SPRING KNOWLEDGE ORGANISER

YEAR 8

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Literacy / key words

Colour Wheel – A circular diagram that shows the relationships between different colours, including primary, secondary, and tertiary colours.

Complementary Colours – Colours that are opposite each other on the colour wheel (e.g., blue and orange). When placed together, they create strong contrast.

Collage – An art technique where different materials such as paper, fabric, and photographs are cut and glued together to create an artwork.

Watercolour Wash – A painting technique using diluted watercolour paint to create a smooth, transparent layer of colour.

Collage:

Collage is an art technique where different pieces of material, such as paper, fabric, or photographs, are layered and glued together to create an image.

We begin by cutting out the biggest shape first. This main shape forms the foundation of the collage.
Next, we add smaller shapes to build details. By layering the paper, we create depth and texture, making the artwork more visually interesting.

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Key terminology for colour Theory

- Primary colours
- Secondary Colours
- Tertiary colours
- Cool colours
- Warm colours
- Complementary colours
- Harmonious colours

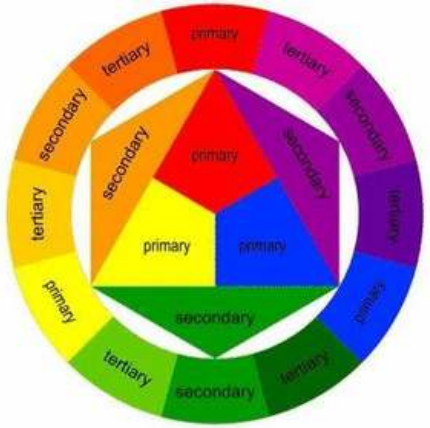
Complementary colours are **opposite each other** on the colour wheel. When placed next to each other, they create strong contrast and make each other stand out. Examples include:

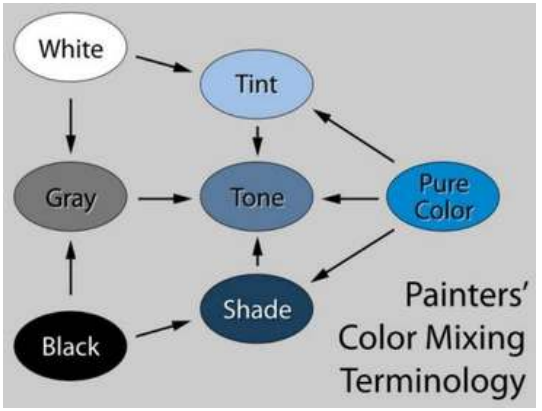
- **Red and Green**
- **Blue and Orange**
- **Yellow and Purple**

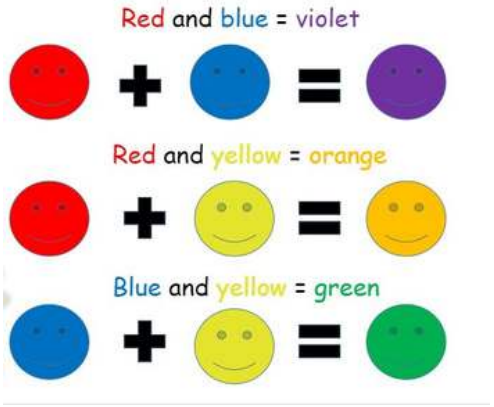
Artists use complementary colours to create eye-catching effects, like making a subject pop in a painting.

Harmonious Colours
Harmonious colours, also known as **analogous colours**, are **next to each other** on the colour wheel. They blend well together and create a sense of unity and calm.

These colours are often used in landscapes or backgrounds where a softer, more natural look is needed.







Extra - Read/watch/do

- Colour theory- https://theartyteacher.com/colour-theory-in-art/
- Colour theory and advertising- https://blog.hubspot.com/the-hustle/psychology-of-color?var=botA

Art & Design

Colours in advertising

When advertising a product, companies use colour theory to influence consumer emotions and perceptions. Different colours evoke specific feelings—red can create a sense of urgency and excitement, while blue conveys trust and reliability. Brands carefully select colours based on their target audience and the message they want to communicate. For example, fast-food chains often use red and yellow to stimulate appetite and energy, while luxury brands prefer black or gold to suggest sophistication. By strategically applying colour psychology, companies can enhance brand recognition and drive consumer behaviour.

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.

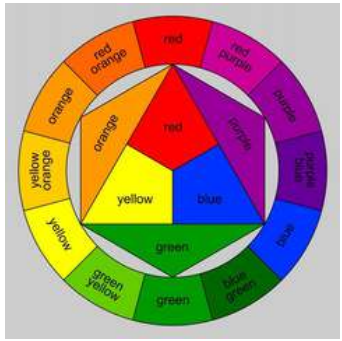
Colour mixing

When mixing watercolours, colours blend transparently, creating soft transitions and new hues. Primary colours—red, blue, and yellow—can be combined to form secondary colours like orange, green, and purple. Layering thin washes of colour, known as glazing, allows for subtle shifts in tone, while wet-on-wet mixing creates fluid, organic blends. The amount of water used affects the intensity; more water results in lighter, more transparent colours, while less water produces richer, more saturated tones.

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 (watercolour)

Links to curriculum

English, maths, science- In our lessons this term we will be using grids with X and Y axis to help when mixing colours using colour theory.

WilliamShakespeare (1564-1616) was a **British playwright and poet**. He is often considered to be the most talented writer of all time. His plays and poems are still studied and performed 400 years later! Shakespeare wrote **38 plays and 154 sonnets**. Shakespeare's plays generally fall into three categories: **comedies**, **tragedies** and **histories**.

Shakespeare lived in the 16th and 17th centuries, throughout the reigns of Queen Elizabeth I and King James I. Both watched his plays. Some of his most famous plays include Romeo and Juliet, Macbeth, Hamlet and Much Ado about Nothing.

Some of the phrases that Shakespeare wrote have become a part of our everyday language.

Fun Fact:
Shakespeare coined many new words and created "knock, knock" jokes

Iambic Pentameter	This is a poetic rhythm that Shakespeare wrote in. Each line has 10 syllables, of particular stresses. Plays at this time were basically extended poems, and so Shakespeare wrote poetically, thinking about rhythm and a lot of the time also rhyme. The main point is the lines weren't supposed to sound like everyday speech, they were supposed to sound fancy!
Histories	The plays of Shakespeare are generally divided into three categories: Histories, Tragedies and Comedies. The plays that we normally mean when we refer to the 'history' plays cover English history from the twelfth to the sixteenth centuries. Each play is named after, and focuses on, the reigning monarch of the period. We should never forget that they are works of imagination, based very loosely on historical figures. Shakespeare was a keen reader of history and was always looking for the dramatic impact of historical characters and events as he read.
Tragedies	The basic structure of a tragedy is: The main character is someone important; a prince or a king. He is someone we admire and respect, but he also has a 'tragic flaw' in his character which makes him contribute to his own destruction. The flaw is often part of his greatness but it also causes his downfall. The flaw causes the protagonist to make mistakes and mis-judgments. He begins to fall from his high level. He struggles to regain his position but fails and he comes crashing down. He eventually recognises his mistakes, but too late.
Comedies	Shakespearean comedies are full of fun, irony and dazzling wordplay. They are also full of disguises and mistaken identities with very complicated plots that are difficult to follow. Much of the comedy comes from characters making mistakes, and the ridiculous situations
Globe Theatre	The Globe Theatre was a theatre in London built in 1599 by Shakespeare's playing company . It was destroyed by fire in 1613, rebuilt in 1614 and closed in 1642 . It was a three-storey, open-air amphitheatre that could house up to 3,000 spectators. At the base of the stage, there was an area called the *pit*, where, for a penny, people would stand to watch the performance. Vertically around the yard were three levels of stadium-style seats , which were more expensive than standing room. Performers and audience members would have been very close, and be able to see each other clear as performances took place during the daytime.

Plot of Romeo and Juliet

Act 1 The Montagues and the Capulets are families involved in a bitter feud. Under penalty of death, the Prince of Verona orders the families to stop fighting. Romeo, a Montague, is lovestruck. His cousin, Benvolio, and best friend, Mercutio plan to cheer him up by gatecrashing a party at the Capulet house. Meanwhile, Lady Capulet plans for her daughter, Juliet, to marry Paris, a wealthy gentleman. At the party, Romeo and Juliet meet and fall in love at first sight.

Act 2

After the party, Romeo sneaks back into the Capulet house and asks for her hand in marriage.
Friar Laurence agrees to marry the lovers in secret, hoping that it will end the feud.

Act 3

Tybalt, Juliet's cousin, is enraged that Romeo snuck into his family party. He tries to fight Romeo, who will not fight back. Mercutio dies defending his friend Romeo.
Having heard of the violence, the Prince banishes Romeo from Verona.
Capulet, in order to cheer his daughter up, arranges for her to marry Paris in two days' time.

Act 4

Friar Laurence hatches a plan for Juliet to take a sleeping potion and appear dead, so she can meet Romeo in the family crypt and run away together. Juliet takes the potion, and funeral plans are made.

Act 5

Romeo learns of Juliet's death, but not the secret plan. He fights his way back to Verona, buying poison on the way. Romeo kills Paris in order to be the one lying next to Juliet's grave. He kills himself just as Juliet wakes up. She then uses Romeo's dagger to take her own life.
After the deathof their children, the Montagues and Capulets end their feud.

THE MONTAGUES

Romeo
A lovesick teenager.
Benvolio
Romeo's cousin and all-round nice guy.
Mercutio
Romeo's fight-loving best friend
Lord and Lady Montague
Romeo's parents.

THE CAPULETS

Juliet
A teenager who won't be forced into love.
Tybalt
Juliet's fiery cousin
Nurse
Basically raised Juliet.
Lord and Lady Capulet
Juliet's pushy parents.

OTHERS

Friar Laurence *Tries to end the feud. Succeeds – at a price.*
Prince Escalus *The lawmaker in Verona*
Paris *A nice guy, but not Juliet's true love.*

Devising from a Stimulus

Keywords explored in this topic

Devising - Creating a piece of theatre using our own ideas

Stimulus – Something that can be used to generate ideas when devising e.g. a poem, music, an image

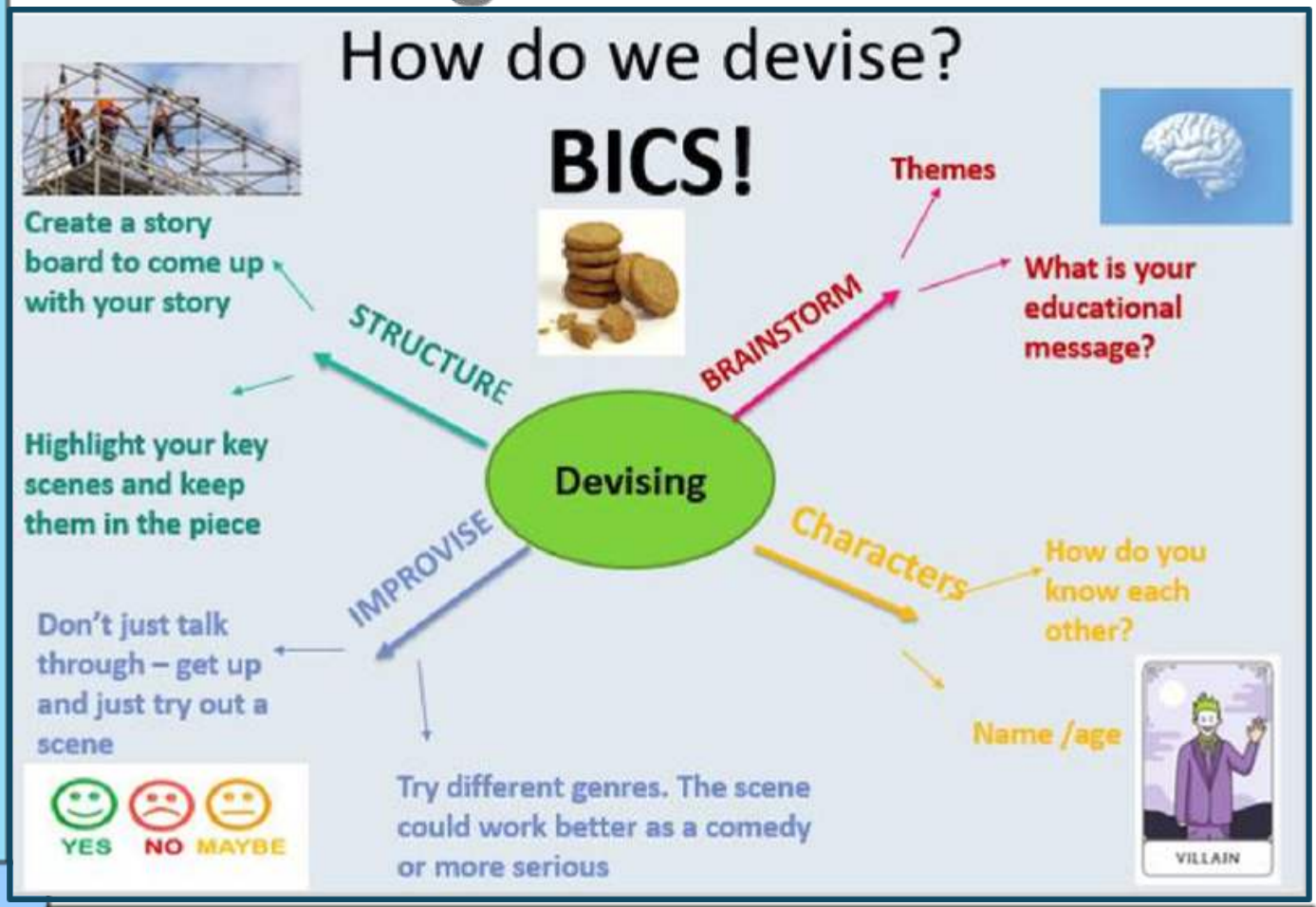
Thought tracking - Sharing your inner thoughts and feeling with the audiences

Mime - Acting using only movement and imagination (no props)

Synchronised - Moving at the same time in the same way

Monologue – a long speech said by only one actor

Proxemics - The distance between two or more characters to show their relationship



Writing an effective peer evaluation:

WAGOLL: Tom's group used tableau effectively. I could see that Tom was using facial expressions such as wide eyes to portray how scared his character was. He projected his voice so that the audience could hear him. In order to improve, Tom should exaggerate his movements when miming.

Keywords to recap and use

Pitch Pace Pause Tone Volume Accent Gesture Posture Facial Expressions Projection Diction Thought Track Multi-role Split Focus Audience

Evaluative words: successful improve effective captivating interesting focus

KEY WORDS:

Composer Gustav Holst Planet Suite Movement Orchestra Dynamics Tempo Atmosphere Tempo Strings Brass Percussion Woodwind Contrast Symphonic Suite Synthesizer Themes Instrumentation Texture Structure Crescendo

THE PLANET SUITE

- Composed by Gustav Holst
- English composer
- Time 1914 –1916 (WW1)
- Symphony orchestra
- A suite of 7 movements (pieces)
- All based on Roman Gods/ Goddesses – planet names

Music and Space

Year 8 Spring Term

Other works we have studied:

Claire DeLune–Debussy
Piano solo, slow, romantic, moderately quiet. Represents the sad but lonely moonlight.

Ron's Theme –Jean Michelle Jarre
Contains electronically generated sounds to represent computers, a slow heartbeat, sad/ flat saxophone solo. Represents the crew of the Challenger shuttle who lost their lives when the rocket exploded on take-off.

Apollo 13 Theme – James Horner
Military sounds, solo trumpet, powerful brass and percussion, soaring strings. Representsthe determination ofthecrewin a doomedspace mission.

The Seven Movements:

MARS the Bringer of War–bold, lots of crescendos and loud dynamics, repeated rhythms (ostinato) using the whole orchestra. Frightening.
VENUS the Bringer of Peace –soft and gentle with quiet dynamics and mainly use of woodwind.
MERCURY the Winged Messenger –Fast tempo with short note values to signify flitting around.
JUPITER the Bringer of Jollity –four main themes used, quite varied as it's jolly BUT strong as Jupiter is also the KING of Roman Gods.
SATURN the Bringer of Old Age –Slow tempo, serious, long note values, mainly quiet with a contrasting middle section.
URANUS the Magician –Loud brass fanfare to start then short skip fell like a naughty cartoon character up to no good. Lots of contrasts of volume and instruments to represent the drama of a fantastic magic show!
NEPTUNE the Mystic –Long notes, slow tempo lots of woodwind and magical choir sounds. It feels like a soundtrack to walking though a misty, enchanted woodland.

KEY WORDS AND MEANINGS (Tier2 words in ORANGE, Tier 3 words in BLUE)	
Percussion	A collection of instruments that you hit, scrape and shake in order to get a sound out of them e.g. tambourine, drum, glockenspiel
Orchestra	A group of instrumentalists, especially one combining string, woodwind, brass, and percussion sections
Instrumentation	The particular instruments used in a piece of music
Composer	A person who writes/ makes themusic
Symphonic Suite	A collection of music, usually created for an orchestra
Crescendo	Gradually getting louder One section (one piece of music) of a Symphonic Suite
Movement	
Texture	The layering of sounds to make thinor thick texture
Themes	A short and simpletune repeated throughout a piece of music
Structure	The way that a piece of music is organised from start to finish e.g. intro/verse/chorus/outro

English Spring 1 IDENTITY

Spelling Bee

1. Metaphor
2. Simile
3. Personification
4. Rhyme
5. Stanza
6. Imagery
7. Alliteration
8. Adjective
9. Poetry
10. Onomatopoeia

BriefSummaryoftheTexts:

Presents From My Aunts in Pakistan by Moniza Alvi
This poem describes the inner conflict experienced by the speaker who is trapped between trapped between her heritage and the pressures to assimilate.

Search For My Tongue by Sujata Bhatt
This poem shows how challenging it is for the speaker to have to speak only in a foreign language, and suggests that in losing her "mother tongue," she would lose part of herself.

Bend it Like Beckham by Narinda Dhami
This book and film tells the story of a girl torn between her traditional Indian upbringing and her aspirations of playing football professionally.

Belong by Lemn Sissay
Sissay's poem looks at what it means to 'belong' in or to a place and how it to shapes our thoughts and identity.

This is the Place by Tony Walsh
This poem grew in popularity after the Manchester Arena bombing. It was written to help us appreciate our Mancunian heritage and inspire us to think about what it means to live where we do.

The Right Word by Imtiaz Dharker
The speaker in Dharker's poem feels conflicted about how to refer to a visitor she receives at her door. Her poem helps us explore the importance of language and the impact the language we use towards others can have on their own identity.

The Opener by The Courteeners
Liam Fray, The Courteeners' frontman once described this song as being for anyone who felt "a great affection and connection to the place where you were born and raised.". This song personifies Fray's home city of Manchester to show his deep love of it.

Derry Girls by Lisa McGee
This hit comedy television shows helps us explore how our language choice and colloquialisms help to express and shape our identity. It centres around five very different students in a Northern Irish secondary school during the Troubles.

'Ode to a rat'
A poem written by Elizabeth Acevedo when she was told off by an English teacher for not choosing a 'noble' animal to write about in a poem – she compares herself growing up poor and marginalised to how the rat struggles to survive even when hated.

Extra - Read/watch/do *Bend it like Beckham (film/ book) Black flamingo* (Dean Atta, book) *The Poet X* (Elizabeth Acevedo, book) *The Crossing* (Manjeet Mann, book) *Billy Elliott* (film)
Wonder (R. J. Palacio, book/film)
*Aristotle and Dante*BenjaminSáenz (book)

You will be assessed on:

Reading assessment on one of the extracts you have studied, analysing how it presents an aspect of the theme of 'identity'

Links to curriculum

- History – the British Empire and its legacy, the Windrush generation
- Geography – demographics and diversity
- PSHE – prejudice and identity, civil rights

English Spring 1 IDENTITY

Literacy / key words

Rhyme- The ends of the lines have the same sound *e.g. pie and sky.*

Repetition – A word or phrase is used more than once. E.g. *faster and faster, the cheetah ran…*

Onomatopoeia- When a word sounds as it is *e.g. boom.*

Metaphor- Two things are compared by saying one thing is the other e.g. the sun was a glittering ball in the sky.

Simile- Comparing something using 'like' or 'as'. *E.g. the sun was like a glittering diamond.*

Personification- When an inanimate object is given human features. *E.g. the tree danced.*

Hyperbole- Exaggeration *e.g. the sun melted my skin.*

Stanza- verse of poetry

Sensory imagery – language that uses the senses to create a clear visual or feeling in the reader's mind

Keyideas/themes:

- **Identity** – how you view yourself, shaped by various influences
- **Heritage** – culture inherited from your family or social group
- **Culture** – beliefs and customs shared by groups of people
- **Assimilation** – feeling forced to 'fit in' with another culture
- **Pride** – feeling happy and secure about who you are
- **Persecution/ prejudice** – treating others unfairly due to their identity
- **Marginalised** – a group pushed out of society or treated as lesser
- **Identity crisis** – feeling you do not belong to a culture or being unsure of who you are
- **Dual heritage/ mixed race** – individuals whose parents/ family come from different cultures
- **Ethnicity** – shared cultural identity and/or racial ancestry
- **Race** – refers to shared physical heritage/ appearance. Often considered outdated today
- **Dialect** - language specific to a specific or social group e.g. *Mancunian dialect, American dialect*

Commonwealth – a voluntary association of 56 countries which used to be part of the British empire *e.g. India, Jamaica*

TIF Words!

- **Extendedmetaphor=**ametaphorthatcontinuesthroughoutthe entire text or poem e.g. the image of flowers and growing in *Search for my tongue*
- **Enjambment =** in poetry, when a sentence continues over the end oftheline withoutpunctuation,giving a'flowing'feeling
- **Caesura**= suddenpauseinmiddleofa lineinpoetrydue to punctuation (e.g. full stop), often to shock or disrupt

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…

T. Alternatively, it could also imply…

T: The audience will think/feel… because…

A: This links to the context of … because…

A: The writer 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

GEOGRAPHY: Year 8 – Ice Worlds

Key terms / Literacy:

cryosphere – the system of ice in all its forms on Earth.
glacier – a slow-moving mass, or 'river' of ice formed by the build-up and compaction of snow.
latitude – the angular distance from the equator. The higher your latitude, the further from the equator you are and the colder your climate is.
altitude – height up from sea level.
abrasion – a type of erosion caused when rock is scraped away by other stones and rocks.
plucking – a form of erosion caused when rocks stick to the underside of a glacier and get picked up and taken away by it.
corrie – an armchair-shaped hollow found at the top of a mountain where a glacier has previously eroded its sides and back wall.
moraine – Frost-shattered rock debris and material eroded from the valley floor and sides, transported and deposited by glaciers.
geothermal energy – energy that is generated using heat from within the Earth's crust.
conflict – Disputes between different groups of people, which may be caused by disagreements about land use.

What is the cryosphere?

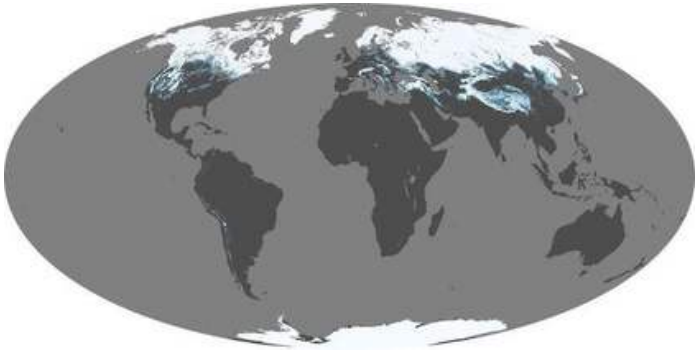
The cryosphere refers to any place on Earth where water is in its solid form, where low temperatures freeze water and turn it into ice. The frozen water can be in the form of solid ice or snow and occurs in many places around the Earth.

Inputs are precipitation. Stores are ice sheets, ice shelves, icebergs and ice caps. Flows are glaciers. Outputs are evaporation at 0℃ and melting

The cryosphere is important because it reflects solar radiation back into space, reducing global temperatures. Climate change is causing ice to melt. This will speed up the process of climate change as reflection is reduced.

Latitude (Arctic Circle) – areas with high latitudes are colder due to the sun's energy being spread across the curvature of the Earth, making these places colder. 24hours of darkness in the wintertime decreases the temperature further.

Altitude (Himalayas) – Different factors affect the temperature, including air pressure causing air to be thinner so less able to retain heat Temperature decline by 0.65-1℃ for every 100m climbed.



How do glaciers erode the land?

Glaciers erode through two key processes:

1. Plucking – when meltwater on the underside of the glacier melts and bonds to rocks on the ground. As the glacier advances it picks up the rocks and moves them away with it.
2. Abrasion – rocks and stones being carried on the underside of the glacier are scraped along the ground, causing it to be removed (sandpaper effect)

Glaciers transport (move) material in, on and below the ice, as well as being pushed ahead of it.

Deposition is the dumping or leaving behind of material due to ice melt at the snout and the sides.

How do glaciers affect our landscape?

A corrie is formed when a glacier moves downhill and abrasion and plucking caused when the movement of the ice hollows out the top of the mountain.

An arete is formed when two corries are formed either side of a mountain, scraping both sides of the mountain away.

Moraine is left behind when the material that is being pushed along by the glacier is left behind, either at the sides or at the end of the glacier's path.

Geography: Year 8 – Ice Worlds

Howdopeoplesurvive lifeinIce Worlds?

- **Heated roads**: Some areas of Iceland are being treated by snow removal systems. These are ways of snow and ice being taken away to make day-to-day life easier. One example is having heated roads and pavements! This melts any snow or ice that may fall to the surface, making these routes safe to walk and drive on.
- **Geothermal energy**: Iceland is in a region where there are lots of volcanoes. Hot magma is close to the surface of the land, creating heat. This is used to heat up water which can then be pumped into people's homes and can also be used to generate electricity.
- **Appropriate industries** (fishing and tourism): The two main industries in Iceland are fishing and tourism. Although only 5% of Iceland's population work in fishing, it earns them a lot of money. This is because huge supplies of fish are found in their cold waters, meaning their catch is large. Over $120mill is earned through tourism. People are attracted to 'The Land of Fire and Ice' to visit its hot springs, active volcanoes and the Northern Lights.

What are the impacts of tourism in glaciated environments?

The Lake District has a stunning glaciated landscape, and it attracted 20million tourists in 2018. This has both positive and negative impacts for local people, the environment and the local economy.

- About 83% of visitors arrive at the Lake District by car. Congestion is a serious issue on the narrow winding roads.
- Tourism provides employment for about 65,000 local people.
- The Lake District is sometimes referred to as a 'honeypot site', attractive to lots of people for its natural beauty, but the high number of visitors cause it to lose its appeal as a quiet and peaceful location.
- Walker trample on vegetation, causing footpath erosion.
- The increase of 'Air B&Bs' has driven up the cost to buy a house, so many local people cannot afford to buy.
- In 2019, tourism earned the Lake District £3bill.
- Many visitors are concerned about the natural environment and want the area to be conserved.

Should tourism be developed further in the Lake District?

- Treetop Trek, a Windermere-based company, wanted to construct a mile-long zipwire in the Lake District.
- They had their first planning application turned down, as they wanted the zipwire to go over the town of Glenridding in Patterdale and local people objected.
- Their second planning application was to go over the length of Thirlmere reservoir, near Keswick. The impacts would have been:
  - Environmental concerns relating to constructions traffic
  - Expected to attract 50,000 tourists
  - Increased congestion on roads
  - Increased job opportunities
  - Impact on the landscape
  - The Ministry of Defence were concerned that it would be hazardous for low-flying aircraft.
- The second planning application also failed.
- Do you think this was the correct decision?

Extra:
Read: *Ice Rivers: A Story of Glaciers, Wilderness and Humanity* by Jemma Wadham
Watch: '*Down To Earth – Iceland*' on Netflix.
Do: Visit the Lake District to see some of the corries, erratics and ribbon lakes which have been created through glacial processes.

Curriculum Links:
The content from this unit ties in with units throughout KS3 and GCSE where we look at how landscapes are formed through the processes of erosion, transportation and deposition, and the ways people interact with these landscapes.

Assessment Skill - Writing to explain:
K: Show **knowledge** of the geographical feature in question e.g. People survive living in cold conditions by having technologies that help them to keep warm.
PLC: Try to include some **place located content** i.e. a fact about a specific place to illustrate the point e.g. In Iceland people use geothermal energy to heat roads in urban areas.
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 helps people to survive because snow and ice does not build up on the roads, therefore they can be used safely for people and goods to travel around when needed. As a result, people are less at risk of injury, so helping them to survive; but also goods are able to be traded, enabling people to earn money to survive.

GEOGRAPHY: Year 8 – Population and Migration

Key terms / Literacy:

Population – the number of people living in a region or country
Distribution – the spread, position or arrangement of something (e.g. people in a region)
Density – the number of something in an area (e.g. people per km²)
Population structure – the proportions of age groups and sex within a population.
Migration – the movement of people from one place to another. Emigrate is movement out of a region, while immigration is movement into a region
Push-pull factors – the reasons why people might move out of one region and be attracted to another region
Economic migration – movement to improve standard of living e.g. to find better work opportunities
Forced migration – when people do not have a choice but need to move due to threats to their life e.g. due to war or persecution
Asylum seeker – a person who arrives in a country of safety after being forced to move away from their country of origin
Refugee – a person who has been through the asylum seeker process and has now been given permission to remain in the country of safety indefinitely.

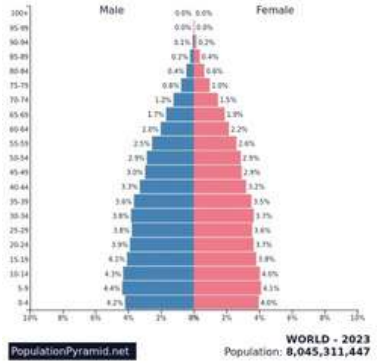
Where in the world do people live?

Global population distribution is uneven, with some countries having high population densities, while others are sparsely populated.

- Libya has one of the lowest population densities in the world (3.6 people/km²). Much of the country is desert, which limits the amount of food that can be grown, so a large population is not feasible. Most of the population live close to the coast where the climate is cooler and it is less dry.
- India has a high population density (444.7 people/km²) due to favourable climatic conditions for growing crops. There are large plains of flat land, which are easy to build on. The country has one of the most rapidly growing economies in the world, giving people a good standard of living and an improving healthcare system, which has lowered the death rate.

What is population structure?

- Population structure can be shown on a type of graph called a population pyramid. These show the proportions, or numbers of males and females in each age bracket.
- Less developed regions have a wide base and narrow sides as death
- rates in each age group are high.
  As health of people is often better in richer countries, it leads to straighter sides as fewer people die in each age-group, and more people live to an old age.



What was China's One Child Policy?

- The policy was put in place in 1979 after fears that rapid population growth would lead to a famine – millions of people had in previous famines in the country. From 2016 families were allowed two children. In 2021 married couples were allowed to have up to three children.
- Couples were allowed one successful pregnancy (twins were allowed). It mainly applied to the Han Chinese ethic groups; other smaller ethnic groups did not need to follow the rules. China is a communist country, and the government have control over every aspect of people's lives. Propaganda posters advertised the benefits of small families. They used strategies such as forced sterilisation, abortions, imprisonment and fines to prevent people from having more than one pregnancy. People had to apply for a licence to have a child within a fixed amount of time. In remote villages, elderly women known as 'the granny police' would keep an eye on young women and report any behaviour to the police that they thought may result in an unlawful pregnancy.

Geography - Year 8 - Population and Migration

What havebeen the implications of China's Once Child Policy?

- Literacy rates in China have increased from 66 per cent to over 96 per cent since 1980. Poverty has decreased, and as of 2021, only 0.6 per cent of the population now live on less than $1.90 (around £1 to £1.50) a day. China has not suffered from a famine since the policy was introduced, despite rapid population growth caused by an aging population.
- However, people have been forced to reduce family size, at times against their will, people argue that this is unfair treatment of the population
- Imbalance in population age structure and fear that there will be too many dependents, leading to recent changes in the policy. Other imbalances in sex ratios a sex-selective abortions have taken place in the past. There have been 114 males for every 100 females born. This has led to men not being able to find a wife. Human trafficking into China is a serious concern.

What are the impacts of Japan's aging population?

In 2022 Japan reported its larges yearly population decline since 1968. It had declined by 800,000 in the space of a year. The birth rate is falling for a number of reasons: work-life balance (some Japanese companies require employees to do an extra 80 work a month), rising living costs (Japan is one of the world's most expensive places to raise a child), the economy is not advancing rapidly enough to increase salaries in line with this.

Impacts – 1.2million family-run businesses have no successor, so will disappear. Businesses have to innovate and develop technologies that will do the work instead of a person. The government is offering financial incentives ($7,500 per child for families who move from cities such as Tokyo to areas suffering from population decline) and subsidising childcare costs.

What are the features of migration?

Economic migration:

- Impacts on the host country – they fill jobs that would otherwise be left empty, may be less desirable jobs that people from the host country do not want, or highly skilled roles that we need well-qualified people to do. They work and, therefore, pay taxes contributing to the public purse, so the government has more to spend on improving services e.g. education.
- Impacts on the country of origin – Their hardest working and best qualified workers leave to find better opportunities elsewhere, leading to 'brain drain' – they are left with the least productive members of society e.g. the elderly.

Forced migration:

- For example, the Middle East Refugee Crisis 2021.
- Civil war broke out in 2011 causing economic and social turmoil for many years. By March 2021 an estimated 594,000 people had died and an estimated 6.6mill people had fled the country (making up 25% of the world's refugee movements). People's homes, schools and hospitals were being attacked and innocent people, including children were dying.

Extra: Read / Watch / Do:
Read: Factfulness by Hans Rosling. Watch: The Good Lie (Cert 12) a film about asylum seekers who travel from Sudan to America for safety. Do: Investigate and compare population structures for different countries of the world.

Curriculum Links:
The content from this unit ties in with the development and aid unit of work we completed earlier in the year. We will also consider populations when we study development in Y9 and at GCSE.

Assessment Skill - Writing to explain:

K: Show **knowledge** of the geographical feature in question e.g. One advantage of TNCs is that they create jobs.
PLC: Try to include some **place located content** i.e. a fact about a specific place to illustrate the point e.g. Shell Oil employ 65,000 people in Nigeria.
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 is good because it means a lot of people have a reliable income and higher salaries, therefore, they have more money to spend on the things that they want, rather than what they need. As a result, the service industry grows as more people spend money on these.

Topic 3 – The Transatlantic Slave Trade

Key Word	Definition
Transatlantic Slave Trade	Trade of enslaved Africans across the Atlantic to the Americas.
Enslavement	Forcing people into slavery against their will.
Middle Passage	The brutal journey enslaved Africans endured across the Atlantic.
Plantation	Large farm where enslaved people worked, often growing sugar, cotton, or tobacco.
Abolition	Ending slavery and the slave trade.
Resistance	Ways enslaved people fought back, including rebellion and work slowdowns.
Triangle Trade	Trade routes between Europe, Africa, and the Americas.
Chattel Slavery	Enslaved people treated as property with no rights.
Auction	Sale of enslaved people to plantation owners.

What was the Transatlantic Slave Trade?

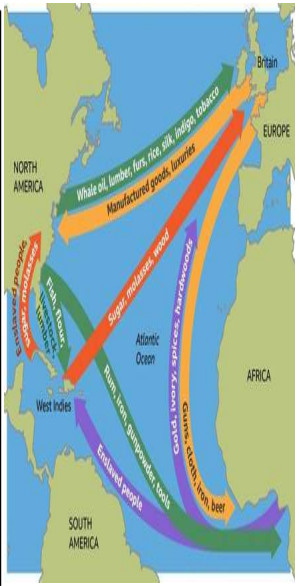
- It lasted from the **1500s to the 1800s**.
- Around **12 million** African people were forcibly taken from their homes.
- British involvement increased after **1660** when the **Royal African Company**, backed by the king, began transporting enslaved Africans.
- By the **1700s**, British ships carried about **40%** of all enslaved Africans across the Atlantic.

How were people enslaved in Africa?

- Some African leaders captured people during wars and sold them to Europeans.
- Europeans supplied **guns and cloth** in exchange for captives.
- Many people were **kidnapped** by slave traders.
- Powerful African states involved included the **Oyo Empire** and the **Kingdom of Dahomey**.
- Families and communities were torn apart—about **1 in 5 people** taken were children.

What was the Middle Passage?

- Journeys lasted **6–10 weeks** in overcrowded ships.
- People were chained together with barely **0.5 metres** of space.
- Poor food and filthy conditions spread diseases like **dysentery** and **smallpox**.
- Around **15%** of enslaved Africans died on the journey—over **1.8 million** people.
- Olaudah Equiano later wrote a famous book describing the horrors (published **1789**).



Life on a Plantation

- Enslaved people worked long hours with harsh punishments.
- Families were often separated by sale.
- Resistance included rebellion, escape, and cultural survival.

How and Why Was Slavery Abolished?

Abolitionists campaigned through petitions, speeches, and books.
Enslaved people resisted and revolted.
Britain abolished the slave trade in 1807 and slavery in 1833.

Topic4–The Industrial Revolution

Key Word	Definition
Industrial Revolution	A period of huge change when machines replaced hand-making and factories grew (c.1750–1900).
Urbanisation	The growth of towns and cities as people moved from countryside to urban areas.
Factory System	Large buildings with machines where workers produced goods for long hours.
Textiles	Cloth and fabrics (cotton, wool). First major industry to industrialise.
Steam Engine	A machine powered by steam (invented by **James Watt**). It powered factories, mines, trains.
Canal	Man-made waterway used to transport heavy goods before railways.
Laissez-faire	The idea that government should not interfere in business.
Cholera	Deadly waterborne disease common in cities with poor sanitation.
Slum	Overcrowded, poor-quality housing in fast-growing cities.
Trade Union	Groups of workers joining together to fight for rights and better working conditions.

Wh y Was the Industrial Revolution Important?

Britain became the **world's first industrial nation**.
ddd
Huge growth in **technology, transport, population,andcities**.
Changed how people **worked, lived, travelled, andusedenergy**.
Britain became the **"workshop of the world"** by themid-1800s.
ff

What was Britain like before the Industrial Revolution?

- Most people lived in **rural villages**.
- Work was done by hand (the **domestic system**).
- Travel was slow—poor roads, no trains.
- Families worked together at home spinning wool or weaving cloth.

How did people's lives change in industrial cities?

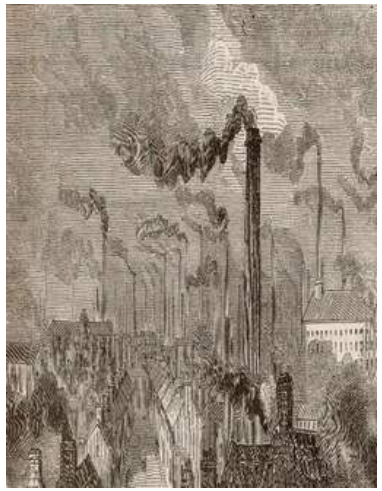
- Overcrowded housing: entire families in one room.
- Water pollution led to cholera outbreaks (e.g., **Manchester, 1832**).
- Air pollution from coal created permanent smog ("pea-soup fogs").
- High crime rates and dangerous

Manchester: A City Transformed

Manchester became the **symbol of the Industrial Revolution**, often called: "Cottonopolis"

Because it became the **world centre of the cotton and textile industry**.

- Population grew from **10,000 (1750)** to over **300,000 by 1850**.
- Surrounded by mills, factories, chimneys, and warehouses.
- Workers lived in back-to-back houses and crowded slums like **Angel Meadow**.
- Canals such as the **Bridgewater Canal (1761)** brought coal cheaply to the city.
- One of the world's first railway lines—**Liverpool to Manchester Railway (1830)**—connected the city to ports and markets



Extra - Read/watch/do
The Transatlantic Slave Trade:
https://www.bbc.co.uk/bitesize/topics/z2qj6sg
The Industrial Revolution:
https://www.bbc.co.uk/bitesize/topics/zm7qtfr

You will be assessed on How and why people were enslaved, the Middle Passage, life on a plantation
How transport changed, how life changed, what the roles of women and children were, how much progress was made

Links to curriculum

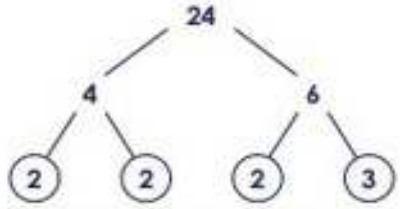
RE
English
Geography

Math

KPI 8.01 Powers and Roots

1) Square number	The result of multiplying a number by itself. It will always be positive. The first 12 square numbers are: 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121,144.	**2) Square root**	The opposite of squaring a number to find the original factor. E.g. $\sqrt{64} = 8$ or -8 because $8^2 = 64$ and $(-8)^2 = 64$
3) Cube number	The result of multiplying a number by itself, then itself again. The first 10 cube numbers are: 1, 8, 27, 64, 125, 216, 343, 512, 729, 1000.	**4) Cube root**	The opposite of cubing a number to find the original factor. E.g. $\sqrt[3]{8} = 2$ because $2^3 = 8$ Note: $(-2)^3 = -8$ so $\sqrt[3]{8} \neq -2$
5) Index notation	**Example** $a \times a \times a \times a = a^4$. The number 4 is called the index (plural indices). This tells us how many times the "base" a has been multiplied by itself.		
6) Multiplying powers	$a^m \times a^n = a^{m+n}$ ADD the powers only if the bases are the same. E.g. $a^2 \times a^3 = a^{2+3} = a^5$	**7) Dividing powers**	$a^m \div a^n = a^{m-n}$ SUBTRACT the powers only if the bases are the same. E.g. $a^4 \div a^2 = a^{4-2} = a^2$
8) Indices with brackets	$(a^m)^n = a^{mn}$ MULTIPLY the powers. E.g. $(a^2)^3 = a^{2\times3} = a^6$	**9) Indices with brackets**	$(ab)^n = a^n \times b^n$ Raise each number or variable to the same power. E.g. $(2p)^4 = 2^4 \times p^4 = 16p^4$
10) Power of 0	$a^0 = 1$. Any number or variable to the power of zero equals 1.	**11) Power of $\frac{1}{2}$**	$a^{\frac{1}{2}} = \sqrt{a}$ E.g. $16^{\frac{1}{2}} = \sqrt{16} = 4$

KPI 8.02 Prime Factorisation

1) Prime numbers	A prime number only has two distinct factors: 1 and itself. 2 is the only even prime number. 1 is not a prime number. Prime numbers between 1 and 100: 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97.		
2) Prime factor decomposition	The process of expressing a number as a product of its prime factors. $24 = 2 \times 2 \times 2 \times 3 \rightarrow 24 = 2^3 \times 3$	**3) Prime factor trees**	

Math

KPI 8.03 Rounding

1) Significant figures

The total number of digits in a number, not counting zeros at the beginning of a number or at the end of a decimal number.
345 000 has 6 significant figures.
0.3047 has 4 significant figures.
10.500 has 3 significant figures.

2) Rounding to significant figures

Round to...	0.00764 to 3 sf	0.00768 to 2 sf	0.00738 to 1 sf	2.0507 to 3 sf	20.507 to 2 sf	20.507 to 1 sf
Answer	0.00764	0.0076	0.008	2.05	2.1	2

3) Estimate

Find a rough or approximate answer by calculating with numbers rounded to one significant figure.
e.g. $2.3 \times 18.4 \approx 2 \times 20 = 40$
$\approx$ "approximately equal to"

KPI 8.04 Fractions

1) Converting an improper fraction to a mixed number

$$\frac{15}{7} = 2\frac{1}{7}$$

2) Converting a mixed number to an improper fraction

$$3\frac{4}{5} = \frac{(3 \times 5) + 4}{5} = \frac{19}{5}$$

3) Adding and subtracting fractions

Make the denominators the same (find the LCM).
Use equivalent fractions to ensure fractions have a common denominator.
Add/subtract the numerators only.

$$\frac{2}{7} + \frac{2}{5} = \frac{10}{35} + \frac{14}{35} = \frac{24}{35}$$

4) Multiplying fractions

Multiply the numerators.
Multiply the denominators.
Simplify where possible.

$$\frac{4}{5} \times \frac{3}{8} = \frac{12}{40} = \frac{3}{10}$$

5) Dividing fractions

Keep the first fraction the same.
Change the second to its reciprocal.
Multiply the fractions.
Simplify or convert to a mixed number where possible.

$$\frac{4}{5} \div \frac{3}{8} = \frac{4}{5} \times \frac{8}{3} = \frac{32}{15} = 2\frac{2}{15}$$

Math

KPI 8.05 Solving Equations 1

1) Inverse operations	Addition and Subtraction are inverse operations. Multiplication and Division are inverse operations. Squaring and taking the square root are inverse operations.	**2) Variable**	A letter used to represent any number.
3) Coefficient	The number to the left of the variable. This is the value that we multiply the variable by. $4x$ ➔ The coefficient of x is 4. x ➔ The coefficient of x is 1.	**4) Term**	A single number, variable or numbers and variables multiplied together.
5) Collecting like terms	Combining the like terms in an expression. $7x + 3y - 2x$ is simplified to $5x + 3y$.	**6) Expression**	A mathematical statement which contains one or more terms combined with addition and/or subtraction signs E.g. $4x + 3y$.
7) Linear equation	Contains an equals sign (=) and has one unknown. E.g. $5x - 2 = 2x + 7$.		

8) Solve

Use inverse operations to find the solution of an equation.

E.g. 1. (One step)

$\frac{x}{4} = 12$

x4 x4

$x = 48$

E.g. 2. (Two step)

$3p - 7 = 8$

+7 +7

$3p = 15$

÷3 ÷3

$p = 5$

E.g. 3. (Unknown on both sides)

$2x + 10 = 19 - 9x$

+9x +9x

$11x + 10 = 19$

-10 -10

$11x = 9$

+11 +11

$x = \frac{9}{11}$

9) Form and solve a linear equation

E.g. 1

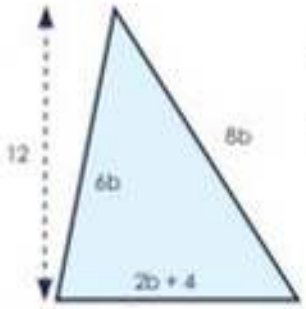
Jake is y years old. Lilly is 15. Kobe is 3 years younger than Jake. They have a total age of 36. Work out their individual ages.

$y + 15 + y - 3 = 36$
$2y + 12 = 36$
$2y = 24$
$y = 12$

Jake: 12, Lily: 15, Kobe: 9

E.g. 2

The area of the triangle is 120 cm². Find the value of b.



$\frac{12(2b + 4)}{2} = 120$

$\frac{24b + 48}{2} = 120$

$12b + 24 = 120$

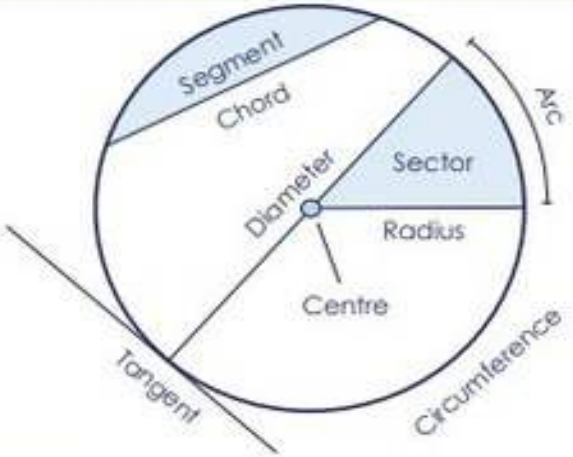
$12b = 96$

$b = 8cm$

Math

KPI 8.07 Circumference

1) Diameter	A straight line going straight through the centre of the circle and touching the circumference at each end.
2) Radius **Plural: radii**	A straight line joining the centre to the circumference.
3) Chord	A straight line joining any two parts of the circumference.
4) Tangent	A straight line that touches the circumference at a single point.
5) Arc	A section of the circumference.
6) Sector	The area bound by two radii and an arc.
7) Segment	The area bound by the circumference and a chord.



8) Circumference

The perimeter of the circle.
$C = \pi \times \text{diameter}$
$C = \pi d$

$d = 5cm$

$c = \pi d$
$c = \pi \times 5$
$c = 5\pi cm$

$c = 15.70796327cm$
$c = 15.7cm$ (3sf)

9) π (PI)

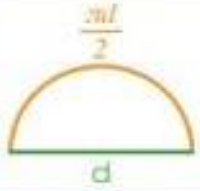
The ratio of a circle's circumference to its diameter.

It has an estimated value of $\frac{22}{7}$ or 3.14 rounded to 3 significant figures.

10) Revolution

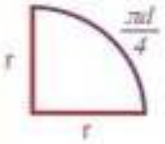
A revolution is a full turn of a circle.
The distance covered by one revolution is equal to the circumference of the circle.

13) Semi circle



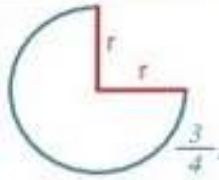
Perimeter $\frac{\pi d}{2} + d$

12) Quarter- circle



Perimeter $\frac{\pi d}{4} + 2r$

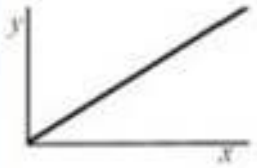
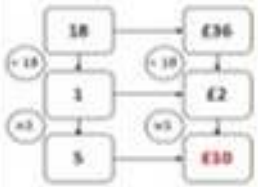
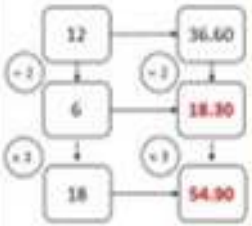
14) Three-quarter circle



Perimeter $\frac{3}{4}\pi d + 2r$

Math

KPI 8.08 Direct Proportion

1) Proportion	A relationship between two quantities.	**2) Direct proportion**	A relationship between two variables where, as one increases, the other also increases. The graphical representation of this relationship is a straight line through the origin. 
3) Unitary method	To find the value of one unit first. 	**5) Best buy**	Better value for money means that the cost is cheaper when buying an identical item or amount. Equal quantities must be compared.
4) Multiple intersections		**6) Recipes**	**Option 1:** Find the amount of ingredients needed for a specific number of people. **Option 2:** Find how much of the recipe can be made with the quantities available in the question.

KPI 8.09 Fractions, Decimals and Percentages

1) Common conversions

Fraction	Decimal	Percentage
$\frac{1}{10}$	0.1	10%
$\frac{1}{8}$	0.125	12.5%
$\frac{1}{5}$	0.2	20%
$\frac{1}{4}$	0.25	25%
$\frac{1}{3}$	0.33333...	33.3% (1dp)
$\frac{1}{2}$	0.5	50%
$\frac{3}{4}$	0.75	75%
$\frac{1}{1}$	1	100%

2) Fraction to decimal

Divide the numerator by the denominator.

$\frac{1}{5} \rightarrow 1 \div 5 \rightarrow 5\overline{)1.0}$ → 0.2

3) Decimal to percentage

Multiply by 100 and add the percentage symbol.

$0.09 \rightarrow 0.09 \times 100 = 9\%$

4) Percentage to fraction

Write the percentage as the numerator and make 100 the denominator. Simplify if possible.

$30\% \rightarrow \frac{30}{100} = \frac{3}{10}$

4) Percentage change

Percentage Increase or Decrease =

$\frac{\text{Change}}{\text{Original}} \times 100$

1	atman	The Hindu idea of the soul, the true self, which is reincarnated through a cycle of many lifetimes.
2	Bhakti Yoga	Hindu spiritual path of devotion focusing on loving and worshipping the divine.
3	Brahman	(In Hindu Dharma) the one, divine ultimate reality.
4	Buddha	A title meaning "Enlightened One." It refers to Siddhartha Gautama.
5	Buddhism	Dharmic faith that teaches people how to end suffering by following the Buddha's teachings.
6	dastar	A turban worn by some Sikhs to show respect for their faith and identity.
7	dharma	Often translated as 'duty', it includes human behaviour, justice and living in harmony with the world.
8	Diwali	Hindu festival of lights celebrating the victory of good over evil in the Ramayana.
9	Gurdwara	A Sikh place of worship where people pray, sing and share food.
10	Guru	A spiritual teacher. In Sikhi, there were ten human Gurus who taught important lessons.
11	Hindu	A person who follows Hindu Dharma.
12	Hindu Dharma	A Dharmic faith that teaches people how to live well by following their duty (dharma), seeking truth and aiming for spiritual freedom (moksha).
13	Jnana Yoga	A spiritual path in Hindu Dharma that focuses on learning about God through study, thinking and wisdom.
14	karma	In Hindu Dharma, the idea that actions and choices have consequences; good actions lead to positive outcomes in future lives and bad actions lead to suffering.

YEAR 8 – INTRODUCTION TO THE DHARMIC FAITHS

What are Dharmic faiths:

Dharmic faiths are religions that have similar **cultural and ethical roots**. **They are not connected in the same way as the Abrahamic faiths**, but they all focus on the idea of **dharma** which means doing your **duty**, being **righteous** and maintaining **harmony** and order in the world.

Hindu Dharma: The roots of Hindu Dharma go back more than 4000 years, originating in the **Indian subcontinent.** Hindus follow a diverse set of scriptures, including the **Vedas** and **Upanishads. Temples** serve as places of worship and Hindus engage in rituals, prayers and ceremonies in worship to **Brahman**, the one, divine ultimate reality..

The **'Om / Aum'** symbol is widely associated with Hindu Dharma, representing the ultimate reality or **consciousness.**

Buddhism:

Buddhism began 2500 years ago in India with the teachings of **Siddhartha Gautama**, known as the **Buddha.**

Buddhists follow the principles of the **Four Noble Truths** and the **Eightfold path**, seeking Enlightenment and liberation / freedom from suffering.

Temples and **monasteries** are places where Buddhists gather for meditation and prayer.

The **Dharma Wheel** is a common symbol of the key teachings of the Buddha.

15	Karma Yoga	A spiritual path in Hindu Dharma that focuses on doing your duty and helping others without being selfish.
16	Krishna	Hindu deity known for his wisdom, kindness and playful nature (an avatar of Vishnu). He taught Arjuna in the Bhagavad Gita.
17	mandir (or temple)	Hindu place of worship where people go to pray and take part in religious ceremonies.
18	moksha	Freedom from the cycle of birth, death and rebirth (the ultimate goal in Hindu Dharma), where the soul (atman) becomes one with ultimate reality.
19	mukti	Freedom from the cycle of birth and death; a goal in Sikhi.
20	nirvana	A peaceful state of mind in Buddhism where there is no more suffering or desire.
21	Raja Yoga	A spiritual path in Hindu Dharma that focuses on controlling your mind (meditation) and connecting with your inner self.
22	samsara	Cycle of birth, life, death and rebirth in Hindu belief.
23	sari (or saree)	A traditional piece of clothing worn by many women in South Asia, often wrapped around the body.
24	Sikh	A follower of Sikhi, a dharmic faith that teaches equality, honesty and helping others.
25	Sikhi	A dharmic faith that teaches equality, honesty and helping others. Started by Guru Nanak.
26	Vaisakhi	Sikh festival celebrating the start of the Khalsa (the Sikh community) in 1699. It's also a harvest festival in parts of India, especially the Punjab.

Sikhi:

Sikhi is a relatively young religion followed by Sikhs. It was founded just over 500 years ago in the **Indian subcontinent** by **Guru Nanak** and later developed by ten successive Sikh Gurus.

Sikhs follow the teaching found in the **Guru Granth Sahib**, their central religious scripture. **Gurdwaras** are places of worship where Sikhs come together for prayer and communal meals known as **Langar**.

The symbol of the **Khanda**, a double-edged sword surrounded by a circle, is often associated with Sikhi, representing principles such as **equality** and **justice.**

Religious Authority Introduced:

Bhagavad Gita	(One of many Hindu sacred texts) narrative in which Lord Krishna teaches Arjuna about life, duty, and making good choices.
Vedas	Oldest and most important texts in Hindu tradition. Ancient scriptures including hymns, prayers and teachings.
Siddhartha Gautama (The Buddha)	A man who became the Buddha after discovering how to overcome suffering.
Guru Nanak	The first Sikh Guru and the founder of Sikhi.

Sikhi Belief in God

Sikhi often refer to God as **Waheguru**, which means 'wondrous enlightener'. Sikhs believe that there is **only one God**, who created everything and that Waheguru must remain in the mind at all times. Sikhs' beliefs reflect their actions on a daily basis and bring them closer to Waheguru.

5 K's of Sikhism

YEAR 8 – SIKHI

10 Sikh Gurus and the Guru Granth Sahib

Sikhism was established by **ten human Gurus**. These Gurus created and defined Sikhism from one to the next through their words, hymns, writings and actions. By living a spiritually pure life, they taught people in India the importance of equality and the belief that all religions.

Guru Nanak is the founder of Sikhism. He was succeeded by nine other human gurus until in 1708 Guru Gobind Singh passed the Guruship to the holy Sikh scripture, Guru Granth Sahib, which is now considered the living Guru by the followers of the Sikh faith.

Khalsa and Amrit Sanskar

Amrit Sanskar is the **initiation ceremony** that Sikhi take part in when they make the decision to become fully committed Sikhi. Once they have gone through this initiation ceremony, they commit themselves to the **Khalsa.** This means that they wear the five Ks and are expected to follow the strict rules.

Key Terms:

Guru – A spiritual teacher

Guru Granth Sahib- The 'Eternal Guru' The holy book for Sikhi.

Gurdwara- Sikhi place of worship.

Sewa- translates to acts of 'selfless service'

Langar- Communal kitchen

Sangat- the community of Sikhi

What is the importance of the Langar?

Sewa: serving God and other people. Essential to Sikh faith as they believe everyone should be equal.

The Langar – is the kitchen and dining hall where a community meal is served. It is always vegetarian so everyone can eat it, including non-Sikhs who may need a meal.

How is Sewa practiced in the UK?

Gurdwaras in the UK are often houses/buildings which are converted into a place of worship. The Gurdwara is the *centre of the community* and will host initiatives like community kitchens (Langar) and support humanitarian aid.

By doing this Sikhi's actively contribute to the well-being of society, fostering unity and compassion in the multicultural landscape of the United Kingdom.

1. Il y a: there is / are	Il y avait: there was/were
2. Il N'y a PAS de	Il N'y avait PAS DE/D'
3. C'est: it is/ it's	C'était: it was
4. Ce n'est pas	Ce n'était pas: it wasn't

PRESENT	-er verbs	-ir verbs	-re verbs
je / j'	habit-e	-is	-s
tu	habit-es	-is	-s
Il/elle/on	habit-e	-it	-
Nous	habit-ons	-issons	-ons
Vous (pl)	habit-ez	-issez	-ez
Ils or elles	habit-ent	-issent	-ent

OPINION & PRONOUN PHRASES

ÇA OR CELA **me**fascine **OR me** plaît **OR**

m'intéresse**ORm'**amuse OR

me rend content[e]

CELA or **ça m'**ennuie OR **m'**énerve

CELA or **ça m'**embête or **me** fâche

1. **je trouve que** I find
2. **je pense que** I think
3. **je crois que** I believe
4. **je dirais que** I would say
5. **à mon avis** In my opinion

*__selon__ moi = according to me
*__selon__ mon copain *__selon__ mes parents

FUTURE tense INDICATORS

Demain = tomorrow **Ce** week-end= **this** *weekend*
Le **week-end** = ***at the*** *weekend*
Le week-end **prochain**= ***next*** *weekend*

CONNECTIVES/ ADVERBS

alors /donc: *so, therefore*
d'abord: *first of all* **car / parce que**: *because*
ensuite: *next* **après:** *afterwards*
finalement/enfin : *finally*

BRAGS ADJECTIVES

BEAUTY **1 beau/belle**: handsome / beautiful
2 jolie[e]: pretty **3 moche**: ugly

RANKS **premier**[e] : first **deuxième**: second

AGE

1. **jeune:** young
2. **neuf[ve]:** brand new
3. **viel, vieux, vielle:** old
4. **nouvel, nouveau, nouvelle**: new

GOODNESS

1 gentil[e]: kind **2 bon[ne]:** good
3 mauvais[e]: bad **4 méchant[e]:** naughty

SIZE 1 **petit[e]**: small **2** grand[e]: tall
3 **gros[se]:** big/fat **4 énorme**: huge

HOW TO COMPARE [MORE/LESS…THAN]

1Le ciné est **PLUS** amusant **QUE** le théâtre.
2Le stade à Sale est **beaucoup PLUS** petit **QUE** le stade deM.U.
3Les monuments de Londres SONT **MOINS** beaux **QUE** lesmonuments de Paris.

LES DIRECTIONS

Excusez-moi, **OÙ est/ se trouve** le.../ la... ?
WHERE is the...?

Excusez-moi OÙ **sont/ se trouvent** les... ?
WHERE **are** the...?

2

Allez tout droit. Go straight on.
Tournez **à** gauche. Turn left.
Tournez **à** droite. Turn right.
Prenez la première rue à droite. Take the first to the right.
Prenez la première rue à gauche Take the first to the left.
Prenez la deuxième rue à gauche. Take the second left
Prenez la deuxième rue à droite. Take the second right.
C'est à droite/ à gauche. It's on the right/ left.
Au carrefour, tournez à droite. At the crossroad turn right.
Au carrefour, tournez à gauche. At the crossroad turn left.
Aux feux, tournez à droite. At the lights turn right.
Aux feux, tournez à gauche. At the lights turn left.

INFINIVES "TO..." / ...-ING
AllER à (to go to) ; visitER (TO visit) ; voir (TO see);
faiRE du/ de la/ des (TO do) ; admirER;

QU'est-ce qu'IL Y A dans TA ville? What IS THERE/ IS in YOUR town?

1

➢ Dans ma ville **il y a** ...

1 un café
2 une église *a church*
3 un centre commercial
4 un château *a castle*
5 un cinéma
6 un centre de loisirs *a leisure centre*
7 un hôtel
8 un marché *a market*
8 un parc
9 un restaurant
10 un stade
11 une patinoire *an ice rink*
12 une piscine
13 **des** magasins *some shops*
14 **des** muséeS *some museums*

➢ Cependant / Par contre/ En revanche / Mais
****IL N'Y A PAS DE/D'**** ***parc; pas de cinéma; pas de château; pas de patinoire***

MORE OPINONS

[Est-ce que] tu aimes ta ville? **Do you like you** town/ city

3

1. Je pense que c'est une ville ennuyeuse.
2. Selon moi c'est ennuyeux et vraiment nul à mon avis.
3. Selon ma mère, c' est pas mal (not bad), mais trop petit. (too small).
4. Je pense que c'est bien (good), joli et assez intéressant.

Present tense: regular verbs

PRESENT	-er verbs	-ir verbs	-re verbs
je / j'	habit-e	-is	-s
tu	habit-es	-is	-s
Il/elle/on	habit-e	-it	-
Nous	habit-ons	-issons	-ons
Vous (pl)	habit-ez	-issez	-ez
Ils or elles	habit-ent	-issent	-ent

Aller – to go
Je vais
Tu vas
Il /elle va
Nous allons
Vous allez
Ils elles vont

KEY IRREGULAR VERBS in the present

FAIRE [to do]	ÊTRE [to be]	AVOIR [to have]
Je fais	Je suis	J'ai
Tu fais	Tu es	Tu as
Il/ elle/ on fait	Il/elle/on est	Il/elle/ on a
Nous faisons	Nous sommes	Nous avons
Vous faites	Vous êtes	Vous avez
Ils / elles font	Ils / elles sont	Ils/ elles ont

Opinions & Pronouns

Ce que j'aime **LE PLUS** c'est ... [what I like the most is...]
Ce qui **ME PLAÎT** c'est ... [what I enjoy is...]

J'aime [bien] ...
Je préfère ...
... (ça) m'amuse
.. (ça) m'intéresse

Je n'aime pas du tout
Je ne supporte pas...
J'ai horreur de
... (ça) m'énerve.
... (ça) m'ennuie.

O P

Frequency words & Connectives

quelquefois sometimes
souvent often
tous les jours every day
tout le temps all the time

parce que/ car because
cependant however
de plus furthermore
mais but ou or

C

Premièrement...deuxièmement firstly...secondly...
(et) en fin (and) finally

Complexity

1. ne....pas not
2. ne... plus no more / no longer
3. Il y a / il n'y a pas DE there is / are / isn't / aren't
   ***TIF - il y avait – there were (neg = il n'y avait pas de)*
   ***TIF - c'était...=it was (neg = ce n'était pas)*
4. qui est / qui sont which is / which are

• Expressions of frequency

(adverbs)	
d'habitude	usually
normalement	normally
quelquefois	sometimes
tous les weekends	every weekend

C'EST ... = IT IS ... CE N'EST PAS... = IT IS NOT...

Adjectives

1. beau / belle = beautiful
2. joli [e] = pretty
3. laid [e] = ugly
4. intéressant [e] = interesting
5. grand [e] / petit [e] = big / small
6. Ennuyeux [euse] = boring
7. excitant [e] = exciting
8. dangereux [euse] = dangerous
9. nul [le] = rubbish
10. énorme = enormous
11. génial [e] = great
12. pittoresque = picturesque
13. nouveau [elle] = new
14. vieux / *vielle = old
15. sûr[e] = safe
16. touristique = touristic
17. historique = historical

A

QUANTIFIERS

un peu = a bit
plutôt = rather
assez /très = quite/very
tellement = so
trop = too
vraiment = really

KEY QUESTIONS

1 Où habites-tu?	*Where do you live?*
2. Qu'est-ce qu'il y a?	*What is there/What's in?*
2. Où est?	*Where is?*
4. Où sont?	*Where are?*
5. Tu aimes..? Aimes-tu..?	*Do you like..?*

SUGGESTING TO GO OUT/ REACTIONS to invitations

A [Est-ce que] tu veux ...? Do you want ...?
B [Est-ce que] vous voulez ...? Do you want ...?
sortir go out?
aller à LA .../ au .../ aux ...?

1. Oui, je veux bien! *Yes, do!*
2. D'accord *OK*
3. Bonne idée! *Good idea!*
4. Chouette, quand? *Great, when?*
5. Non, merci! Je suis fati[guée] *I am tired*
6. Désolé [e] je NE peux PAS! *Sorry! I can't!*
7. Je n'ai pas envie! *I don't feel like it!*
8. Ça ne me dit rien! *I don't fancy it!*

INVITATIONS ideas

1. aller au bowling?
2. aller à une fête? *TO go to a party?*
3. aller en boîte? *TO go clubbing?*
4. faire une promenade/ une balade? *TO go for a walk?*
5. faire du vélo? *TO go cycling?*
6. faire du patin à glace? *TO go iceskating?*
7. faire les magasins? *TO go shopping?*
8. jouer au foot? *TO play football?*
9. jouer au baby-foot?
10. regarder un match de foot?
11. voir un film? *TO see a film?*

À Paris

la cathédrale Notre-Dame

l'Arc de Triomphe

la Grande Arche de la Défense

le Sacré-Coeur

le musée du Louvre

l'avenue des Champs Élysées

la tour Eiffe

la Cité des ces et de l'Industrie

le Centre Pompidou

Montmartre

SUBORDINATE clause "where YOU can"

1. À Sale il y a un centre commercial, **OÙ ON PEUT** faire les magasins.
2. À Manchester Il y a des restaurants **OÙ ON PEUT** manger et boire.
3. À Paris il y a le louvre **OÙ ON PEUT** admirer la Joconde.
4. À Manchester il y a des stades de foot **OÙ ON PEUT** regarder des match

Pouvoir = to be able to/ can

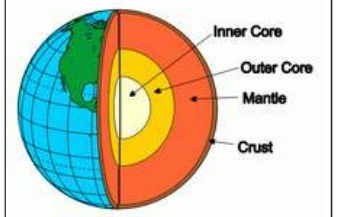
Je peux – I can
Tu peux – you can/ can you
Il peut / elle peut – he / she can
***ON PEUT – we can / you can / one can**
Vous pouvez – you can/ can you
Ils / ells peuvent – they can

8H Rocks

1. Rocks and their Uses

Geologist	Ascientist who studies rocks and the Earth.
Rocks	Naturally occurring substances made up of different grains.
Grains	Made from one or more chemical compounds.
Minerals	The chemical compounds in rocks- rocks are mixtures of different minerals.
Texture	The combination of sizes and shapes of grains in a rock.
Interlocking Crystals	The grains all fit together with no gaps. They are hard and do not wear away easily.
Rounded Grains	Some rocks have rounded grains with gaps in between. They are not strong and can be worn away more easily.
Porous	Rounded grain rocks can absorb water because it gets into the gaps.
Permeable	Water can run through.
Cement	A building material made from limestone.
Gravel	A mixture of cement, sand and gravel.

2. Igneous and Metamorphic

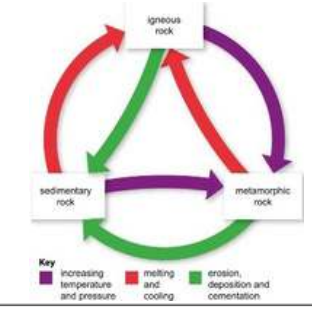
The Structure of the Earth	
Igneous Rocks	Formed when molten rock cools down *e.g. basalt, granite*
Magma	Molten rock
Lava	Magma that reaches the Earth's surface.
Small Crystals	Formed when molten rock cools down fast due to less time for particles to become ordered.
Large Crystals	Formed when molten rock cools down slowly due to more time for a large grid pattern to form.
Extrusive	Igneous rocks formed from cooling lava above the surface.
Intrusive	Igneous rocks formed underground.
Metamorphic Rocks	Formed by pressure and heat changing other rocks. *e.g. Schist, gneiss (both formed from granite) slate (from mudstone) and marble (from limestone)*
Metamorphic Rock Texture	Always made from interlocking crystals which may form coloured bands.

3. Weathering and Erosion

Weathering	Whenrocks arebrokenup by physical, chemical or biological processes.
Chemical Weathering	When rocks are broken up by chemical reactions. *eg. gases in air making rainwater slightly acidic which then reacts with minerals in rock wearing them away.*
Biological Weathering	When rocks are broken up by living organisms. *e.g. growing plants splitting rocks apart with their roots.*
Physical Weathering	When rocks are broken up by physical processes. *e.g. changes in temperature causing expansion and contraction over time, cracking rocks.*
Expanding	Rocks get bigger when they are heated.
Contracting	Rocks get smaller when they are cooled.
Freeze-Thaw Action	Water gets into cracks in rocks, freezes, expands and then forces the crack to get bigger.
Erosion	The movement of loose and weathered rock.
Abrasion	When rock fragments bump into each other and are worn away.
Sediment	Bits of rock and sand in streams or rivers.
Glacier	Rivers of ice that move slowly but can transport large pieces of rock.

4. Sedimentary Rocks

Sedimentary Rocks	Formed when layersof sediment build up over time followed by compaction then cementation. *e.g. sandstone, mudstone*
Compaction	Pressure forces water out from the gaps between grains squashing the grains closer together.
Cementation	Dissolved minerals between the gaps act as a glue and 'cement' the grains together.
Sedimentary Rock Texture	They are always made from rounded grains. Properties depend on the type of sediment that forms them.

The Rock Cycle	

5. Materials in the Earth

Native State	Metals found as pure elements in rocks.
Ores	Rocks that contain enough of a metal / metal compound to be worth mining.
Extracting Ores	Ores are obtained by mining, then crushed and chemical reactions used to obtain the metal.
Mining Problems	Damages the environment by destroying habitats and causes pollution.
Rare Metals	Hard to obtain which makes them expensive.
Recycling	Using a material again.
	Cuts down on pollution from mining and landfill sites, allows
Recycling Advantages	supplies to last longer and requires less energy.

8G Metals and Their Uses

1. Metal Properties

Physical Properties	The properties that describe a substance on its own. *(colour, strength, density, etc.)*
Chemical Properties	How a substance reacts with other substances.
Properties of Metals	High melting points, strong, flexible, malleable, shiny, good conductors.
Copper	Used in electrical circuits because it is a good conductor of electricity and unreactive. Used in water pipes because it is unreactive, non-poisonous and malleable.
Aluminium	Used in window frames because it is strong and light.
Metals & Oxygen	Most metals react with oxygen. metal + oxygen → metal oxide *e.g. zinc + oxygen → zinc oxide*
Metals & Halogens	Metals react with halogens and other non-metals. *e.g. zinc + fluorine → zinc fluoride*
Catalysts	Speed up chemical reactions without being permanently changed themselves.
Catalytic Converter	Found in cars to help convert dangerous gases into harmless ones- often contain platinum, palladium and rhodium.

2. Corrosion

Corrosion	Any reaction with oxygen at the surface of a metal.
Rusting	The corrosion of iron.

Word Equation for Corrosion of Titanium
titanium + oxygen → titanium oxide

Symbol Equation for Corrosion of Titanium
Ti + O2 → TiO2

Formula	Used to represent the products and reactants in a symbol equation.
Ratio	Comparison of the proportion of two quantities *e.g. in TiO2 there are two oxygen atoms for every titanium- the ratio is 1:2*
Rusting of Iron	More complex than general corrosion- requires water as well.

Rusting of Iron Word Equation
Iron + oxygen + water → iron hydroxide

Preventing Rust	Use a barrier such as paint/plastic/oil to keep away air/water

3. Metals and Water

ReactivityofMetals

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

Increasing reactivity

Key

🔥 can catch fire	✓✓✓ reacts very quickly	✓✓ reacts quickly
✓ reacts	••• slow or partial reaction	✗ no reaction

Reactivity	How quickly / vigorously something reacts.
Reactivity Series	A list of metals in the order of their reactivity.

Metals & Water	Metals produce metal hydroxides and hydrogen when reacting with water. *(sodium + water → sodium hydroxide + hydrogen)*

4. Metals and Acids

Potassium - Lithium	React explosively with dilute acids.
Calcium - Zinc	React very quickly with dilute acids.
Iron - Lead	React slowly with dilute acids.
Copper - Platinum	Do not appear to react with dilute acids at all.
Effervescence	The production of a gas. Occurs when metals react with an acid.
Metals & Acids	Metals react with acids to form hydrogen and a salt.

Metals & Acids Word Equation
metal + acid → salt + hydrogen
e.g. 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	HCl – forms salts ending in chloride
Sulfuric Acid	H2SO4 – forms salts ending in sulfate
Nitric Acid	HNO3 – forms salts ending in nitrate
Obtaining Salts	Mix the acid and the metal. Filter the solution to remove any excess metal. Heat the solution to evaporate water leaving just the solid salt.

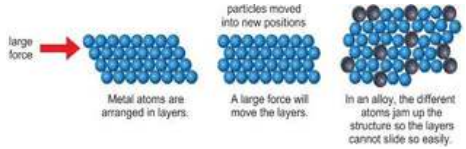
5. Pure Metals and Alloys

Pure	Substance made up of one type of atom.

Alloys

	Mixtures of metals. Lead mixed with tin- lower melting point than lead used for fixing pipes / electrical equipment.
Solder	
Duralumin	Aluminium mixed with copper and magnesium making it lighter and stronger. Used in aircraft.
Stainless Steel	Iron mixed with carbon, chromium and nickel making it stronger and more resistant to corrosion. Used in cutlery.

Explaining How Alloys Are Strong



Melting / Boiling Points	Melting and boiling points for pure substances are fixed and occur at precise temperatures. Alloys melt and boil over a range of temperatures.

8C Breathing and Respiration

1. Aerobic Respiration

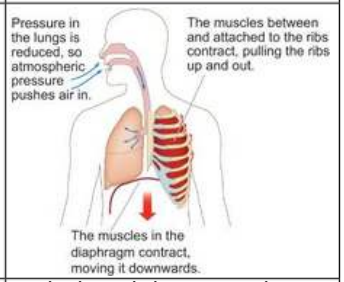
Robert Boyle	(1627-1691) placed a burning candle in a jar and sucked out all the air- the candle went out. Repeated with a mouse and the mouse died.
Joh Mayow	(1641-1679) did experiments to discover that only a certain part of the air was needed to keep candle burning and mouse alive.
Joseph Priestly & Antoine LaVoisier	(1733-1804) (1743-1794) Showed that oxygen was the part of air needed for the candle to burn and mouse to live- makes up 21% of air.
Aerobic Respiration	Using oxygen to release energy from glucose.

Aerobic Respiration Word Equation

glucose + oxygen → carbon dioxide + water

Combustion	The word equation for combustion (burning) of glucose is the same as above but occurs in a different way.
Reactants	The starting substances- written on left of word equation.
Products	The new substances made- written on right of word equation.

2. Gas Exchange System

Breathing	Musclemovementallowing the lungs to expand/contract.
Ventilation	Movement of air into / out of the lungs.
Diaphragm	Organ below the lungs that contracts / relaxes changing the size of the lungs.
Inhalation breathing in	
Mucus	Sticky liquid that traps dirt, dust and microorganisms.
Cilia	Tiny hairs on cells that sweep mucus from the lungs into the gullet to be swallowed.
Gas Exchange	The swapping of gases between the lungs and the blood.
Diffusion	Movement of particles from a high concentration to low.
Alveoli	Little pockets on the lungs. They increase the surface area for faster diffusion.
Adaptations of Alveoli	The walls are one cell thick for faster diffusion.

3. Getting Oxygen

Red Blood Cells	Take in oxygen when it gets into the blood.
Haemoglobin	Where the oxygen binds to in red blood cells.
Arteries	Blood vessels that carry blood from the heart to the body.
Capillaries	Tiny blood vessels that the arteries divide into. oxygen leaves red blood cells here and dissolves into the plasma.
Plasma	Liquid part of the blood that leaks out of the capillaries into the tissue fluid.
Tissue Fluid	Carries the oxygen to the cells.
Veins	Carry blood back towards the heart.
Exercise	Your muscles must release more energy so need more oxygen and glucose- your breathing and heart rates increase.
Frostbite	Blood vessels in skin narrow to avoid heat loss and less blood reaches cell. If the cells die this causes frostbite.
Heart Attack	Fatty substances build up inside blood vessels reducing blood flow causing cells to die.
Carbon Monoxide	Poisonous gas found in cigarette smoke- sticks to haemoglobin so red blood cells carry less oxygen.
Tar	In tobacco smoke- irritates alveoli and causes them to break apart leading to emphysema.
Asthma	Tiny tubes in lungs become narrow and fill with mucus meaning less air gets into and out of the lungs.

4. Comparing Gas Exchange

Limewater	Turns cloudyin the presence of carbon dioxide.
Hydrogen Carbonate Indicator	Turns from pink to yellow as carbon dioxide increases and the pH drops.
Gills	Water flows over feathery strands where oxygen diffuses into the blood and carbon dioxide out.
Stomata	Tiny holes in leaves that allow gas exchange.

5. Anaerobic Respiration

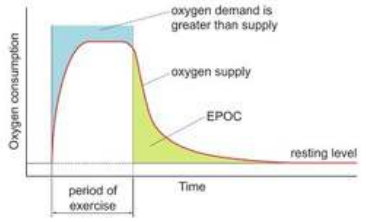
Anaerobic Respiration	Respiration thatoccurs in the cytoplasm of cells when oxygen isn't present during strenuous exercise.

Anaerobic Respiration Word Equation

Glucose → lactic acid

Energy	Anaerobic respiration releases less energy than aerobic.
Anaerobic Advantages	Allows for a quick, sudden burst of energy.
After Strenuous Exercise	Lactic acid enters the blood, is carried to the liver and converted back to glucose.
EPOC	Excess post-exercise oxygen consumption (or oxygen debt). Extra oxygen is needed after strenuous exercise to replace lost oxygen from blood / muscles and convert lactic acid to glucose.

Effect of exercise on oxygen demand



8E Combustion

1. Burning Fuels

Fuel	Achemical substance from which stored energy can be transferred usefully to make things happen.
Fuel Cell	Used in hydrogen-powered vehicles, releasing energy from hydrogen.
Fuel Cell Word Equation	Hydrogen + oxygen → water
Reactants	The starting substances- on left of word equation.
Products	The new substances made- on right of word equation.
Combustion	Burning, usually in air. The reaction gives out energy which is transferred to the surroundings by heating or light.
Fossil Fuels	Fuels formed from living organisms that died millions of years ago- *petrol, diesel*
Hydrocarbons	Only contain carbon and hydrogen atoms- *petrol, diesel*
Combustion of Hydrocarbons	The carbon and hydrogen atoms react with oxygen. The carbon reacts to form carbon dioxide.
Carbon Dioxide	Carbon dioxide will turn limewater cloudy.

2. Oxidation

Oxidation	Reacting withoxygen.
Oxide	Compound formed by oxidation. Formed when
Metal Oxides	metals react with oxygen. *metal + oxygen → metal oxide*

Conservation of Mass	Mass is never gained or lost in a chemical reaction. The atoms in reactants just rearrange to form the products, no new atoms are made and none disappear.
Heating Zinc in Air	Forms a white powder zinc oxide. The mass will appear to increase because the zinc has combined with the oxygen in air.
Gas Products	If the product is a gas it may escape and make it seem like the mass has decreased.
Phlogiston	A substance scientists used to think explained why things burned that was then proven not to exist.

3. Fire Safety

Exothermic	Areaction that releases energy that we can feel as heat- *combustion*
Thermometer	Used to measure a change in the temperature.
Fire Triangle	Three factors allow combustion to occur. 
Putting Out a Fire	You must remove at least one of the three factors.
	**Explosive** Heating may cause an explosion.
	**Flammable** These substances catch fire easily.
	**Oxidising** These substances release oxygen.

Fire Extinguishers	Work by cooling a fire or stopping oxygen getting to the fuel. Water will sink through the
Oil Fire	oil and turn to steam making the fire spread out. Use foam or a fire blanket to keep oxygen away. Water conducts electricity
Electrical Fire	so you may get a serious shock. Turn off the electricity and use a powder or carbon dioxide extinguisher.

4. Air Pollution

Complete Combustion	Carbon burns inplenty of air only forming carbon dioxide.
Incomplete Combustion	Not enough oxygen for all the carbon to react with.
Products of Incomplete Combustion	• carbon dioxide- linked to global warming • carbon monoxide- poisonous gas • soot- damage lungs and trigger asthma
Impurities	Small amounts of other substances in fuels.
Sulfur Dioxide	Formed when hydrocarbons have a sulfur impurity.
Nitrogen Oxide	Formed by high engine temperatures causing nitrogen and oxygen in air to react.
Pollutants	Something that can harm living things and damage the environment. Found in cars to react carbon
Catalytic Converter	monoxide with more oxygen forming carbon dioxide. Also breaks down nitrogen oxides.

Acid Rain	Sulfur dioxide and nitrogen oxides rise into the air and dissolve in water vapour. The rain is now more acidic.
Controlling Acid Rain	Neutralisation reactions used to remove acidic gases from chimney smoke. Acidic soil /water can be neutralised by adding calcium carbonate.

5. Global Warming

Greenhouse Gases	Trap energyfrom the Sun in the atmosphere *e.g. carbon dioxide*
Greenhouse Effect	Energy trapped by greenhouse gases is transferred back to the Earth's surface causing it to warm up. The temperature of the Earth
Earth's Temperature Over Time	has fluctuated over time it is rising rapidly now though.
Global Warming	Increase in global temperature due to more greenhouse gases in the air and the greenhouse effect.
Climate Change	Resulting from global warming- changes to weather patterns, more storms, flood, droughts, etc.
Evidence	There is now lots of evidence for global warming, average temperatures are increasing and ice caps are melting.

ComputerScience Knowledge Organiser

COMPUTING SYSTEMS

Modern computer systems receive an input, process that data and then produce anoutput.The data canbe soredinmemory.They are designedto automate anyprocess byaprogram. Toexecuteprograms that operate on da ta .

Computing systems need a **processor**, **memory**, and **storage**. Modern systems alsorelyheavilyon**communication** between them.

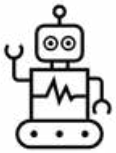
Modern computer systems receive an input, process that data and then produce anoutput.The data canbe soredinmemory.They are designedto automate any process by a program. To execute programs that operate on da ta .

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



HardwareComponents

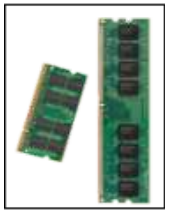
CPU –Central Processing Unit
It is knownas the'brains ofthecomputer' that processes program instructions

An instruction may:

- Performarithmeticorlogicoperations on data
- Perform input/output of data
- Control program flow

The **storage** (secondary memory) is the set of components that **stores**programs and da ta .
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 evenwhenthecomputerisswitched off

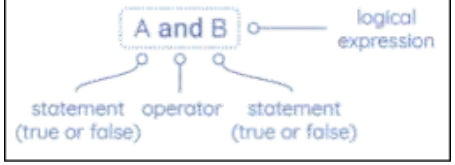


Key words

data
architecture
device
hardware
tes ti ng
input
output
s oftwa r e
RAM
program
CPU
s tor a ge
communication
Logic circuits

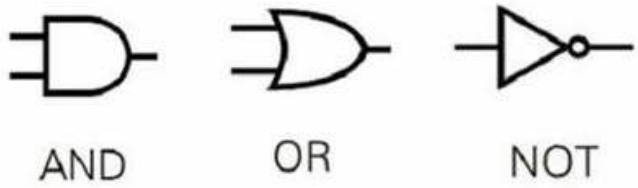
Logical Operators

Logical operations operate on statements that are **true**or **false**. There are three basic logical operations.AND ORNOT



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

Logical operations —**logic gates** can be represented using symbols



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

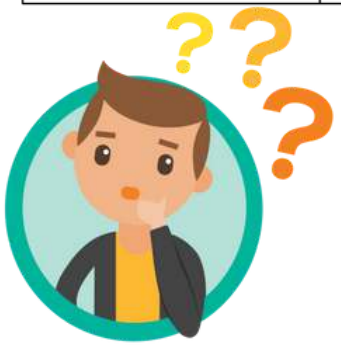
It manages: Files, Hardware, software, memory

Examples: IOS, Windows, Android, MacOS, Linux

ComputerScience Knowledge Organiser

Binary – Data Representation

Key Words	
Binary number	A number system that contains two symbols, 0 and 1. Also known as base 2
Base 2	Anumbersystemwheretheareonly 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, includingintegers,charactersand Boolean.Datais often acted on by instructions.
Denary (also known as decimal)	The number system you use. It contains 10 unique digits 0 to 9. Alsoknown asdecimal orbase10
Base 10	The number systems that we/humans use.Numbers 0-9 as it can make any number combination from that.



Binary Rules	Car r
0 + 0 = 0 0 +	y 0 0
1 = 1	0
1 +0 = 1	
1 + 1 =0	1

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 computersmustberepresentedinaform convenientfor processing.

Humanshaveinvented lotsofdifferent waysto 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 onlyuse thetwo symbols 0and1becauseallcomputers 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.

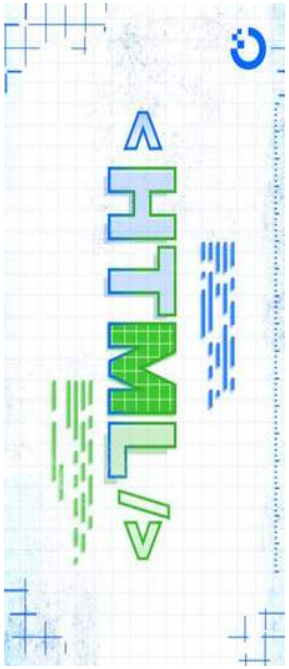
Example: a capital "T" is represented by 84, or 01010100 inbinary.

ComputerScience Knowledge Organiser

HTML

Key Words	
World Wide Web	Collection of webpages connected together by hyperlinks, using the Internet (Usually shortened to WWW)
Internet	A global network of computers all connected together
Webpage	A hypertext document connected to the world wide web
W ebs i te	A collection of webpages withinformation on a particular subject
Web browser	The softwarewhich displays a webpage or website on a computer
UniformResource Locator (URL)	An address that identifies aparticular file or webpage onthe internet
HTML	HyperText Mark-up Language –describes and defines the content of a web p a ge
Web script	A type ofcomputer programming language used to add dynamic features to a webpages
Mul ti medi a	Content that uses a combination of differenttypes of media –for example, text, audio, images
Hyper l i nk	Alinkfromahypertextdocumenttoanother location, activated by clicking on a highlighted wordor image
Hots pot	An area on a computer screen which can be clicked to activate a function, especiallyan image or piece of text acting as a hyperlink
Na vi ga ti on	The elements of a website that allows the user to move around the website. Thisisusuallyintheform of amenu or hyperlinkedtext or buttons
JPG	Themain file type used for mages on the world wide web –uses lossy compression
PNG	Anothertypeofimagefileusedontheworldwide web –supports transparency and uses lossless compression

Definitions: What does it do?	
< ht ml>	Root of a HTML document
<body>	Contentsof the page
<head>	Information about a page
<t it le>	Table title/defines title
<h1>, <h2>, <h3>	H ea ding s
<p>	Paragraph
< img >	Image
<a>	Anchor(used in hyperlinks with href)
,	Order/unordered list
	List item
<table>	Creates and defines table
<tr>	Table row
<td>	Table data
	Bold
 	Linebreak
	D ivider
<!---->	Com m e nt



ComputerScience Knowledge Organiser

Year 8 Intro to Python

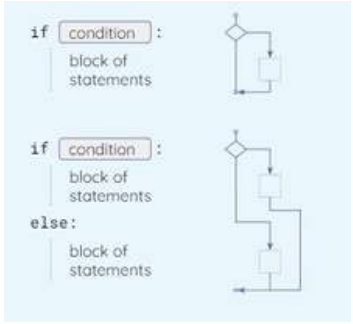
Python is a **text** based **programming language**. That can be used to create programs, games, applicationsandmuchmore!

A **program** is a set of precise instructions, expressed in a **programming language**. **Translating**theprogramminglanguageisnecessaryforamachinetobeableto**execute**the i nstructi ons.

To execute a Python program, you need a **Python interpreter**.

This is a program that translates and executes your Python program.

A **selection** statement allows a computer to **evaluate** whether an**expression** is'true'or'false'andthenperform an action depending on the outcome.



Arithmetic operators
+ addition
- difference
* multiplication
/ division
// integer division

Key terms

selection

algorithm

iteration

sequence

logical operators

input

variable

Arithmetic

output

You can use multiple branches using if, elif and else

Python helps by telling the programmer wherethe error is.
So if you see red error text—read it first.

Keywords	
Variable	Stores a value/data –Can be changed during the program
Float (FLOAT)	Decimal point
Integer (INT)	Whole number
Boolean (BOOL)	True or False
String (STR)	Letters,numbers, symbols inside speech marks
Data types	The different data that can be stored in a variable
Sequence	A set of instructions or rules that an algorithm uses have to be in the right order.
Syntax Error	A syntaxerrorisamistakeinyour Python program that prevents it from running (executing). Syntax errors are like spelling/grammar errorsor logic error

Some common syntax errors in selection

- use if and else—no capitals
- A colon : is always required after the condition and after else.
- Use **indentation**to indicate which statements 'belong' to the if block and the else block.
- The == operator checks for equality.
- A single = is only used in assignments

Syntax Errors

All programming languages have rules for **syntax**, i.e. how statements can be assembled.

Programs written in a programming language must follow its syntax.

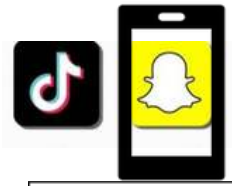
Programs with **syntax errors**cannot be translated and executed.

ComputerScience Knowledge Organiser

Year 8 Mobile App

Key Words	
abstraction	Identify the important aspects to start with
a l gor i thm	Precise sequence of instructions
Application (app)	Software designed to run on a mobile device
Computational thinking	Solving problems with or without a computer
debugging	Looking at where a program might have errors or can be i mproved
blocks	Scratch bricks that we can use to code algorithms
decomposition	Breaking down a problem into smaller parts
ex ec u te	A computer precisely runs through the instructions
GUI	Graphical User Interface
i ter a ti on	Doing the same thing more than once
s el ec ti on	Making choices
s equenc e	Running instructions in order
variable	Data being stored by the computer

Sequence, **selection** and **iteration** are all processes. In order for computers to perform tasks there ismore that isneeded. For example a computer will take an **input** (this might be automatic or via human input) whichthe computer will then **process** and the **output** will be visible on the computer monitor.



A mobile application, most commonly called an app, is a type of application software designedtorunonamobiledevice,suchasasmartphoneortabletcomputer.

AppLabisa**blockortextbasedprogramminglanguage**.This allows creation and sharing of apps.

The point of an app is to connect and interact with users.
Appcreators tend to have an idea, a problem ora task that they want to develop user an app. These can be huge or relatively small ideas.
Decomposing the problem helpsus makethe task less daunting and moreachievable. This involves breaking down the task into smaller more manageable parts to start with.

Most computers have an environment with tiles, icons and/or menus. These allow users tointeract.
Thistypeofinterface is calledthe **graphicaluser interface(GUI)** because theuser interacts with images through a mouse, keyboard or touchscreen. The GUI needs careful design consideration so thatthe user experience is a positive one sothey want to continue to use it.

Making sure the app is successful and actually does what it was intended to do is important.
Setting **success criteria** should be determined at the start of the project and can be re vi sPte d f re quently.
The success criteria should be clear and easy to follow.

Evaluatingand**debugging**allowforjudgingthe quality of the app and enables errors to be corrected and improvements to be made.

Effect of cooking on protein

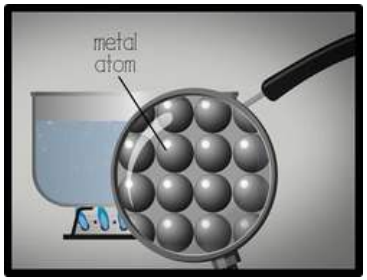
Protein denaturation:

the process of altering a protein's molecular characteristics or properties

Proteins: Coagulation

The process of turning a liquid into a solid

Example: Egg



Why food is cooked:

1. To make it safe to eat
2. To improve the shelf life
3. To develop flavour
4. To improve texture
5. To give variety

Functional and chemical properties of ingredients in cake and bread making

Cupcakes	
Self raising flour	Make the cake rise, Structure, dextrinises –add colour
Caster sugar	Sweetness, aeration
Margarine	Makes the cake moist, aeration
Egg	Binds mixture

Bre ad	
Strongflour	Structure,Gluten stretches helps bread rise and sets shape
Ye ast	ProduceCO2 when all conditions provided so makes bread rise.
Wat e r	Bindsingredients, providesmoisturefor yeast.

Methods of heat transfer

Convection - when the environment (air, water or oil) is heated up.

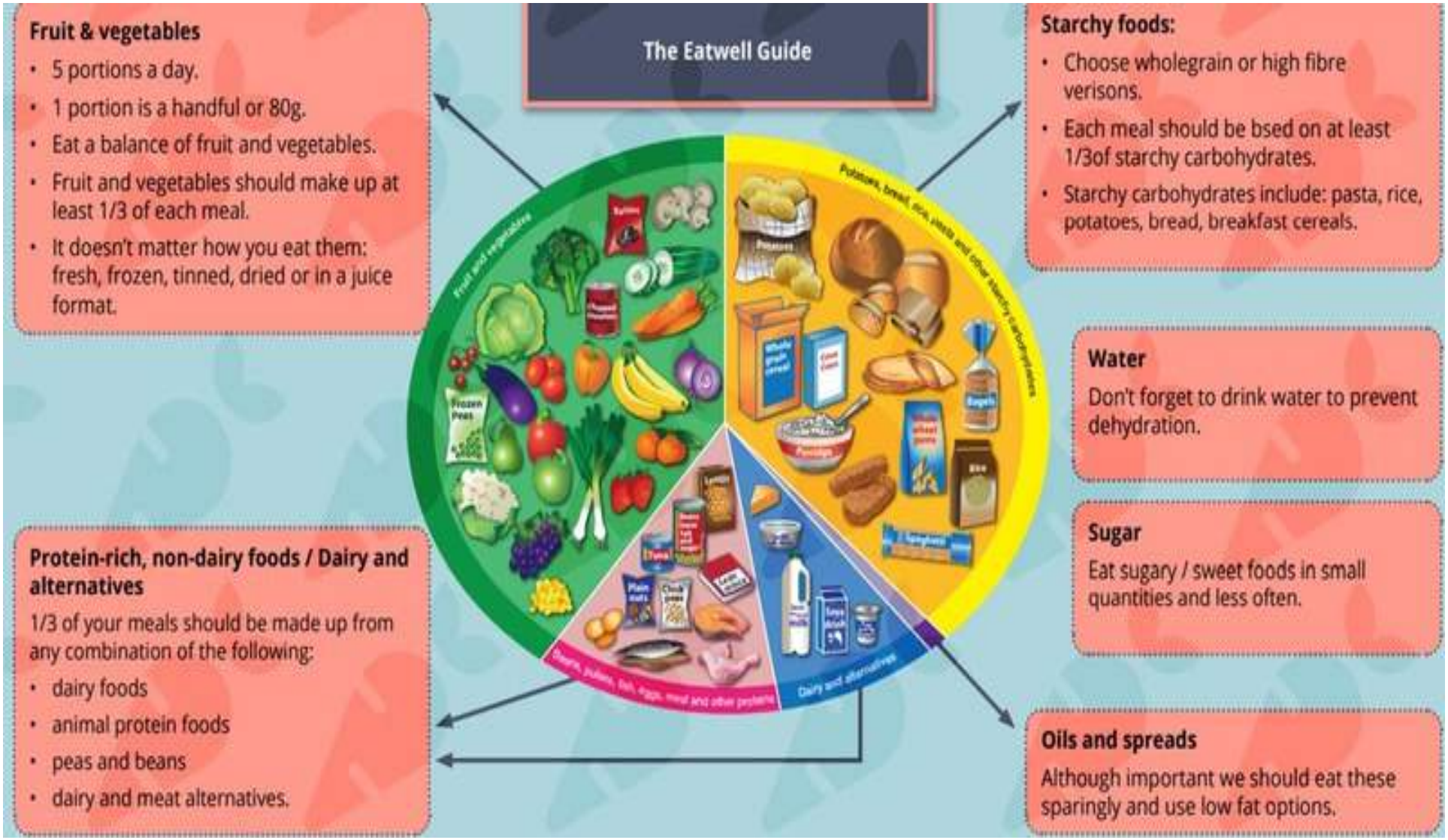
e.g. - baking a cake
- boiling an egg

Conduction - when heat is transferred directly.

e.g. - frying an egg

Radiation - when heat radiates

e.g. - toast


The Eatwell Guide
Fruit & vegetables
• 5 portions a day.
• 1 portion is a handful or 80g.
• Eat a balance of fruit and vegetables.
• Fruit and vegetables should make up at least 1/3 of each meal.
• It doesn't matter how you eat them: fresh, frozen, tinned, dried or in a juice format.
Starchy foods:
• Choose wholegrain or high fibre verisons.
• Each meal should be bsed on at least 1/3of starchy carbohydrates.
• Starchy carbohydrates include: pasta, rice, potatoes, bread, breakfast cereals.
Water
Don't forget to drink water to prevent dehydration.
Sugar
Eat sugary / sweet foods in small quantities and less often.
Protein-rich, non-dairy foods / Dairy and alternatives
1/3 of your meals should be made up from any combination of the following:
• dairy foods
• animal protein foods
• peas and beans
• dairy and meat alternatives.
Oils and spreads
Although important we should eat these sparingly and use low fat options.

Nutrient		Functions	
Protein		Growth –known as the body's building blocks. For growth, particularly during pregnancy & adolescence. Repair body cells and tissues, including recovery after illness or injury. To produce enzymes needed for digestion. Toproducehormonesthat controlbodyfunctions.	Animal products –meat, fish, dairy; plants – lentils,nuts,seeds
Carbo-hydrates		Sourceofenergy.Divided into:simple 1. Sugars and complex 2. Starchesand dietary fibre. Starches provide slowreleasing energy& add bulk	complex–wholemeal bread, pasta, rice, potatoes with the skin
Fats		Source of energy, insulation and Helping your body absorb fat-soluble vitamins (A, D, E, & K). Four types: 1. Monounsaturated 2. Polyunsaturated (omega 3 and 6) 3. Saturated 4. Trans fats. Fatsarestoredunder theskinandareessentialfor health. Too much fat can cause health problems	Monounsaturated –olive oil, avocados; polyunsaturated –oilyfish,nuts,sunflower oil, soya beans; saturated –full-fat dairy, fatty meats;andtrans fats–manysnackfoods
Vitamins A,D &C		**A**:For healthy eyes , skin and immune system **D**:The mainfunctionistohelpthebodyabsorbcalcium for strong teeth & bones **C**:Helps heal wounds and prevents scurvyand helps absorb iron.	**A**–dairy, oily fish, yellow fruit; **D**–oilyfish,eggs,fortifiedcereals **C**–citrus fruit, broccoli, sprouts, berries, kiwi
Min er als-Calcium		Essential for many processes, e.g. bone growth/strength, nervous system,redbloodcells,immunesystem.Onlyneededinsmall amounts.	**Calcium**: milk, canned fish, broccoli; **Iron**: watercress,brownrice,meat;**Zinc**:shellfish, cheese,wheatgerm; **Potassium**: fruit, pulses, white meat

Extra - Read/watch/do

https ://www.youtube.c om/wa tc h?v =x tFx 5 5 a - j 0 Y&l i s t=PLSXnX8 l DffhTq4 1 s hvMiA7 n9 x CVl t7 _ n N& t=5 s

Linkstocurriculum:Discusstheimportanceofenergybalanceandhowtomaintain a healthy weight throughout life; Demonstrate how to analyse a diet and make improvements; Perform nutritional analysis and use the results to plan recipes, mealsanddiets;Promotethebenefitsofahealthydietandactivelifestyle.

Types of Microorganisms

Yeast,Mould,Bacteria (Bad bacteriaareknownas Pathogens)

Some Pathogens that causes

~~FoodPoisoning:~~

~~Campylobacter~~ - Raw or undercooked meat, particularly raw poultry, unpasteurised milk, untreated water.

E. Coli -Raw or undercook ed meat and poultry or related products (eggravy), raw seafood products, unpasteurised milk or products made from it (egcheese) contaminated water.

Listeria-Unpasteurised milk or productsmadefromit

Softcheeses(egcamembert, brie) ready-to-eat foods (egpre-packed sandwiches, pâté, deli meats) unwashed vegetables contaminated with soil.

Staphylococcus Aureus - humans carry this intheirnose & throat; it can be transmitted by coughing or sneezing. Ready-to-eat foods that are hand-made (e.g. sandwiches), cooked meats, unpasteurised milk and related products.

Salmonella-rawor undercooked poultry and meat, eggsandunpasteurisedmilk.

	Conditions for growthof Micro-organisms explained **(FATTOM)**
F 	**Food**-Foodprovidesenergyandnutrientsforbacteriatogrow.Highriskfoodsparticularly protein foods such as chicken and dairy products are rich in nutrients and moisture and so promote bacterial growth.
A 	**Acid**-MostbacteriareproducebestataneutralpHlevelof7.AcidicfoodswithapHbelow 7, or alkaline foods with a pH above 7, may stop or slow down the rate of bacterial growth.
T 	**Time** - Ifprovidedwiththeoptimumconditionsforgrowth,bacteriacanmultiplytomillions over a small period of time via binary fission. This is when a bacterium divides in two every 20 minutes.
T 	**Temperature** - Bacteria need warmth to grow. The temperature a food is stored, prepared and cooked at is crucial. If this is not followed correctly then the food will not be safe to eat. The optimum temperature range for bacterial growth is between 5-63℃. This is known as the danger zone as it is dangerous for some foods to be in this temperature range for prolonged periods of time.
O 	**Oxygen** - Microorganisms that that require oxygen to grow are called aerobic such as most yeast.
M 	**Moisture** - Bacteria need moisture in order to grow. This is why they grow on foods with high moisture content such as chicken. Foods that are dehydrated or freeze-dried can be stored for much longer as the moisture has been removed.

Literacy / key words

Ergonomics: The study ofhowproducts and environmentsare designed to minimise effort anddiscomfort.

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 othermaterialssuch 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...

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?

Natural Fibres

Plant -de r ive d

Cotton

L ine n

Anim al-de r ive d

Wool

Silk

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 waywe dress impactsthe environment. Whatis meant byFairtrade?

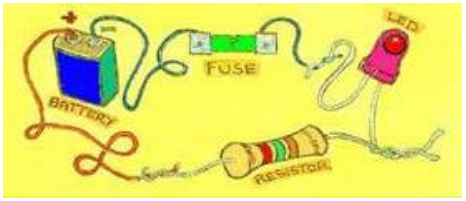
Create a login for Tinker Cad

Youwillbe assessedon:
-Fast fashion and sustainability.
-How to write a design specification.
-Electronic circuit construction.
-Final piece and evaluation.

Links to curriculum:
Computing
Science
Mathematics
Engineering
Art

Literacy / key words

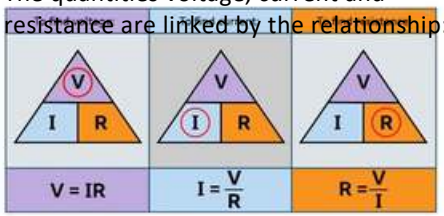
Collaborationand design fixation:
Collaborative design is an excellent way of gaining feedback for designs from your peers. This helps with design fixation, where a designer might get stuck or not know how to develop their design further. This brings fresh ideas and new innovation to any project.



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

A**prototype**is an early model built to test aconcept orprocess.Itisaterm used in a variety ofcontexts, including semantics,design,electronic and computer programming. A prototype is generally used to evaluate a newdesignto enhanceprecisionby system analysts and users.

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

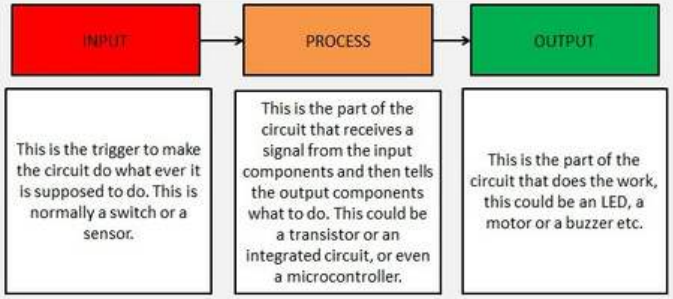


Ohm'slaw

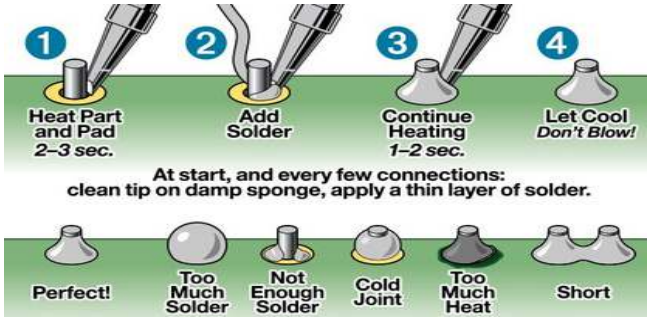
Conte nt

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.



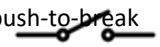
Safety rules when soldering:

- - Never touch the hottip 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.

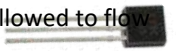
Lightcan beproducedin different ways; a **light-emitting diode(LED)** close light-emitting diode (LED)Light-emitting diodes (LEDs)glow when current passes through them. Are themost common component used for producing light.

Switches: Apush-to-make (PTM) switch allows currentto flow(ora signal to be passed on for processing) when pressed -therefore'making' the reverseand 'breaks' the circuit. A push-to-break (PTB)switch doesthe opposite.



Transistorsare atype of processing device and a specialtypeof switch.

When a small amount of volts are applied to the **Base** leg,a large current is allowed to flow from the **Collector** legto the **Emitter** leg.



Resistors are anexample of a processing device. Resistors are used to restrict the flow of current around a circuit andcan prevent damage to components.

Lampscontain 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 for storing 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, trainand confirmation of user input suchas amouse clickor 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 voicecoil to move back and forth, which in turn causesthe 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 temp er a tu r es .