SUMMER KNOWLEDGE ORGANISER

YEAR 8

CONTENTS PAGE

Art & Design

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

Hyperrealism

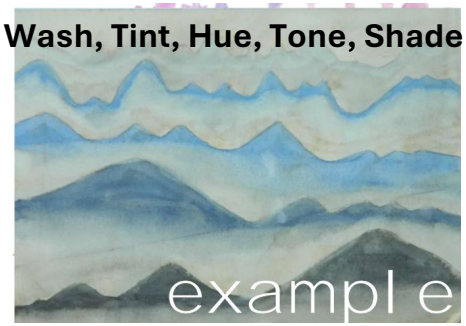
Hyperrealism is a style of art where the artist makes their work look so detailed and lifelike that it looks almost like a photograph. Artists focus on tiny details like light, shadows, textures, and reflections to make the artwork seem as real as possible. It's about creating something that feels even more realistic than real life!

Realism

A style where artists try to make their work look as close to real life as possible. They focus on showing things like they really are

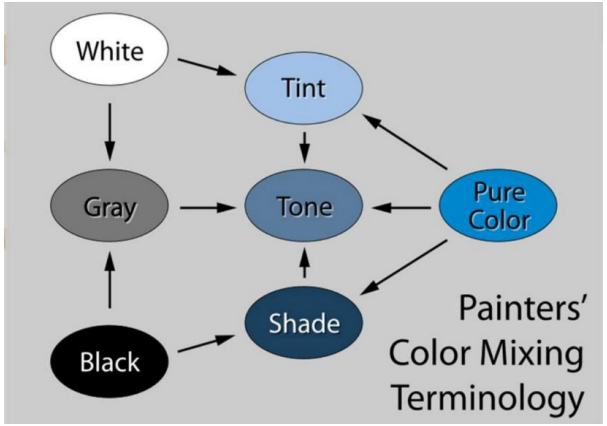
YEAR 8 Summer Term

Wash, Tint, Hue, Tone, Shade



Sarah Graham

Understanding Sarah Graham's work helps us to create realistic artwork. Her attention to detail in capturing reflections, textures, and vibrant colours helps us understand how light and shadow interact to create depth and realism. By studying her techniques, such as the layering of bright, saturated colours and precise rendering of glossy surfaces, we can learn to replicate the shiny, enticing qualities of sweets. Her playful and joyful compositions also encourage us to experiment with creative arrangements and dynamic perspectives, making our artworks both realistic and visually appealing.



Key terminology for colour mixing

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

Hue= another word for colour

This is an example of a one colour gradient

Mixed media 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
- **Sarah Graham documentary-** https://www.youtube.com/watch?v=uW9-euSNiYY

Art & Design

Colour and mood

Colours can make us feel different moods and emotions in art. Here's how different colours might affect us:

Red- Red is a strong colour that can feel exciting, powerful, or even angry. It's great for showing energy, love, or danger.

Blue- Blue often feels calm, peaceful, or sad. It's like the colour of the sky or the ocean, making us think of quiet and relaxing places.

Yellow-Yellow is a happy and bright colour. It can remind us of sunshine, making us feel cheerful and full of energy.

Green- Green feels fresh and natural, like plants and grass. It can make us feel calm, safe, or even full of hope.

Purple- Purple is a creative and mysterious colour. It's often linked to royalty or magic, making us think of special or unusual things.

Orange- Orange is warm and fun, often reminding us of autumn leaves or sunsets. It's a colour that feels friendly and full of life.

Black- Black can feel serious, strong, or mysterious. It's often used to show sadness or power in art.

Mixed Media

Mixed media in art is when an artist uses different materials and techniques together in one artwork. For example, they might combine paint, pencils, collage, and ink to create different textures and effects. It's a creative way to mix materials and explore new ideas!

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.

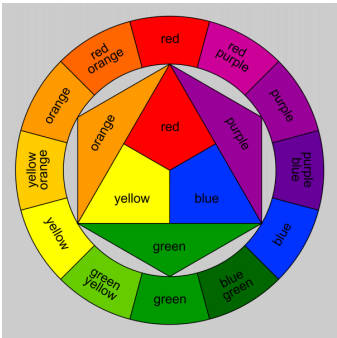
Designing Your Own Chocolate Bar Wrapper

1. **Choose a Theme**
   Decide on the overall theme or style of your chocolate bar. Think about what kind of chocolate it is (e.g., milk, dark, white, or flavoured) and who it's for (kids, adults, or a special occasion).
2. **Create a Logo or Brand Name**
   Come up with a catchy brand name and design a simple logo. Make sure it's easy to read and matches your theme. For example, a fun chocolate for kids might use playful letters, while a luxury bar might have elegant fonts.

What techniques will I learn?

Colour theory

Colour theory is the study of how colours work together in art. It helps us understand things like the colour wheel. It also explains how colours can look good together, like warm colours making us feel happy, or cool colours making us feel calm.



Coloured pencils

Start Light
Begin with light pressure so you can build up layers of colour gradually. This makes it easier to fix mistakes or add details later.

Layering
Add colours in thin layers to create depth and richness. Start with lighter colours and gradually add darker tones.

You will be assessed on

- Term 1 – Observational drawing (tonal shading)
- Term 2 – Coloured pencil drawing (Artist inspired)
- Term 3 – Chocolate bar wrapper painting

Links to curriculum

English and History - In our lessons, we will look at a different artist and talk about their artwork, helping you learn to describe and discuss what you see.

TOP TIPS FOR LEARNING A SCRIPT

1. Read through the script a line at a time then cover it up and say it out loud

2. Break the script into sections then write each section onto a post it note rearrange them and put them back into the correct order.

3. Rehearse with movement. Add a movement to each section to help you remember.

4. Annotate your script with the vocal and physical skills you want to use so that you don't forget them!

OUR DAY OUT by Willy Russell

ACT / SCENE SUMMARIES

The plot centres on a school trip to Conwy Castle in North Wales. Mrs Kay teaches a class for illiterate children called the 'Progress Class'. The whole class – along with Digga and Riley, the slightly older pupils who used to be in the Progress Class – are taken on a coach trip. The headmaster asks deputy head, Mr Briggs, to go on the trip as an extra member of staff, emphasising his mistrust of the liberal values of Mrs Kay.

On the way, the coach stops at a roadside café with a snack shop, where the students take advantage of the storekeepers' confusion to shoplift sweets and snacks, while their teachers are unaware. The coach makes a second stop at the zoo, where the students enjoy the animals so much that they try to steal most of them. The zoo attendant discovers this just in time before the coach pulls out of the parking lot, and makes them return the animals.

When the coach finally reaches the castle, the students race around exploring the grounds, cliffs and beach. Soon it's time to leave, but one of the best-behaved students, Carol, is missing. A search ensues and Mr Briggs finally finds Carol at the cliff edge. She is depressed because she doesn't want to return to the bad conditions at home and becomes so upset that she threatens to jump off. Mr Briggs shows a more understanding side as he convinces Carol to re-join the rest of the group.

At the suggestion of Mr Briggs, the coach makes one more stop at a fairground where the students have some more fun before returning home. Mr Briggs joins the students on some of the rides, wears a funny hat, and joins in with the sing-song on the journey home, all of which is photographed by Mrs Kay. Mr Briggs offers to develop the photos but he secretly unravels the undeveloped film, exposing and ruining the photos.

THEMES

Social class	Poverty	Conflict	Morality	Nature vs Nurture
Education	Stereotyping	Prejudice	Pride	Relationships

CONTEXT

Playwright 	Willy Russell was born in 1947 into a working-class family near to Liverpool. He left school at 15 without academic qualifications and began work. Dissatisfied with his job, he went to university and then became a teacher at a school in Liverpool. Russell wrote 'Our Day Out' in 1977 which was based on his experience while teaching at Shorefields School in Liverpool.	Genre	**COMEDY/ REALISM/ SATIRE**: Russell's plays and novels are about ordinary working class people His collection of work is funny and moving with a comic touch
		Socio-historical Contexts	Escalating economic decline in the 1970s meant many had little or no income, which divided the rich and poor. This is social exclusion where people do not have access to adequate health care or education. Margaret Thatcher became the Conservative Prime Minister in 1979. One of Thatcher's central political beliefs was that success came to those who chose to work hard.
		Political context	Russell contradicts this view as he shows that the pupils in the class are already intended for menial, low paid jobs and have effectively been written off by society. Willy Russell would have seen the poverty and lack of aspiration first hand in his home city. Liverpool's famous docks, a traditional source of local employment, were allowed to run down and thousands of households fell into poverty; crime levels increased; housing was allowed to deteriorate and drug use became more common.

MAIN CHARACTERS

Mrs Kay	A kind-hearted and generous teacher of the progress class
Mr Briggs	The deputy-head of the school who believes in very strict discipline
Colin/ Susan	Young teachers who are helping support those on the trip
Carol	A thoughtful student who seems unhappy with her life in Liverpool
Reilley/ Digga	Older students who used to be in the progress class; a bad influence on the others
Lindo	A girl with a bad attitude, she has a crush on Colin and clashes with Mr Briggs
Andrews	A young student with a difficult home life

Vocal Skills (Scan the QR code to find out more about vocal skills)

Pitch

Pace

Tone

Volume

Accent

Physical Skills (Scan the QR code to find out more about physical skills)

Body Language

Gesture

Levels

Facial Expressions

Posture

and IMPROVISATION

Year 8 Summer Term

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

Blues Walking Bass Line String Bass Big Band Saxophone Improvisation Introduction (Extended) Chords Melody Sequence Lyrics New Orleans Structure 12 Bar Blues

PRACTICAL SKILLS USED IN BLUES MUSIC:

ORIGINS and DEVELOPMENT – African slaves brought their musical traditions with them when they were transported to work in the North American colonies. These *Work songs* were sung rhythmically in time with the task being done. Their songs were passed on orally (word of mouth) and were never usually written down. They used ***call and response*** (phrases from a lead singer were followed by the others). Early styles of Blues were known as *country blues* and were usually a solo singer accompanied on guitar or piano sometimes with added harmonica or drums. This developed through to *BIG BANDS* which used ***trumpets, trombones, saxophones, piano, drum kit, string bass and clarinets***.

The 12 Bar Blues Chord Sequence

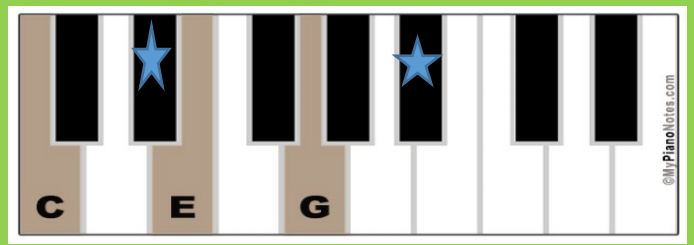
A chord is 3 notes played together at the same time. Blues music only uses 3 chords which are played in this order:

C	C	C	C
F	F	C	C
G	F	C	C

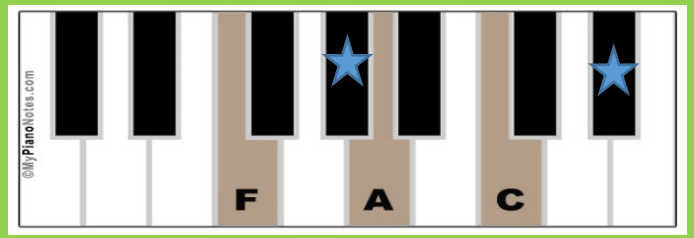
BESSIE SMITH –one of the greatest blues singers of the 20th Century. She had a deep, soulful voice and made her way from poverty to stardom because of her fantastic talent. She was at the height of her success in th 1920s. She sang about her own harsh experiences as a black woman in the deep south of American. She worked with jazz legends such as Louis Armstrong and Benny Goodman

THE CHORDS (ADVANCED IMPROVISATION NOTES ARE STARRED)

CHORD OF C MAJOR:



CHORD OF F MAJOR:



CHORD OF G MAJOR:

KEY WORDS AND MEANINGS (Tier 2 words in ORANGE, Tier 3 words in BLUE)	
Improvisation	To make music up as you go along
Structure (Twelve bar blues)	The way the music is put together. The twelve bar blues has a very specific chord sequence that you will need to learn off by heart – see first page (blue boxes)
Lyrics	The words to a song
New Orleans	A city in Louisiana, America. It has strong associations with Jazz and Blues music
Introduction	The first section of a piece of music – before the voice or solo instrument enters with the main tune
Extended chords	Chords are usually a collection of THREE notes played together. Extended chords add more notes e.g. 7ths to give a 'blues' feel
String Bass/ Double Bass	A large string instrument used to play the bass line in Blues and Jazz music. Plucked with fingers rather than using a bow
Saxophone	A WOODWIND instrument, comes in a variety of sizes which determines the pitch – soprano (smallest and highest pitch), alto, tenor and baritone (largest and lowest)
Big Band	A collection of instruments (like an orchestra) that includes clarinets, saxophones, trumpets, trombones, piano, drum kit and string bass. Sometimes flutes are added too.
Chord *Sequence*	Chords played in a *specific order* e.g. the 12 bar blues chord sequence.

English

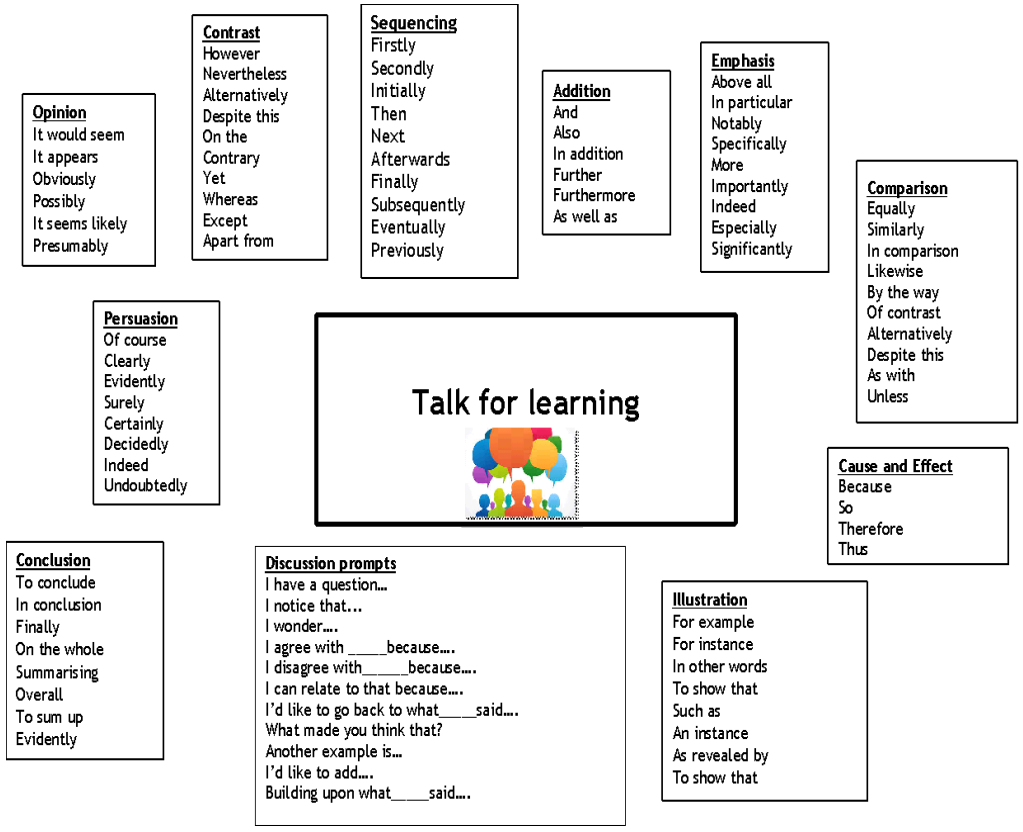
Literacy / key words:

Audience – the people you are addressing (verbally or through writing)
Target Market – a particular group of consumers a product is aimed at
Purpose
Engagement – how well you captivate your audience
Persuasion – the action or process of influencing or coaxing someone
Direct Address – speaking directly to your audience with words like 'you' or 'us'
Alliteration – successive words beginning with the same letter in order to create something memorable
Facts – true, proven statements
Opinions – personal view/judgement
Rhetorical Question – a question asked to prompt thought rather than answer
Emotive Language – words used to trigger an emotional response
Statistics – numerical, factual information
Tricolon – a series of 3 words of phrases

Gestures – a movement of the hand or head to express an idea/meaning
Eye contact – looking directly at members of your audience in order to engage them
Intonation – the rise and fall of a voice in speaking
Pace – the speed at which you speak when delivering your speech
Anecdote – a personal story.
Expert opinion – a quote from a doctor, professor etc.
Figurative language – Use of metaphors, similes etc. for effect.
Repetition – repeating a word or phrase for effect.

What will I be doing for my assessment?

You will be completing a presentation on who your role model is. We will read a range of non-fiction extracts to inspire your ideas and to help you develop the skills necessary to write an engaging speech!



Extra - Read/watch/do:
YouTube: To research successful, engaging speeches at home, search up 'TEDx Talks' and enjoy some really impressive speeches, delivered by kids! Recommend 'The effects of lying' by Georgia Haukom. *Some content requires parental/guardian's permission to view.*

What skills will be assessed?

- Your speaking and listening skills (oracy)
- Organisation and engagement of your speech and its delivery (assessment feedback sheet on the next page!)

Links to curriculum:

-Computer Science/IT skills, creating PowerPoint presentations.

-Drama and performance skills

How to craft our presentation:

HOOK – <u>How are you going to grab the attention of your audience right away?</u>
Rhetorical questions are often used to do this: Have you ever thought about…? ***or*** Did you know that…?

ORGANISATION – Consider the fact that your audience may not know who your role model is - it is *entirely* new to the audience. What is going to be the best way to inform us about who this person is? You might wish to:

- Provide some facts about the person;
- Make use of some emotive language to introduce the person when they were little;
- Detail the key benefits of your product and how it is different to other items on the market (include anecdote, direct address or tricolon to persuade us!);

ENDING - Consider how you are going to have a lasting impact and remain memorable for the audience!

<u>Pitch Fill-In the Blank</u>

I am _____ (student name) and this is _____ (student name).

Together, we are _____ (company name).

Our product is _____ (product name).

Have you _____(problem that product solves for customer)?

Well our product is just what you need! _____ (Product name)

_____ (what product does).

Buy now and get a special price of _____ (price). Ready to

_____ (what the customer gets from product)?

Or you could use this more simplified writing frame!

The Assessment Mark Scheme:

FOUNDATION	
Your ideas are communicated **simply**	
You **try** to link your ideas together	
You **try** to use strategies to engage the audience such as: Hand gestures Humour Eye contact Movement Persuasive Techniques	

INTERMEDIATE	
Your ideas are communicated **in more detail with some interest**	
You link your ideas together **well**	
You **use** strategies to engage the audience such as: Hand gestures Humour Eye contact Movement Persuasive Techniques	

HIGHER	
Your ideas are communicated **confidently** with **interesting vocabulary** to help	
You **organise** your ideas well making sure it is **coherent** and well planned	
You use strategies to engage the audience really **convincingly**, such as: Hand gestures Humour Eye contact Movement Persuasive Techniques	

<u>Links to Careers:</u>
We will look into concepts such as entrepreneurship and investment, exploring how to use our skills of persuasive writing from the Autumn term, to craft effective and engaging speeches.
Many innovators and entrepreneurs have to develop a skillset and a new way of thinking; it

English

Key Terminology	
Term	**Definition**
emotive language	Word choice which is used to evoke emotion in the reader.
extended metaphor	A metaphor that is developed throughout a poem.
enjambment	The overlapping of a sentence onto the following line, usually to emphasise a word or phrase at the start of a line or verse.
juxtaposition	When two or more contrasting objects, images or ideas are placed next to each other to show a contrast between them.
metaphor	A comparison in which one thing is said to be another.
personification	The attribution of human feelings, emotions, or sensations to an inanimate object.
refrain	A recurring phrase or set of lines.
rhyme scheme	The pattern of a poem's rhyme, often identified using letters e.g. ABABCC
simile	A comparison which uses 'as' or 'like' to show how one thing is similar to another.
symbolism	The use of symbols to express ideas or qualities.

	Key Vocabulary
Term	**Definition**
advocate	To support or speak in favour of somebody or something.
equality	The fact of being equal in rights, status, advantages, etc.
injustice	An event or situation which is fundamentally unfair.
oppression	A situation when people are governed in a cruel and unjust way.
plight	An unpleasant situation, especially a dangerous, difficult, or sad one.

Key Poet – Jackie Kay
Jackie Kay is a poet, playwright, and novelist.
She was born in Edinburgh to a Scottish mother and a Nigerian father before being brought up by white adoptive parents in Glasgow.
Kay's poetry often explores themes of identity, injustice, race, and sexuality.
Kay was the Scots Makar, the national poet laureate of Scotland, from 2016-2021.
'Poetry gives voice to the voiceless.' Jackie Kay

Y8 Summer 2 KO: Social Justice Poetry

Literacy / key words

Refrain (n) = word, line or phrase that is repeated within lines or stanzas of a poem

Imagery (n) = images that convey the key ideas, messages or themes in a text

Personification (n) = giving human feelings/actions to something non-human

Connotation (n) = idea or feeling created by a word that adds to its literal meaning *e.g. Red = death, love, passion*

Speaker (n) = the narrative voice or the person speaking in the poem

Metaphor (n) = comparing person/object/action to another directly

Extended metaphor (np) = metaphor that unfolds across multiple lines or even paragraphs of a text

Plosive (n) = a hard speech sound made by the letter t, k, p, d, g, or b

Caesura (n) = pause that occurs within a line of poetry, usually marked by some form of punctuation

Emotive language (np) = words/ phrases used to stir emotions in the audience

Symbolism (n) = Writer gives an action, object, place, person etc a more metaphorical meaning

Juxtaposition (n) = two things placed close together for a contrasting effect

Enjambment (n) = the continuation of a sentence across a line break in poetry

Simile (n) = comparing a person/thing using 'like/as'

Tone (n) = the attitude or feelings that a speaker or writer expresses through their words

Extra: Read

Authors

-Benjamin Zephaniah

-Danielle Jwando

-John Agard

-Langston Hughes

-Zadie Smith

-Toni Morrison

Sentence Starters

The writer creates the idea/ theme/ character to…

This is shown in the quote "…"

The *word/ techniques* suggests…

Also, the (word) emphasises…

Alternatively, it could also imply…

The audience will think/feel… because…

This links to the context of … because…

The writer intended to…

Thematic Vocabulary

Social justice (np) = the fair and equal treatment of all people in society

Injustice (n) = an event or situation which is unfair and undeserved

Abuse of power (np) = when a person or group in a position of authority uses their power to oppress people

Collective responsibility (np) = everyone being responsible for each other

Activist (n) = a person who acts or campaigns to bring about political or social change

Glass ceiling (np) = a metaphor used to describe the difficulties faced by women when trying to move to higher roles in a patriarchal society

Exploitation (n) = the action or fact of treating someone unfairly to benefit from their work

Prejudice (n) = holding an unfair opinion about a person or group without reason or experience, often based on sex, religion, ethnicity or other characteristics

Civil rights (np) = the right that every person has to political and social freedom and equality

Oppression (n) = continued, unfair, cruel and unjust treatment which prevents people having their rights and freedoms

Polemic (n) = a strongly critical verbal or written attack on someone or something

GEOGRAPHY: Year 8 – Flooding

Key terms / Literacy:

- **Flood** – an overflow of a large amount of water, beyond its normal limits.
- **Permeable** – rocks that enable water to pass into them
- **Infiltration** – the transfer of water from the surface of the land into the soil layer
- **Percolation** – the transfer of water deeper underground from the soil into the rock layer
- **Geology** – the type and arrangement of rocks underground
- **Discharge** – the volume of water passing along a given point in a river. It is measured in m^3/sec.
- **Hydrograph** – a type of graph that shows how the discharge in the river is affected by a period of heavy rainfall.
- **Bangladesh** – situated in south Asia, Bangladesh is the most flood-prone country in the world.
- **Environment** – the built and natural surroundings, which can be damaged by flood events.
- **Engineering** – ways of preventing flood events through building structures that alter the natural processes in the river (hard engineering) or by working with the natural processes in the river.

Why do floods happen?

Human Factors:

- Deforestation - As there is less vegetation to intercept (catch with its leaves and branches) any precipitation, rainfall directly hits the surface and can quickly saturate (completely fill with water) soils or run-off into nearby rivers.
- Urbanisation - Building on a floodplain (the flat area beside a river that is flooded) creates impermeable surfaces such as tarmac roads, and slate roofs. Water is quickly moved into drains and sewers and then into urban river channels. This rapid movement of water makes flooding more likely.
- Agriculture - Cattle (cows) and heavy machinery can compact (push down so the air is squeezed out) the soil on the surface, leading to less infiltration and more surface run-off. After crops have been harvested, sometimes the soil is left bare in the winter. This reduces interception because there is no vegetation.

Physical Factors:

- Steep slopes - These reduce the amount of infiltration (rainwater soaking into the ground) as it is easier for rainfall to flow down the slope as surface run-off.
- Precipitation - Prolonged (lasting for a long time) rainfall leads to more water in the drainage basin of a river. This can lead to sudden flash floods (a sudden localised flood, mainly caused by heavy rain).
- Geology - Impermeable rocks do not allow water to infiltrate through them. This means that water flows over the land and into the river channel, making flooding more likely.

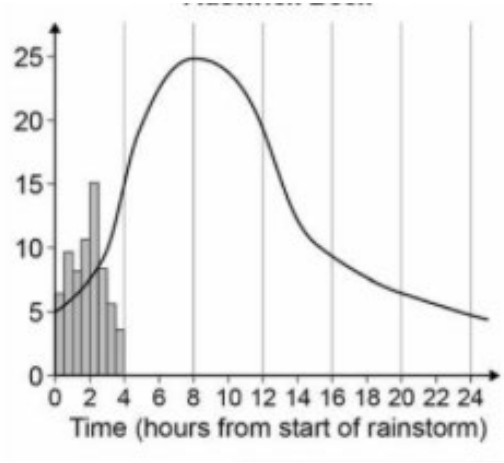
Drainage basin hydrological cycle:

- Infiltration of water into the soil prevents flooding as less water gets to a river or sits on the surface of the land. Percolation enables water to be stored deeper underground, preventing flooding. Interception by trees prevents flooding as less water reaches the ground. Light or low rainfall prevents flooding as less water is added to the system. Where these processes are prevented, flooding is more likely.

GEOGRAPHY: Year 8 – Flooding

What is a flood hydrograph?

- The line graph on a flood hydrograph represents the discharge of the river (the volume of water in it)
- The bar chart shows how much rain fell which caused the change in river discharge.
- A high peak discharge means the flood was very severe.
- The difference between the peak rainfall and peak discharge is called the lag time. A short lag time means there was a flash flood, which happened very quickly with little time for people to prepare for it.



What are the impacts of flooding in the UK?

- June 2019 - February 2020 – succession of flood events across the UK caused by excessive rainfall, which in some regions was double the average and with February being the wettest month on record.
- Social – 11 people died, thousands had to be evacuated from their homes
- Environmental – many road closures and rail services cancelled due to flooded infrastructure.
- Economic - Estimates have put expected insurance pay-outs as a result of the flooding in the hundreds of millions of pounds.

Why does Bangladesh flood and what impacts do they have?

Causes of flooding:

- Each year around 21% of Bangladesh is flooded.
- Bangladesh is flat and low-lying
- It is on the confluence of the Ganges, Brahmaputra and Meghna rivers, which have a large discharge.
- It experiences a monsoon season every year bringing heavy rain (2,200mm/year).
- High population densities especially in key cities such as Dhaka mean hard impermeable surfaces and deforestation.

Impacts of flooding in June 2022:

- Social – over 9mill people in India and Bangladesh were affected with 141 people dying in Bangladesh and millions suffering from food shortages.
- Economic – 53,000 hectares of farmland destroyed in Bangladesh and 640 schools had to close for a month leading to a loss of learning.
- Environmental - Large parts of Sunamganj and Sylhet were completely cut off due to severe disruption of road communication and power cuts. Dams have been weakened by the floods.

Extra: Read / Watch / Do:
Read: News articles about flood events that have happened in the UK.
Watch: Documentaries about flood events that have happened in Bangladesh.
Do: Walk along the River Mersey and consider how the land is being used to prevent the negative impacts of flooding.

Curriculum Links:
The content from this unit ties in with the Year 7 unit we did about Rivers. In GCSE Geography you will study how rivers can be managed to prevent the negative impacts of floods.

Assessment Skill - Writing to explain:
K: Show **knowledge** of the geographical issue in question e.g. an impact of flooding in Bangladesh is that peoples' lives were disrupted.
PLC: Try to include some **place located content** i.e. a fact about a specific place to illustrate the point e.g. 53,000 hectares of farmland destroyed in Bangladesh.
U: show your **understanding** by explaining why this feature is significant. You may use terms such as 'because', 'therefore', and 'as a result' e.g. This could lead to not as much food being produced that year. Therefore, people may have to go hungry or pay more for food as the demand for food is higher. As a result, people could go hungry and their health could be affected in the months that followed the flood.

GEOGRAPHY: Year 8 – Fieldwork

1. Hypothesis setting:

A hypothesis is a statement that sets out a likely conclusion of a study, before that study takes place. This statement can then be proven or disproven by investigating the topic further.

Why setting a hypothesis it is important to think about what you want to find out from the study.

A hypothesis generally has a yes / no answer e.g. Land use in Sale is typical of that of a commuter settlement.

2. Why is a risk assessment needed?

When working outside the classroom, there is a risk that harm can come to the people carrying out the research, or other people in the local area. In order to minimise the possibility of people being at risk from harm, it is first important to:

- List any possible dangers or risks three are
- Who could be affected
- How could the risk be reduced, or the likelihood of the risk happening be reduced.

Everyone on the trip needs to know what is on the risk assessment as well as their responsibilities to make sure it is acted on throughout the trip.

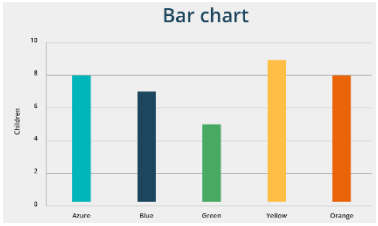
3. What data will we collect?

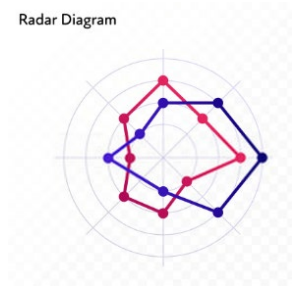
- Environmental Quality Survey – this is a way of deciding how good or bad the quality of the environment is in the area selected for study. You will score the location on a number of different factors e.g. dirty / clean and add up the score.
- Pedestrian count – this is a way of determining how popular a place is. You will count the number of people who walk in front of you for a given amount of time.
- Traffic survey – this gives an indication of how noisy or polluted a place can be as well as how well-connected it is to other areas. You will count the number of different types of vehicles that pass by you in a given time.
- Questionnaire – this is a set of questions that you ask people to find out about their experiences of the study.

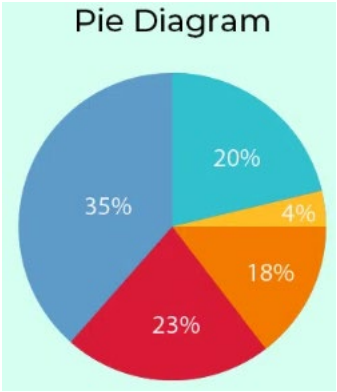
4. Data presentation:

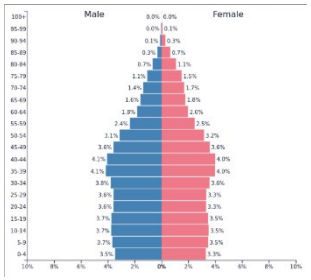
Once the data has been collected, it is important to present it in an appropriate graph or chart. This makes it easy to interpret (see what the data s like) and analyse (find out important facts). It makes data sets easy to compare, so that patterns can be found.

- Bar chart
- Pie chart
- Radar diagram
- Population pyramid









5. Analysis:

This is where you find important trends from your data. You may use statistical analysis like calculating the mean or percentages to help you with your analysis.

6. Conclusions

This is where you respond to your hypothesis, was it correct or not? What is the main piece of evidence to support your answer?

7. Evaluations

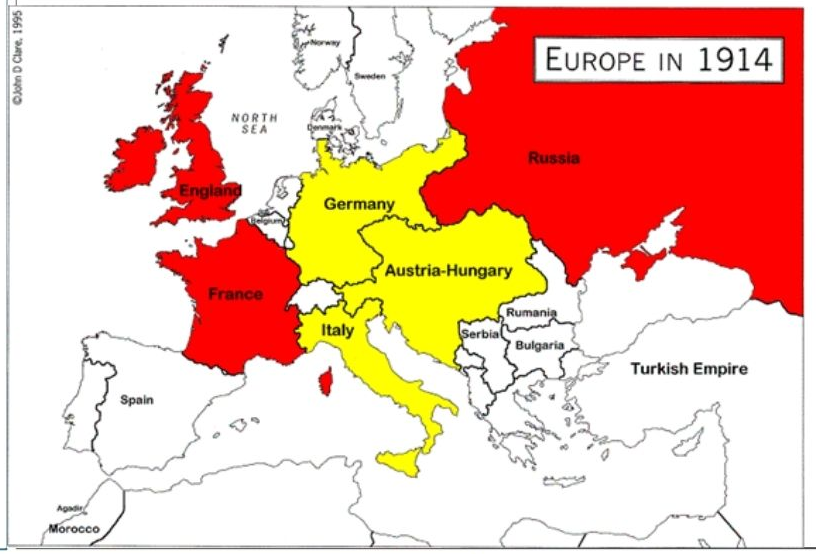
This where you judge the quality of the study, how reliable was your data and how accurate is your conclusion? If you were to repeat the study, what would you differently and why would this be an improvement?

Literacy / key words

Militarism
The belief that military power is essential for national success. This fuelled a European arms race.
Alliances
The alliance system was a network of agreements and treaties that were negotiated before 1914. They added to the suspicion and tension in pre-war Europe.
Imperialism
A system where powerful nations control territory outside its own borders. Many nations fought to gain more territory.
Nationalism
Intense love for ones own country. Germany became obsessed with wanting their own empire and wanted even more
Propaganda
Information, especially of a biased or misleading nature, used to promote a political cause or point of view.
Trench
A narrow excavation dug deeper than the ground.
Western front
The zone of fighting in western Europe in the First World War, in which the German army engaged the armies to its west (France, Britain).
Tactic
An action or strategy carefully planned to achieve specific end. (e.g. send troops to attack at night)
No man's land
An area of unclaimed land in-between the trenches of both sides.

Causes of WWI

Short term causes Militarism, imperialism, alliances, nationalism Long term causes The assassination of Archduke Franz Ferdinand on June 28th1914 who was heir to the throne of Austria-Hungry. Serbian nationalist group the Black Hand were responsible as they were wanting independence from Austria-Hungary. This led to Austria-Hungary declaring war on Serbia Alliance system Triple Entente –Britain, France, Russia (Russia left in 1917 to go through a revolution) Triple alliance –Germany, Italy, Austria-Hungary



Reasons for joining up

When the war started Germany had 4.5 million people ready to fight whereas Britain only had 700,000. They decided to use propaganda in the form of poster, radios and speeches to encourage men to enlist to the army. There were many reasons why men decided to join the army and these include: patriotism, adventure, hatred of Germans, fear of cowardice and having a paid job.

Weapons used during WWI

Artillery -These long ranged guns accounted for 60% of battlefields deaths during WW1. Shells fired from artillery would explode.
Machine guns -The Machine Gun had been a concept since the musket, but in World War I it became a well designed, brutal killing tool.
Aircraft -WW1 was the first conflict involving the large-scale use of aircraft. They were mainly used for reconnaissance missions and dog fights. Dog fights involved two aircraft attempting to shoot one another down.
Tanks -Developed to offer protection when pushing through no-mans land. They could drive over trenches and barbed wire. Tanks were very slow and would often break down.
Gas -To get past deadly machine guns and rifle fire, both sides tried using Poison Gas. One example is deadly Chlorine Gas which attacked the lungs and caused panic and coughing fits. Gas masks were worn.

Extra - Read/watch/do

BBC bitesize KS3 WWI -World War One -KS3 History -BBC Bitesize
Imperial war museum -https://www.iwm.org.uk/visits/iwm-north
The Windrush journey -https://www.youtube.com/watch?v=mY8e5k45z6k

You will be assessed on
- WWI
- Mid unit source analysis
- End of unit extended piece of writing

Immigration Nation
-End of unit extended piece of writing

Links to curriculum
- English
- RE
- Geography

Literacy / key words

Voluntary migration
When people choose to migrate.
Forced migration
When people have to migrate due to conditions in their home country or due to decisions of others
Expulsion
~~Removing~~ somebody from a place
Pogrom
~~A large~~ scale targeted attack of a religious or ethnic group, particularly Jews
Refugee
~~A person~~ who has been forced to leave their country due to certain conditions (war, disease etc)
Anti-Semitism
Hatred or dislike towards Jewish people
Windrush generation
A term used to describe West Indies migrants who arrived to the UK between 1948-73
Partition
The division of a nation into two smaller countries

British Empire in the war

During WWI there were many different nations and troops from all over the world that fought for Britain during WWI. These nations include:
-Canada
- Australia
-India
-Ceylon (Sri Lanka)
-Nepal
- Pakistan
-Burma
-South Africa
-New Zealand

The Battle of the Somme

The battle lasted from 1st July to 18th November 1916 and it is known in British history as 60,000 men were killed on the first day. The battle was started to help the French in Verdun. The tactic of the allies was the bomb the German trenches for 7 days straight and then walk across no-mans land thinking all the Germans would've been killed. All together around 1,738,000 artillery shells.

There are many reasons why British loss was so high these include: Barbed wire was not destroyed by artillery; Germans had dug up to 60ft deep in their trenches; which offered good protection; Mines exploded by the British before the attack alerted the Germans to an attack.

Women at war

As men were enlisted to fight it opened up job opportunities back in Britain and the only people to take them were women. There were several different types of jobs that women took such as producing ammunition. More than 80% of weapons used in the army were made by women and they were nicknamed 'Munitionettes.' Another job they had was working as farmers and agriculture thanks to the government introducing The Women's Land Army. Many women also They assisted in the nursing of wounded soldiers, working as ambulance drivers and cooks both in the hospitals of the home front and in Field Hospitals close to the trench lines. Finally, thousands of women answered the call to work from the British Government by replacing many male led jobs. Therefore many women became civil servants.

Immigration Nation

The first migrants
Pre-1066 migration to Britain included The Romans, the Anglo-Saxons and the Vikings. All three brought many changes such as straight roads, Christianity, Aqueducts, sewage systems.

Jewish migration

British Jews had numbered fewer than 10,000 in 1800 but grew above 120,000 after many fled Eastern Europe to escape the pogroms. Nowadays the Jewish population of the United Kingdom is closer to 300,000. Many fought against the Nazis.

~~Black migration~~

The History of black Britons begins during the roman period and stretches all the way through the history of the British isles. One of the most notable examples was the Windrush ship which brought hundreds of migrants to help Britain after WW2.

South-East Asian Migration

Since ferry and plane transport have become ever more common we have seen a more diverse group of migrants arrive on our shores. After the 1940s we saw an influx of migrants from Asia.

Irish migration

Irish migrants in the 1800s came to UK for several reasons such as better jobs with the Industrial Revolution. Sometimes they had no choice to migrant because of the increase in famine due to the potatoes famine from 1845-1852.

KPI 8.13 Statistics 1

1) Frequency table

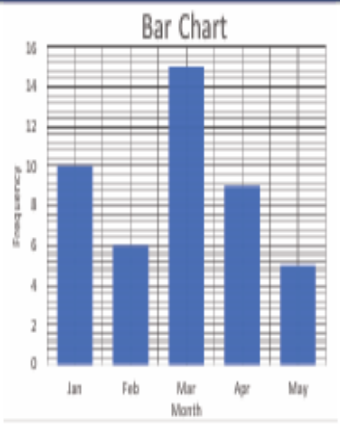
A table showing how often (frequent) something occurs. Can include tally charts.

Score	Tally	Frequency (f)
1	𝍸	4
2	𝍸 𝍸	9
3	𝍸	6
4	𝍸 𝍸	8
5	𝍸	3
6	𝍸	1

2) Bar chart

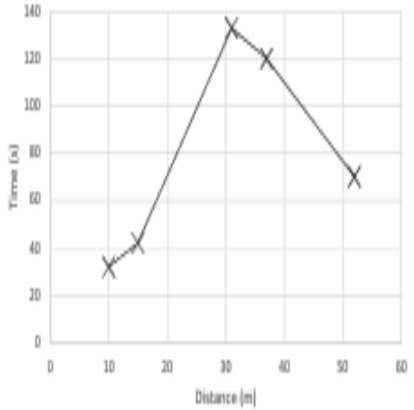
A way of displaying data, using horizontal or vertical bars which are the same width and have gaps between them.

Data can also be presented in dual and composite bar charts in which case a key word would be used.



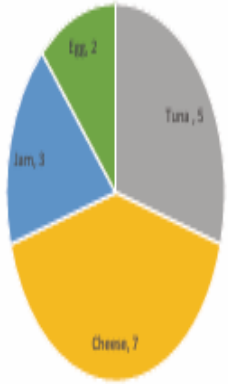
3) Line graph

Uses lines to join points on a graph to represent a data set.



4) Pie chart

Method of displaying proportional information by dividing a circle up into different-sized sectors.



5) Stem and Leaf diagrams

Presents data in a table where the place value columns are split.
For example, the tens and the ones columns may be split where the tens become the "stem" and the ones become the "leaf". Stem and lead diagrams come with a key and must always be written in order.

12	5
34	31
27	22
19	6
39	40

0	5 6
1	2 9
2	2 7
3	1 4 9
4	0

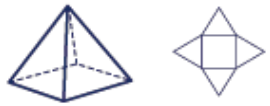
Key

2 | 9 = 29

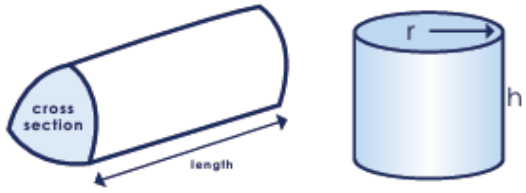
KPI 8.14 Averages and spread

1) Average	The central or typical value in a data set. There are three types of averages: mode, median and mean.	**2) Mode**	The most common/frequent value from a set of data. Mode of 3, 3, 6, **7, 7, 7**, 8, 9, 10 = 7
3) Median	The middle value when the data is in order. Median of 9, 5, 15, 6, 8 → 5, 6, **8**, 9, 15 = 8	**4) Mean**	Add up all the numbers and divide the total by how many numbers there are. Mean of 7, 8, 9: $\frac{7+8+9}{3} = \frac{24}{3} = 8$
5) Range	A measure of the spread of the data, = *Largest Value − Smallest Value*.		
6) Reversing the mean	If we have the mean but one of the data points is missing, we can find the missing value by: 1) Multiplying the 'mean' by the number of data points to get the total of the values; 2) Subtracting the sum of the known values from the total of all values.	E.g. The mean of three numbers is 5. Two of the numbers are 3 and 10. Find the third value. Total of the values: 5 x 3 = 15 15 – (3 + 10) = 2 The third value is 2	

KPI 8.15 3D Visualisation

1) Face	A face is a single flat surface.	**2) Edge**	An edge is a line segment between faces.	**3) Vertex**	A vertex is a corner.
4) Cube	6 faces 12 edges 8 vertices 	**5) Cuboid**	6 faces 12 edges 8 vertices 	**6) Triangular prism**	5 faces 9 edges 6 vertices 
7) Pentagonal prism	7 faces 15 edges 10 vertices 	**8) Square-based pyramid**	5 faces 8 edges 5 vertices 	**9) Triangular -based pyramid**	4 faces 6 edges 4 vertices 
10) Cylinder	3 faces 2 edges 0 vertices 	**11) Cone**	2 faces 1 edge 1 vertex 	**12) Sphere**	1 face 0 edges 0 vertices 

KPI 8.16 Volume

1) Volume	The volume of a solid body is the amount of 'space' it occupies. It is measured in cubic units e.g. cubic centimetres (cm^3).		
2) Volume of a prism	Volume of a prism = area of cross section × length Volume of cylinder = $\pi r^2 h$ 	**3) Units of capacity**	1 L = 1000 ml; 1 L = 1000 cm^3

Literacy / key words

Radical: someone who supports & leads on political or social change

Blasphemy: claiming to be God or insulting God

Messiah (Christ in Greek): King or saviour.

Incarnate: God made flesh.

Pharisee: a member of an ancient Jewish group or sect distinguished by strict observance of the traditional and written law.

Outcaste: a person who has been rejected or ostracised by their society or social group

Social and Religious Background 2000 years ago:

The Roman Empire ruled Judea, which was the area where Jesus lived. Jesus was a Jew, living amongst Jewish people who hated the Romans for their violent rule over them and for taxing the people. **The Pharisees** were strict Jewish religious leaders. They interpreted the Jewish laws very extremely and people feared them because they might accuse you **of blasphemy**. The Jewish people were desperate for a **Messiah** to rescue them from the Romans and Pharisees. Christians are people who believe that Jesus was that Messiah or Christ.

YEAR 8 Radical Jesus

Who did Jesus befriend and help?

Jesus helped and befriended a wide range of people, including the poor, sick, sinners, tax collectors, and those considered **outcasts in society**. His teachings emphasized **love, forgiveness, and inclusivity,** encouraging everyone to treat others with kindness. Jesus' message focused on compassion and friendship, breaking **down social barriers** and reaching out to those who were marginalised or overlooked by society.

Last week of Jesus' life

The last week of Jesus' life, often referred to as **Holy Week**, holds immense significance in Christianity. It begins with Jesus' entry into Jerusalem on **Palm Sunday** and includes events such as the **Last Supper**, and the **betrayal by Judas** leading to his arrest. The week ends with Jesus' crucifixion on **Good Friday** and concludes with the celebration of his resurrection on **Easter Sunday**.

Significance of the crucifixion

The crucifixion refers to the **execution of Jesus Christ** on a cross. This event is central to the Christian belief in redemption, symbolizing **Jesus' sacrifice for the forgiveness of sins**. The act of crucifixion involves a person being nailed or bound to a cross, and Jesus willingly endured this suffering to demonstrate love and provide a **path to salvation** for believers.

Significance of the resurrection

The resurrection is a crucial event in Christianity, symbolizing **Jesus overcoming death**. In the words ***"I am the resurrection and the life, those who follow me shall never die"*** Christians find a message of hope, emphasizing that through faith in Jesus, believers can triumph over challenges and look forward to **eternal life in Heaven** with God.

What teachings and ideas from Jesus were radical?

Jesus said seeking money and working to be wealthy was not the pathway to Heaven. He said you cannot serve 2 masters. **You had to choose: money or God.**

Jesus was anti-racist. In the Parable of the Good Samaritan he taught people to '***love your neighbour***', in which he was referring to every human who must be treated with respect and equality.

Jesus taught that we should forgive everyone and '***love our enemies and pray for those who hate you***'.

Jesus befriended outcasts in society who were ignored by others such as tax collectors and lepers.

Extra - Read/watch/do

BBC Bitesize – J is for Jesus https://www.bbc.co.uk/teach/class-clips-video/articles/zdgv47h

BBC Bitesize – Facts about Christianity https://www.bbc.co.uk/bitesize/articles/zk4fxyc

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 8 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.**

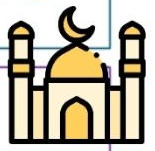
Why are Churches important?

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/

LISTENING & READING revision

People/You can go / watch **On peut** aller / regarder
People can do/ You go on **On peut** faire

THE PRESENT TENSE OF -ER verb endings :	
je (I)	**-e**
tu (you -sg)	**-es**
il (he) ; elle (she)	**-e**
nous (we)	**-ons**
vous (you – pl)	**-ez**
ils ; elles (they)	**-ent**

NORMALEMENT normally
D'HABITUDE Usually

je parle I speak / I am speaking
je reste I stay/ I am staying
je retrouve I meet

GOING TO = the NEAR future TENSE

Le week-end PROCHAIN NEXT weekend

An easy way to put a verb in to the (near) future is the equivalent of ➔ **I'm going to**... using the correct form of the verb **ALLER** in the present + INFINITIVES (see table below)

je [**NE**]**vais [PAS]**	I'm [**NOT**]going
tu **vas**	you're going
il/elle/on **va**	he/she's/we're going
nous **allons**	we're going
vous (plural) **allez**	you're going
ils/elles **vont**	they're going

manger *(to eat)*	rester (to stay)	jouer *(to play)*	acheter *(to win)*	porter *(to wear)*

HOLIDAY ACTIVITIES

faire une balade	TO GO for a walk
faire une promenade	TO GO for a walk
faire du vélo / cyclisme	TO GO cyling
faire des randonnées	TO GO hiking
faire les magasins	TO GO shopping
faire les courses	TO GO shopping
faire des achats	TO GO shopping
faire une soirée pyjama	**TO HAVE a sleepover**
faire de l'équitation	TO go horseriding
faire de la natation	TO GO swimming
nager	to swim

LOCATIONS

à la campagne **in the countryside**
à la montagne **in the mountains**
au bord de la mer **by the seaside**
en ville **in town**

TRANSPORT
en avion by plane
en voiture by ca

NEGATIVE STRUCTURES

1 NOT ne/n' … pas
2 NEVER ne/n' … jamais

ADVERBS

assez + adjective quite /fairly
trop + adjectives too
TROP de noun too much/many of…

WEATHER PHRASES

1 Il fait (**assez**) chaud it is(quite) hot
2 Il fait (**très**) froid it is (very) cold
3 Il fait **beau** it is nice weather

ADJECTIVES

amusant[e]	fun
barbant[e]	boring
difficile	difficult
divertissant	entertaining
ennuyeux	boring
fatigant[e]	tiring
intéressant[e]	interesting
nul	rubbish
passionnant	fascinating/ exciting

NOUNS

un cadeau a gift/ a present
un spectacle a show
une B.D. (bande dessinée) a comic book

VERBS
déménager : to move (house) **acheter: to buy**

PLACES IN TOWN / PLACES OF INTEREST

1 **l'**église: church
2 la mosquée: mosque
3 le château: castle
4 le marché: market
5 le lac: lake
6 le stade: stadium
7 **LES GROTTES: caves**
8 **LES PARCS D'ATTRACTIONS: theme parks**

GRAMMAR & TRANSLATION into French REVISION

THE PRESENT TENSE OF

IR & RE VERBS

USING the PAST(perfect) [DID] with être AUXILIARY. Step 1 > find pronouns step **2>** choose auxiliary verb (être parts) **Step 3 >** take off ER/IR/RE and add é/i/u (unless irregular) **Step 4** make agree if following être parts when needed (extra e or s)

Être [AUXILIARY]

Je suis

Tu es

Il/elle/on est

Nous sommes

Vous êtes

Ils/elles sont

1 Je suis allé [e]	I went	
2 tu es on est allé[e]	you (sing) went /	did you go
3 il est allé	he went	
4 elle est allée	she went	
5 on est allé [e][s]	we went	
4 nous sommes allé [e][s]	we went	
5 vous êtes allé[e][s]	you (plural) went	
6 ils sont allés	they went	
7 elles sont allées	they went	

VERBS TO SPELL

1. I want: je veux
2. I cannot: je ne peux pas
3. I go : je vais
4. I love: j'adore
5. I am going: je vais
6. to go: aller
7. I went: je suis allé (e)
8. We went : nous sommes allés
9. It was: c'était

NOUNS & PREPOSITIONS TO SPELL

1. ON holiday: EN vacances
2. France: LA France
3. TO Spain: EN Espagne
4. TO London: à Londres
5. tonight: ce soir
6. today: aujourd'hui
7. Last year: l'année prochaine
8. Next weekend: LE week-end prochain

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.

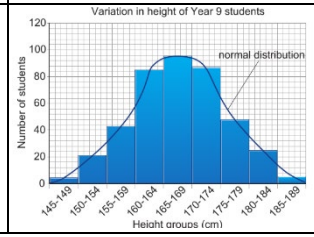
Lesson	Memorised?
1. Types of Explosion	
2. Reactivity	
3. Energy & Reactions	
4. Displacement	
5. Extracting Metals	

9A Genetics and Evolution

1. Environmental Variation

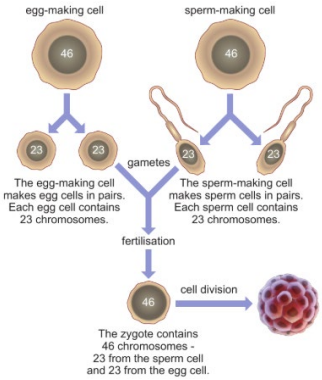
Environment	An organisms surroundings - affected by physical environmental factors and living organisms.
Characteristics	The features of an organism.
Variation	The differences between characteristics of organisms.
Environmental Variation	Variation caused by an organism's environment *e.g. hairstyle*
Continuous Variation	Variation that can have any value between two points *e.g. height, mass*
Discontinuous Variation	Variation that can only have a value from a limited set of values *e.g. eye colour*
Classification	Sorting organisms into groups.
Species	The smallest group an organism is classified into. Members of the same species can reproduce together and produce fertile offspring.

2. Inherited Variation

Inherit	Offspring / children get a mixture of characteristics from their parents.
Inherited Variation	The variation in characteristics inherited from parents *e.g. blood group*
Genetic Information	The instructions for inherited characteristics stored inside the nuclei of cells.
Gametes	Sex cells (sperm and egg)
Sexual Reproduction	Two gametes fuse together during fertilisation.
Zygote	Fertilised egg cell formed during fertilisation. Contains genetic material from both parents.
Normal Distribution	Bell shape usually given by plotting characteristics that show continuous variation.
Normal Distribution Example	

3. DNA

Watson and Crick	Used data from themselves and other scientists to build the first model of DNA in 1953.
Rosalind Franklin	Took x-ray images of DNA and showed it was a spiral structure.
Chromosomes	DNA is found in structures called chromosomes inside nuclei of cells.
Human DNA	Human cell nuclei contain 46 chromosomes (23 pairs).
Genes	A gene is a section of DNA /a chromosome.
Sex Chromosomes	Determines sex of offspring. Girls have two X chromosomes, boys have an X and a Y.
Cell Division	The splitting of a parent cell to form two daughter cells.

Zygote Formation	

4. Genes and Extinction

Adaptations	Features of an organism to help it survive in its habitat.
Ecosystem	All the physical environmental factors and living organisms in a habitat.
Endangered	When a species is at risk of becoming extinct.
Extinct	When a species no longer exists.
Competition	Organisms fighting over the resources that are available.
Native	A species that has always lived in an area.
Squirrels	Red squirrels are native to the UK and grey squirrels came to the UK in the 1870's. Grey squirrels can store more fat to survive the winter and can digest unripe acorns unlike red squirrels. This has meant grey populations have increased leaving less food for red squirrels.
Biodiversity	The number of different species within an area.
Preserving Biodiversity	Banning hunting, set up nature reserves, start breeding programmes and gene banks.
Gen Banks	Storing parts of organisms (seeds, gametes etc.) to grow if they become extinct.

5. Natural Selection

Natural Selection	A change in the environment causes certain characteristics to be 'selected' to pass on to the next generation.
Peppered Moths	Most peppered moths were pale in the 1850's. Then factories started churning out soot, turning trees black. Birds could now easily spot the pale moths to eat them. More black moths survived and reproduced, increasing their numbers. This is an example of natural selection.
Evolution	A change over time in the characteristics of organisms.
New Species	As populations evolve they can become new species.
Darwin's Theory of Evolution	Charles Darwin and Alfred Russel Wallace developed a hypothesis that natural selection causes evolution.

Lesson	Memorised?
1. Environmental Variation	
2. Inherited Variation	
3. DNA	
4. Genes and Extinction	
5. Natural Selection	

9B Plant Growth

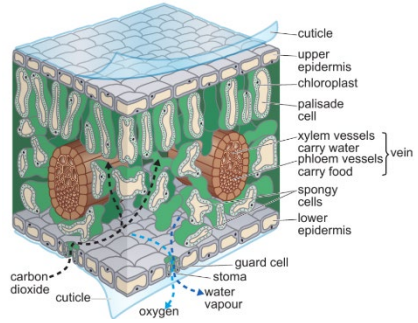
1. Reactions in Plants

Reactants	The substances that take part in a chemical reaction.
Products	The new substances made in a chemical reaction.
Photosynthesis	A process that plants use to make their own food.
Photosynthesis Word Equation	carbon dioxide + water ⟶ glucose + oxygen
Chloroplasts	Where photosynthesis occurs inside plant cells.
Chlorophyll	A substance inside chloroplasts that captures the light energy needed for photosynthesis.
Limiting Factor	A variable that slows down the rate of photosynthesis.
Aerobic Respiration	The process by which living organisms release energy stored in glucose.
Aerobic Respiration Word Equation	glucose + oxygen → carbon dioxide + water
Phloem	The vessels inside plants that transport glucose.

2. Plant Adaptations

Adaptations	Features that something has to enable it to do a certain job.
Root Adaptations	They are branched and spread out, helping them to get a large volume of water.
Root Hair Cells	Increase the surface area of roots so that more water can be absorbed.
Xylem	The vessels inside plants that transport water.
Uses of Water	- photosynthesis - keeping leaves cool - filling up cells to keep them expanded and firm
Palisade Cells	Cells in a leaf adapted to carry out photosynthesis by having lots of chloroplasts.
Cuticle	A waxy layer on the outside of a leaf that stops them from losing too much water.
Stomata	Small holes in a leaf that open and close to allow gas exchange.
Guard Cells	The cells that open and close the stomata.
Gas Exchange	The swapping of different gases from inside the leaf and the atmosphere.

Structure of a Leaf



3. Plant Products

Lipids	Insoluble substances that include fats and oils.
Uses of Lipids	- Found in the cuticle, making it waterproof - make parts of the cell like cell membranes - energy store found in seeds
Polymer	A substance made up of a long chain of repeating groups of atoms (monomers).
Starch	A polymer formed by linking together glucose molecules.
Uses of Starch	Stored in the chloroplast until photosynthesis stops then broken down into sugars to be transported. It can then be converted to starch and stored in storage organs or used to make cellulose.
Testing for Starch	Iodine solution will turn blue-black is starch is present.
Proteins	Polymer formed by joining long chains of amino acids.
Nitrates	Needed to make amino acids.
Germination	Water and oxygen enter seed allowing molecules to move around. Enzymes released that digest starch into glucose which enters the embryo allowing it to respire and grow.

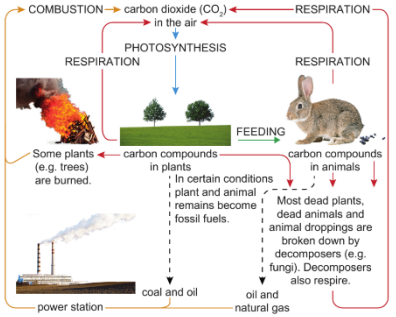
4. Growing Crops

Yield	The amount of useful product you get from a crop.
Increasing Yield	Forests are cut down, hedgerows removed, machines used
Fertilisers	Contain mineral salts that plants need to grow.
Decomposers	Microorganisms that break down manure and release mineral salts.
Pesticides	Kill pests
Insecticides	Kill insect pests
Fungicides	Kill fungi that cause plant disease
Herbicides	Kill weeds (weedkillers) that compete with crops for resources- they are selective so only kill the weeds
Variety	Group of plants bred for a certain characteristic.
Cross-Breeding	Breeding different varieties together to produce offspring with characteristics of both.
Selective Breeding	Choosing organisms to breed based on the characteristics that you want in the offspring.

5. Farming Problems

Fertiliser Problems	Can wash into rivers causing fast growth of algae which blocks out the light causing plants to die. Decomposers break down dead material using up oxygen.
Pesticide Problems	Some do not break down in the environment (they are persistent) so move up the food web.
Varieties Problems	They are identical so a disease will affect them all. Biodiversity is reduced.

The Carbon Cycle



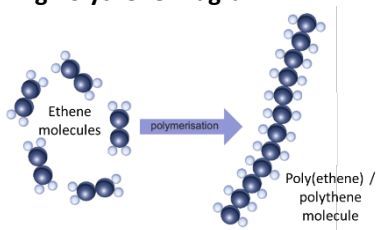
Lesson	Memorised?
1. Reactions in Plants	
2. Plant Adaptations	
3. Plant Products	
4. Growing Crops	
5. Farming Problems	

9E Making Materials

1. About Ceramics

Ceramics	Range of hard, durable, non-metallic materials, generally unaffected by heat. *e.g. glass, china*
Ceramic Properties	• Hard, strong and brittle • High melting point and heat resistant • Good insulators of heat and electricity • Very unreactive
Glass	Hard, rigid, unreactive and can be transparent making it ideal for windows, bottles and jars.
Porcelain	Rigid, strong when compressed and an electrical insulator making it ideal to support electrical cables on pylons.
Ceramics	Heat resistant so used for brakes in high-performance cars
Raw Materials	Clays are used for making pottery and sand for glass.
Using Clay	When heated, chemical reactions occur forming new compounds. When cooled, crystals form and bind together in the ceramic.
Crystal Size	Dependent upon speed of cooling. Slower cooling produces larger crystals.
Lattice Structure	Grid-like structure formed by crystals.
Bonds	Because atoms in a lattice structure are joined by strong bonds it explains why ceramics are so stiff and have high melting points.

2. Polymers

Polymer	Substances that have molecules made of long chains of repeated groups of atoms.
Monomer	Small molecule joined with the identical molecules to form polymers.
Rubber	Polymer from certain trees. Soft and sticky when hot, but hard and brittle when cold.
Vulcanisation	Rubber is heated with sulfur to form cross-links between molecules making it harder and tougher.
Natural Polymer	Polymers found naturally. *e.g. rubber, DNA, proteins*
Synthetic Polymers	Polymers made in laboratories mainly using raw materials from crude oil.
Polymerisation	Reaction that joins together monomers into chains.
Forming Polythene Diagram	
Exothermic	Reactions that transfer energy to the surroundings. e.g. polymerisation
Endothermic	Reactions that absorb energy from the surroundings.

3. Composite Materials

Composite Material	Combinations of 2 or more materials with properties of each. *e.g. concrete, paper*
Laminated Glass	Combines layers of glass with a clear polymer
Laminated Glass Properties	Laminated glass is rigid and hardwearing like glass but holds together under impact.
Making Composite Materials	Many are made by mixing fibres into a liquid resin which then sets hard.
GRP (Glass Reinforced Plastic)	Composite of glass fibres in a polyester resin. Used in boatbuilding as it is strong, light and slightly flexible.
Concrete	Composite material made from a mixture of cement, sand, aggregate and water.
Concrete Properties	Strong, hardwearing and easy to mould into shapes.
Aggregate	Crushed rocks
Reinforced Concrete	In building works, steel rods are also added to make it even stronger.
Cement	Mainly calcium oxide which is made by roasting calcium carbonate (limestone) in a thermal decomposition reaction which is endothermic
Thermal Decomposition of Limestone	Calcium carbonate → calcium oxide + carbon dioxide

4. Problems With Materials

Finite	Limited resource that will eventually run out.
Fossil Fuels	Usually used in the manufacture of materials.
Incomplete Combustion	Produces carbon monoxide and soot due to lack of oxygen
Sulfur Dioxide	Caused by sulfur impurities in fuel. Leads to acid rain.
Nitrogen Oxides	Caused by high combustion temperatures. Form acid rain.
Carbon Dioxide	Traps the Sun's energy, increasing the greenhouse effect, leading to global warming.
Carbon Capture Technology	Technology used to remove carbon dioxide from waste gases given off.
Toxic Substances	Pass along the food chain as organisms eat smaller animals.
Non-Biodegradable	Materials that do not break down naturally.

5. Recycling Materials

Recycling	Using the same materials again.
Recycling Benefits	Reduce use of finite resources, save fuel/energy, reduce landfill use.
Recycling Metals	Can be melted down and used again.
Recycling Glass	Can be crushed, melted and moulded into new glass.
Recycling Polymers	Difficult and expensive to separate different polymers so recycling levels are low.
Recycling Paper	Water added, filtered, heated and mixed to form pulp, squeezed and dried to form paper.
Recycling Concrete	Crushed using large machines and used aggregate.

Lesson	Memorised?
1. About Ceramics	
2. Polymers	
3. Composite Materials	
4. Problems With Materials	
5. Recycling Materials	

COMPUTING SYSTEMS

Modern computer systems receive an input, process that data and then produce an output. The data can be sored in memory. They are designed to automate any process by a program. To execute programs that operate on data.

Computing systems need a **processor**, **memory**, and **storage**. Modern systems also rely heavily on **communication**between them.

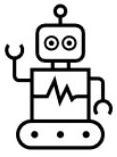
Modern computer systems receive an input, process that data and then produce an output. The data can be sored in memory. They are designed to automate any process by a program. To execute programs that operate on data.

Communication Computing systems exchange information and form networks
Programsand **data**are transferred between computing systems, when required.

Artificial Intelligence (AI)

Machine Learning

"AI has by now succeeded in doing essentially everything that requires 'thinking' but has failed to do most of what people and animals do 'without thinking' –that, somehow, is much harder!"
Donald Knuth, author of *The Art of Computer Programming, in* ***1981***
Programming computers to learn from experience



Hardware Components

CPU –Central Processing Unit
It is known as the 'brains of the computer' that processes program instructions

An instruction may:

•Perform arithmetic or logic operations on data

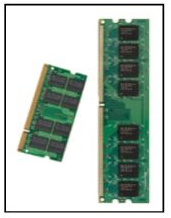
•Perform input/output of data

•Control program flow

The **storage** (secondary memory) is the set of components that **stores**programs and data.
Storage is **persistent**: it retains its contents when the power is off.

Volatile (RAM) -Only stores information to run programs when computer is on

Non-volatile (ROM) -retains data even when the computer is switched off

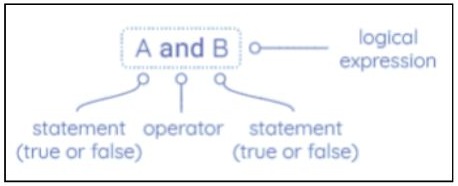


Key words

data
architecture
device
hardware
testing
input
output
software
RAM
program
CPU
storage
communication
Logic circuits

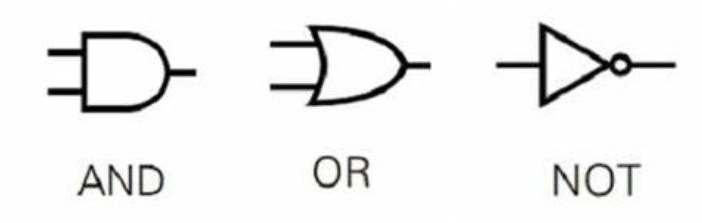
Logical Operators

Logical operations operate on statements that are **true**or **false**. There are three basic logical operations. AND OR NOT



Logical expressions —**logic circuits** can be represented using diagrams

Logical operations —logic gates can be represented using symbols



Operating Systems
All hardware needs an operating system. It is responsible for managing the hardware and providing an environment for programs to run in.

It manages: Files, Hardware, software, memory

Examples: IOS, Windows, Android, MacOS, Linux

Binary – Data Representation

Key Words	
Binary number	A number system that contains two symbols, 0 and 1. Also known as base 2
Base 2	A number system where there are only 2 digits to select from. 0 –1 as this is allbinary can understand.
data	Units of information. In computing there can be different data types, including integers, characters and Boolean. Data is often acted on by instructions.
Denary (also known as decimal)	The number system you use. It contains 10 unique digits 0 to 9. Also known as decimal or base 10
Base 10	The number systems that we/humans use.Numbers 0-9 as it can make any number combination from that.

Binary Rules	Carry
0 + 0 = 0 0 +	0 0 0
1 = 1 1 +0 =	1
1 1 + 1 =0	

Conversion table	128	64	32	16	8	4	2	1
Example binary number	0	0	0	1	0	1	1	1

Representing information with sequences of symbols, is necessary for storing, exchanging and processing information. Information in computers must be represented in a form convenient for processing.

Humans have invented lots of different ways to code information using different sounds, symbols or even lights!

Computers represent all data, including numbers, letters, symbols, images, videos and sounds using binary numbers. All binary numbers are made up of the digits) and 1.

0s and 1s are called binary digits, or bits. All characters are represented using sequences of bits.

Computers only use the two symbols 0 and 1 because all computers are built out of electrical switched which can only be on (1) or off (0).

ASCII –American Standard Code for Information Interchange

ASCII is acharacter setthat uses numeric codes to representcharacters. These include upper and lowercase English letters, numbers, and punctuation symbols.

Example: a capital "T" is represented by 84, or 01010100 inbinary.

Literacy / key words

Ergonomics: The study of how products and environments are designed to minimise effort and discomfort.

Primary, Secondary, Tertiary recycling – know the differences.

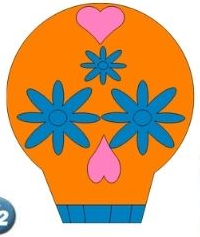
Appliqué: Pieces of fabric in different shapes and colours are attached to a larger piece of fabric to make a picture or pattern.

Embroidery: isthe art of decorating fabric or other materials using a needle to stitch thread or yarn. Embroidery may also incorporate other materials such as pearls, beads, quills, and sequins.

Fast fashion: is replicating trends and mass-producing them at a low cost, bringing them to retail quickly while demand is at its highest: throwaway fashion.

The 6 r's of Sustainability

Advantage of CAD: Ideas can be drawn and developed quickly, where as...



2D DESIGN V2

A disadvantage would be that it needs a skilled workforce.

We use **ACCESS FM** to help us write a **specification** - a list of requirements for a design - and to help us **analyse and describe** an already existing product.

ACCESS FM - Helpsheet

A is for **Aesthetics**
Aesthetics means **what does the product look like?**
What is the: Colour? Shape? Texture? Pattern? Appearance? Feel? Weight? Style?

C is for **Cost**
Cost means **how much does the product cost to buy?**
How much does it: Cost to buy? Cost to make?
How much do the different materials cost? Is it good value?

C is for **Customer**
Customer means **who will buy or use your product?**
Who will buy your product? Who will use your product?
What is their: Age? Gender?
What are their: Likes? Dislikes? Needs? Preferences?

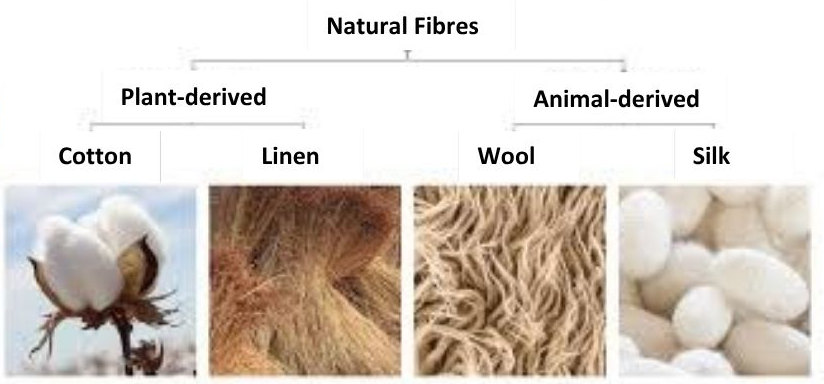
E is for **Environment**
Environment means **will the product affect the environment?**
Is the product: Recyclable? Reuseable? Repairable? Sustainable?
Environmentally friendly? Bad for the environment?
6R's of Design: Recycle / Reuse / Repair / Rethink / Reduce / Refuse

S is for **Size**
Size means **how big or small is the product?**
What is the size of the product in millimeters (mm)? Is this the same size as similar products? Is it comfortable to use? Does it fit?
Would it be improved if it was bigger or smaller?

S is for **Safety**
Safety means **how safe is the product when it is used?**
Will it be safe for the customer to use? Could they hurt themselves?
What's the correct and safest way to use the product? What are the risks?

F is for **Function**
Function means **how does the product work?**
What is the products job and role? What is it needed for? How well does it work? How could it be improved? Why is it used this way?

M is for **Material**
Material means **what is the product made out of?**
What materials is the product made from? Why were these materials used? Would a different material be better? How was the product made? What manufacturing techniques were used?



Properties of fabric:

Elasticity - The ability of a material to stretch and then return to its original shape and size when the stretching force is removed.

Flexibility - The ability of a fabric to regain its shape when stretched can be improved by adding elastic fibres into the blend,

Softness - Describes the clothing comfort performance. Along with compression, smoothness and flexibility of fabrics being handled and their end-uses.

Insulation - A material that reduces or prevents the transmission of heat or sound or electricity.

Absorbency - To take in moisture and retain liquids within its structure, affects skin comfort, static build–up, shrinkage, water repellency and wrinkle recovery.

Weight - How heavy or light a fabric is, usually measured in grams per square meter (GSM). It's a crucial factor influencing the drape, durability, and functionality of a fabric.

Extra - Read/watch/do

Fast Fashion and how the way we dress impacts the environment. What is meant by Fairtrade?

Create a login for Tinker Cad

TINKERCAD

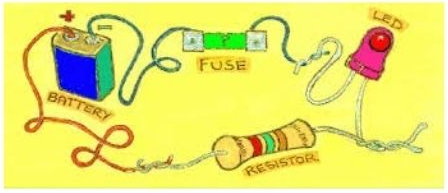
You will be assessed on:
-Fast fashion and sustainability.
-How to write a design specification.
-Electronic circuit construction.
-Final piece and evaluation.

FAIRTRADE

Links to curriculum:
Computing
Science
Mathematics
Engineering
Art

Literacy / key words

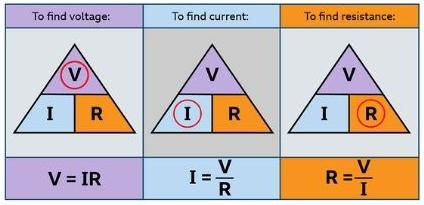
Collaboration and design fixation: Collaborative design is an excellent way of gaining feedback for designs from your peers. This helps with design fixation, where a designer might get stuck or not know how to develop their design further. This brings fresh ideas and new innovation to any project.



Electrical circuit: is a loop through which an electrical current can flow. It consists of a power source, wires and components.

A**prototype**is an early model built to test a concept or process.It is a term used in a variety of contexts, including semantics, design, electronic s, andsoftware programming. A prototype is generally used to evaluate a new design to enhance precision by system analysts and users.

The quantities voltage, current and resistance are linked by the relationship:

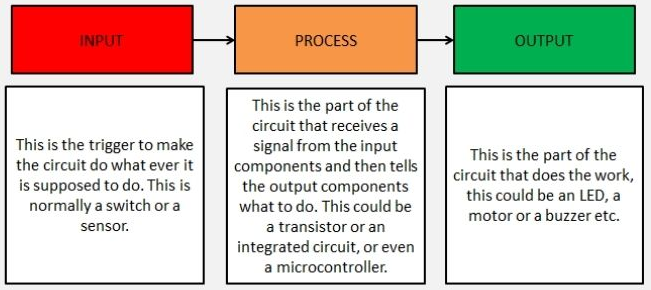


Ohm's law

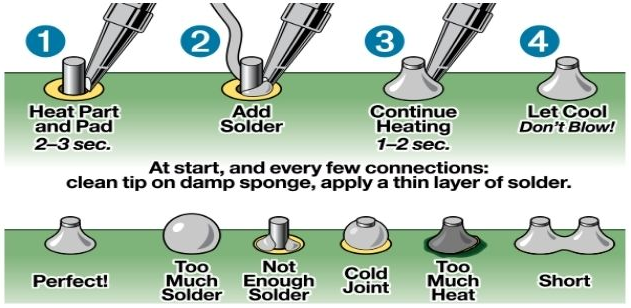
Content

Electronic Systems

When designing electronic systems, electrical engineers start with a block diagram called a systems diagram.
Systems diagrams help the designers to work out how the electronic system will work and which parts need to be connected together.



A good example of **components**would be: Light emitting diodes (LED's), buzzers and motors.



Safety rules when soldering:

- Never touch the hot tip of the soldering iron.
- Take great care to avoid touching the mains flex with the tip of the iron. Always return the
- soldering iron to its stand when not in use. Never put it down on your workbench. Work in a well-ventilated area.
-

Further your knowledge on electronic systems here.

Light can be produced in different ways; a **light-emitting diode (LED)** close light-emitting diode (LED)Light-emitting diodes (LEDs)glow when current passes through them. Are the most common component used for producing light.	**Switches:** A push-to-make (PTM) switch allows current to flow (or a signal to be passed on for processing) when pressed -therefore 'making' the circuit. A push-to-break (PTB) switch does the reverse and 'breaks' the circuit. 	**Transistors**are a type of processing device and a special type of switch. When a small amount of volts are applied to the**Base**leg, a large current is allowed to flow from the**Collector**leg to the **Emitter** leg. 
Resistors are anexample of a processing device. Resistors are used to restrict the flow of current around a circuit and can prevent damage to components. 	**Lamps**contain a thin coil of wire called the filament. This heats up when an electric current passes through it andproduces lightas a result. 	A **capacitor**is adevice forstoring electrical energy, consisting of two conductors in close proximity and insulated from each other. 
A **buzzer**or beeper is an audio signalling device, which may be mechanical, electromechanical, or piezoelectric (piezo for short). Typical uses of buzzers and beepers includealarm devices, timers, train and confirmation of user input such as a mouse click or keystroke. 	**Speaker:** When an electrical signal is sent to the voice coil, it creates a magnetic field that interacts with the magnetic field of the permanent magnet. This interaction causes the voice coil to move back and forth, which in turn causes the diaphragm to vibrate and produce sound waves.	A **thermistor**isa component where resistance changes with its temperature. Usually, increasing temperature decreases the resistance. We can use a thermistor to turn a heater off when a house reaches certain temperatures.