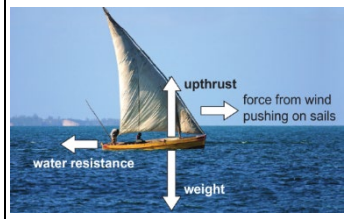
5. Extracting Metals

Native State	When a metal is found in the Earth as an element.
Ore	Rock that contains enough of a metal/metal compound to be worth mining.
Extracting Iron	Iron is found as iron oxide. Oxygen is removed by heating with carbon.
Extracting Iron Word Equation	Iron oxide + carbon → iron + carbon dioxide
Reduced	When a substance has lost oxygen.
Electrolysis	Used to extract reactive metals (e.g. aluminium) from their ores using electricity.
Extracting Aluminium Word Equation	Aluminium oxide → aluminium + oxygen
Potassium - Aluminium	Extracted through electrolysis
Zinc - Copper	Extracted by heating with carbon.
Silver- Platinum	Found in native state.

Lesson	Memorised?
1. Types of Explosion	
2. Reactivity	
3. Energy & Reactions	
4. Displacement	
5. Extracting Metals	

9I Forces and Motion

1. Forces and Movement

Friction	Force between two surfaces sliding across each other.
Reducing Friction	Using rollers or wheels / sleds in snowy countries
Balanced	When a force acting on an object is the same size as the force in the opposite direction.
Constant Speed	Caused by balanced forces acting on an object.
Unbalanced	Forces acting in opposite directions are not equal.
Resultant	The difference between the forward and backward force.
Accelerate	Get faster- caused by unbalanced forces.
Boat Force Diagram	
Drag	Acts to slow down objects moving through fluids (liquids/ gases) *e.g. water resistance and air resistance*
Top Speed	Dependent on the maximum force a vehicle can move forwards an on the friction/ drag acting to slow it down.

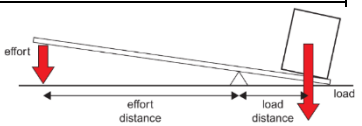
2. Energy For Movement

Food	Supplies humans the energy they need.
Solar Energy	Energy stored in food originally came from the Sun.
Kinetic Energy	Stored in anything that is moving.
Fossil Fuel	Fuels formed by remains of plants / animals that store large amounts of energy. *e.g. coal, oil, natural gas*
Non-Renewable	Resources that will run out one day like fossil fuels.
Using Fossil Fuels	Energy stored in oil and natural gas is used for transport. Energy released by burning fuels is transferred by heating for cooking or keeping warm
Gravitational Potential	Energy stored in raised objects.
Elastic Potential	Energy stored in stretched or squashed objects.
Thermal	Energy stored in the movement of particles. Transferred from hot objects to cooler ones by heating.
Renewable	Resources that will not run out. *e.g. wind, moving water*
Nuclear Energy	Non-renewable resource used to generate electricity.
Electricity	Cannot be stored, has to be generated by renewable or non-renewable resources.
Conservation of Energy	Energy cannot be created or destroyed, only transferred.
Efficiency	The useful energy transferred compared to the total energy transferred by a device.
Dissipated	Energy that spreads out.
Transfers	Energy is often transferred by heating or sound.

3. Speed

Speed	How far something can travel in a certain time.
Units	Dependent on measurements taken *e.g. miles per hour, metres per second*
Speed Formula	$\text{speed} = \frac{\text{distance}}{\text{time}}$
Mean Speed	Total distance travelled, divided by the total time taken.
Distance-Time Graph	Used to show how fast someone travelled during a journey. Also called a displacement-time graph
Displacement	Distance in a straight line between an object and its starting point.
Horizontal Line	Shows an object isn't moving on the distance-time graph.
Steep Line	Shows an object is moving quickly
Relative	Looking speed compared to another object which may be moving.

4. Turning Forces

Lever	Long bar used to life heavy objects.
Pivot / Fulcrum	Point that the lever turns around.
Effort	Force applied down on lever.
Load	The object being lifted.
Lever Diagram	
Force Multiplier	Effort distance is greater than the load distance meaning that the effort force is smaller than the force lifting the load.
Distance Multiplier	Large effort force moves a small distance and the load is moved a greater distance.
Moment	The turning effect of a force.
Units	Moments are measured in newton metres (**N m**)

Moment Formula	moment of the force (N m) = force (N) × perpendicular distance from the pivot (m)
Equilibrium	Opposing forces are balanced.

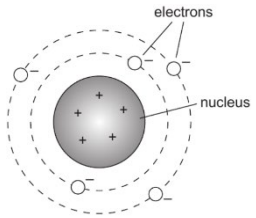
5. More Machines

Machine	Anything that helps us work with forces.
Ramp	A simple machine that means less force is needed to push an object up a slope compared to lifting.
Pulleys	Makes lifting a load easier by pulling down a rope.
Work	Amount of energy transferred when a force moves something.
Units	Work is measured in Joules (**J**)
Work Done Formula	work done (J) = force (N) × distance moved in the direction of the force (m)
Conservation of Energy	If a smaller force is needed to move something, the force has to move through a greater distance.

Lesson	Memorised?
1. Forces and Movement	
2. Energy For Movement	
3. Speed	
4. Turning Forces	
5. More Machines	

9J Force Fields and Electromagnets

1. Force Fields	
Force Field	The area around something where a non-contact force can affect things.
Non-Contact Force	A force which can affect something from a distance.
Magnetic Field	The space around a magnet where it can affect magnetic materials or other magnets.
Repel	To push away. Two of the same poles will repel each other.
Attract	To draw together. A north and a south pole will attract each other.
Earth's Magnetic Field	Protects the Earth from charged particles emitted by the Sun
Mass	The amount of matter that something is made up of- measured in grams / kilograms.
Gravitational Field	The space around any object with mass where its gravity attracts other masses.
Gravitational Field Strength	The force with which a gravitational field pulls on each kilogram of mass. Earths gravitational field strength is approximately 10 N/Kg.
Weight	The amount of force with which gravity pulls things. Measured in Newtons. Weight = mass x gravitational field strength
Gravitational Potential Energy (GPE)	Energy stored in objects in high places that can fall down.

2. Static Electricity	
Static Electricity	A positive or negative charge on an insulating material caused when rubbing transfers electrons from one material to another.
Nucleus	The central part of an atom- has a positive charge.
Electrons	Small particles moving around the nucleus in an atom- have a negative charge
Atom	
Charges	Something with a charge of static electricity can attract uncharged objects. Two charged objects can attract or repel each other.
Electric Field	The space around an object with a charge of static electricity where it can affect other objects.

3. Current Electricity	
Electric Current	The flow of electrons in a circuit.
Current in Series	The current is the same everywhere in a series circuit.
Current in Parallel	The current through the cell splits up when it comes to a junction in a parallel circuit.
Ammeter	Connected in series and used to measure the current flowing through a circuit- measured in amperes (A).
Voltage	How much energy is transferred by electricity by a cell / component.
Voltmeter	Connected in parallel and used to measure the voltage of a component- measured in volts (V)

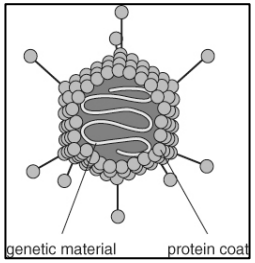
4. Resistances	
Resistance	How difficult it is for electricity to flow through something.
Resistors	A component that makes it difficult for electricity to flow. Used to reduce the size of the current in a circuit.
Factors Affecting Resistance	Increasing the length of a wire or decreasing the thickness will increase the resistance.
Insulators	Do not conduct electricity- they have very high resistances.
Ohms	The units for measuring resistance- Ω
Calculating Resistance	Voltage = current x resistance

5. Electromagnets	
Electromagnets	A coil of wire with electricity flowing in it that has a magnetic field around it.
Increasing Electromagnet Strength	Increasing the number of coils. Increasing the current in the wire. Using a magnetic material as a core.
Relays	A small current is used to switch on a circuit that carries a much bigger current
Motor Effect	The force produced when a wire carrying a current is placed in a magnetic field.
Electric Motor	A coil of wire in a magnetic field. The coil spins when a current flows through it.

Lesson	Memorised?
1. Force Fields	
2. Static Electricity	
3. Current Electricity	
4. Resistances	
5. Electromagnets	

Biology GCSE Transition

1. Diseases	
Disease	Something that makes you ill, such as infection by a pathogen or not having a healthy diet
Pathogen	A microbe that causes disease e.g., polio virus
Infectious disease	Caused by a microbe that gets into the body and changes how it works e.g., polio
Deficiency disease	Caused by the lack of a nutrient needed for good health e.g., anaemia
Genetic disease	Caused by a fault in DNA that changes how cells work e.g., haemophilia
Lifestyle disease	How we live can increase the risk of getting these diseases
Example of a lifestyle disease	Smoking can cause lung cancer
Autoimmune disease	When the body's immune system attacks and damages cells in the body e.g., Type 1 diabetes
Communicable disease (also called *infectious disease*)	A disease that can be passed from an infected person to an uninfected person
Structure of a virus	An outer protein coat that protects the genetic material inside
Why viruses are not a living organism	They cannot carry out all the life processes
How a virus infects a cell	It takes over the cell's genetic material and makes the cell produce more viruses, which break open the cell membrane and escape to infect other cells

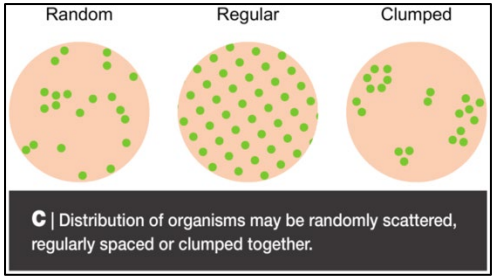


Structure of a virus

2. Control Systems	
How the nervous system works	**Receptor cells** in **sense organs** detect stimuli; a receptor cell produces **electrical impulses** that travel along **nerve cells** in **nerves** to the **spinal cord**, and then usually to the **brain**; the brain processes the information in the impulses; the brain sends electrical impulses through nerves in the spinal cord to **effectors** (muscles and glands); muscles respond by contracting; glands respond by releasing hormones
Hormone	A chemical messenger that is released from a gland into the blood and carried around the body
Target cell or organ	Cells or organs that respond to hormones by changing what they are doing
Example of a hormone and its effect	Oestrogen controls changes in a girl's body during puberty
How the nervous system is different to the hormonal system	Electrical impulses travel quickly along nerves; hormones travel in the blood

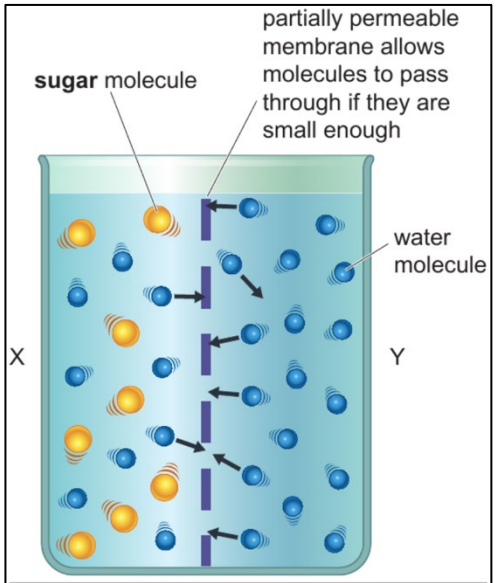
3. Testing Medicines	
Medicine	A drug that helps the body to ease the symptoms of a disease or cure the disease
Antibiotic	Treats bacterial infections by killing the pathogen
Antiviral	Treats viral diseases
Vaccine	Used to immunise people *before* they get ill so that they are protected from a particular pathogen
Side-effect	Unintended effects of medicines that may be harmful
Stages of testing new medicines	• Stage 1: on diseased cells or organs to see how well the medicine affects the pathogen and cells • Stage 2: on animals to see how a whole body reacts to the medicine, without risk to humans • Stage 3: on a few healthy people to make sure the drug is safe and to find general side-effects • Stage 4: **clinical trial** on many patients to make sure the drug works, to find the right **dose** and to check for side-effects in different groups
Using a control group	Group of people that is similar to the test group in stage 4 and receives a placebo, against which the results of the new treatment will be compared
Placebo	Something that looks like the real medicine but contains no drug
Why a placebo is taken	To stop the placebo effect (when a patient gets better because they think they have received a medicine, even when they haven't)
Getting the correct results in stage 4	Patients are randomly placed in each group to reduce the risk of bias

4. Ecology	
Abundance	The number of organisms in an area
Estimating population size	Population size = number of organisms in sample x (total size of area ÷ area of sample)
Distribution	How the organisms are spread throughout an area
Sampling techniques	Quadrat for organisms that don't move e.g., plants; pitfall trap for animals that crawl on the ground, e.g., beetles; sweep net for small organisms in tall plants e.g., insects sitting on long grass



C | Distribution of organisms may be randomly scattered, regularly spaced or clumped together.

5. In And Out	
Diffusion	When particles spread and mix with each other without anything moving them
Surface area : volume ratio	Larger organisms have a smaller SA : V ratio than smaller organisms
Osmosis	The type of diffusion that describes the overall movement of solvent molecules in a solution across a partially permeable membrane



D | Osmosis occurs if solutions on each side of a partially permeable membrane contain different amounts of water molecules.

Y contains more water molecules, so the overall movement of water molecules will be from Y to X by osmosis

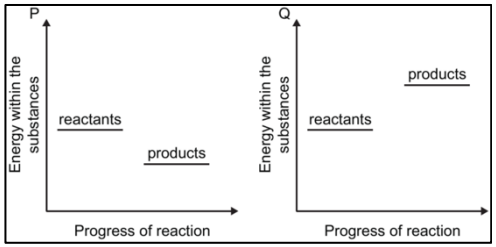
Chemistry GCSE Transition

1. Ions

Atom	Has no overall charge as the negative charge of the **electrons** balances the positive charge of the central **nucleus**
Ion	An atom that has a tiny electrical charge
How a positive ion is formed	When an atom loses one or more electrons
How a negative ion is formed	When an atom gains one or more electrons
Ionic bond	A strong force between oppositely charged ions
When ionic compounds can conduct electricity	Only if the ions can move e.g., when the compound is dissolved in water or is liquid
Structure of a metal	A lattice of positive ions sitting in a sea of negative electrons
Metallic bonding	Forces of attraction between the opposite charges that hold the metal together
Why metals can conduct electricity	The electrons can move

2. Energy Transfers

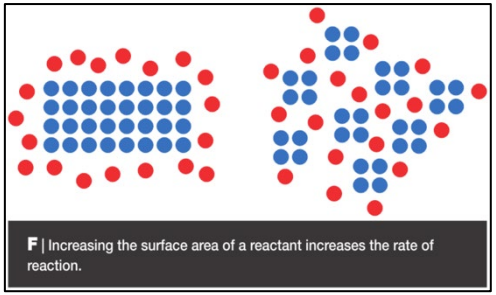
When metallic bonding is stronger	If there are more free electrons and ions with more charges
Endothermic	Any change that takes energy in from the surroundings, which normally decreases the temperature of the surroundings e.g., melting
Exothermic	Any change that gives out energy to the surroundings, which normally increases the temperature of the surroundings e.g., freezing
Reaction profile	Shows the changes in energy of reactants and products during a reaction



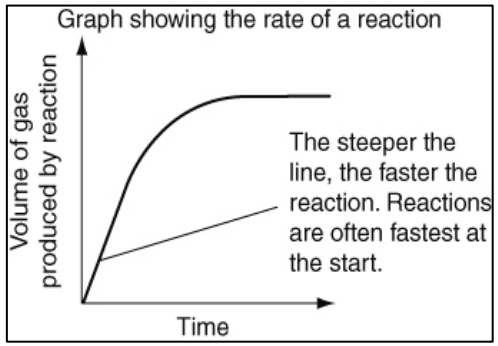
Q is an endothermic reaction because the products have more energy than the reactants

3. Rates Of Reaction

Rate of reaction	How quickly a reaction occurs
Example of a slow reaction	Iron rusting
How to measure the rate of reaction	Measure how quickly the reactants are used up or how quickly the products are formed
What is needed for two particles to react	They must collide hard enough or with enough energy
When reactions occur faster	If more reactant particles can collide with each other
How to increase the number of colliding particles	Increase the **surface area** of a reactant



Why reactions get slower as they progress	There are fewer and fewer reactant particles



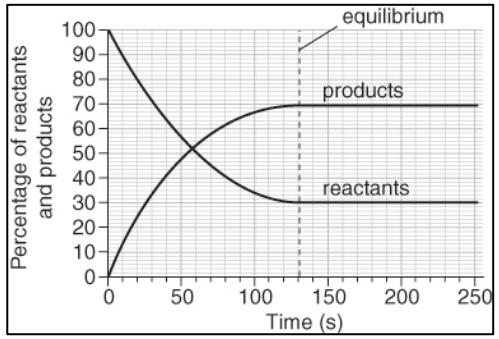
The horizontal line on the graph shows that the reaction has stopped

4. Chemical Equations

Salt	An ionic compound produced in a neutralisation reaction
Neutralisation reaction	An acid reacts with an alkali or a base to produce a salt and water
Example of a neutralisation reactions	Hydrochloric acid + copper oxide → copper chloride + water
State symbols	Solid (s); liquid (l); gas (g); aqueous (aq)

5. Equilibria

Reversible reaction	Can go both backwards and forwards
Example of a reversible reaction	$3H_2(aq) + N_2(g) \rightleftharpoons 2NH_3(g)$ A double arrow shows a reversible reaction
Dynamic equilibrium	When there are constant changes going on but these changes are equal and opposite and so do not affect the overall levels of something
A reversible reaction reaches a dynamic equilibrium	When the amounts of the products and the reactants do not change



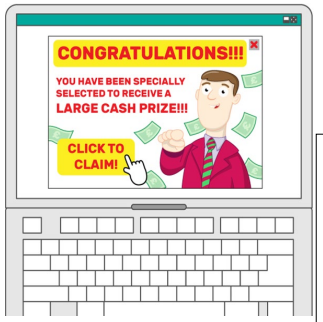
At equilibrium, the rate of the forwards and backwards reactions are the same

Computer Science Knowledge Organiser

CYBERSECURITY

Key words	
adware	adverts for products a user may be interested in, based on internet history
authentication	verifying the identity of a user or process
biometrics	'password' created from the user fingerprint, iris, retina, facial, voice
blagging	inventing a scenario to obtaining personal information
CAPTCHA	Completely Automated Public Turing Test To Tell Computers and Humans Apart
DoS/DDoS	Denial of Service attack/Distributed Denial of Service
encryption	mathematically converts data into a form that is unreadable without a key
firewall	checks incoming and outgoing network traffic for threats
hacking	gaining **unauthorised** access to or control of a computer system'
malware	a variety of forms of hostile or intrusive software
penetration testing	testing a network/program for vulnerabilities
pharming	redirecting web traffic to fake websites designed to gain personal information
phishing	messages designed to steal personal details/money/identity
ransomware	virus which locks a computer and encrypts files until a "ransom" is paid
script kiddies	hackers with no technical hacking knowledge using downloaded software
shouldering	directly observing someone enter personal details e.g. PIN number, password.
social engineering	manipulating people so they give up personal/confidential information
spyware	gathers information about a person or organisation without their knowledge
trojans	masquerades as having a legitimate purpose but actually has malicious intent
viruses	self-replicating software attached to another program/file
worms	Replicate and spread through the network

Cybersecurity looking at common attacks and methods to protect ourselves and our networks against these attacks.



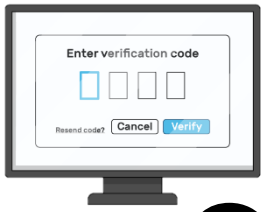
It is the law

Data Protection Act 2018:
All organisations and people using and storing personal data must abide by the DPA principles . It states how data should be stored/accessed and what rights a data subject has for the protection of their data.
Computer Misuse Act 1990: It is an offence to:
1. have unauthorised access to computer material
2. have unauthorised access with intent to commit or facilitate the commission of further offences
3. commit unauthorised acts with intent to impair, or with recklessness as to impairing, the operation of a computer.

Hacking in the context of cyber security is gaining **unauthorised** access to or control of a computer system .
Unethical versus ethical hacking
Penetration testers (pen testers) are people who are paid to legally hack into computer systems with the sole purpose of helping a company identify weaknesses in their system.

Network and System **security measures** include:

Penetration testing
Anti-malware
passwords
User permissions
firewall
biometrics
User authentication
encryption
Auto updates

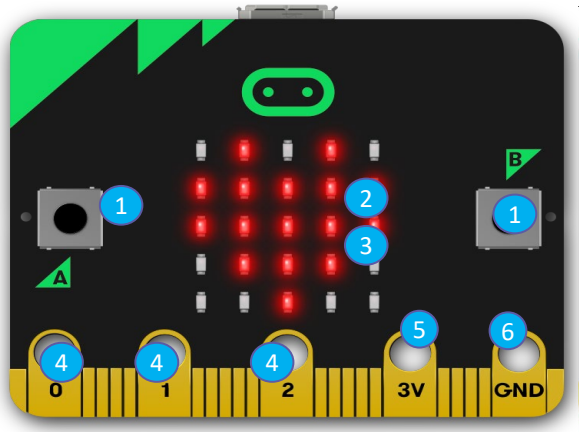


Computer Science Knowledge Organiser

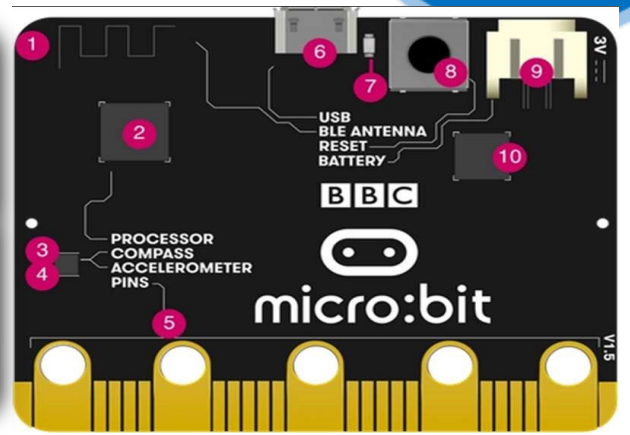
MICRO-BITS

The micro: bit is a pocket-sized computer that introduces you to how software and hardware work together. It has an LED light display, buttons, sensors and many input/output features that you can program and physically interact with.

Keywords	
Micro:bit	A small computer with a microprocessor that can execute a single program at a time.
Buttons	Capture user input and makes things happen
LED display (Light Emitting Diodes)	5x5 LED matrix output used to display information.
Light Sensor	Input, measures how much light is falling on the micro: bit.
GPIO (General-Purpose Input Output) pins	Input and output connects headphone, sense touch and add other electronics.
Temperature sensor	Input measures how warm the environment is.
Compass	Input, finds magnetic north or measures magnetic field strength
Accelerometer	Input detects gestures and measures movement in 3 dimensions.
Radio	Communication input and output allows communication with other devices
Algorithm	A set of instructions to be followed to complete a given task or solve a problem.
Program	A sequence of instructions used by a computer.
Sequence	The order which the computer will run code in, one line at a time.
Selection	A decision made by a computer, choosing what code should be run only when certain conditions are met.
Condition	Checking to see whether a statement or sum is true or false.
Iteration	When a section of code is repeated several times – also known as looping.
Variable	Something which can be changed in a computer. Made up of a name and some data to be saved.



1. **Buttons: input**
2. **LED display: output**
3. **Light sensor: input**
4. **Pins – GPIO: input/output**
5. **Pin - 3 volt power**
6. **Pin - Ground**



1. **Radio & Bluetooth antenna**
2. **Processor & temperature sensor**
3. **Compass**
4. **Accelerometer**
5. **Pins**
6. **Micro USB socket**
7. **Single LED**
8. **Reset button**
9. **Battery socket**
10. **USB interface chip**

Python is a **text** based **programming language**. That can be used to create programs, games, applications and much more!

A **program** is a set of precise instructions, expressed in a **programming language**.
Translating the programming language is necessary for a machine to be able to **execute** the instructions.

To execute a Python program, you need a **Python interpreter**. This is a program that translates and executes your Python program.

Python with data

Computer Science Knowledge Organiser

IT AND THE WORLD OF WORK

Keywords	
Local software	• Needs time to be installed on all computers • Licences may be bought for staff who do not use all of the available software in the package • Has to be maintained and updated by maintenance people • Users must be using the computer on which the software is installed
Cloud storage	• Files are stored on remote servers • When you want to access the file or media, they are downloaded or streamed to your device • Files or media can also be uploaded to the cloud for storage (useful for backups) • Files or media can be synchronised on more than one device so that each device has the same content • The amount of storage can be increased or decreased as needed (it's scaleable)
Ad hoc network	Created with a temporary device-to-device connection without the need for a connection to a Wi-Fi access point or router
VPN	A VPN will route your data traffic via the virtual server. This will hide/cloak your data from potential hackers
Mental well-being	Mental well-being describes your mental health, how well you cope with day-to-day life, how you feel, and how confident you are (good self-esteem).

Accessibility tools

Technology is transforming the way individuals with a disability access the world around them. This increases the opportunity for these individuals to successfully develop a career of their choice.

- Voice recognition that converts spoken word to digital text
- Screen readers that read screen text out loud
- Closed captioning or subtitles
- Motion or eye tracking
- Switch devices, which take the place of mice or keyboards

Reader pen

The impact of Technology

Positive

- Apps can encourage physical activity
- Enhances access to learning
- Wearable technology can track heart rate
- Diabetics can track blood sugar levels and receive warnings if it is high or low, helping them to manage their well-being
- Allows flexibility in choosing a working style

Negative

- Can reduce sleep quality
- Eye strain/poor vision
- Repetitive strain injuries
- Physical inactivity can lead to weaker muscles
- Overuse can lead to: Loneliness, Depression, Anxiety

Traditional vs modern workplace

Traditional

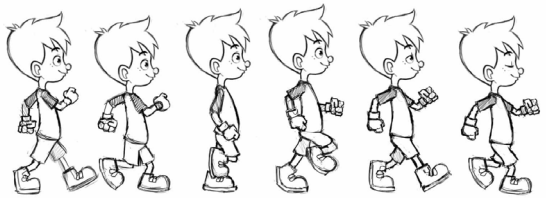
- Takes time to travel to and from the workplace
- Formal work wear
- Desks/workstations
- Labour-intensive tasks
- Slow communication
- Sociable
- 9-to-5 hours

Modern

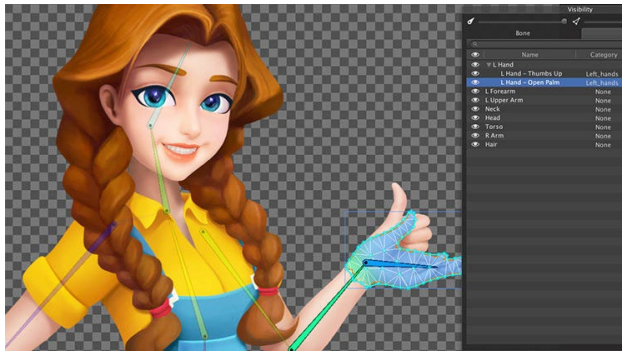
- Use of technology allows flexibility
- Teams can be local, national, or global
- Communication can be immediate
- Data/information is sent digitally and [illegible]ly
- Increased productivity
- Can be isolating

Computer Science Knowledge Organiser

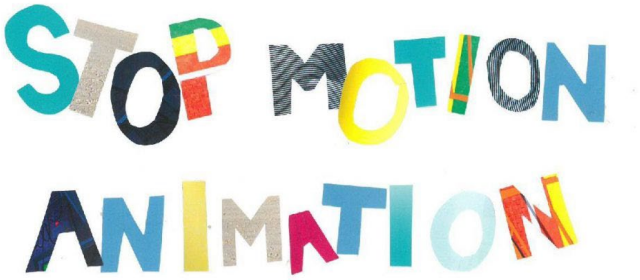
BLENDER - MEDIA ANIMATIONS



Stop motion - manually animate every frame of the animation e.g. Shaun the Sheep ● **slower to make animations** ● **More difficult to edit**	**Keyframe animation** - pick the important locations, the keyframes and the computer works out the rest (called tweening) e.g. Pixar films ● Faster to make animations ● Easier to edit ● Smoother animations ● Repeatable



Key words		
add	colour	cut
edge	knife tool	extrude
face	keyframe	focus
edit	vertex	location
loop	tweening	object
organic	proportional	rotate
render	ray tracing	scale
timeline	subdivision	mode



Definitions	
Face:	A surface made up of three or more sides. **Faces** are often referred to as **polygons.**
Vertex:	A point where one or more edges meet
Edge:	A line connecting two vertices
Objects:	Scenes are made up of geometric, control, lamp and camera objects
Keyframes:	Used for tracking change, a key is a marker in time
Ray tracing:	Rendering that involves tracing the path of a ray of light through the scene
Rendering:	The process of computationally generating a 2D image from 3D geometry
Subdivision:	Creating smooth higher poly surfaces which can take a low polygon mesh as input.
Proportional editing:	Transforming selected elements
Extrude:	Extend an object

Smart Materials

A smart material has a property that can change depending on its environment. This change can be reversed if the environment changes again.

Type	Smart Property	Uses
Thermochromic pigments	Change colour with temperature	Plastic strip thermometers Mugs or spoons that change colour when hot Test strips on batteries
Photochromic pigments	Change colour with light	Lenses in sunglasses that get darker as the light gets brighter Security markers that can only be seen in UV light
Shape Memory Alloy (SMA)	If bent, will return to their original size when heated.	Spectacle frames Sensors in fire sprinkler systems Electric door locks

How to reduce our impact on the environment?

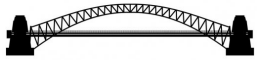
.

- Use **renewable** materials rather than non-renewable means these can be replenished.
- If non-renewable materials are used such as plastic (oil) **carbon emissions** are given off resulting in global warming.
- Choosing **biodegradable** materials means they will break down naturally when the product comes to the end of its life. Non-biodegradable materials that have not been recycled will end up in the landfill or the sea damaging animals and habitats.
- Apply the **6Rs** to ensure minimal impact on the planet.

DT

Y9

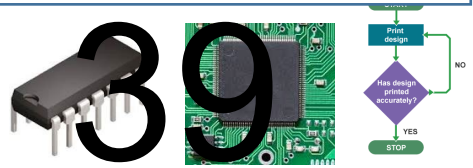
Modern Materials

Type	Properties	Uses
Graphene	Hard and extremely strong Good conductor Flexible	Solar cells Ink that conducts electricity In the future it could be used to develop flexible technology
Composite **Glass Reinforce Polymer** *Fibreglass*	The polymer is flexible and the glass fibres are strong but brittle. Together they make a composite that is tough and strong.	Hulls of boats 
Composite **Carbon Reinforced Polymer**	Polymers are reinforced with carbon fibres making it extremely strong.	Crash helmets Frames for high performance racing bikes Racing cars 
Composite **Reinforced Concrete**	Cement has good compressive strength but poor tensile strength. This is reinforced with steel bars which have good tensile strength.	Construction of buildings and bridges 

Microcontrollers are programmable components that acts like a small computer within a single integrated circuit.

Peripheral Interface Controller **PIC** is a commonly used microcontroller

Flowchart program is a set of instructions laid out using flowchart symbols that tells a microcontroller what to do.



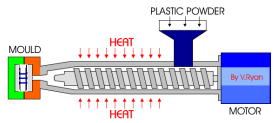
Manufacturing Methods

Natural and Manufactured Timbers	Metal	Polymer	Paper and Boards
Steam Bending Vacuum Press	Injection Moulding Extrusion	Injection Moulding Extrusion Blow Moulding Vacuum forming	Die Cutter Lithography Printing Screen Printing

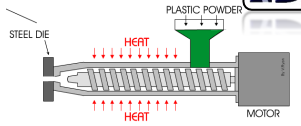
Scales of Production

	Advantages	Disadvantages
One off	High-quality craftsmanship, prototypes can be tested	Expensive, requires specialist labour, time consuming
Batch	Volumes are made for demand which reduces waste, templates and jigs can reused to produce identical products	Downtime between batches
Mass	High volumes can be produced, materials can be bulk purchased at cheaper rates, low-skilled workforce required	Expensive to set up because of specialised equipment, expensive machinery repairs
Continuous	24/7 production using an automated system, high volumes can be produced, materials can be bulk purchased at cheaper rates, low-skilled workforce required	Expensive to set up because of specialised equipment, expensive machinery repairs

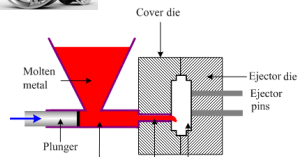
Injection



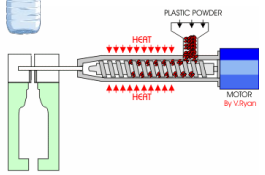
Extrusion



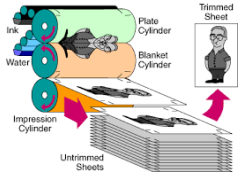
Die Casting



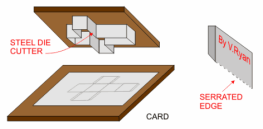
Blow Moulding



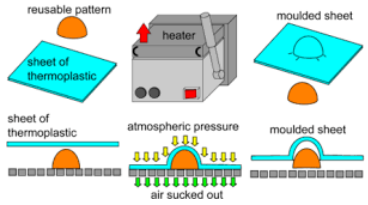
Lithography



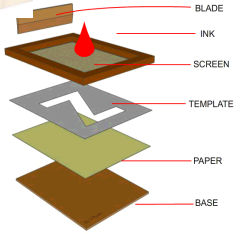
Die Cutter



Vacuum forming



Screen Printing



6Rs

Refuse	Is the product necessary?
Rethink	Are there alternative materials or design options that are more sustainable?
Reduce	Can the product be made from fewer materials? Can the amount of unsustainable materials be reduced?
Reuse	Can parts of the product be reused in a different product?
Recycle	Can the materials used be recycled? If the product made from recycled materials?
Repair	Can the product be repaired rather than being thrown away if it breaks?

Computer Aided Design
Computer Aided Manufacture

CAD	This is using computer software to draw and model a product. **Examples:** 2D Design, Photoshop, Macromedia Fireworks and Sketch Up **Advantages:** • Designs can be shared electronically • Accurate • Designs can be easily edited **Disadvantages:** • Software and training can be expensive • Security issues
CAM	This is using computer software to control machine tools to make products. **Examples:** Laser Cutter, 3D printer **Advantages:** • Faster • Complicated shapes are easily produced • Exact copied are easily made • Machines can run 24/7 **Disadvantages:** • High initial set up costs as CAM machines are expensive

Ergonomics and Anthropometrics

Anthropometrics is the practice of taking measurements of the human body and provides categorised data that can be used by designers. Anthropometrics help designers collect useful data, eg head circumferences when designing a safety helmet. In this example, as there is a large variation in size, the designer would need to build some adjustment into the safety helmet design.

Ergonomics can incorporate the use of **anthropometric data** when designing products to improve the user experience. If a designer doesn't use anthropometric data during the design process, it can lead to a poor user experience that causes discomfort, pain and potential injury. **Ergonomics** is a consideration that leads to a product being designed in a way to make it easy to use. Size, weight, shape, position of buttons and controls are all aspects that contribute to it being ergonomically designed.

Market Pull and Technology Push

Market Pull is when a new product is produced in response to demand from the market.
Technology Push is when a development in materials, components or manufacturing methods leads to the development of a new product.

Life Cycle Analysis

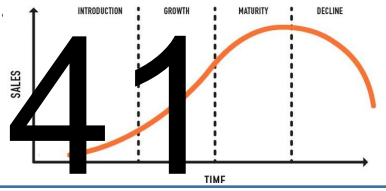
A Life Cycle Analysis is carried out to assess the environmental impact of a product during its entire life, from cradle-to-grave. It looks at use of materials, use of energy, impact of transporting the materials and the parts of the product at various points in its life.

1. **Supply Raw Material**
2. **Transport**
3. **Manufacture**
4. **Package**
5. **Use**
6. **Disposal**

Product Life Cycle

The Product Life Cycle describes the four stages a product goes through from its initial introduction to the market until it is replaced or withdrawn because it is not selling well enough.

1. **Introduction**
2. **Growth**
3. **Maturity**
4. **Decline**



James Dyson

Key Facts

- He is a British inventor
- He is best known for dual cyclone bag bagless vacuum cleaner
- Dyson spent lots of money in research and development with robotics and artificial intelligence being the main focus
- He has developed several products using the latest technology and at the same time reducing impact on the environment by designing them so they use less energy.
- He uses 100% recycled materials to manufacture his products





Philippe Starck

Key Facts

- He is inspired by the organic in order to create technologies better adapted to humans – biomimicry
- He uses sustainable materials in his design
- His designs are made from recycled and re-used plastic
- He uses new technologies in his design
- He sees products as extension of the human body
- He creates products with the perfect balance between design and functionality
- He combines technology and an environmental approach.
- His use of industrial practices to manufacture his products





Design Process

Primary Research	Data gathered first hand directly from the client
Secondary Research	Data about the client that comes from a second hand source
Product Analysis	Looking at a product in detail to understand more about it using ACCESS FM
Design Brief	A summary of the design opportunity
Design Specification	A document that lists all the design criteria that the finished product must meet.
Design Development	Involves making a model of a design, which is then tested and evaluated. A new, improved prototype is made and the process is repeated until the finished design meets all the needs and wants of the client.
Testing	To check that the product meets the design specification and the needs of the user.
Evaluation	Where a designer reflects on the design of a product, looks at what went well during testing and identifies ways that a product could be improved.

Key Words and Definitions

Sustainability	The level to which resources can be used without them becoming unavailable in the future.
Carbon Footprint	Carbon foot print is the measurement/amount of greenhouse gases produced in the production of products.
Renewable Energy Source	A source that is quickly replaced by natural means and will not run out.
Non Renewable Energy Source	A source that cannot quickly be replaced and will eventually run out.

Food Technology Knowledge Organiser

FOOD CHOICES
What makes us choose?

- Special occasions
- Culture
- Likes and dislikes
- Time of day
- Morals
- Health conditions
- Age
- Cost
- Religion

- Some people will make food choices based on their religious beliefs
- Hinduism – most avoid beef & related products; some vegetarians; some avoid eggs
- Judaism – kosher; avoid pork & shellfish;
- Islam – halal; avoid pork & related products; no alcohol
- Buddhism – most are vegetarian or vegan; avoid alcohol

Types of vegetarians

Type of vegetarian	Meat	Fish	Dairy	Eggs
Vegan	✗	✗	✗	✗
Pescetarian	✗	✓	✓	✓
Lacto	✗	✗	✓	✗
Lacto-ovo	✗	✗	✓	✓

Vegetarian alternatives to meat

Quorn- cultured fungus

Soya- soya bean

TVP- Textured vegetable protein

Tofu-soya bean curd

Key words

1. Kosher
2. Halal
3. Vegetarian
4. Ovo-lacto vegetarian
5. Vegan
6. Lacto vegetarian
7. Ethical
8. Diabetes
9. Coeliac
10. Gluten
11. Protein
12. Malnutrition
13. Lactose intolerance
14. Allergy
15. Anaphylaxis
16. Epi pen

What is a Vegan diet	eat **no animal flesh** /meat/fish and poultry **and no animal products**
What is a lacto vegetarian diet	eat animal produce **(Dairy)** but not eggs or the flesh of animals/meat/fish/poultry
What is a lacto- ovo vegetarian diet	eat animal produce **(Dairy and eggs)** but not the flesh of animals/meat/fish/poultry
Why might someone choose to be a vegetarian?	Religious beliefs /Moral beliefs – cruel to kill animals/ Do not like the flavour, texture of meat / Land growing crops can feed many more people than land raising animals / Food scares – BSE, food poisoning, salmonella / Family influence/habits /Peer pressure
What foods can vegetarians get protein from?	Good vegetarian sources are Quorn, Tofu, Soya, Cereals, Pulses, Nuts & Lentils (**some** may also get this from diary and eggs)
What foods can vegetarians get non- haem Iron from?	Found in pulses, nuts, dried fruit, dark green leafy veg, dark chocolate, cocoa powder, black treacle, curry powder.
What foods can vegetarians get Vitamin B12	Found in yeast extract, marmite and fortified breakfast cereals
Vitamin B12 is needed to:	Needed for energy production, formation of red cells

Nutrient Needs of Teens

Nutrient	Reason	Example Foods
Protein	Cope with growth spurts. Boys muscular tissue develops	Omelettes, chicken
Iron	Girls lose iron during menstruation and could become anaemic if not replaced. Vit C helps absorb iron.	Spinach, beef
Vitamin C		Peppers, strawberries
Calcium	Skeleton grows rapidly. These nutrients helps skeleton reach peak size and bone density.	Milk, yogurt, kale, tofu
Vitamin D		Tuna, salmon, mackerel

Food Technology Knowledge Organiser

Diet related health conditions

Cardiovascular disease (CVD) - This is the general term that describes disease of the heart or its blood vessels. The term includes coronary heart disease and stroke in which arteries carrying blood around the body become blocked with fatty deposits (cholesterol) and consequently blood flow is reduced. CVD is linked to poor diet and lifestyle traits such as obesity, high blood pressure, a diet high in cholesterol and lack of exercise.

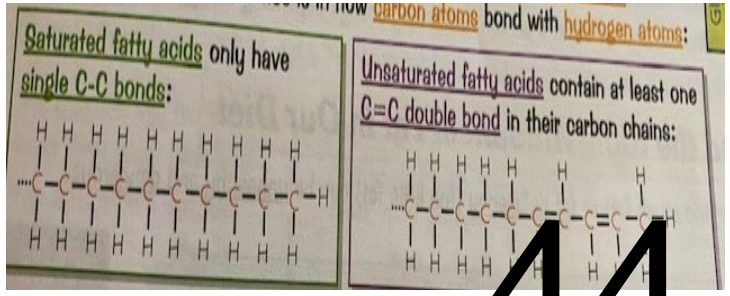
To reduce the outcome of CVD it is important to follow dietary guidelines and eat a diet that is low in saturated fat and instead eat foods higher in unsaturated fat such as oily fish, nuts and seeds, olive oil and the recommended 5-a-day of fruit and vegetables.

Diabetes: type 2 - The body may produce too little insulin, or the body has become insulin resistant and cannot utilise the glucose produced by carbohydrates. To help prevent this condition, people should follow the healthy eating guidelines, exercise and maintain a healthy weight. This kind of diabetes usually affects people who are overweight or older. If a person is overweight, they are twice as likely to get type 2 diabetes. Therefore, a high-sugar diet and high-fat diet should be avoided.

Iron deficiency anaemia - Iron is important in making red blood cells, which carry oxygen around the body. Iron deficiency anaemia results in the person affected feeling tired and lethargic because organs and tissues will not get as much oxygen as they need.
Good sources of iron include liver (avoid during pregnancy), eggs, red meat and dried fruit e.g. dried apricots and most dark green leafy vegetables.

Obesity - This is the term to describe a person who is very overweight, with a lot of body fat. It is a common problem in Western society. The method to determine if a person is overweight is to measure their BMI.

Saturated fat: solid at room temperature, mainly animal foods sources include:
fatty cuts of beef, pork, and lamb
dark chicken meat and poultry skin
high fat dairy foods (whole milk, butter, cheese, sour cream, ice cream), tropical oils (coconut oil, palm oil, cocoa butter)lard
Unsaturated fats: Liquid at room temperature, vegetable sources, includes mono and polyunsaturated fats.



Food Technology Knowledge Organiser

Making a Roux Sauce

Food Science Topics

Keywords

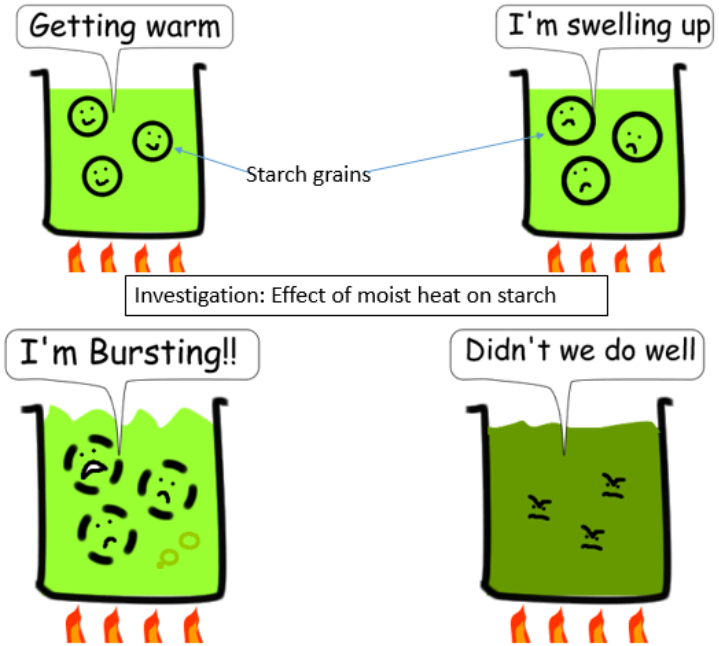
1. Gelatinisation
2. Viscosity
3. Consistency
4. Dextrinisation
5. Caramelisation

LOVE FOOD LOVE SCIENCE

Carmelisation:Sugar molecules break down when they reach a high temperature causing the sugar to turn brown and change flavour.

Dextrinisation occurs when starch is exposed to dry heat. Starch in bread, biscuits and cakes with dry heat (toasting/baking) causes the starch molecules to break down to dextrin (brown colour)

Macro-nutrients (are those nutrients we need in large amounts . They all provide us with energy)

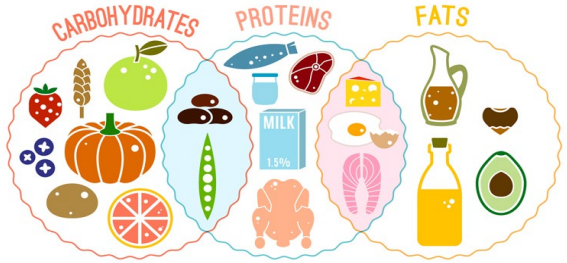


a. The starch grains when **heated** between 62◦C and 80◦ C with the liquid **absorbs the liquid.**
b. As it does so it **swells/expands.**
c. When it is no longer able to hold any more liquid the **starch grains burst** to release starch causing the **sauce to thicken.**

Gelatinisation occurs when the starch grains absorb water and ruptures to thicken a sauce or in the cooking of rice and pasta.

Carbohydrates

Starch
Sugars
Dietary fibre



Chemical formula for **glucose** : $C_6H_{12}O_6$

Sugars : Monosaccharide
Disaccharide
Polysaccharide

Food Technology Knowledge Organiser

Key Words

BMR: Basal Metabolic Rate is the amount of energy we need to keep our body alive.
Energy balance: the amount of energy we get from food each day is the same as the amount of energy we use each day.

BMI:is a measure that adults and children can use to see if they are a healthy weight for their height.

Energy dense: foods . containing high amounts of fat and carbohydrates (especially sugar) e.g. pizza, pastry, chocolate bars, pastries, cakes, cookies, meat products i.e. sausages, burgers salami).

Kilocalorie (kcal)/ kilojoule (Kj): units used to measure energy.

PAL (Physical Activity Level): the amount of energy we use for movement and physical activity every day.

Functions in the body. Everyone needs energy to survive. It allows the body to:

- Move muscles and be physically active
- Produce heat to keep warm
- Send messages to the brain to make nerves work
- Allow the body to grow and develop

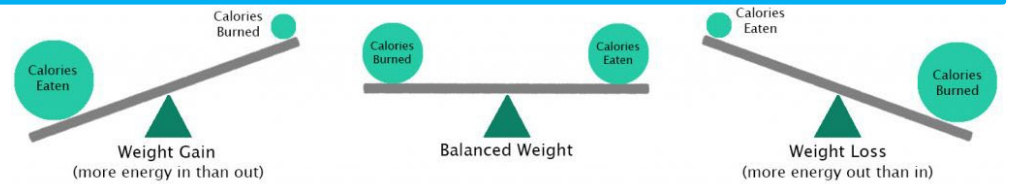
Sources:
Carbohydrate: foods containing sugar and starch (1g of carbohydrates = 3.75 /4 kcals of energy)

Fat: foods containing visible and invisible fats and oils. (1g of fat = 9 kcals of energy)

Protein: (1g of protein = 4 kcals of energy)

Energy Balance The amount of energy we take in from food must be used up by our Basal Metabolic Rate and Physical Activity Level.

If we take in more energy from the food we use every day , the energy we do not use will be stored as fat and the body will gain weight.
If we take in less energy from food than we use every day, the energy stored in body fat will need to be used and the body will gradually lose weight.
This is the basis of weight reducing diets.



Physical Activity Level: Regular exercise is an important part of a healthy lifestyle.
Physical activity :

- Reduces risk of developing heart disease, obesity and some cancers.
- Improves health of muscles and skeleton
- Keeps the brain alert and working
- Makes people feel good about themselves.
- Health experts are concerned about the sedentary (inactive) lifestyles due to too much sitting for long periods of time e.g. working at a desk, watching television, using the internet or playing computer games.

The recommended physical activity needed daily is suggested to be:

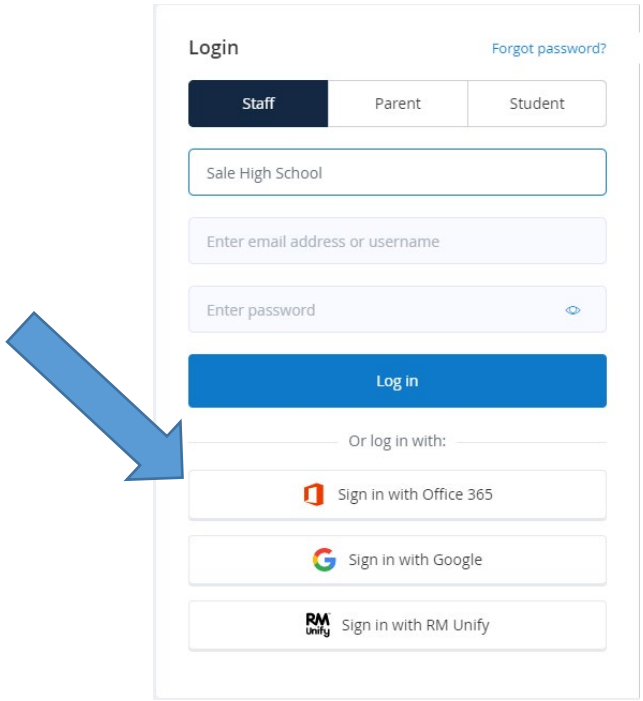
- 5—18 years: aim for an average of at least 60 minutes of moderate intensity physical activity a day across the week
- 19-64years: aim to do at least 150 minutes of moderate intensity activity a week or 75 minutes of vigorous intensity activity a week.

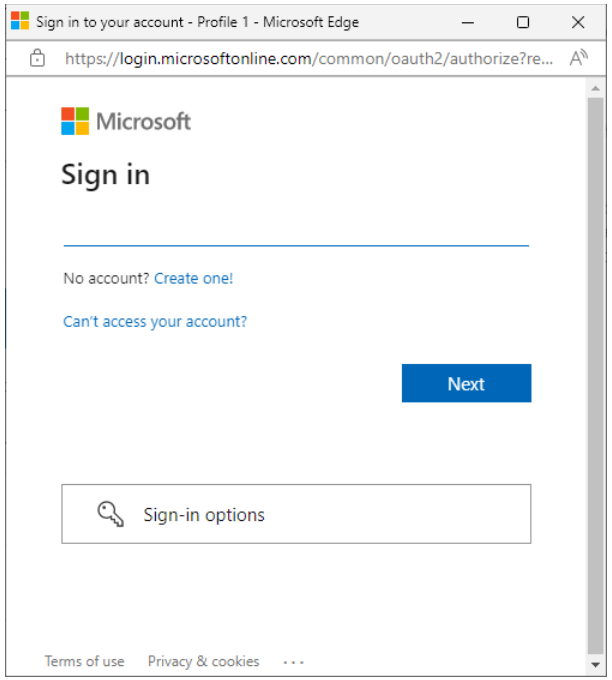
Amount of energy needed daily by each nutrient: Carbohydrate: 50%. Most of which should come from starch, intrinsic and milk sugars.
No more than 5% of the energy from carbohydrate should come from free sugars, intrinsic sugar found in fruit and vegetables.
Fat: 35% or less eat less saturated fats.
Protein: 15%

Satchel:one log in guide

How to Log into satchel:one

1. At the Log in Screen, Click ‘Sign in with Office 365’





2. Type in your school email address.

Your School Email Address is made up from the year you started Highschool,

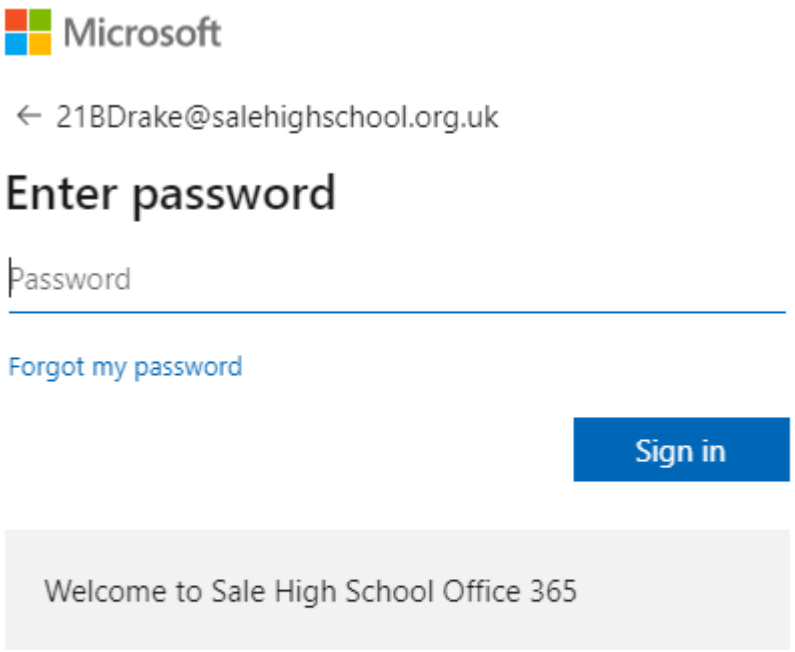
Year Started	School Year
23	7
22	8
21	9
20	10
19	11

Follow this with your first initial, second name, and the school domain address (@salehighschool.org.uk)

e.g: 21BDrake@salehighschool.org.uk

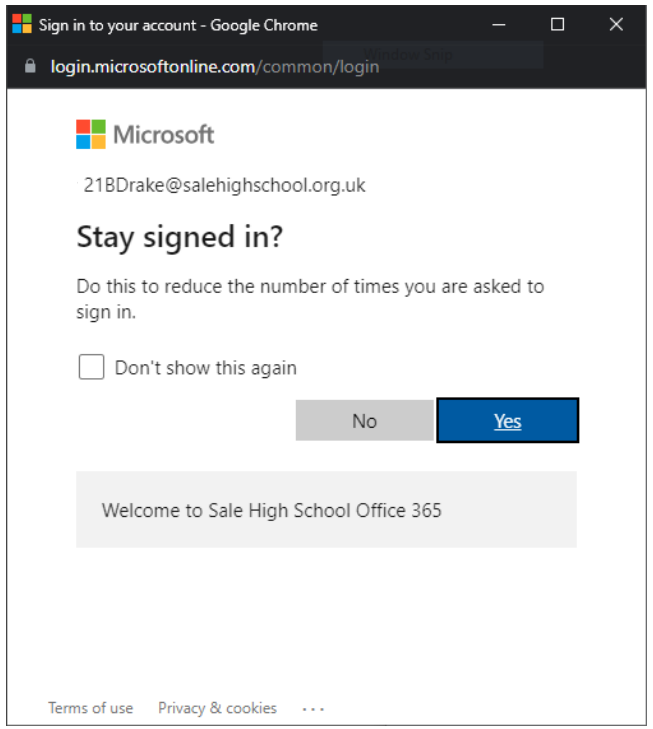
Satchel:one log in guide

3. Enter your password.
This is a six digit number.
(Your teachers can give you)

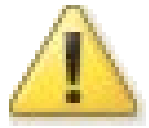


4. Finally, Office 365 asks about signing in.

Yes can be pressed if your log in is from your phone or own computer.



Logging into Satchel:one in this way is the same on all devices:
PC, Laptop, Tablet, iPad, and Phone.



PLEASE BE PATENT!
If you are on a mobile device (phone or tablet) Satchel often 'snaps' back to the original log in screen.
Wait for a few seconds and the system will change to your logged in account.