SUMMER KNOWLEDGE ORGANISER

YEAR 9

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Literacy / key words

Transparency- A key characteristic of watercolour, where the paint is diluted with water to create a translucent effect, allowing underlying layers or paper texture to show through.

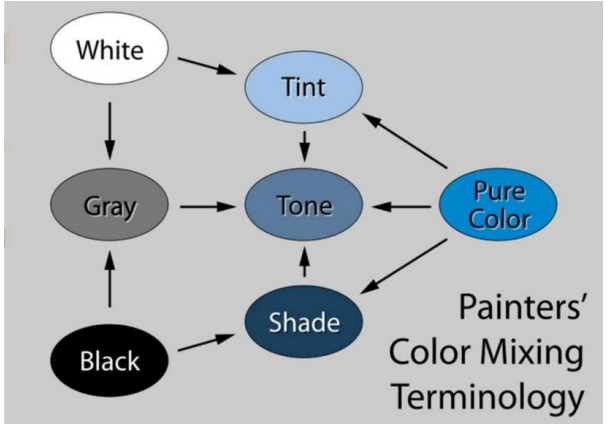
Wash- A technique in watercolour painting involving the application of a thin, even layer of diluted paint to cover large areas, often used for skies or backgrounds.

Layering- Building up multiple layers of paint to create depth, tonal variations, and texture in a painting.

Mixed Media- The combination of different artistic mediums, such as watercolour, ink, pastel, or collage, in a single artwork to create diverse textures and effects.

Stippling-
Stippling in watercolour is a technique where an artist creates an image or texture by applying small, individual dots of paint, essentially "dotting" to build up areas of colour and shading, with denser dots creating darker areas and more spaced out dots creating lighter areas; it's a method that requires patience and precision to achieve the desired effect. This can be done by dabbing the bristles of the brush onto the page repeatedly. Or by using a fine tipped brush to place each dot individually.

Dry brush-
A technique where a dry brush with minimal paint is used to create textured, broken strokes on the paper. This results in a dry-looking appearance and reveals the texture of the paper. It's commonly used for depicting rough surfaces like rocks, grass, or hair, while still maintaining a visible white space between brushstrokes.

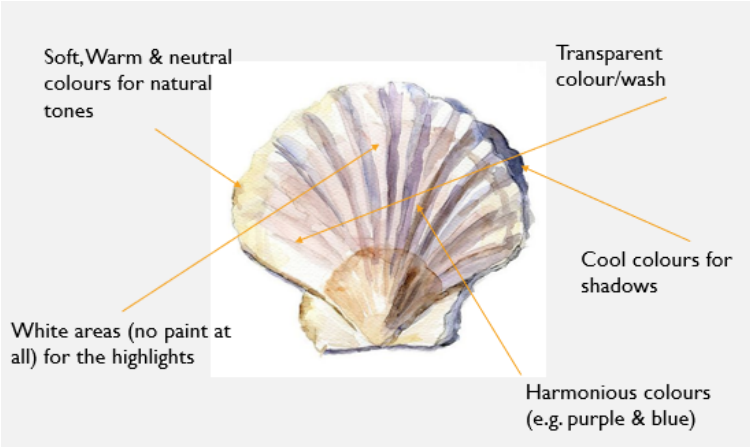


Saturation- The intensity or purity of a colour. Colours with high saturation are more vivid and pure.

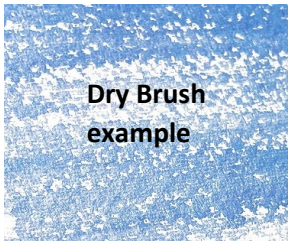
Key terminology for colour mixing

Any colour + white = Tint
Any colour + grey = Tone
Any colour + black = Shade

Hue= another word for colour



YEAR 9 Summer Term



Watercolour wash examples

Extra - Read/watch/do

- **What is colour?** -https://www.bbc.co.uk/bitesize/articles/z7rtng8#ztxnvj6
- **Tints, tones and shades-** https://www.bbc.co.uk/bitesize/guides/z9bbk2p/revision/7
- **How to begin with watercolour-** https://www.youtube.com/watch?v=NkhQsTpkWrs&t=223s

Karin Zeller:

Karin Zeller is a self-taught artist known for her vibrant and whimsical paintings, often featuring cats and fish. Initially focusing on realistic pencil portraits, Karin eventually embraced her love for colour, experimenting with watercolours and acrylics to develop her distinctive style. Her work is influenced by artists like Picasso and Paul Klee, and she enjoys creating abstract and surreal pieces. Karin has been teaching art classes and workshops for several years and continues to inspire others with her playful and imaginative creations

Collage:

Collage is an art technique where different materials are cut, arranged, and stuck onto a surface to create an artwork. These materials can include paper, fabric, newspaper, magazine cuttings, photographs, textured materials.

Watercolour:

Watercolour is a painting method using water to spread colour smoothly and lightly across the paper. It's great for creating soft, transparent layers and blending colours easily.

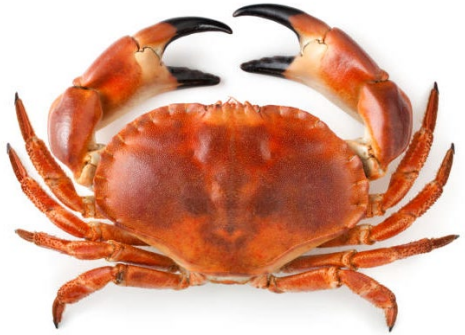
Mono printing:

Mono printing is a type of printmaking where you create a one-of-a-kind print, meaning each print is unique and cannot be exactly repeated. It is a fun and experimental technique that allows for creative textures, marks, and layering of colours. Roll or paint a thin layer of ink or water-based paint onto the surface. Use tools like brushes, cotton buds, or even your fingers to draw patterns, textures, or images into the ink. You can also place paper over the ink and draw on the back to transfer the design.
Carefully press a sheet of paper onto the inked surface and smooth it down evenly.

What techniques will I learn?

This term your assessment will be a watercolour painting of this crab image. To be successful, you will need to:

- Use a tint
- Use a tone
- Use a shade
- Use a gradient
- Show texture



Wax resist:
Wax resist is a painting technique where you use a wax-based material, like a white oil pastel or crayon, to create a design on paper before applying watercolour paint. The wax repels the water-based paint, leaving the drawn areas untouched and creating a contrast between the wax and the painted surface.

You will be assessed on

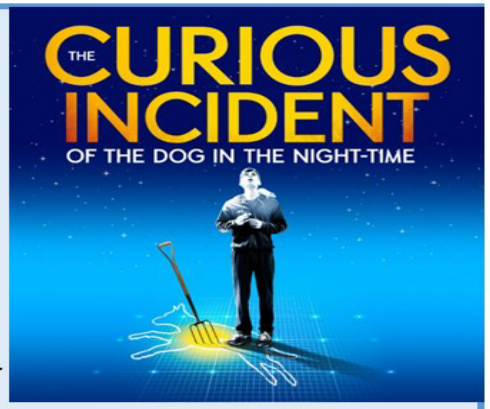
- Term 1 – Observational drawing (tonal shading)
- Term 2 – Biro pen drawing (Artist inspired)
- Term 3 – Crab painting (watercolour)

Links to curriculum

English and Science (biology) - In our lessons, we will look at environmental issues such as pollution, plastic in the ocean and marine life.

Drama Knowledge Organiser

Plot



The Curious Incident of the Dog in the Night-Time is an adaptation by Simon Stephens of the original novel by Mark Haddon.

The Curious Incident of the Dog in the Night-Time follows the story of Christopher Boone, a 15 year old, who is exceptional at Maths but finds people confusing.

The play opens with Christopher discovering a dead dog in his neighbour, Mrs Shears', garden. Despite his father, Ed, warning Christopher not to get involved, Christopher decides to investigate the death of the dog. In doing so he discovers that his mother is not dead as his father had told him, but alive and well, living in London.

He also discovers that it was his father who killed the dog. Christopher feels that his father is a murderer, who he cannot trust. He can no longer live with him and so he bravely travels to London to find his mother. Christopher has difficulty settling into his new life in London and returns to Swindon to take his A-level Maths exam.

The play ends with him passing the exam and the realisation that he can do anything he puts his mind to.

CHARACTERS

Christopher Boone	The protagonist. A 15-year-old boy who is very good at maths but finds people confusing.
Ed Boone	Christopher's Dad. He cares about his son but is very hot-headed and stubborn.
Judy Boone	Christopher's Mum. Left due to not being able to handle his odd behaviour. Has a fun and romantic view of life.
Siobhan	Christopher's teacher. She is calm, patient and encouraging. She gives Christopher advice on what he should do.
Rodger Shears	Christopher's Mum's boyfriend. He is not understanding towards Christopher's needs and is often sarcastic
Mrs Shears	Rodger's wife. Helped Ed and Christopher. Wellington's owner.
Mrs Alexander	An elderly woman who lives on Christopher's street. She is kind and welcoming, but could also be seen as a gossip.

Vocal skills	Physical Skills
Pitch	Posture
Pace	Eye contact and its withdrawal
Pause	Gesture
Accent	Gait
Emphasis	Interaction
Intonation	Body Language
Tone	Mannerisms

Constantin Stanislavski
1863 - 1938

'The actor must use his imagination to be able to answer all questions (when, where, why, how).'

Believed that the audience should emotionally connect with the characters.

Actors should use their own experience to make their characters as believable as possible.

Terminology and techniques:
- The fourth wall
- Emotional memory
- The magic 'if'
- Sense memory
- Objectives
- Given circumstances
- Subtext
- Method of physical actions

Naturalism

Bertolt Brecht
1898 – 1956

'Art is not a mirror to reflect reality, but a hammer with which to shape it.'

Believed that theatre should be used to spread a message and comment on society.

The audience should always be aware they are watching a play and constantly questioning what they see.

Terminology and techniques:
- Breaking the fourth wall
- Alienation (Verfremdungseffekt)
- Gestus
- Use of placards
- Narration
- Multi-role
- Minimal set/costume/props
- Masks

Epic theatre

Frantic Assembly
1994 – Present

FRANTIC ASSEMBLY

'We began with little more than a fierce work ethic and a desire to do something different and to do it differently.'

World-renowned theatre company who use physical theatre to devise performance.

Wanted to create non-realistic pieces of theatre through the use of movement and music.

Terminology and techniques:
- Chair duet
- Hymn hands
- Lifts
- Walk the grid
- Mirroring
- Round-By-Through

Physical theatre

To find out more about Naturalism, scan the QR code:

To find out more about Epic Theatre, scan the QR code:

To find out more about Physical Theatre, scan the QR code:

Music Knowledge Organiser

Year 9 Summer Term

The invention of the movie soundtrack changed the role of music in film. In the 1930s the role of the *film composer* began to emerge. Music was needed for the credits and for parts of the film with no dialogue, particularly the really dramatic sections Many have REALLY good themes (leitmotifs) for their characters e.g. James Bond, Jaws, Superman.

Composers in big budget films use a full symphony orchestra. In modern times, films that do not have the large amounts of money can now employ one person using sampled sounds and a keyboard to re-create the sounds of a full orchestra.

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

INTERVAL PEDAL NOTE OMINOUS ENDING FANFARE TRIPLETS LEITMOTIF RITENUTO STACCATO DISSONANCE PICCOLO CONTRAST OSTINATO

Features of Movie Music:

- **Lots of contrast to suit the drama – tempo changes, pitch changes, dynamics changes**
- **Syncopated rhythms**
- **Use of Symphony orchestra**
- **Leitmotifs (character themes)**
- **Cultural references in the music – choice of instruments and rhythms suitable to the location**
- **'Mickey Mousing'**
- **Interesting choice of tonality e.g. major = happy, minor = sad/mysterious, atonal = horror**
- **Diagetic music (can be heard by characters) and background music**

What is Mickey Mousing?

A film technique that matches the music with the actions on screen. Walt Disney films often used this technique where the music almost completely works to mimic the animated motions of the characters.

John Williams is an American composer, conductor and pianist and has won 25 Grammy Awards! He is regarded as one of the most influential film composers. His work has influenced other film composers, as well as contemporary classical and popular music. Some of his most well-known films include: Star Wars, Jaws, Close Encounters of the Third Kind, Harry Potter, Jurassic Park and E.T.

Hans Florian Zimmer is **a German film score composer and record producer.** His works are notable for integrating electronic music sounds with traditional orchestral arrangements. Since the 1980s, Zimmer has composed music for over 150 films. His works include The Lion King, Dune, Pirates of the Caribbean, Gladiator. His films have grossed over 28 BILLION dollars at the box office world –wide!

Quincey Jones' legendary career spans over six decades in the entertainment industry. Jones's highlight-laden career includes producing everything from hits for Frank Sinatra and Count Basie to piloting *Off the Wall, Thriller*, and *Bad* for Michael Jackson. His work for *The Color Purple* was nominated for Best Original Score and Best Original Song in Steven Spielberg's first movie without composer John Williams.

Key Score: ***In the Heat of the Night, The Italian Job, The Colour Purple***

KEY WORDS AND MEANINGS: Tier two words in BLUE, Tier three words in ORANGE	
Interval	The distance between two notes e.g. a 4th, 5th, 7th
Pedal (note)	A long, sustained note OR a repeated not in the bass line
Ominous ending	A tense and worrying ending to the piece created by using a long, low pitched note on cello
Fanfare	A fancy, brass 'announcement' that something or someone important has arrived e.g. The Queen
Triplets	Three notes that can played in the space of two. Sounds like 'sau-sa-ges'
Contrast	Opposites e.g. Fast and Slow, Loud and Quiet, High and Low
Leitmotif	A theme for a character, place or item e.g. Luke Skywalker or the Death Star
Ritenuto	To gradually slow down
Staccato	To play the notes in a short and detached way
Dissonance	Clashing harmonies
Piccolo	A small flute – very high in pitch
Ostinato	Repetition – this could be a rhythm or a melody

English

Literacy (spellings)

1. Shakespeare
2. Soliloquy
3. Imagery
4. Contextual
5. Hierarchy
6. Metaphor
7. Simile
8. Figurative
9. Lysander
10. Demetrius

Adjectives - character (Q)

- Impulsive
- Romantic
- Idealistic
- Patriarchal
- Bitter/ jealous
- Mischievous
- Emotional
- Despairing/ desperate
- Manipulative
- Chaotic/ ordered
- Abusive/ controlling
- Supernatural
- Ridiculous/ absurd
- Naïve/ cunning

Summer 1: *A Midsummer Night's Dream*

Context

Elizabethan era: the period in history when Elizabeth I was queen is often called the "Elizabethan era". This was the period when *A Midsummer Night's Dream* was written by Shakespeare.

Comedy: a play that includes A) both a lot of humour and jokes and B) in Shakespeare plays, couples survive different struggles and barriers to finally be able to be happily married

Marriage: Wealthy Elizabethans would be expected to have arranged marriages by their parents and not marry for love

Patriarchy/ patriarchal: society controlled by men: Elizabethan women were expected to obey husbands/fathers

Petrarchan love = an idealised (not necessarily realistic!) view of love that believe men should 'worship' women and long for them. This romantic view contrasted with the reality of arranged marriages.

Great Chain of Being = Elizabethan view of the world that believed in a 'divine order' created by God. This created a social and gender hierarchy, and it was considered wrong to 'go against' the chain.

Sentence Starters (QTA)

*Try to include one of each colour! (**QTA**)*

Q. Shakespeare has created the character of ____ to…/ Shakespeare presents the theme of…

Q. This is shown in the quote "…"

T. The *word/ techniques* suggests…

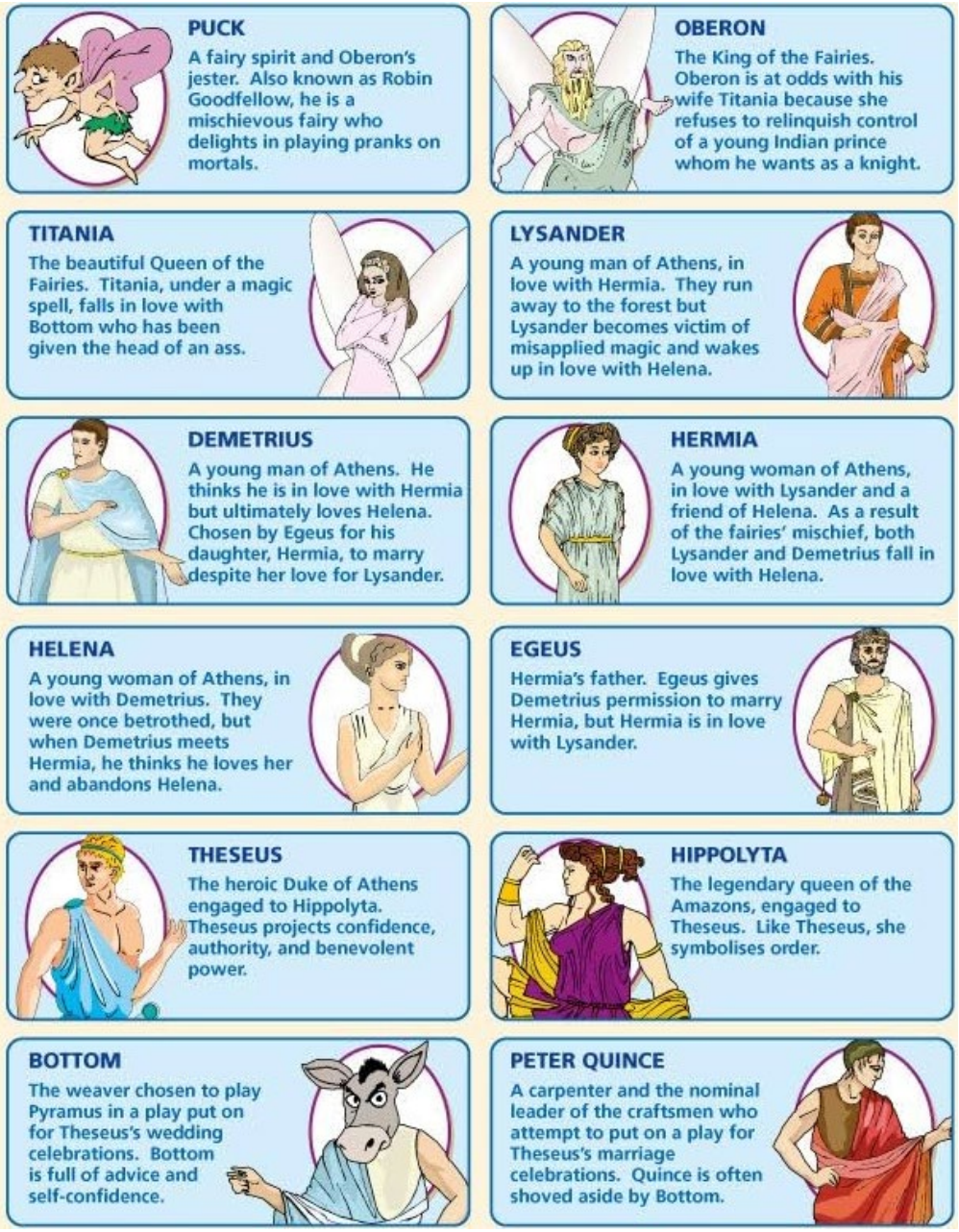
T. Also, the (word) emphasises…

T. Alternatively, it could also imply…

A: The audience will think/feel… because…

A: This links to the context of Elizabethan England because…

A: Shakespeare intended to…



Verbs of Inference: (Q)

- Present/ show/ convey
- Creates/ illustrates
- Establishes/ develops/ concludes

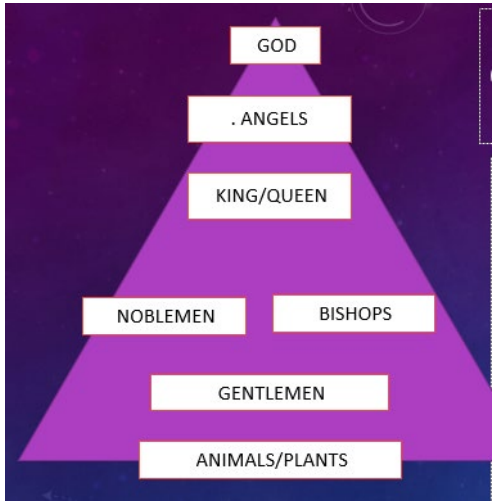
Verbs of analysis: (T – effect of language)

- Emphasise/ highlight
- Has connotations of/ makes you think of
- Imply/ suggest

Verbs of intent: (author's purpose)

- Makes the audience think/feel/ like/dislike
- Warns
- Criticises
- Sympathises with
- Shocks/ horrifies/ saddens
- Encourages the audience to/has a message of

Great Chain of Being



Techniques (T)

- **Simile** – comparing like/as
- **Metaphor** – comparing directly (is/are)
- **Juxtaposition** - clear contrast of opposites
- **Iambic pentameter** – poetic metre of alternating stressed/unstressed syllables (di-DUM, di-DUM)
- **Emotive language** – language with strong emotion
- **Personification** – describing non-humans as human
- **Motif** - repeated imagery
- **Oxymoron** – contradictory phrase e.g. 'bittersweet'
- **Hyperbole –** deliberate over-exaggeration for effect
- **Dramatic irony –** information the audience knows but the characters do not!
- **Soliloquy –**speech where characters speak their thoughts aloud on stage alone

Connectives...

Therefore	Whereas
Equally	Consequently
Similarly	Contrastingly
Moreover	However
Despite this	Crucially

Literacy (spellings)

1. Prejudice
2. Language
3. Discrimination
4. Dialect
5. Hierarchy
6. Colonialism
7. Ignorance
8. Intersectional
9. Stereotype
10. Heritage

Summer 2: Prejudice

Techniques (T)

- **Simile** – comparing like/as
- **Metaphor** – comparing directly (is/are)
- **Juxtaposition** - clear contrast of opposites
- **Emotive language** – language with strong emotion
- **Personification** – describing non-humans as human
- **Motif -** repeated imagery
- **Hyperbole –** deliberate over-exaggeration for effect
- **Anecdote –** story from real life
- **Direct address –** speaking directly to audience e.g. 'you'
- **Anaphora –** repetition at start of sentences/ phrases
- **Imperative** – command/ request
- **Modal verbs** – shows necessity/possibility *e.g. 'must'*

Class hierarchy

Upper class

- ✓ Rich; usually inherits wealth
- ✓ Aristocracy (earls, dukes etc)
- ✓ Private schools, country houses

Middle class

- ✓ Professional/ highly educated
- ✓ Doctors, teachers, skilled tradesperson such electrician etc

Lower/ working class

- ✓ Lower income
- ✓ Usually less formal education
- ✓ Often manual work
- ✓ Shop assistant, carer, cleaner etc

Key words: Dialect

Dialect –form of a language specific to a region or social group

Idiom – metaphorical phrase specific to a dialect e.g. 'raining cats and dogs' in England!

Slang – informal language specific to a group

Colloquial – ordinary/ familiar language (not literary)

Standard English – formal English, usually used in professional contexts

Timeline: Black Britons

1492
Columbus 'discovers' the new World (America/ Caribbean)

1680 – 1834
Transatlantic slave trade – Britain profits from 'trading' enslaved African people to the Caribbean/ America

1686 – 1733
Nanny of the Maroons leads escaped Jamaican enslaved people against their enslavers

1841 - 1853
Solomon Northup kidnapped into slavery for 12 years – he published an autobiography of his experiences

1854 - 1857
Mary Seacole nurses soldiers in the Crimean war after initially being rejected for being black

1948 - present
'Windrush' generation: Caribbean and other commonwealth countries invited to rebuild UK after WW2, despite facing discrimination

Key words:

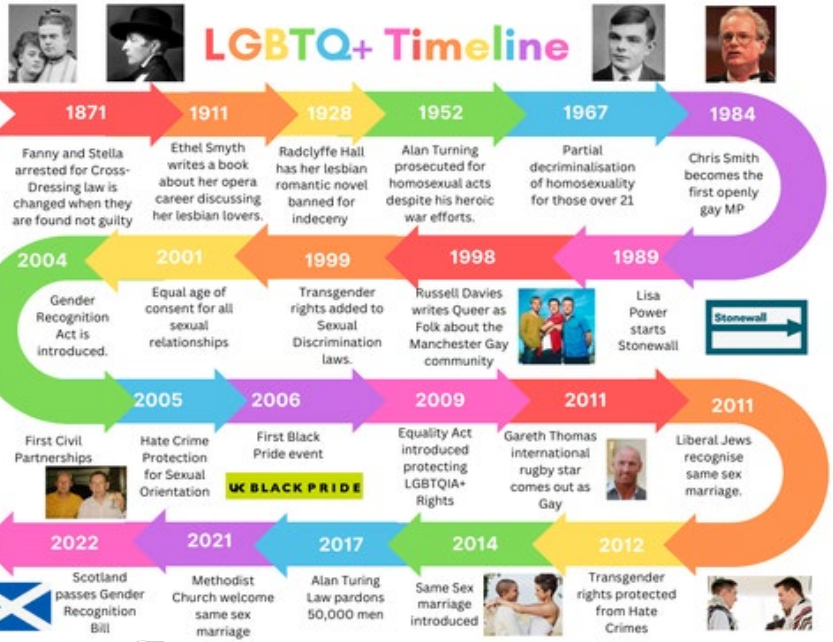
Prejudice = negative pre-existing belief

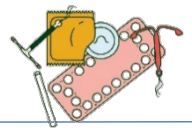
Discrimination = treating someone differently based on prejudice

Colonialism (n.)/ colonial = occupying/ controlling another country

Intersectional = identities that face overlapping prejudices/ privileges e.g. a white man may still face prejudice for a disability

Ableism = prejudices against disability





1878: Women first allowed to leave violent husbands

1903: Emmeline Pankhurst founds suffragettes

1918: women over 30 granted vote
1928 – equal voting rights

1923: women gain right to equal divorce rights

1967: Abortion/ contraception legalised

1968: Equal pay Act makes it illegal to pay women less

1975: Sex discrimination act – illegal to fire on basis of gender

1976: Domestic violence recognised as a crime

1994: marital rape made a crime

1999: (unpaid) maternity/ paternity leave

Extra - Read/watch/do

Suffragette (film)
On the edge of gone (book)
Things a bright girl can do (book)
The girl with the louding voice (book)
Kes (book)
Silence between us (book)
Small island (book)
Luna (book)
Windrush child (book)
Every star that falls (book)

Sentence Starters (QTA)

Try to include one of each colour! (QTA)

Q. The writer creates the idea/ theme/ character to…

Q. This is shown in the quote "…"

T. The *word/ techniques* suggests…

T. Also, the (word) emphasises…

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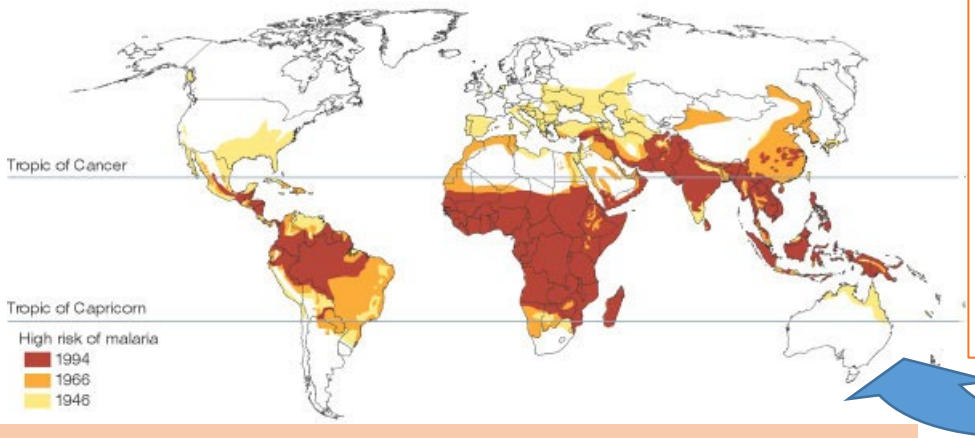
Geography Knowledge Organiser: *Modern Challenges*

Disease



Example – The pattern of global malaria risk is directly linked to the climate conditions needed for mosquitoes to thrive.

Patterns of disease can exist for multiple reasons:

- Social – access to healthcare - regions with limited access to healthcare services often experience higher rates of diseases and higher mortality rates.
- Economic – Poverty affects access to food, clean water, housing, and healthcare services, all of which are essential for maintaining good health. Access to clean water and proper sanitation facilities, such as toilets and sewage systems, is essential for reducing the transmission of waterborne diseases like cholera.
- Environmental – climate - Changes in climate patterns can alter the geographic range and seasonality of infectious diseases, including vector-borne diseases like malaria. Rising temperatures and changes in rainfall patterns can create conditions which are easier for disease vectors to thrive, leading to increased transmission rates.

How are diseases spread?

Person to person	Any contact with another person, such as shaking hands, can spread pathogens.
Water	Drinking dirty water can transmit many diseases, such as cholera.
Air	When a person who is infected by the common cold sneezes, they can spray thousands of tiny droplets containing virus particles to infect others.
Vector	Any organism that can spread a disease is called a vector. For example, mosquitoes spread malaria when they bite people.

Malaria in Uganda

Uganda has one of the highest global burden of malaria cases, with over 90% of the population at risk, malaria is Uganda's leading cause of death, especially in children. The average economic loss in Uganda due to malaria each year is over $500 million. The diseases stops adults from working and children from going to school. In 2022, WHO reported that there were an estimated of 12.7 million malaria cases and over 17,556 estimated deaths in the country.

Conflict

What causes conflict?

1.Resource Scarcity: Competition for limited resources such as water, land, and minerals can lead to conflicts between communities, regions, or nations.
2.Ethnic and Religious Tensions: Differences in ethnicity, religion, or culture can fuel conflicts.
3.Political Instability and Governance Issues: Populations that feel they are not represented by their government can result in social unrest and conflict.
4.Economic Inequality: Inequalities in wealth, lack of economic opportunities, and marginalization of certain groups can lead to social unrest and conflict.
5.Territorial Disputes: Conflicts over which countries own land can escalate into armed conflict.
6.Ideological Differences: Conflicts driven by disagreements over religion or extremism can cause dangerous conflicts.

Case study: Darfur, Western Sudan, Africa.

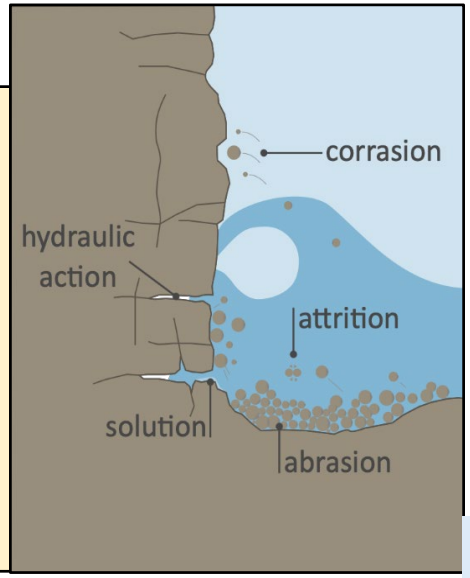
The conflict in Darfur is known as the 'first climate change' conflict as one of the causes of the war in Darfur was a conflict over control of water resources between nomadic livestock herders and permanently settled farmers who farmed the land.
Climate change has led to an increase in drought and desertification meaning that these supplies were becoming more scarce. An estimated 480,000 people died in the conflict and 2.8 million people became refugees.

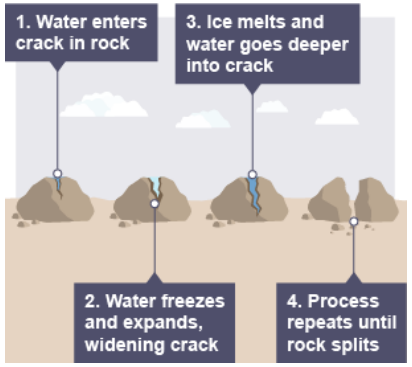
Geography Knowledge Organiser: Coasts

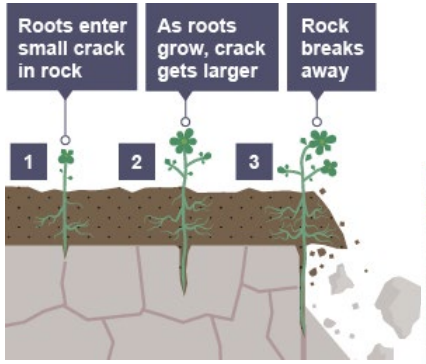
Weathering and Erosion

Types of erosion

- **Hydraulic action:** air may become trapped in joints and cracks on a rock face. When a wave breaks, the trapped air is compressed which weakens the cliff and causes erosion.
- **Abrasion:** Pieces of rock carried by waves grind and scrape against cliff surfaces like sandpaper.
- **Attrition:** Waves smash rocks and pebbles on the shore into each other. They break and become smaller, smoother and rounder.
- **Solution:** Acids contained in sea water will dissolve some types of rock such as chalk or limestone.



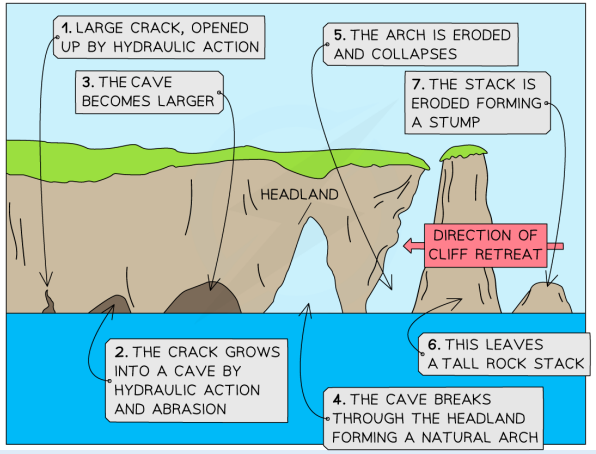


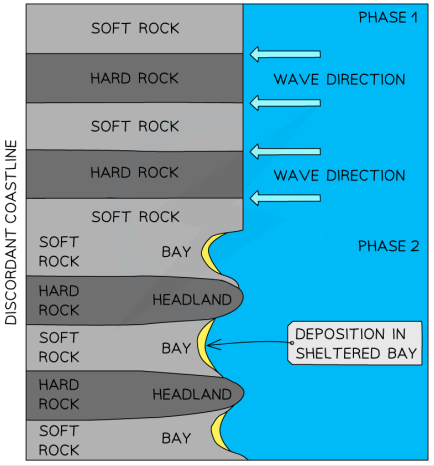


Types of weathering

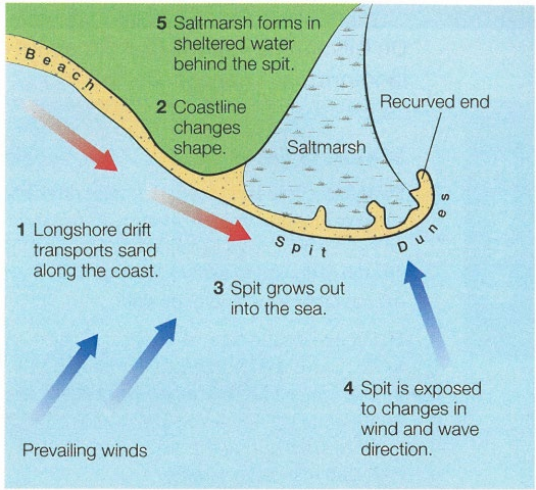
- **Freeze-thaw weathering** – As rainwater freezes and melts repeatedly over time, cracks in the rocks are widened.
- **Biological weathering** – plant roots can grow into cracks in the rock and widen them.
- **Chemical weather**ing - Rainwater and seawater can be a weak acid. Over time a coastline made up of rocks such as limestone or chalk can become dissolved by the acid in the water.

Landforms of Erosion





A discordant coastline occurs where bands of **hard and soft rock** types run **perpendicular** to the coast. The differing resistance to erosion leads to the formation of headlands and bays. A hard rock type is resistant to erosion and creates a **headland** whilst a softer rock type is easily eroded creating a **bay**. Headlands are eroded over time to form cracks, caves, arches, stacks and stumps.



E The formation of a spit

Longshore drift

Longshore drift is the movement of material along the shore by wave action. It happens when waves approach the beach at an angle.
The swash (waves moving up the beach) carries material up and along the beach.
The backwash (waves moving back down the beach) carries material back down the beach at right angles. This is the result of gravity. This process slowly moves material along the beach

Case Study: Norfolk Coastal Erosion

Norfolk and Suffolk have some of the fastest eroding coasts in Europe, with over 2.500 homes at direct coastal risk and thousands more properties and businesses directly and indirectly affected by loss of property, infrastructure and utilities.
The North Norfolk cliffs are comprised of a mix of silts, sands, clays and gravels that were deposited during the glacial and interglacial periods of the last 2 million years. The cliffs provide little resistance to the aggressive action of North Sea waves, which erode the base of the cliffs.

History – Civil Rights

Literacy / key words

- **Emancipation** - *the process of giving people social or political freedom and rights*
- **Jim Crow Laws** – Racial segregation laws in the Southern US.
- **Segregation** – Separation of people based on race.
- **Plessy v. Ferguson (1896)** – Supreme Court case that upheld "separate but equal."
- **Brown v. Board of Education (1954)** – Supreme Court case that ruled segregation in schools unconstitutional.
- **Civil Rights Act (1964)** – Banned discrimination based on race, colour, religion, sex, or national origin.
- **Martin Luther King Jr.** – Civil rights leader advocating nonviolent protest.
- **Malcolm X** – Civil rights leader advocating Black empowerment and self-defence.
- **Constitutional – legal** in the eyes of the America constitution or government.
- **Ku Klux Klan (KKK)** – White supremacist group opposing civil rights.
- **Affirmative Action** – Policies to improve opportunities for historically marginalized groups.

Slavery in the USA was officially abolished in 1863 with the **Emancipation Proclamation** issued by Abraham Lincoln, although many historians recognise the end of slavery in America to be in 1865 when the American Civil War ended. This meant that American society now needed to find a jobs, housing and care for **over 3 million people** that had been forced into slavery through the triangular trade.

In many cases, people that had previously been enslaved remained on plantations and continued to do the same work as they had done before, but now with a small wage. In 1896 the US supreme court ruled that it was constitutional to have **'separate but equal'** facilities for black and white people. This legislation made it legal for America to segregate services like **schools, hospitals, restaurants and even busses.** This segregation was supported by laws that were known as **Jim Crow Laws**.

Emmett Till

Scan the QR code to learn more.

- **14 year old African American boy from the Northern states of America.**
- **In 1955 he was murdered by two white men for allegedly flirting with a white woman in a southern state of America were segregation was still practiced alongside Jim Crow laws.**
- He had been beaten and shot
- His mother requested an open casket as his funeral to show the barbarity and severity of his murder.
- **The American people were horrified by this case and Emmett Tills murder is seen as the catalyst for the Civil Rights Movement**

Resistance to segregation – case studies

Montgomery bus boycott

Busses in Montgomery Alabama were segregated in 1955. On December 5th 1955 Rosa Parks refused to give up her seat to a white person on a full bus which led to her arrest. This led to a group of African American protestors, supported by white Americans refusing to use the bus service until they integrated them

Greensboro sit ins

In the 1960s, lunch counters were segregated. Young African American students staged a sit in, in Greensboro, North Carolina. They sat at the counter for white customers and requested to be served. This turned into a worldwide movement that was met with aggression but the sit in protestors remined non-violent.

Little Rock Nine

The Supreme Court ruled in 1954 that segregation in schools was unconstitutional. One of the first to attempt integration was Little Rock Central High School, Arkansas in 1957. 9 black students were enrolled, but on their first day met with abuse and prevented from entering the school. The national guard was called in by the president to protect the students to be able to get into school

Extra - Read/watch/do

Holt, Thomas C. *The movement: The African American struggle for civil rights*. Oxford University Press, 2021.
History of Civil Rights in the UK on blackhistorymonth.org.uk

Selma (film) 2014. Martin Luther King Jr's I have a dream speech.

You will be assessed on

Causes and consequences of the civil rights movement in the USA and the UK. Key figures involved in the movement and key events.

Links to curriculum

Geography
English
PSHE

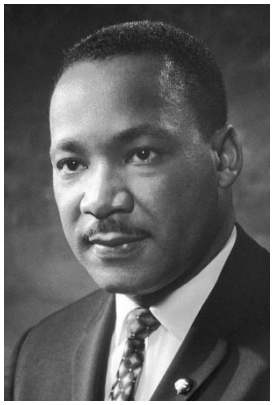
Literacy / key words

- **Race Relations Act (1965, 1968, 1976, 2000)** – Laws against racial discrimination.
- **Commonwealth Immigration Acts (1962, 1968, 1971)** – Restricted immigration from former colonies.
- **Brixton Riots (1981)** – Protests against racial discrimination and police brutality.
- **Stephen Lawrence Case (1993)** – Racially motivated murder that led to police reform.
- **Windrush Generation** – Caribbean migrants who faced discrimination in the UK.
- **Macpherson Report (1999)** – Found institutional racism in UK policing.
- **Equality Act (2010)** – Protects against discrimination based on race, gender, disability, etc.
- **Notting Hill Riots (1958)** – Clashes between white nationalists and Black communities.
- **National Front** – Far-right group opposing immigration and multiculturalism.

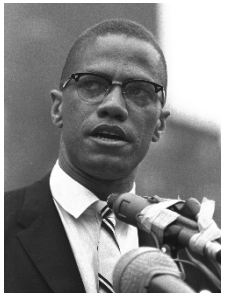
Martin Luther King

- **Dignified, intelligent, peaceful: helped win support not only of black Americans but also many white Americans**
- Made it clear that the protestors were the victims of police brutality
- Outrage at the use of Water Cannons on protestors during the Birmingham Campaign in 1963
- **Peaceful protests** - without this message, the protests could have spilled into violence, which some white Americans could have twisted to support their views that African-Americans were brutal thugs who did not deserve the same rights as they did not follow the law
- **1964 The Civil Rights Act desegregated many states and improved the lives of millions of black Americans. MLK played a key role in getting this act passed.**

Scan the QR code to watch a clip



Scan the QR code to learn more



Malcolm X

- **Believed peaceful protest was not bringing change fast enough and violence was needed in some cases**
- Used his speeches to inspire people, more to remind people that they have a voice and should use it.
- **Inspired young African Americans who were unhappy with their treatment and felt that the civil rights movement was not improving their lives**
- **Key role in the development of the Black Power Movement and the idea that being black was something to be proud of rather than to be made to feel ashamed of**
- **Gained publicity for black civil rights campaigns**

Civil Rights in the UK

The roots of the Notting Hill Riots are found in the migration of people from the Caribbean to London right after World War II. With the population influx, Notting Hill became a more international district. Claudia Jones was a key figure.

The Bristol Bus Boycott of 1963 came from the refusal of the Bristol Omnibus Company to employ black or Asian bus crews in the city of Bristol, England.
In British cities, there was widespread racial discrimination in housing and employment at that time. The boycott was led by Paul Stephenson. The boycott of the company's buses by Bristolians lasted for four months until the company backed down and overturned the colour rule.

Religion and Ethics

Literacy / key words

Human Rights: The basic rights and freedoms that every person is entitled to, such as the right to life, freedom, and equality.

Social Justice: The idea of creating a society where everyone is treated fairly.

Discrimination: Treating someone unfairly because of characteristics (age, gender, sex, race, etc.)

Prejudice: Holding unfair and biased opinions based on appearance, background or belief.

Poverty: The state of having little or no money/resources, making it difficult to meet basic needs.

Activism: Taking action and campaigning to make a positive change in society, especially for human rights or social justice.

Human Rights and Social Justice

Human rights and social justice focus on ensuring **dignity, equality, and freedom** for all individuals, with key principles outlined in the **Universal Declaration of Human Rights (UDHR),** adopted by the United Nations in 1948. The UDHR advocates for rights such as the right to life, liberty, education, and non-discrimination.

YEAR 9 Social Justice & Human Rights

Religious Freedom

Religious freedom is the right to practice, change, or express one's religion **without persecution**. However, in many parts of the world, people face restrictions or discrimination due to their beliefs. The UDHR upholds this freedom, but individuals in some countries experience severe limitations.

Christian Responses to Human Rights

Christian responses to human rights emphasise **compassion, justice, and human dignity**, based on the belief that all are made in the image of God (Imago Dei). The **parable of the Sheep and Goats** (Matthew 25:31-46) teaches that helping the marginalised is a way to serve Christ. Similarly, the story of the **Rich Man and Lazarus** (Luke 16:19-31) highlights the moral responsibility of the wealthy to care for the poor.

Muslim Responses to Human Rights

Muslim responses to human rights are rooted in the principles of **justice, equality, and compassion**, as outlined in the Qur'an and Hadith. **Zakat**, one of the Five Pillars of Islam, emphasises the duty of Muslims to give to those in need, **promoting social welfare and reducing inequality**. The concept of ***khalifah*** (stewardship) outlines the responsibility of humans to care for others and the world, ensuring justice and the protection of rights, as Islam teaches that all people are equal in the eyes of God.

Sikh Responses to Human Rights

Sikh responses to human rights are grounded in the principles of equality, justice, and selfless service. The concept of ***sewa*** (selfless service) encourages Sikhs to support others without expectation of reward. ***Langar***, the free community kitchen, embodies this commitment by offering meals to all, regardless of background or status, reinforcing the belief in equality. The ***Khalsa***, established by **Guru Gobind Singh**, are called to protect human rights and fight against injustice.

Religious Charities

Muslim Aid® Serving Humanity

christian aid

CAFOD

Extra - Read/watch/do

What is Equality & Social Justice: https://www.bbc.co.uk/bitesize/articles/z42khbk

Human Rights and Responsibilities: https://www.bbc.co.uk/bitesize/articles/zdv646f#zt83239

Literacy / key words

Ritual: Planned actions or ceremonies done for religious or cultural reasons.

Community: A group of people living together and sharing common interests, values, and goals.

Sacred: Holy, blessed, or set apart for worship or reverence.

Numinous: The presence of a divine or spiritual quality that evokes awe and reverence.

Identity: The unique traits and features that make someone who they are.

Shared identity: Common characteristics, experiences, or values that bind a community together.

Diversity: Having different people in a group or community.

Charity: Providing help, support, or resources to those in need, often through acts of kindness and generosity.

What is the importance of Sacred Spaces?

Sacred spaces are important for both religious and non-religious people. For religious people, these places are where they go to **worship, connect with their faith, and be part of a community**. The art and symbols in these spaces help them understand their religion better. Non-religious people can appreciate sacred spaces for their **cultural and historical value, beautiful architecture**, and as **quiet places for reflection**. These spaces also host events support their local community and bring **people together, fostering understanding and shared values.**

YEAR 9 Why are sacred spaces important?

Notre Dame – Why does it matter?

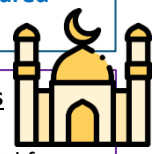
Notre Dame Cathedral in Paris which was erected in the 1345. It's a symbol of **France's history, art, and shared identity**. The cathedral's stunning architecture showcases the incredible skills of French craftsmen and contains important **religious relics** making it a **proud landmark that people around the world recognize**. When Notre Dame faced a **fire in 2019**, people from around the wold **raised money to save the building**. Many people supported the effort, however some **people criticised the fund raising effort** stating that the money would be better spent looking after **people who are struggle or homeless.**

Why are Churches important?

Churches are important for various reasons. They are places where people come together to **worship, find moral guidance**, and build a **supportive community**. Churches often organise charitable activities such as **food banks**, contributing to the well-being of the local community. Additionally, they mark important **life events** and serve as cultural and architectural landmarks, **preserving history** and providing **educational programs**. Churches play a role in shaping individuals' **spiritual journeys**, fostering a **sense of belonging**, and making positive contributions to society through acts of charity.

Why are Gurdwaras important?

A Gurdwara serves as a central place for **worship** and **community activities**. It embodies the Sikh principles of **equality**, **selfless service (sewa)**, and **community fellowship**. Sikhs gather at the Gurdwara to engage in **congregational prayers**, **listen to the Guru Granth Sahib**, and participate in the **langar**, a community kitchen that offers free meals to all, regardless of background. The concept of sewa, or selfless service, is integral to Gurdwaras, where volunteers work together to ensure the well-being of the community and extend assistance to those in need.



Why are Mosques important?

Mosques are crucial for Muslims as places of **worship** and **community gathering**. They provide spaces for **daily prayers**, **Friday congregations**, and educational programs, promoting spiritual growth and unity. Beyond religious duties, mosques engage in charitable activities, actively promoting the **principle of zakat**, where they **organise aid distributions**, **food drives**, and **community outreach**. They also offer a sense of **belonging among diverse Muslim communities**, encouraging shared values and collective well-being.

Extra - Read/watch/do

Gurdwara - https://www.truetube.co.uk/resource/holy-cribs-the-gurdwara/

Mosque - https://www.truetube.co.uk/resource/holy-cribs-the-mosque/

Chruch - https://www.truetube.co.uk/resource/holy-cribs-the-anglican-church/

DISTANCE-TIME GRAPHS

Key Concept

A **distance-time** graph, plots time against the distance away from a starting point.

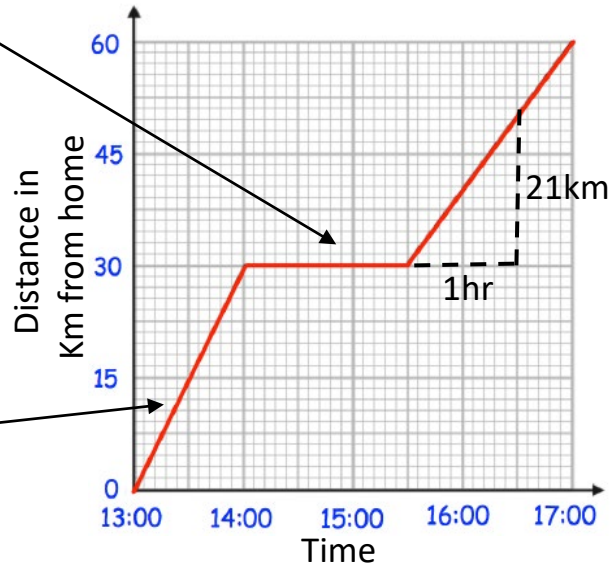
Speed can be calculated from these graphs by finding the gradient of the graph.

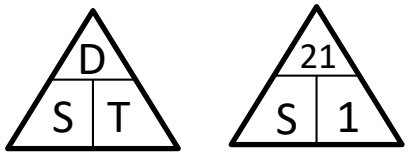
Horizontal lines are sections where the object is stationary.

Examples

Horizontal sections are where the object is stationary

Diagonal lines show the object moving away from home or moving closer to home





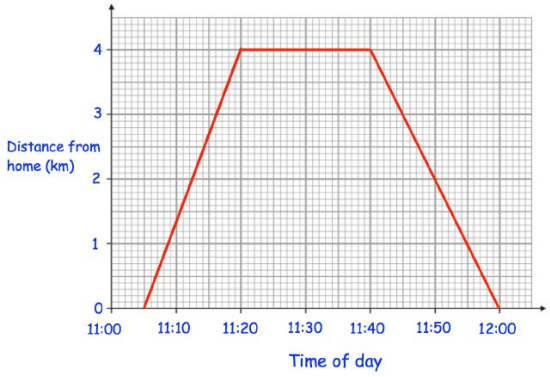
$$Speed = \frac{distance}{time}$$

$$Speed = \frac{21}{1}$$

$$Speed = 21km/h$$

Key Words

Distance
Time
Speed
Gradient
Stationary



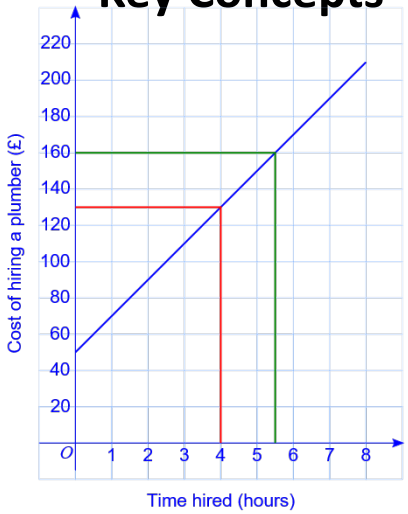
A distance-time graph shows the journey of someone from home to the shop and back again.

1) How long were they at the shop for?
2) How far away from home is the shop?
3) How far did they travel in total?
4) What speed did they travel on the way to the shop in km/h?

ANSWERS: 1) 20 minutes 2) 4km 3) 8km 4) 16km/h

CONVERSION GRAPH

Key Concepts

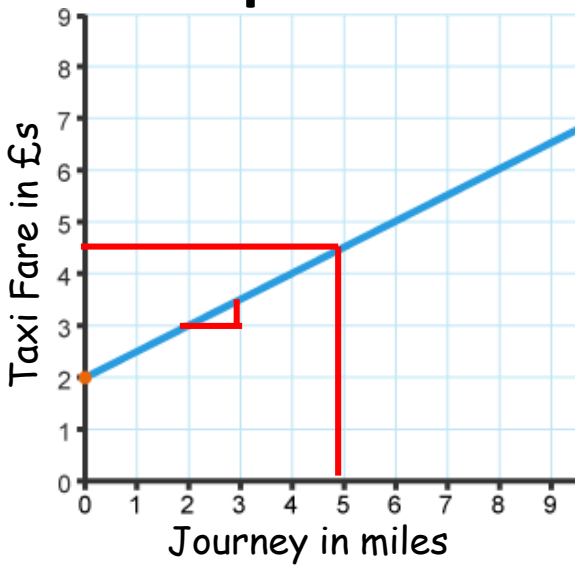


Gradient – The extra cost incurred for every extra hour.
y-intercept – The minimum payment to the plumber.

Key Words

Conversion graph: A graph which converts between two variables.
Intercept: Where two graphs cross.
y-intercept: Where a graph crosses the y-axis.
Gradient: The rate of change of one variable with respect to another. This can be seen by the steepness.
Simultaneous: At the same time.

Examples



What is the minimum taxi fair?
£2, this is the y-intercept.

What is the charge per mile?
50p, every extra mile adds on 50p.

How much would a journey of 5 miles cost?
£4.50, See line drawn up from 5 miles to the graph, then drawn across to find the cost.

Tip

The solution to two linear equations with two unknowns is the coordinates of the intercept (where they cross).

Questions

1) For the graph above a) A journey is 8 miles, what is its cost?
b) A journey cost just £3, how far was the journey?
2) Draw a graph to show the exchange rate £1 = $1.4.

ANSWERS: 1) a) £6 b) 2 miles

PYTHAGORAS

Key Concepts

Pythagoras' theorem and basic trigonometry both only work with **right angled triangles**.

Pythagoras' Theorem – used to find a missing length when two sides are known

$$a^2 + b^2 = c^2$$

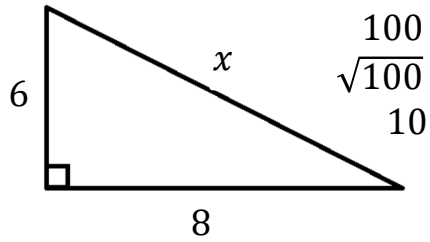
c is always the hypotenuse (longest side)

Key Words

Right angled triangle
Hypotenuse
Length
Shorter-side
Square
Square-root

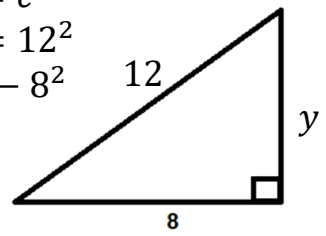
Examples

Pythagoras' Theorem



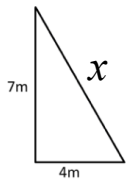
$$a^2 + b^2 = c^2$$
$$6^2 + 8^2 = x^2$$
$$100 = x^2$$
$$\sqrt{100} = x$$
$$10 = x$$

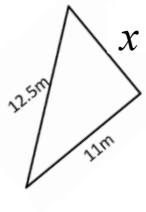
$$a^2 + b^2 = c^2$$
$$y^2 + 8^2 = 12^2$$
$$y^2 = 12^2 - 8^2$$
$$y^2 = 80$$
$$y = \sqrt{80}$$
$$y = 8.9$$



Questions

Find the value of *x*:





ANSWERS: a) 8.06m b) 5.94m

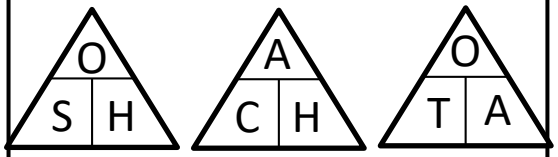
TRIGONOMETRY

Key Concepts

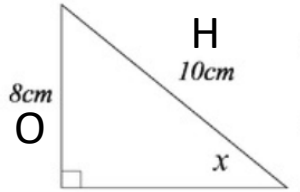
Basic trigonometry
SOHCAHTOA –
used to find a missing side or an angle in a right-angle triangle

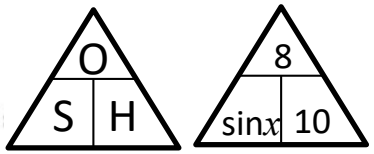
Special angles:

- Sine $30^0 = 0.5$
- Sine $0^0 = 0$
- Sine $90^0 = 1$
- Cosine $60^0 = 0.5$
- Cosine $0^0 = 1$
- Cosine $90^0 = 0$



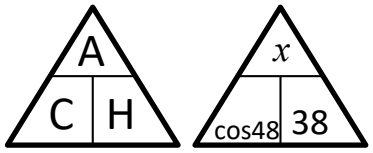
Examples





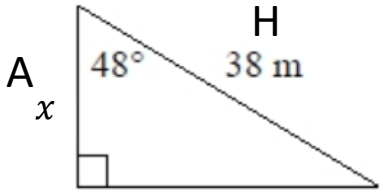
$$\sin x = \frac{8}{10}$$

$$x = \sin^{-1}\left(\frac{8}{10}\right) = 53.1^o$$



$$\cos 48 = \frac{x}{38}$$

$$x = 38 \times \cos 48 = 25.4m$$

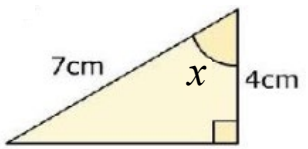


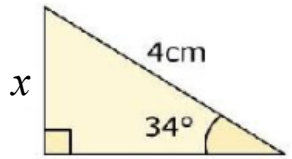
Key Words

Right angled triangle
Hypotenuse
Opposite
Adjacent
Sine
Cosine
Tangent

Questions

Find the value of x





ANSWERS: a) 8.06m b) 5.94m c) 55.15° d) 2.34cm

AVERAGES FROM A TABLE

Key Concepts

Modal class (mode)
Group with the highest frequency.

Median group
The median lies in the group which holds the $\frac{total\ frequency+1}{2}$ position.
Once identified, use the cumulative frequency to identify which group the median belongs from the table.

Estimate the mean
For grouped data, the mean can only be an estimate as we do not know the exact values in each group. To estimate, we use the midpoints of each group and to calculate the mean we find $\frac{total\ fx}{total\ f}$.

Examples

Length (L cm)	Frequency (f)	Midpoint (x)	fx
$0 < L \leq 10$	10	5	10 × 5 = 50
$10 < L \leq 20$	15	15	15 × 15 = 225
$20 < L \leq 30$	23	25	23 × 25 = 575
$30 < L \leq 40$	7	35	7 × 35 = 245
Total	55		1095

a) Estimate the mean of this data.
step 1: calculate the total frequency
step 2: find the midpoint of each group
step 3: calculate $f \times x$
step 4: calculate the mean shown below

$$\frac{Total\ fx}{Total\ f} = \frac{1095}{55} = 19.9\text{cm}$$

b) Identify the modal class from this data set. ***" the group that has the highest frequency "***
Modal class is $20 < x \leq 30$

c) Identify the group in which the median would lie. Median $= \frac{Total\ frequency+1}{2} = \frac{56}{2} = 28th\ value$

" add the frequency column until you reach the 28th value " Median is the in group $20 < x \leq 30$

Key Words

Midpoint
Mean
Median
Modal

Questions

Cost (£C)	Frequency	Midpoint	
$0 < C \leq 4$	2		
$4 < C \leq 8$	3		
$8 < C \leq 12$	5		
$12 < C \leq 16$	12		
$16 < C \leq 20$	3		

From the data:
a) Identify the modal class.
b) Identify the group which holds the median.
c) Estimate the mean.

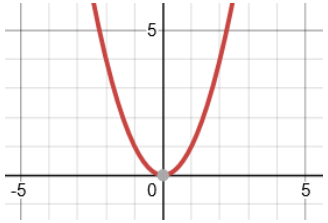
ANSWERS: a) $12 < C \leq 16$ b) $\frac{25+1}{2} = 13^{th}$ value is in the group $12 < C \leq 16$ c) $\frac{294}{25} = £11.76$

QUADRATIC GRAPHS

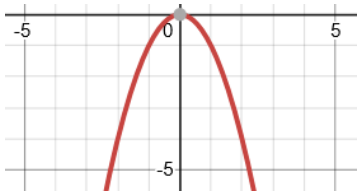
Key Concepts

A quadratic graph will always be in the shape of a parabola.

$y = x^2$



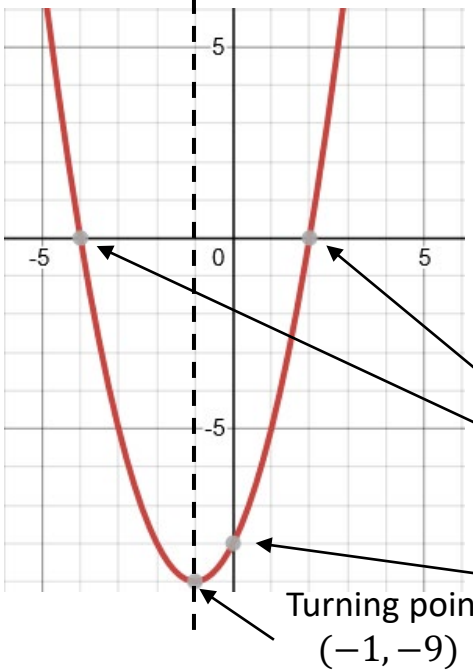
$y = -x^2$



The roots of a quadratic graph are where the graph crosses the x axis. The roots are the solutions to the equation.

Key Words

Quadratic
Roots
Intercept
Turning point
Line of symmetry



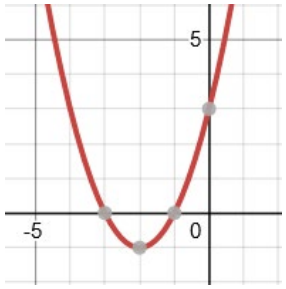
Examples

$$y = x^2 + 2x - 8$$

A quadratic equation can be solved from its graph.
The roots of the graph tell us the possible solutions for the equation.
There can be 1 root, 2 roots or no roots for a quadratic equation. This is dependant on how many times the graph crosses the x axis.

Roots $x = -4$
$x = 2$

y intercept = -8



Identify from the graph of $y = x^2 + 4x + 3$:

1) The line of symmetry
2) The turning point
3) The y intercept
4) The two roots of the equation

ANSWERS 1) $x = -2$ 2) $(-2, -1)$ 3) 3 4) $x = -1$ and $x = -3$

EXPAND AND SIMPLIFY BRACKETS

Key Concepts

Expanding brackets
Multiply the number outside the brackets with EVERY term inside the brackets

Factoring expressions
Take the highest common factor outside the bracket.

Key Words

Expand
Factorise
Simplify

Examples

Expand and simplify where appropriate

1) $7(3 + a) = 21 + 7a$

2) $2(5 + a) + 3(2 + a) = 10 + 2a + 6 + 3a$
$= 5a + 16$

3) Factorise $9x + 18 = 9(x + 2)$

4) Factorise $6e^2 - 3e = 3e(2e - 1)$

Factorise fully:

1) $16at^2 + 12at = 4at(4t + 3)$

2) $x^2 - 2x - 3 = (x - 3)(x + 1)$

1) $4(m + 5) + 3$
$= 4m + 20 + 3$
$= 4m + 23$

2) $(p + 2)(2p - 1)$
$= p^2 + 4p - p - 2$
$= p^2 + 3p - 2$

Questions

1) Expand and simplify
(a) 3(2 – 7f) (b) 5(m – 2) + 6 (c) 3(4 + t) + 2(5 + t)

2) Factorise
(a) 6m + 12t (b) 9t – 3p (c) $4d^2 - 2d$

ANSWERS: 1) (a) 6 – 21f (b) 5m – 4 (c) 22 + 5t 2) (a) 6(m +2t) (b) 3(3t – p) (c) 2d(2d – 1)

INDICES AND ROOTS

Key Concepts

$a^m \times a^n = a^{m+n}$

$a^m \div a^n = a^{m-n}$

$(a^m)^n = a^{mn}$

$a^{\frac{1}{n}} = \sqrt[n]{a}$

$a^{-m} = \frac{1}{a^m}$

Examples

Simplify each of the following:

1) $a^6 \times a^4 = a^{6+4}$
$= a^{10}$

2) $a^6 \div a^4 = a^{6-4}$
$= a^2$

3) $(a^6)^4 = a^{6\times4}$
$= a^{24}$

4) $(3a^4)^3 = 3^3a^{4\times3}$
$= 27a^{12}$

5) $\frac{5^2 \times 5^6}{5^4} = \frac{5^8}{5^4}$
$= 5^{8-4}$
$= 5^4$

6) $a^{\frac{1}{2}} = \sqrt{a}$

7) $9^{\frac{1}{2}} = \sqrt{9}$
$= 3 \text{ or } -3$

8) $2^{-3} = \frac{1}{2^3} = \frac{1}{8}$

Key Words

Powers
Roots
Indices
Reciprocal

Simplify:

1) $a^3 \times a^2$ 2) $b^4 \times b$ 3) $d^{-5} \times d^{-1}$ 4) $m^6 \div m^2$ 5) $n^4 \div n^4$

6) $\frac{8^4 \times 8^5}{8^6}$ 7) $\frac{4^9 \times 4}{4^3}$ 8) $(3^2)^5$ 9) $81^{\frac{1}{2}}$ 10) 5^{-2}

ANSWERS: 1) a^5 2) b^5 3) d^{-6} 4) m^4 5) 1 6) 8^3 7) 4^7 8) 3^{10} 9) 9 or −9 10) $\frac{1}{25}$

MFL Knowledge Organiser LA SANTÉ Summer 1 Yr9 Frenc

T

1. **Il y a** – there is / are
2. **c'est** – it is **ça sera** – it will be
3. **sont** – (they)are **seront** – they will be
4. **a - has**
5. **ont – (they) have**

Present tense: KEY verbs

	-er verbs	BOIRE (TO DRINK)	PRENDRE (TO have For food and drinks
je / j'	port-e	Je bois	Je prend-s
tu	port-es	Tu bois	Tu prend-s
Il/elle /on	port-e	Il/elle/ on boit	Il/ elle/ on prend
Nous	port-ons	Nous buvons	Nous pren-ons
Vous (pl)	port-ez	Vous buvez	Vous pren-ez
Ils or	port-ent	Ils/elles boivent	Ils / elle prenn-ent

T

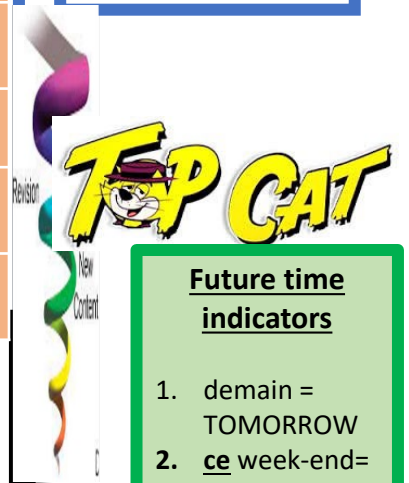
How to form the future tense with ALLER..123

- You will need to remember one easy formula:

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

1. je trouve que
2. je pense que
3. je crois que
4. je dirais que
5. à mon avis

1. - **selon** moi = **according to** me
2. - **selon** mon copain
3. - **selon** mes parents



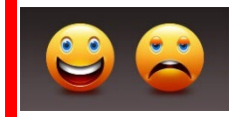
Future time indicators

1. demain = TOMORROW
2. **ce** week-end= this …
3. le week-end prochain=
4. l'année prochaine=
5. l'été prochain=

O

Opinions & Pronouns

ÇA OR CELA …. **me** fascine **OR** **me** plaît **OR** **m'**intéresse **OR** **m'**amuse OR **me** rend content[e]



CELA or ça m'énerve

CELA or ça m'ennuie

CELA/ ça me fâche [angers me]

P

Connectives / frequencies

alors /donc	*so, therefore*
car / parce que	*because*
dernier/dernière	*last*
beaucoup (de)	*a lot (of)*
d'abord	*first of all*
ensuite	*next*
après	*afterwards*
finalement/enfin	*finally*
aujourd'hui	*today*
hier [soir/matin]	*yesterday [eve./morning]*
avant-hier	*the day before yesterday*
(mardi) dernier	*last (Tuesday)*

C

Complexity - comparisons

MEILLEUR[E] [S] QUE: BETTER THAN
PIRE QUE : WORSE THAN
MOINS BON QUE : LESS GOOD THAN
AUSSI BON QUE : AS GOOD AS
LE/LA/LES PLUS/ MOINS…: THE MOST/ THE LEAST

C

A

1. **acide: sour/ acidic/ sharp**
2. **affreux : awful**
3. **aigre: sour/ sharp/ tart**
4. **aigre-doux: sweet and sour**
5. **alléchant: mouthwatering**
6. **amer: bitter**
7. **bon: goog**
8. **bon marché: cher**
9. **cher: expensive**
10. **dégoûtant: disgusting**
11. **dégueulasse: gross/ disgusting**
12. **délicieux: delicious**
13. **dur: hard**
14. **excellent: excellent**
15. **exquis: outstanding/ exquisite/ delicious**
16. **frais: fresh**
17. **gras: fatty**
18. **horrible: horrible**
19. **malsain: unhealthy**
20. **mauvais: bad**
21. **nul: rubbish**
22. **piquant: spicy**
23. **pourri: rotten**
24. **répugnant: disgusting/ revolting**
25. **riche: rich/ calorific**
26. **sain: healthy**
27. **salé: salty/ salted/ savoury**
28. **savoureux: tasty**
29. **sec: dry**
30. **sucré: sweet**

La santé

La nourriture

Mon repas préféré, c'est ...	My favourite meal is ...
Je mange ...	I eat ...
des céréales (f.)	cereals
du pain grillé	toast
de la viande	meat
du poulet	chicken
du jambon	ham
du poisson	fish
du fromage	cheese
des légumes (m.)	vegetables
des fruits (m.)	fruit
une pomme	apple
des gâteaux	cakes
des pâtes	Pasta
Je bois ...	I drink ...
de l'eau	water
du jus d'orange	orange juice
du lait	milk
du chocolat chaud	hot chocolate
du café	coffee

Le corps

le bras	arm
le cou	neck
le dos	back
le nez	nose
le ventre	Back
le genou	knee
la bouche	mouth
la gorge	throat
la langue	tongue
la main	hand
la tête	head
la jambe	leg
l'estomac	stomach
l'épaule	shoulder
les dents	teeth
les doigts	fingers
les oreilles	ears
les pieds	feet
les yeux	eyes

Je suis malade

J'ai mal au bras / à la jambe	I've got a sore arm / leg
J'ai mal aux dents	I've got toothache
Je suis enrhumé(e)	I've got a cold
Je me suis cassé la jambe	I've broken my leg
J'ai été piqué(e) par une guêpe	I've been stung by a wasp
J'ai une grippe	I've got flu
J'ai de la fièvre	I've got a fever
Je tousse	I'm coughing

Garder la forme

Je suis en forme.	I'm fit
Pour garder la forme ...	To keep fit
Je mange sainement	I eat healthily
Je ne bois que de l'eau	I only drink water
Je ne mange pas de sucreries	I don't eat sweet food
Je ne mange pas beaucoup de graisses	I don't eat a lot of fat
Je fais de l'exercice (régulièrement)	I exercise (regularly)
Je mangeais / buvais	I used to eat / drink
Je pourrais manger plus de fruits	I could eat more fruit

Qu'est-ce qui ne va pas?

Si vous avez (mal à la tête) ...	If you have (a headache) ...
Il faut ...	You must ...
Prendre de l'aspirine / des comprimés	take some aspirin / pills
mettre de la crème antiseptique	put on some antiseptic cream
rester à la maison / au lit	stay at home / in bed
boire beaucoup d'eau	drink lots of water
prendre le médicament toutes les deux heures	take medicine every two hours
Il faut aller à l'hôpital pour faire une radio	You must go to hospital for an x-ray

MFL Knowledge Organiser — Ma célébrité préférée — SUMMER 2

T

il y avait *there was/were*
était: was *c'était it was*
Ils/ elles étaient *they were*
Je voudrais/ j'aimerais habit**er**/viv**re**
I would like **to live**

PAST

Perfect Tense

Subject	Avoir	Past participle
J'	ai	Take off ending from infinitive: -er verbs = é -ir verbs = i -re verbs = u
Tu	as	
Il/elle	a	
Nous	avons	
Vous	avez	
Ils/elles	ont	

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	

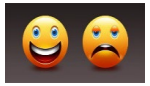
IRREGULAR verbs with avoir

J'ai eu: I had
J'ai bu: I drank
J'ai vu: I saw
J'ai lu: I read
J'ai fait: I did
J'ai dit: I said
J'ai écrit: I wrote

Subject	PRESENT & IMPERFECT tense	
J'/ Je	J'admire	J'admir**AIS** I USED TO admire
Tu [SING]	admires	Tu admir**AIS** You USED TO ADMIRE
Il/elle/on	Admire	Il/ elle/ on admir**AIT** He/she/ weUSED TO live
Nous	admirONS	We USED TO admire: ADMIRI**ONS**
Vous [PLUR]	admirEZ	you USED TO live:admirIEZ
Ils/elles	admirENT	They USED TO live: admir**AIENT**

Opinions & Pronouns

P



Je L' adore	Je LE déteste
Je L'aime	Je LA déteste
Je LES adore	Je LES déteste

Connectives / Sequencers

C

alors /donc *so, therefore*
car / parce que *because*

trop	*too*
assez/très	*quite /very*
un peu	*a little /a bit*
vraiment	*really*
incroyablement	*incredibly*

Complexity

Je LA trouve I find HIM
Je LE trouve I find HER
Je LES trouve I find THEM
JE L'admire I admire HIM/ HER

C

A

Il / elle est comment?

il est/ elle est. *He is / she is*
Je trouve que c'est **OR** qu'il est **OR** qu'elle est…

petit(e)(s)	*small*
grand(e)(s)	*big*
beau(x)/ belle(s)	*beautiful*
joli(e)(s)	*pretty*
vieux/vielle(s)	*old*
nouveau/nouvelle	*new*
neuf[s]/ neuve[s]	*new*
moderne(s)	*modern*
talentueux /se	*talented*
doué [e]	*gifted*
à la mode	*fashionable*
branché [e]	*fashionable*
tendance	*trendy*

TIF –
1. **Selon moi**
2. **Selon mon copain..**
3. **je dirais que**
4. **À mon avis..**

Adjectives placed before the noun	
vieux/vieille	old
nouveau/nouvelle	new
beau/belle	beautiful
grand(e)	big
petit(e)	small
joli(e)	pretty

J'habite dans une **VIELLE** maison qui est **MOINS** confortable **QUE** la maison de ma grand-mère.

English	Masculine	Feminine
The actor	L'acteur	L'actrice
The artist	L'artiste	L'artiste
The singer	Le chanteur	La chanteuse
The dancer	Le danseur	La danseuse
The writer	L'écrivain	L'écrivaine
The entrepreneur	L'entrepreneur	L'entrepreneuse
The footballer	Le footballeur	La footballeuse
The influencer	L'influenceur	L'influenceuse
The _____ player	le joueur de _____	La joueuse de _____
The journalist	Le journaliste	La journaliste
the _____ activist	Le militant *climatique*	La militante *pour les droits des femmes*
The politician	Le politicien	La politicienne
The scientist	Le scientifique	La scientifique
The Youtuber	Le Youtubeur	La Youtubeuse

Qui est ta célébrité préférée ? *Who is your favourite famous person?*

Ma célébrité préférée est
My favourite famous person is

J'admire
I admire

J'aime bien
I quite like

Mon héro/ Mon héroïne est
My hero is

le chanteur /la chanteuse...
the singer ...

le coureur cycliste /la coureuse cycliste ...
the cyclist ...

l'acteur/l'actrice. ..
the actor/actress ...

le joueur de _____/la joueuse de _____...
the ____ player ...

car il/elle est
because he/she is

beau/ belle. *good-looking.*

créatif/créative. *creative.*

courageux/courageuse. *brave.*

fort / forte. *strong/good at something.*

incroyable. *incredible.*

positif/positive. *positive.*

sportif/ sportive. *sporty.*

talentueux / talentueuse. *talented.*

travailleur/ travailleuse. *hard-working.*

une bonne personne. *a good person.*

Je le/la suis sur les réseaux sociaux
I follow him/her on social media

B3: Genetics

Lesson sequence

1. Meiosis
2. DNA
3. DNA extraction
4. Alleles
5. Inheritance
6. Gene mutation
7. Variation

1. Meiosis	
***Gametes**	Egg cell and sperm cell
***Fertilisation**	Sperm cell fuses with egg cell and nuclei combine
***Zygote**	Single cell formed by fertilisation
***Gene**	Length of DNA coding for a protein. Controls your characteristics
***Genome**	All the DNA and genes in an organism
***Protein**	Polymer made from amino acids
****Polymer**	Long molecule made by chaining together many shorter ones
***Diploid**	A cell with 23 pairs of chromosomes (46 in total)
***Haploid**	A cell with 23 single chromosomes
***Meiosis**	Cell division that makes gametes
****Meiosis stages**	DNA replicates, cell divides into 2 diploid cells, these divide into 4 haploid daughters.
****Why gametes are different**	Chromosomes in a pair are slightly different. Different gametes get different combinations of chromosomes.

2. DNA	
***Chromosome**	Large DNA molecule made into a small package by tightly coiling DNA around a protein.
***DNA structure**	Two strands, double helix, complementary base pairs, sugar-phosphate backbone
***DNA bases**	Adenine, A; thymine, T; cytosine, C; guanine, G
***Complementary base pairs**	A pairs with T C pairs with G
****Hydrogen bonds**	Weak force holding the two strands of DNA together.
****DNA analysis**	Uses small differences in DNA to determine family relationships or link people to crimes.

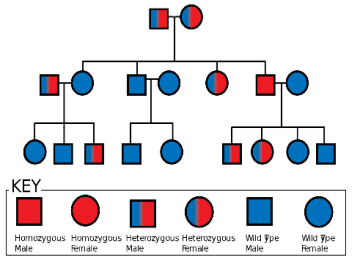
3. DNA extraction	
***DNA extraction: Mix water, salt and detergent.**	Salt makes DNA clump together, detergent breaks down cell membranes to release DNA
***DNA extraction: Mash fruit/veg and add the solution**	Increases the surface area
***DNA extraction: Leave in water bath at 60^{O}C**	Heat makes it react quicker
***DNA extraction: Filter the mixture and collect filtrate**	To remove unwanted lumps
***DNA extraction: Measure out 10 cm^3 of filtrate**	It's easier to work with a small amount
***DNA extraction: Add two drops of protease solution**	Protease breaks down proteins around the DNA
***DNA extraction: Gently add ice-cold ethanol**	DNA is insoluble in ethanol so precipitates
***DNA extraction: Leave for several minutes**	So white DNA layer forms

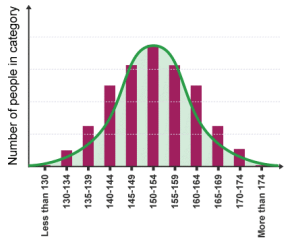
4. Alleles	
***Allele**	Different version of the same gene. We have two alleles of each gene.
****Homozygous**	We have two copies of the same allele
****Heterozygous**	We have two different copies of an allele
***Dominant allele**	One copy needed for characteristic to show. Written as a capital.
***Recessive allele**	Two copies for the characteristic to show. Written as lowercase.
***Genotype**	The combination of alleles in an organism.
***Phenotype**	The characteristics produced by the alleles.
****Genetic diagram**	Shows the likelihood of offspring produced by parents with certain genotypes

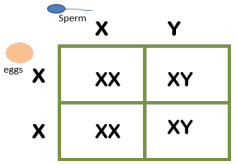
5. Inheritance	
***Sex chromosomes**	Female: XX Males: XY
***Inheriting sex**	All eggs are X, 50% of sperm are X and 50% are Y, so 50% of zygotes are XX and 50% are XY
***Punnett squares**	Uses the genotypes of male and female gametes to predict the genotypes of the offspring.
****Probability and Punnett squares**	Punnett squares tell you the likelihood of certain offspring, not what will actually happen.
****Cystic fibrosis**	Illness caused by a inheriting two copies of a faulty recessive allele.
****Family pedigree chart**	Chart showing how genotypes are inherited down through a family.

6. Gene mutation	
***Mutation**	A change to the bases in a gene.
****Effect of mutations**	Change the structure of a protein and how it works. Sometimes harmless, normally harmful, very rarely beneficial
***Cause of mutations**	Mistakes copying DNA during cell division, DNA damage from chemicals or radiation
***Inheriting mutations**	Only if they occur in gametes (egg and sperm)
***Human Genome Project**	(HGP) Project involving many scientists from many countries to find the order of bases in human DNA
****How is the HGP useful?**	To tailor drugs to genes, to design better drugs
****Genetic differences**	HGP found 99% of DNA in all people is identical.

7. Variation	
***Variation**	Natural differences between members of a species that affect the chance of survival.
***Genetic variation**	Variation caused by genes
***Environmental variation**	Caused by interaction with the surroundings – such as food, climate etc.
***Causes of most variation**	A combination of genes and the environment.
****Acquired characteristics**	Changes caused by the environment during your lifetime, such as losing a leg
****Continuous variation**	Can be anywhere within a range, such as height , following a normal distribution.
****Discontinuous variation**	Can be only one of a few possibilities, such as blood type: A, B, AB, O
****Normal distribution**	Bell-shaped curve with more in the middle and fewer either side.

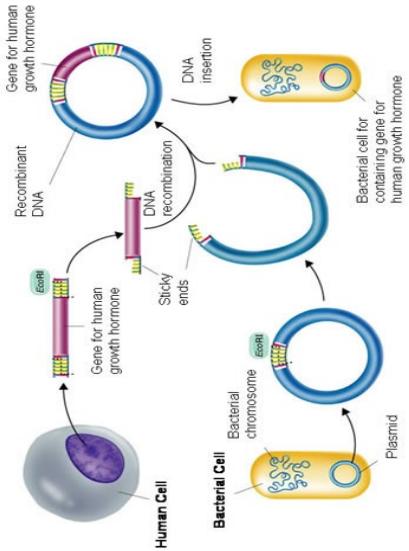






6. Problems with modifying species	
Over-selection	Farmers focussing too much on breeding for one characteristic (such as chicken breast size), don't spot problems with other characteristics (such as weak leg bones) causing suffering.
Gene leakage	The concern GMOs could breed with wild relatives, enabling the modified genes to escape into the wild. This could have ecological impacts.
Resistance	The concern that in areas growing Bt corn, insects simply evolve resistance to Bt.
Insulin	Insulin made by GM bacteria is not identical to human insulin, and some people suffer bad reactions to it.

7. Genetic engineering of bacteria (HT)	
****Plasmid DNA**	Small loops of DNA containing a few genes.
*****Restriction enzyme**	Enzymes that cut DNA, leaving sticky ends at each end of the piece of DNA.
*****Sticky end**	A short sequence of unpaired bases at the end of a piece of DNA.
*****Ligase**	An enzyme that joins two pieces of DNA by matching up the bases on their sticky ends.
*****Recombinant DNA**	DNA produced by combining together two of more pieces of DNA.
*****How to genetically engineer bacteria**	Cut out gene using restriction enzymes, remove plasmids from bacteria and open with restriction enzymes, use ligase to join gene and plasmid together, return plasmids to bacteria.



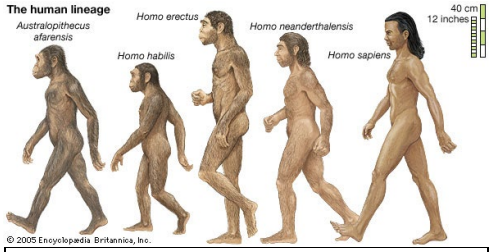
B4: Evolution

Lesson sequence

1. Human evolution
2. The theory of evolution
3. Resistance
4. Classification
5. How to modify species
6. Problems with modifying species
7. Genetic engineering of bacteria (HT)

1. Human evolution	
***Binomial naming**	Two-part names, first part = genus, second part = species. Written in italics.
***Homo sapiens**	Our species. Evolved about 200,000 years ago. Skull volume 1450 cm^3.
****Ardipithecus ramidus**	Aka 'Ardi'. 4.4 million years ago, walked upright and climbed trees, 350 cm^3 skull volume.
****Australopithecus afarensis**	Aka Lucy. 3.2 million years ago, walked upright, skull volume 400 cm^3.
****Homo habilis**	2.4-1.4 million years ago, walked upright, skull volume 5-600 cm^3.
***8Homo erectus**	1.8 to 0.5 million years ago, walked upright, skull volume 850 cm^3.
***Fossil evidence**	Many fossils have been found showing a gradual transition from 'ape-like' to 'human-like'.
****Stone tool evidence**	Older stone tools are simpler requiring less intelligence to make, younger stone tools are more complex requiring more intelligence to make.

****The Leakeys**	Mary and Louis discovered *Homo habilis*, their son Richard worked on *Homo erectus*.



2. The theory of evolution	
***Charles Darwin**	Develop the theory of evolution.
***Evolution**	The way that species develop by gradual changes over many generations due to natural selection.
***Variation**	Natural differences between members of a species that affect the chance of survival.
****Mutations and evolution**	Changes in DNA cause variation.
****Environmental change**	Change to factors such as food supply, climate or predators.
***Competition**	The fight to eat, survive and breed.
***Natural selection**	Organisms with the best genes and characteristics are more likely to survive, breed and pass on their better genes.
***Inheritance**	Gaining your genes from your parents.
****Well adapted**	An organism has features that make it better able to survive and breed.
****Evolution and the individual**	An individual does not evolve during its lifetime, populations of organisms evolve over many lifetimes.

****Human evolution**	Humans did not evolve from chimpanzees, we both evolved from a common ancestor.

3. Resistance	
***Resistance**	The natural ability of some members of a species to survive poisons that would kill the other members.
***Evolution of resistance**	Evolution of organisms that stops them from being affected by poisons.
****Rats and warfarin resistance**	Warfarin is used to kill rats. Some rats were naturally resistant, survived the warfarin, bred and passed on their resistance genes.
****Antibiotic resistance**	Antibiotics are used to kill bacteria. Some bacteria were naturally resistant, survived the antibiotics, bred and passed on their resistance genes.
****The problems of resistance**	Antibiotic resistance means that many infections that used to be simple to treat may become too resistant to treat, causing major health problems.

4. Classification	
***Carl Linnaeus**	Developed the modern system of classification.
***How to classify**	Based on similarities, group things into smaller and smaller groups with fewer and fewer similarities.
***Problems with classification**	Sometimes organisms that look similar are not actually related.
***Kingdoms**	Old idea, classifying living things into five kingdoms (including plants, animals and fungi)
****Carl Woese**	Developed the modern system of classification with three domains.
***Domains**	Modern idea of classifying living things into three main groups: bacteria, Archae, Eukarya.

****Bacteria**	Single-celled organisms with no nucleus and no unused sections of DNA.
****Archae**	Single-celled organisms with no nucleus but with unused sections of DNA.
****Eukarya**	(Often) multi-cellular organisms with a nucleus and unused sections of DNA. Includes plants, animals, fungi and protists.

5. How to modify species	
***Artificial selection**	When humans (normally farmers) select the animals/plants to breed with the best characteristics.
***Selective breeding**	Developing new breeds of plants or animals with better characteristics by selective breeding over many generations.
****Selective breeding in practice**	Choose parents with the best characteristics, breed them together, choose from their offspring with the best characteristics, breed them together, repeat for many generations.
***Genetic engineering**	Changing the characteristics of organisms by giving them genes from another organism.
***GMO**	Genetically modified organism: an organism that has had its genes changed.
****Bt corn**	Corn containing a gene from *Bacillus thuringiensis* that makes it produce a substance called Bt which kills insects.
***Medical GMOs**	GM bacteria are used to make insulin (for diabetes) and some antibiotics.
****Pros and cons of GM**	Quicker than selective breeding and can introduce more different characteristics but is expensive.

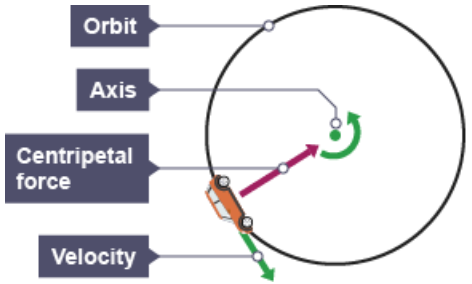
P2: Forces and motion

Lesson sequence

1. Resultant forces
2. Newton's first law
3. Mass and weight
4. Newton's second law
5. Core practical – investigating acceleration (CP12)
6. Newton's third law
7. Momentum (HT)
8. Stopping distances
9. Car safety

1. Resultant forces	
***Scalar quantity**	A quantity with magnitude (but no direction).
***Vector quantity**	A quantity with magnitude and direction.
***Force arrows**	Arrows can be used to represent forces: - Direction = direction of force - Length = size of force
****Resultant force**	The force left over when forces acting in opposite directions are cancelled out.
****Calculating resultant force**	Subtract the total force in one direction from the total force in the other direction.
***Balanced forces**	When the resultant force is zero (because forces acting in opposite directions are the same size).
***Unbalanced forces**	When the resultant force is non-zero (because there is more force in one direction than another).

2. Newton's first law	
***Newton's first law of motion**	An object will move at the same speed and direction unless it experiences a resultant force.
****The effect of resultant forces**	Resultant forces cause acceleration: speeding up, slowing down or changing direction
****Effect of forces on motion**	Forces make you start moving, stop moving or change direction, they are not needed to keep you moving!
*****Circular motion**	Moving in a circle is a type of acceleration because you are changing velocity (your direction changes even if your speed does not).
*****Centripetal force**	A force acting towards the centre of a circle that enables objects to move in a circle.
*****Sources of centripetal force**	Gravity – keeps the Earth orbiting the sun Tension – lets a bucket swing in circles on a rope Friction – keeps cars turn round a roundabout



3. Mass and weight	
***Mass**	The quantity of matter in an object is made of. Units = kilograms, kg.
***Weight**	A force caused by gravity pulling downward on an object. Units = newtons, N.
***Force meter**	An instrument for measuring forces. They usually involve a spring that stretched more the more the force.
****Gravitational field strength**	The strength of gravity, which is different on different planets. Units = newtons per g=kilogram, N/kg.
****Gravitational field strength on Earth**	10 N/kg
****Calculating weight**	Weight = mass x gravitational field strength W = m x g Weight = N Mass = kg Gravitational field strength = N/kg
****Air resistance**	A force greater by the air pushing against you as you move. Faster movement → greater air resistance.
*****Motion whilst falling**	Accelerate until the air resistance is equal to the weight; now there is no resultant force so speed stays constant.

4. Newton's second law	
***Newton's second law of motion**	Force = mass x acceleration
****Acceleration is greater when…**	- The force is greater - The mass is smaller
***Calculating forces**	Force = mass x acceleration F = m x a Force = N Mass = kg Acceleration = m/s^2
***Calculating acceleration**	Acceleration = mass / force a = F / m Force = N Mass = kg Acceleration = m/s^2
*****Inertial mass**	The mass calculated by measuring the acceleration produced by force, using the equation 'm = F / a'
*****The point of inertial mass**	Inertial mass is the same as mass measured with a mass balance, but it gives us a way to measure mass where there is no gravity, such as in space.

5. Core practical – investigating acceleration (CP12)	
***CP12 - Aim**	To investigate how changing force changes acceleration.
***CP12 - Setup**	A trolley on a ramp with 90 g masses. 10 g mass hanger attached to trolley via a string over a pulley.
***CP12 – Data collection**	Release the trolley, use light gates to measure the acceleration.
***CP12 – Variations**	Move 10 g of mass from the trolley to the mass hanger each time.
***CP12 – Independent variable**	The force: each 10 g mass = 0.1 N force
***CP12 - Results**	Ore mass → more force → greater acceleration.

6. Newton's third law	
***Newton's third law**	For every action force there is an equal but opposite reaction force.
***Action force**	The force you push or pull with.
***Reaction force**	A force of the same size but opposite direction to an action force.
***Action-reaction forces**	If, A applies an action force to B, B applies a reaction force of same size and opposite direction to A.
****Action-reaction vs balanced forces**	Similarities: same sizes, opposite directions Differences: balanced forces act on same object, action-reaction act on different objects
*****Action-reaction forces - collisions**	E.g. kicking a ball: the foot pushes the ball, the ball pushes back on the foot.

7. Momentum (HT)	
***Momentum**	The tendency of an object to keep moving.

***Calculating momentum**	Momentum = mass x velocity field strength p = m x v Momentum = kg m/s Mass = kg velocity = N/kg
Momentum and force calculations	Force = change in momentum / time F = (mv – mu)/t Force = N Mass = kg Velocity = m/s Time = s
***Conservation of momentum**	Total momentum before and after a collision is the same.

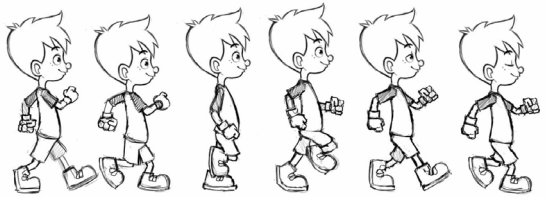
****Three car safety features**	Crumple zones, (stretchy) seat belts, air bags
*****Collision forces**	Greater momentum change → greater force
****Calculating collision forces**	Force = change in momentum / time F = (mv – mu)/t Force = N Mass = kg Velocity = m/s Time = s

8. Stopping distances	
***Stopping distance**	The distance travelled from when a hazard is seen to when you fully stop.
***Thinking distance**	The distance travelled from when a hazard is seen to when you brake.
***Braking distance**	The distance travelled from when you brake to when you fully stop.
****Calculating stopping distance**	Stopping distance = thinking distance + braking distance
****Thinking distance and reaction time**	Slower reactions = greater thinking distance
****Thinking distance increased by…**	Higher speed, tiredness, illness, drugs, distractions, old age
****Braking distance increased by**	Higher speed, poor brakes, poor tyres, wet/icy/gravelly road, downhill, heavier load

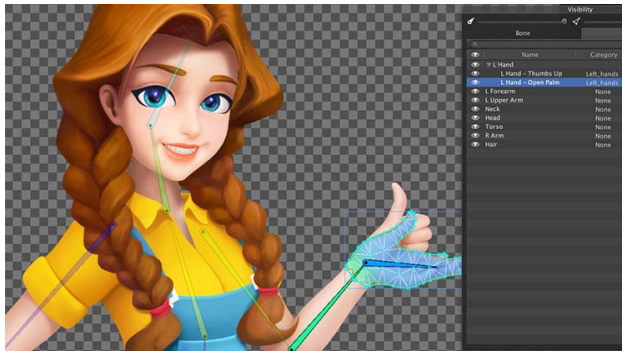
9. Crash hazards	
****Crash danger**	Crashes involve large decelerations, creating large forces which can injure you.
****Car safety features**	Increase the time a collision takes, reducing deceleration and forces.

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

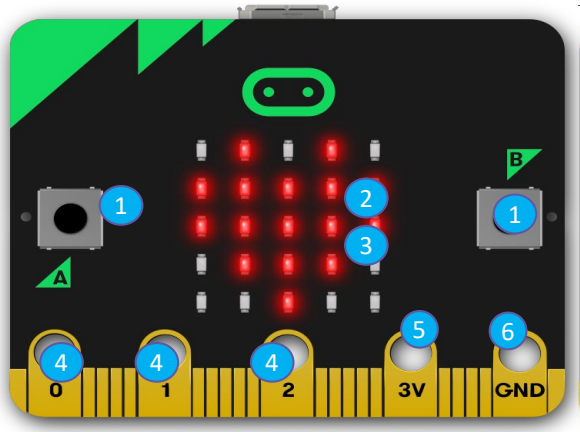
Definitions	
Face:	A surface made up of three or more sides. **Faces** are often referred to as **polygons.**
Vertex:	A point where one or more edges meet
Edge:	A line connecting two vertices
Objects:	Scenes are made up of geometric, control, lamp and camera objects
Keyframes:	Used for tracking change, 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

Computer Science Knowledge Organiser

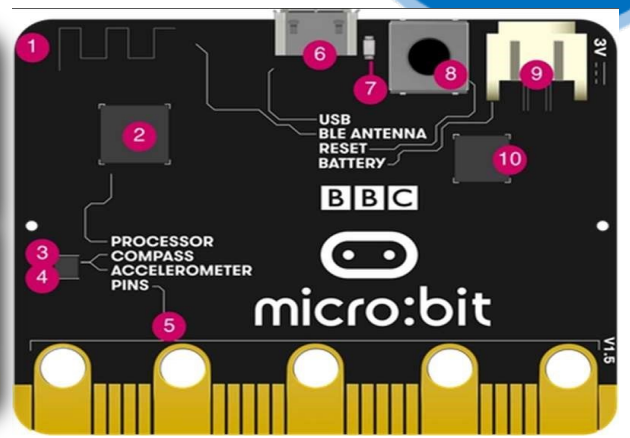
MICRO-BITS

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.

Literacy / key words

CAD and CAM
Computer Aided Design (CAD) drawing allows products s to be manufactured using Computer Aided Manufacture (CAM) Computer aided manufacture is very fast and accurate and requires less human intervention

Renewable
energy comes from natural resources that are constantly replenished and never run out. These sources can be used repeatedly without depleting the Earth's supply.

Non-renewable energy comes from sources that will eventually run out because they are not replenished at the rate they are consumed

CAD Computer Aided Design

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

CAD Computer Aided Manufacture

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

Non renewable energy	Advantages	Disadavatages
Coal	Produces high amounts of energy	Carbon dioxide produced when burned and mining damages the environment.
Gas	It emits less Co2 than coal . The UK has shale gas reserves .	Can cause water pollution ,
Oil	A small amount of oil can produce a lot of energy.	Creates significant air pollution when burned.

renewable energy	Advantages	Disadavatages
Wind turbines	Clean and cheap to run	Expensive to set up and wind does not always blow. Can be an eye sore .
Hydroelectric power stations	Clean and cheap to run	Expensive to set up and output could be affected by drought
Solar cells	Clean and cheap to run	Not always sunny

Extra - Read/watch/do

Watch and read
Who was Zaha Hadid

https://www.bbc.co.uk/bitesize/articles/zd48239#zqtsg2p

You will be assessed on

Links to curriculum

Make
select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture