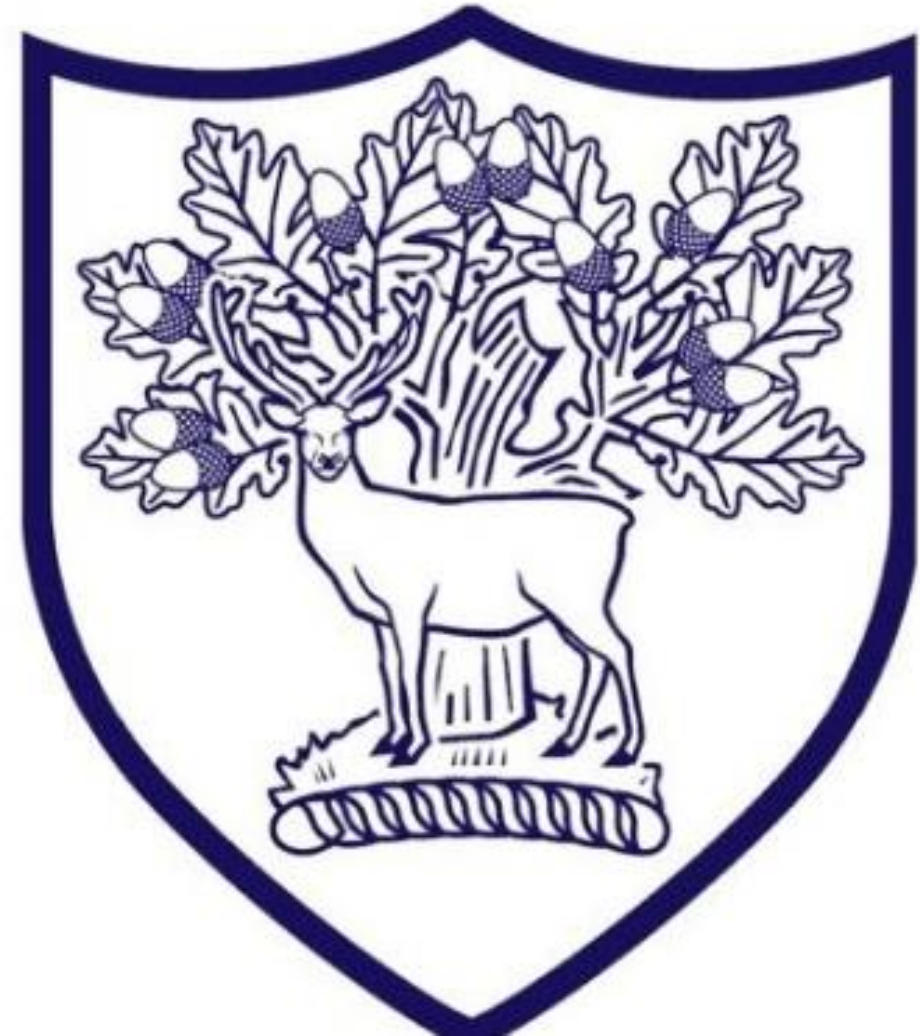


Knowledge Organiser

Year 9



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1. Art
2. Computer Science
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5. Drama
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10. Maths
11. Music
12. Science
13. Spanish
14. Textiles

PORTRAITURE | YEAR 9 | ART | TERM 1

COLOUR THEORY AND COLOUR MIXING

1	Colour Wheel	a diagram used in the visual arts to represent all colours and their relationships to one another. It can be used to help with colour selection when creating artwork
2	Complementary Colours	Colours on the opposite side of the colour wheel. This combination creates the greatest contrast
3	Analogous Colours	Colours close to each other on the colour wheel. These combinations create harmony in artwork.
4	Primary Colours	Colours that cannot be made by mixing other colours but can be used to mix all other colours of the spectrum. YELLOW, RED, BLUE
5	Process Primaries	YELLOW, MAGENTA, CYAN
5	Secondary Colours	Colours made by mixing two primary colours together
7	Orange Green Purple	Yellow + Red/Magenta Yellow and Blue/Cyan Red/Magenta + Blue/Cyan
8	Tertiary Colours	Colours made by mixing a primary colour with its close secondary colour, such as yellow-green.
9	Tints and Shades	Lighter or darker version of a colour by adding white to lighten or adding black to darken.
10	Mixing Brown	Red and Green or orange with a little bit of blue

PARTS OF LIGHT

1	Highlight	The brightest part of the object
2	Mid-tone/half-tone	The tones between shadows and highlights
3	Core shadow	The darkest part of the shadow often on the boundary between half-tones and the shadow area
4	Reflected light	Light that is reflected of other objects into the shadow areas
5	Cast shadow	Is the dark area behind the object on the opposite side of the light source

KEYWORDS

1	Proportion	The size of one thing compared to the size of another
2	Centre Line	A line of symmetry can help you draw objects that are the same on both sides, such as a face.
3	Line drawing	Drawing made with lines only
4	Shading	Adding different tones to create 3D effect
5	Composition	The arrangement of different parts of an art piece
6	Pattern	A symbol or shape that is repeated
7	Line	A mark which can be used to make a drawing
8	Shape	A 2D area that is enclosed by a line
9	Tone	The lightness or darkness of something
10	Distortion	The act of twisting or altering something out of its true, natural, or original state.

PROCESSES

1	Mono-print	An artwork created by transfer of media from one surface to another resulting in a single unique print.
2	Printing	Artwork created by the transfer of media from a matrix or printing block to another surface.
2	Collage	The technique and the resulting work of art in which pieces of paper, photographs, fabric and other ephemera are arranged and stuck down onto a supporting surface.
3	Drawing	The act of making picture with a pencil or pen and other dry media
4	Sculpture	3D artwork designed to be viewed from several angles. Sculpture can be made out of variety
5	Digital Art	Art created using software on a computer or other devices

PORTRAITURE | YEAR 9 | ART | TERM 2

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PORTRAITURE | YEAR 9 | ART | TERM 3

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Year 9 | Computer Science | Term 1: Cyber Security

Cyber Threats		Malware		Valuable Data	
<u>Social Engineering</u>	Tricking people into freely giving up their personal/financial info	<u>Virus</u>	Replicates and spreads from file to file and between computers	Most cyber-crime is aimed at collecting personal data that can be sold or used to commit further crimes such as fraud, or scams	
<u>Shouldering</u>	Looking over someone's shoulder at passwords/pins	<u>Worm</u>	Uses your computer's resources in background	Personal data such as names, addresses, emails, phone numbers, passwords and pin numbers can be used directly for fraud, theft or identity theft.	
<u>Name Generator</u>	Social media "quizzes" that collect personal data or answer security questions to reset passwords	<u>Trojan</u>	Secretly opens backdoor network access	Individual pieces of non-personal data may even be connected together to form a profile for scams	
		<u>Ransomware</u>	Encrypts files and demands money to decrypt them	Cyber Defense	
		<u>Spyware</u>	Monitors keys pressed and mouse button clicks		
<u>Phishing</u>	Emails that look legitimate but pressure people to click links to sites that steal data	UK Laws		<u>Anti-Malware</u>	Scans all files, searching for any infected with malicious code. Can quarantine and delete infected files
<u>Blagging</u>	Emails, messages or calls that use convincing stories to con people	Data Protection Act	Data must be... ...used fairly and within the law ...only collected for specific purposes ...only used for that purpose ...accurate and up to date ...only kept for as long as necessary ...protected against loss/theft Punishment: Up to £17.5 million or 4% of global turnover. May also be banned from processing any data	<u>Strong Passwords</u>	Long, complex passwords are harder to guess/brute force
<u>Hacking</u>	Gaining access to someone's device or account without authority			Computer Misuse Act	Any unauthorised... ...access to computer material ...access to computer material with the intent to commit further crime ...modification, theft, deletion of data Punishment: Two years to life imprisonment, and fines from £5000+
<u>Brute Force</u>	Trying every possible combination of characters in order to guess a login password or pin number	<u>Penetration Testing</u>	Ethical hackers are paid to try to test out a system and identify weaknesses		
<u>DDoS</u>	Flooding a server or device with so much data that it is overloaded and crashes	<u>Firewall</u>	Software that checks data going in and out of a network. Blocks anything suspicious/unwanted		
				<u>Auto-Updates</u>	Automatically installs the latest security patches

Networks

A network is where **two or more** devices (computers/phones/servers etc.) are connected.

Benefits

Drawbacks

Sharing files/resources

Security risks

Communicating

More expensive than stand-alone devices

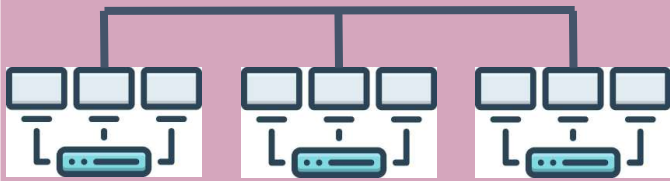
Sharing peripherals (printers/scanners),

LANs and WANs

Local Area Networks (LAN) cover one geographical area like a home, business or school. They usually own all of the hardware



Wide Area Networks (WAN) connect multiple LANs and spread over several geographical locations. The hardware may include phone lines and satellites owned by governments or telecoms companies. The internet is the largest WAN



The Internet

The internet is the physical hardware that connects devices around the world. To manage different types of devices and data the internet uses rules for how data is sent/received called **protocols**

IP addresses are used to identify devices on a network to make sure data goes to the right place. IPv4 addresses have 4 numbers (between 0 and 255) separated by a full stop eg. 96.38.74.155

Data is sent in small **data packets**. The data will **hop** through several networks on the way to its destination each with:

- Sender & receiver IP addresses
- Packet number (eg packet no. 4 of 10)
- Payload - Actual content of the message
- Hop limit to delete the data packet if it is not received in time

The data is put back together when it is received

Network Performance

Bandwidth: The amount of data flowing into a network, measured in giga/megabits per second.

Number of users: Each user needs a share of the bandwidth, more users means less each.

Type of traffic: Streaming HD films or gaming use higher amounts of bandwidth

Errors: Interference from other signals, distance, physical barriers and poor hardware cause errors.

Network Hardware

Router



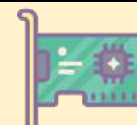
Connects networks together, sending, receiving and managing data traffic & fixing errors

Server



Stores resources, files, programs and data on a network, delivering them to clients as needed.

Network Interface Card



Connects a device to the network. Translates between network data and data used on the device.

Wireless Access Point



Provides wireless (WiFi) access to a network. Has a limited range and may be less secure than physical connections.

Ethernet Cable



Standard copper cable to connect devices. Contains pairs of twisted wires that are insulated.

Fibre Optic Cable



Higher bandwidth than Ethernet so can transfer data more quickly. Also usable over longer distances.

Computational Thinking

Computational thinking allows us to **take a complex problem**, find ways to better understand what the problem is and **develop possible solutions**.

We can then present these solutions in a way that a computer, a human, or both, can understand.

There are 4 cornerstones of computational thinking: **Abstraction**, **Decomposition**, **Pattern Recognition** and **Algorithms**

Abstraction

Abstraction means **picking out the most important elements** of a problem to focus on, and **ignoring parts that are less important**.

Decomposition

Decompositions means **breaking large, complex problems down** into smaller, more manageable sub-tasks.

Pattern Recognition

Pattern recognition involves **finding the similarities or patterns in problems** that can help us solve more complex problems more efficiently

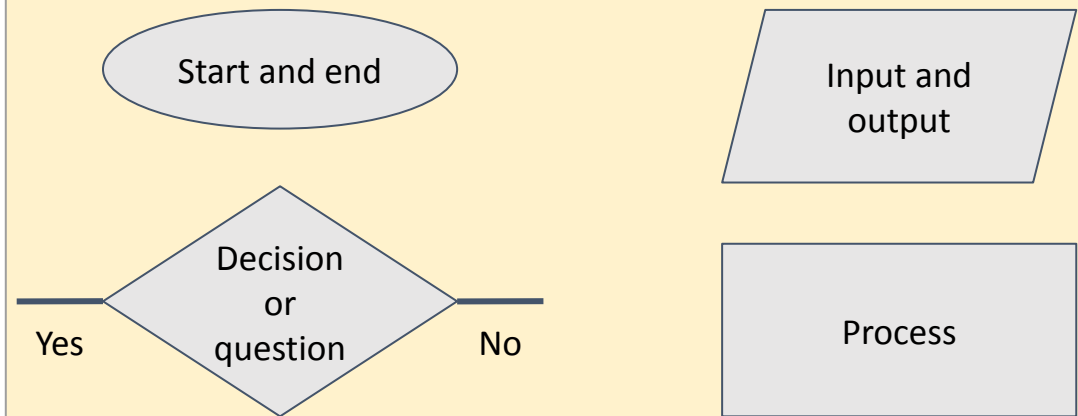
Algorithms

An algorithms is a logical, **step-by-step solution** to a problem. They can be written for humans or computers to follow. Often in the form of a list, flowchart or programming code

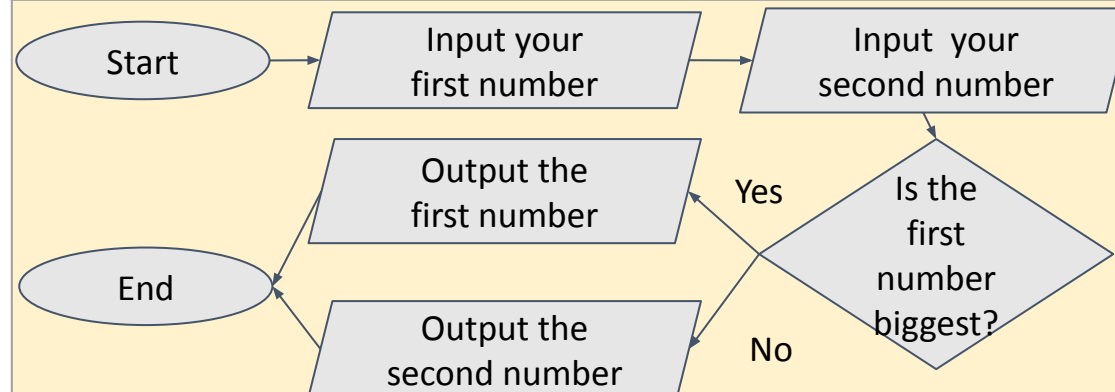
Flowcharts

A flowchart is a diagram that **represents an algorithm** to solve a problem. Flowcharts normally use **standard shapes/symbols** to represent the different instructions at each step.

Flowchart shapes



Flowchart Example: Outputting the largest of two numbers



Artificial Intelligence

Artificial intelligence is technology that enables a computer to complete tasks that would usually require human intelligence. It does this by taking in information from its surroundings, and deciding its response based on what it senses.

AI needs an **algorithm** (a set of instructions) to work from, usually written by human programmers. Essentially rules to follow to pick the correct **output** for different **inputs**.

Machine Learning

Machine learning is a branch of AI that creates its own rules based on recognising patterns in **training data** (eg millions of images of humans for a facial recognition program). Training data must be carefully selected and the system must be monitored to avoid mistakes and **bias**.

Common Uses of AI

- Voice Assistants (eg Siri and Alexa)
- Sat-Navs
- Chatbots (eg Chat GPT)
- Facial Recognition
- Biometric Security (eg unlocking phones)
- Autocorrect
- Web Searches
- Streaming/Media Recommendations
- Image Generation
- Self-Driving Vehicles

Ethics of AI

Ethics is a part of philosophy that deals with whether a choice is the right or wrong thing to do in a situation.

It is ok for a student to use the internet for homework research but not ok to get AI to write it for them.

Areas of Concern

Potential ethical issues from AI include:

- People's jobs being replaced by AI
- Racial/gender/age/disability bias
- Self driving vehicles having accidents
- AI in law enforcement
- AI generated art/music/media
- Misinformation of social media
- Use of AI in education
- Use of AI in healthcare

Turing Test

An experiment created in the 1950s by Alan Turing, The Turing test is a test to see if a computer can trick a person into believing that the computer (placed in another room) is a person too.

Alan Turing thought that if a human could not tell the difference between another human and the computer, then that computer must be as intelligent as a human.

Image Recognition

Once AI has a set of rules to describe what an object may look like, it can start to identify items that fit the description (eg if an object is long, yellow and in a fruit bowl, it is probably a banana).

Since there are so many factors that go into identifying objects, the system will produce a percentage of how certain it is that the object fits the description.

Factors that may reduce identification:

- How clear is the image?
- What angle was the image taken from?
- Are there obstacles in front of the object?
- Are there details in the background?
- How closely does the object match other objects of the same type?
- How similar is it to other objects?

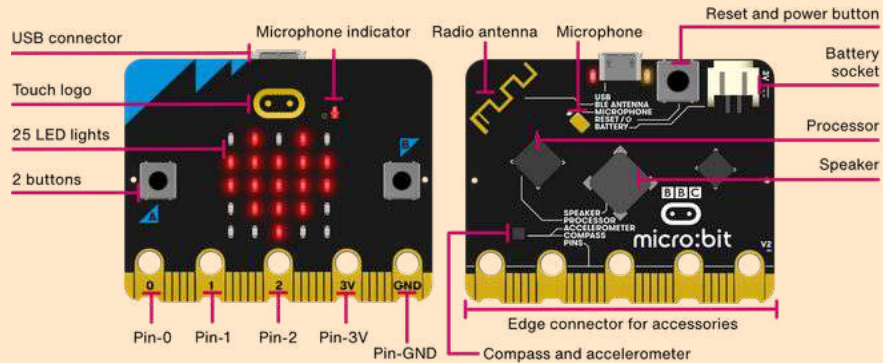
AI Images

AI generated images are usually created by humans describing what the image should contain.

The system will then try to find images that match that description and copy them. It will often get finer details (like fingers) wrong or copy artists work.



Microbit v2 Controller

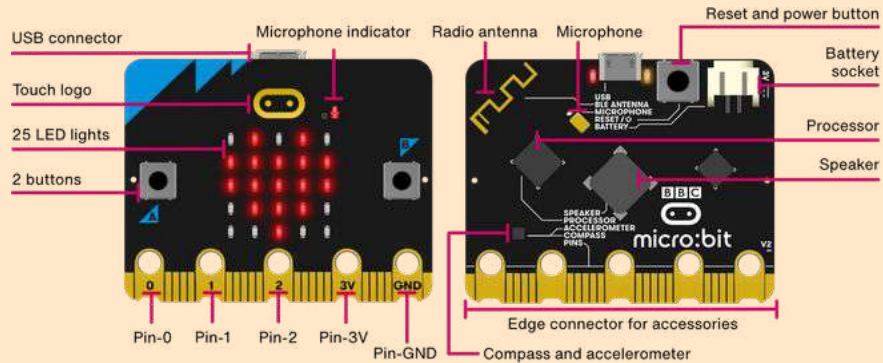


Micro:bit V2 What is it?	The BBC micro:bit is a pocket-sized computer that introduces you to how software and hardware work together. It has an LED light display, buttons, sensors and many input/output features that, when programmed, let it interact with you and your world.
Make:Code	This is a block code creator that can be programmed to run the Micro:bit. There is an online Micro:bit simulator to check if your Make:Code would run if downloaded to the physical micro:bit.

Introduction to the Global Goals for Sustainable Development	
United Nations	an inter-governmental organisation whose main purpose/aim is to maintain peace and security throughout the world, develop friendly relations between nations, and encourage international co-operation.
Global Goals	a shared blueprint for peace and prosperity for people and the planet, now and into the future, created by the UN in 2015, which they hoped to meet by 2030. At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - developed and developing - in a global partnership.
What effect could you have?	<ul style="list-style-type: none"> • How old will you be in 2030? • What job do you think you might be doing, or what further education course, or apprenticeship might you be on? • Consider how what you are doing as a job, apprenticeship or further education course could help you tackle any of the goals?


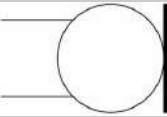

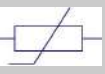

Goal	What is the goals aim?	What could we design to help achieve the target?
2 ZERO HUNGER	End hunger, achieve food security and improved nutrition and promote sustainable agriculture.	An app that notifies local community of food that is going out of date.
3 GOOD HEALTH AND WELL-BEING	Ensure healthy lives to promote well-being for all at all ages.	A light up badge that gives someone a smile.
6 CLEAN WATER AND SANITATION	Ensure availability and sustainable management for water and sanitation for all.	Create a water network like the national grid for electricity to even up UK water supply.
7 AFFORDABLE AND CLEAN ENERGY	Ensure access to affordable, reliable, sustainable and modern energy for all	Plants that collect warmth from the soil and feed it into homes.
11 SUSTAINABLE CITIES AND COMMUNITIES	Make cities and human settlements inclusive, safe, resilient and sustainable.	Add stop and talk benches to all communal spaces.
12 RESPONSIBLE CONSUMPTION AND PRODUCTION	Ensure sustainable consumption and production patterns.	Make it that someone must bring in an old item of clothing to swap for every new item they buy.
13 CLIMATE ACTION	Take urgent action to combat climate change and its impacts.	Make a device that detects whether someone has put a jumper on before they're allowed to turn up a thermostat.
14 LIFE BELOW WATER	Conserve and sustainably use the oceans, seas, and marine resources for sustainable development.	Add debris catchers to every water outlet to collect bottles, plastic waste, before it enters the sea.
15 LIFE ON LAND	Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainable manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	Create drip feeders that collect water at night through condensation, and drip feed this to thee roots of plants during the day.

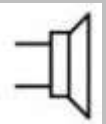
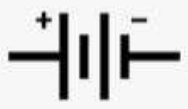
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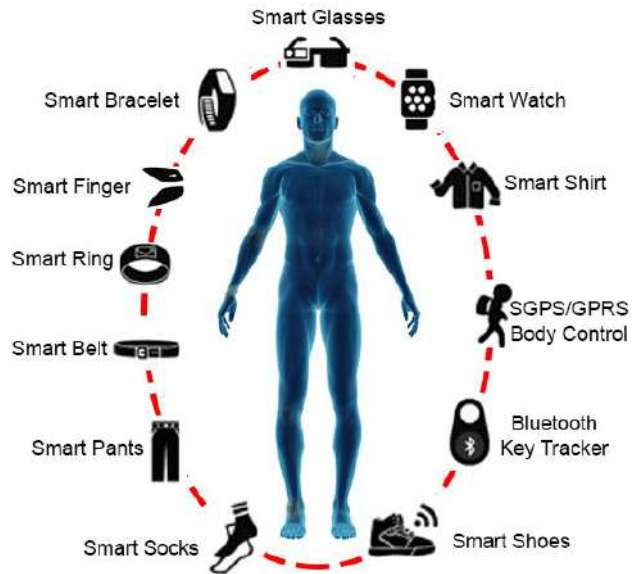


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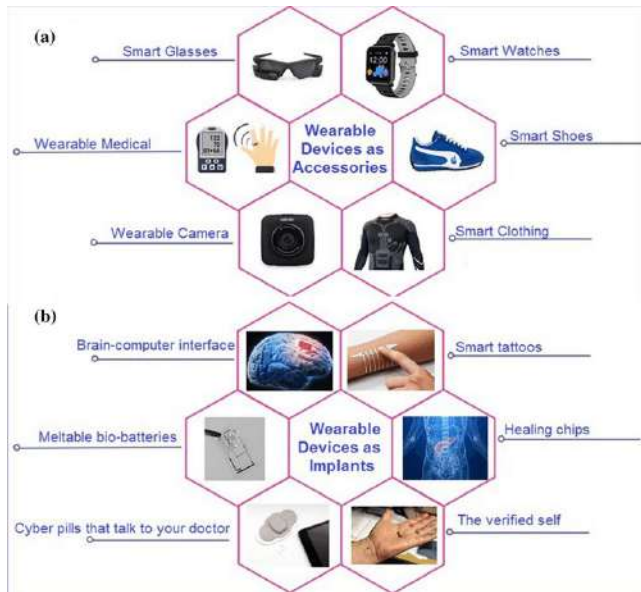
Make:Code This is a block code creator that can be programmed to run the Micro:bit. There is an online Micro:bit simulator to check if your Make:Code would run if downloaded to the physical micro:bit.

Feature	Is there an electrical symbol?	What does this feature do?
Buttons	N/A	The micro:bit has two buttons on the front that can be used separately or together to make things happen.
LED display and light sensor	LED Light Emitting Diodes 	25 LEDs arranged in a 5x5 grid make up the display for showing pictures, words and numbers. They can also act as sensors, measuring how much light is falling on your micro:bit.
Micro-phone LED		You can create programs that react to loud and quiet sounds and measure noise levels with the new micro:bit's built-in microphone. The microphone LED shows you when the microphone is actively measuring sound levels. Just to the left of the LED, you'll see a small hole where the sound goes in.
Radio & Bluetooth antenna	Radio Antenna Bluetooth 	Your micro:bit can communicate with other micro:bits by radio, and with other devices using Bluetooth.
Processor & temperature sensor	Thermistor 	The micro:bit's processor is its brain, fetching, decoding and carrying out your instructions. It also contains a temperature sensor so you can measure how warm or cold your environment is.
Compass		Find magnetic North or measure the strength of magnetic fields using the micro:bit's compass. It can measure magnetic fields in three dimensions, so you can use this for science experiments or for making simple door or window alarms.
Accelerometer		The micro:bit's accelerometer measures forces in 3 dimensions, including gravity, so your projects can tell which way up your micro:bit is. You can use it for science experiments, add shake inputs to games or make simple alarms that alert you when someone moves your things.
Micro USB socket		Download programs to your micro:bit from a computer and power it using its USB interface.

Feature	Is there an electrical symbol?	What does this feature do?
Speaker		The new micro:bit with sound has a built-in speaker so you even more easily add music and new sounds to your projects.
Battery socket	Battery symbol 	Instead of powering your micro:bit from the USB socket, you can unplug it from your computer and use a battery pack instead. This is really useful if you want to take your micro:bit outside, wear it or play games with it. It can run for a long time using just two AAA batteries.

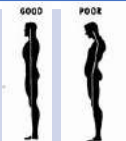










Wearable devices	
Keyword	Meaning and example
Wearable device	These are electronic devices that can be worn on the body, often like accessories or clothing. They can perform various functions and are typically connected to a smartphone or computer.
Smart watches	These are like regular watches but with added features such as fitness tracking, notifications, and apps.
Fitness trackers	These devices are designed to monitor physical activity, such as steps taken, distance traveled, and heart rate.
Smart glasses	These are glasses with built-in displays that can show information like notifications, directions, or augmented reality overlays.
Smart clothing	Certain clothing items are embedded with sensors and electronics to track things like body temperature, heart rate, or even posture.



Internet of Things	
Keyword	Meaning and example
Internet of Things	This refers to the network of physical objects or "things" that are embedded with sensors, software, and other technologies to connect and exchange data with other devices and systems over the internet.
Smart home devices	These include smart thermostats, smart lights, smart locks, and smart appliances that can be controlled remotely via a smartphone or voice commands.
Connected toys	Some toys are now equipped with IoT technology, enabling them to interact with other devices or be controlled remotely.
Smart pet gadgets	There are devices that allow you to monitor and interact with your pets remotely, such as cameras, feeders, and activity trackers.
Environmental sensors	These devices can monitor air quality, temperature, humidity, and other environmental factors in your home or neighbourhood.

Physical Skills

1		Posture The way the body is held.
2		Alignment Correct placement of body parts in relation to each other.
3		Balance A steady or held position achieved by an even distribution of weight.
4		Coordination Efficient combination of body parts.
5		Control The ability to start & stop movement, change direction & hold a shape efficiently.
6		Flexibility The range of movement in the joints.
7		Strength Muscular power.
8		Stamina Ability to maintain physical and mental energy over periods of time.
9		Extension Lengthening one or more muscles or limbs.

Expressive Skills

1	Projection	The energy the dancer uses to connect with and draw in the audience.
2	Focus	The use of the eyes to enhance performance & interpretative qualities.
3	Spatial Awareness	Consciousness of the surrounding space and its effective use.
4	Facial Expression	Use of the face to show mood, meaning or character.
5	Musicality	The ability to make the unique qualities of the accompaniment evident in the music.
6	Communicate the choreographic intent	The ability to communicate the aim of the dance. What the choreographer wants to express to the audience.

Warm Up

WHY?	<ol style="list-style-type: none"> To prepare the body & mind for performance. To prevent injury.
Pulse Raising	To raise the pulse to pump more blood to the muscles, making the body warm.
Mobilisation	To move the joints to release synovial fluid, making them free and mobile.
Stretching	When the body is warm, we can lengthen the muscles, to make them pliable and elastic.

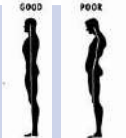








Technical Skills

1	Actions	What a dancer does: Travel, turn, elevation (jumping), gesture, stillness, floorwork, transference of weight.
2	Dynamics	How a dancer performs a movement: fast, slow, strong, light, flowing, abrupt, acceleration, deceleration.
3	Space	Where movements are performed in space: levels, directions, pathways, shapes, designs, patterns.
4	Relationships	How dancers in a group relate to each other: Lead & follow, mirroring, action & reaction, accumulation, complement, contrast, counterpoint, contact, formations.



	Turn		Travel
	Elevation		
	Floor work		

Physical Skills

1		Posture The way the body is held.
2		Alignment Correct placement of body parts in relation to each other.
3		Balance A steady or held position achieved by an even distribution of weight.
4		Coordination Efficient combination of body parts.
5		Control The ability to start & stop movement, change direction & hold a shape efficiently.
6		Flexibility The range of movement in the joints.
7		Strength Muscular power.
8		Stamina Ability to maintain physical and mental energy over periods of time.
9		Extension Lengthening one or more muscles or limbs.

Expressive Skills

1	Projection	The energy the dancer uses to connect with and draw in the audience.
2	Focus	The use of the eyes to enhance performance & interpretative qualities.
3	Spatial Awareness	Consciousness of the surrounding space and its effective use.
4	Facial Expression	Use of the face to show mood, meaning or character.
5	Musicality	The ability to make the unique qualities of the accompaniment evident in the music.
6	Communicate the choreographic intent	The ability to communicate the aim of the dance. What the choreographer wants to express to the audience.

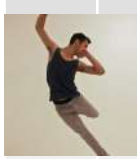

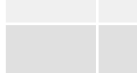

Warm Up

WHY?	<ol style="list-style-type: none"> To prepare the body & mind for performance. To prevent injury.
Pulse Raising	To raise the pulse to pump more blood to the muscles, making the body warm.
Mobilisation	To move the joints to release synovial fluid, making them free and mobile.
Stretching	When the body is warm, we can lengthen the muscles, to make them pliable and elastic.

Technical Skills

1	Actions	What a dancer does: Travel, turn, elevation (jumping), gesture, stillness, floorwork, transference of weight.
2	Dynamics	How a dancer performs a movement: fast, slow, strong, light, flowing, abrupt, acceleration, deceleration.
3	Space	Where movements are performed in space: levels, directions, pathways, shapes, designs, patterns.
4	Relationships	How dancers in a group relate to each other: Lead & follow, mirroring, action & reaction, accumulation, complement, contrast, counterpoint, contact, formations.



	Turn		Travel
	Elevation		
Floor work			

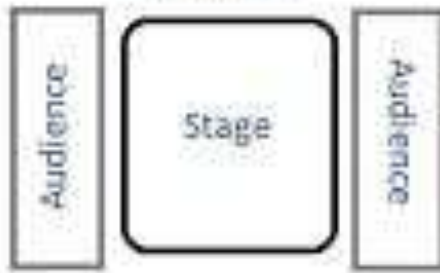
Drama: Stanislavski and Physical Theatre | Year 9 | September- December

Vocal Skills		Stanislavski		Physical Skills	
Pitch	The particular level (high or low) of a voice, instrument or tune.	Stanislavski	Naturalistic technique that stems from his theatre practice and is still used by actors all around the world today.	Facial Expression	Look on face which shows emotions.
Pace	The speed at which someone or something moves, or with which something happens or changes.	Naturalism	Theatre that shows a sense of reality (real life) through a range of dramatic and theatrical strategies.	Body Language	A range of nonverbal signals that you can use to communicate your feelings and intentions.
Pause	A break in speaking, period of silence.	Motivation	Why a character does and says the things they do	Gesture	A sign that communicates a character's action, state of mind and relationship with other characters to an audience.
Tone	This suggests your mood and your intention towards the listener, eg happy or sad.	The Fourth Wall	An imaginary fourth wall separating the actors from the audience.	Posture	Physical alignment of a performer's body, or a physical stance taken by a performer which conveys information about the character being played.
Volume	Loudness or quietness of the voice.	Super Objective	An overarching objective that acts as a through-line for a character over the course of a play.	Levels	They show action in a different place/time and can reflect relationships.
Emphasis	Where a performer will stress a particular word or phrase within a sentence to indicate importance.	Physical Theatre		Gait	A person's manner of walking.
Accent	A way of speaking in a local area or country.	Physical Theatre	A style of theatre where the actor uses their body as the primary tool for performance		
Clarity of diction	Clearness of the voice.	Body Props	The actor creates the shape and form of a prop or object. This replaces the use of set/props and/or physical objects on stage		
		Soundscape	Using the body to create sounds that establish the environment or atmosphere.		
		Chair Duets	Chair duets is when you sit next to a partner and use a series of contact movements.		
		Round-By-Through	A series of contact movements using the three words <i>Round, By and Through</i> to guide you.		

End on/
Proscenium



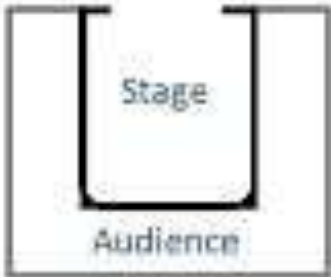
Traverse



In the Round

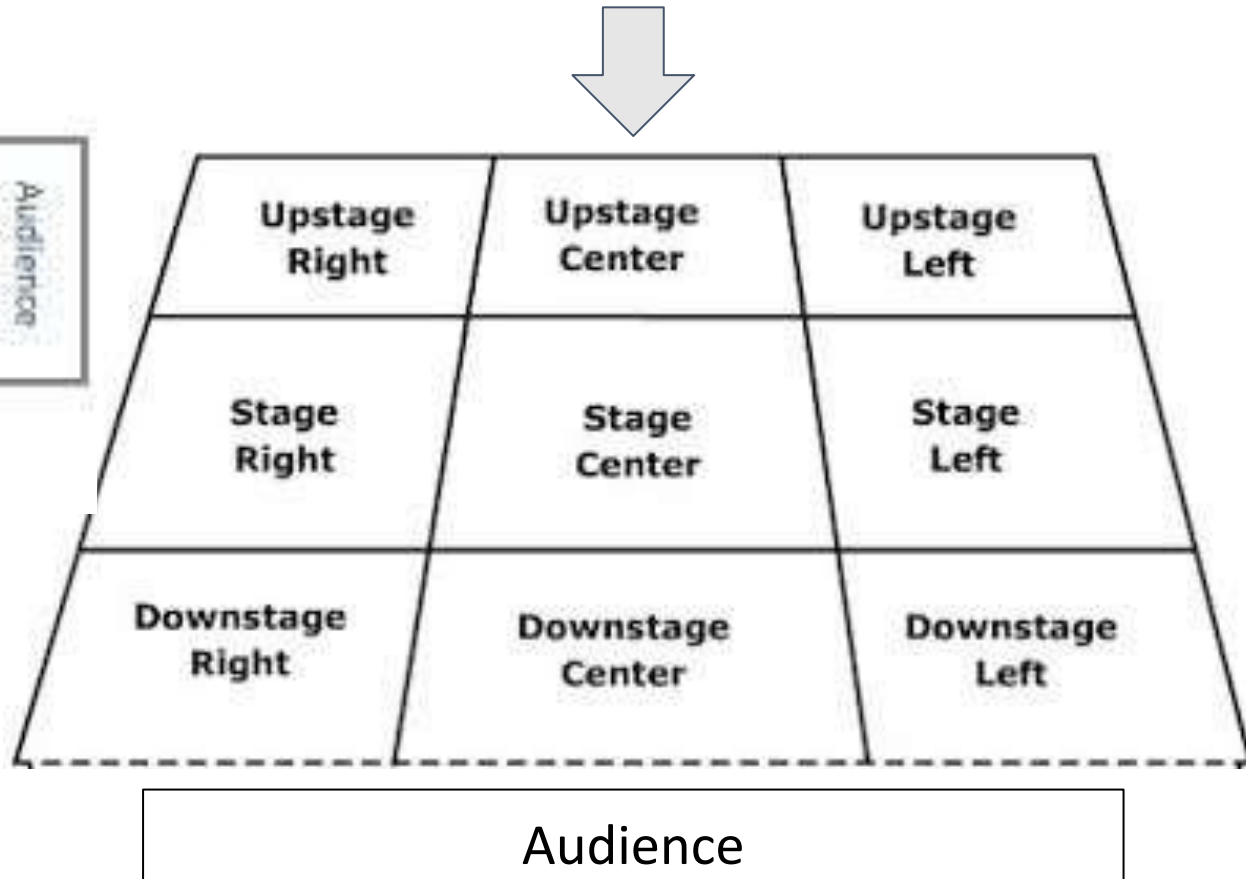


Thrust



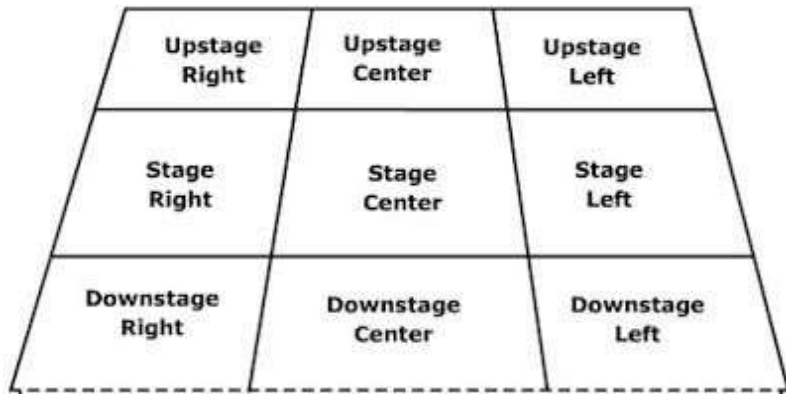
Types of staging

Positions of the stage

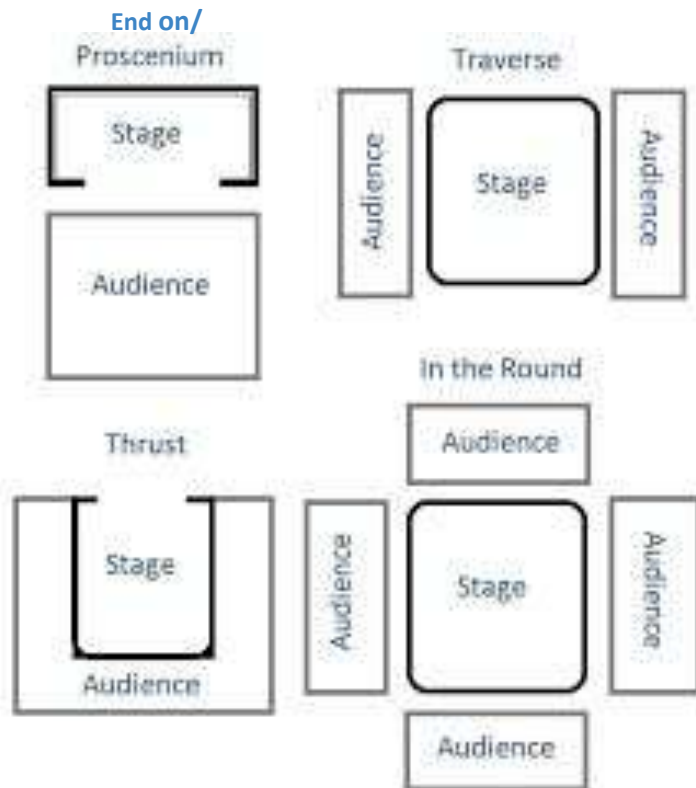


Brecht		Roles and responsibilities		Physical and Vocal Skills	
Bertolt Brecht	A drama practitioner came from Germany in the 194-/50s. He was well known for his very creative and expressive form of theatre, known as Epic theatre	Collaboration	The skill of communicating to work creatively together	Pitch	How high or low your voice
		Ensemble	A group of people who share responsibility for creating and delivering a performance	Pace	How fast or slow you speak
		Playwright	The person who writes a play	Pause	A moment of silence
Epic Theatre	The theatre should challenge its audience through creativity and get the audience to use their brains and imagination.	Director	The person who organises the actors	Tone/Emphasis	The emotion of speech and which words are stressed
		Producer	The person in charge of the money	Volume/Projection	How loud you are/Sending your voice to the audience
		Designers	Lights, Sound, Costume, Set and Props	Body language	Using your body to express feeling or character
Verfremdungseffekt	The distancing effect. This was a technique used by Brecht to make his audience feel separated from the characters on stage.	Stage manager	Organises all off-stage activity	Facial expression	Using your face to express a feeling or thought
		Technicians	Operates, lighting sound scenery	Posture	Having a balanced and solid physical position from which to perform
		Actor	Performs on stage		
Gestus	A technique where attitude and gesture is expressed through exaggerated actions.	Romeo and Juliet		Gesture	Using hands and arms to communicate
				Level/Proximity	Using height and space to communicate
Political theatre	Theatre which focuses on Political and world wide matters. Often raising awareness or educating on important issues.	Romeo and Juliet details	Written by William Shakespeare between 1591 and 1595.	Eye contact	Interacting with another character or the audience. (Could include avoiding eye contact)
		Main Characters	Romeo Montague, Juliet Capulet, Lord Capulet, Lady Capulet, Tybalt Capulet, Mercutio, Friar Laurence, The Nurse	Inflection	Change in pitch or loudness of the voice.
Choral speech/movement	When a group of actors move or speak at the same time.			Accent	A way of speaking in a local area or country.
Placards	A sign or written information for the audience	Romeo and Juliet plot summary	Romeo and Juliet is a tragic love story where two teenagers fall in love and commit suicide due to their families' ongoing feud.	Gait	A person's manner of walking.
		Themes	Love, conflict and family	Interaction with other performers	Use of eye contact, focus, proxemics and physical contact with other performers.
Direct address	Speaking directly to the audience.				

Romeo and Juliet plot summary

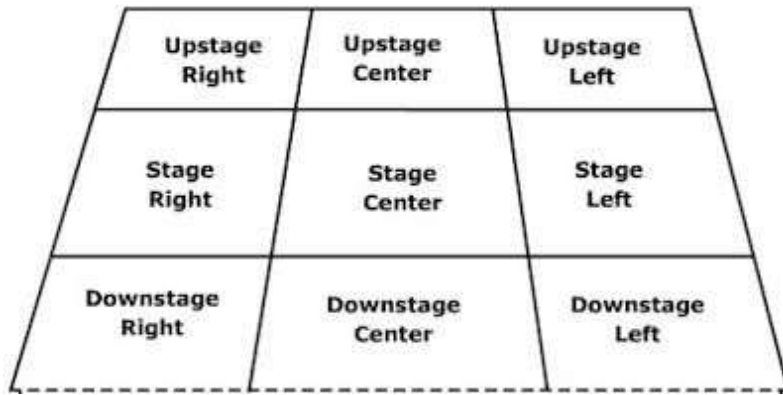


Audience

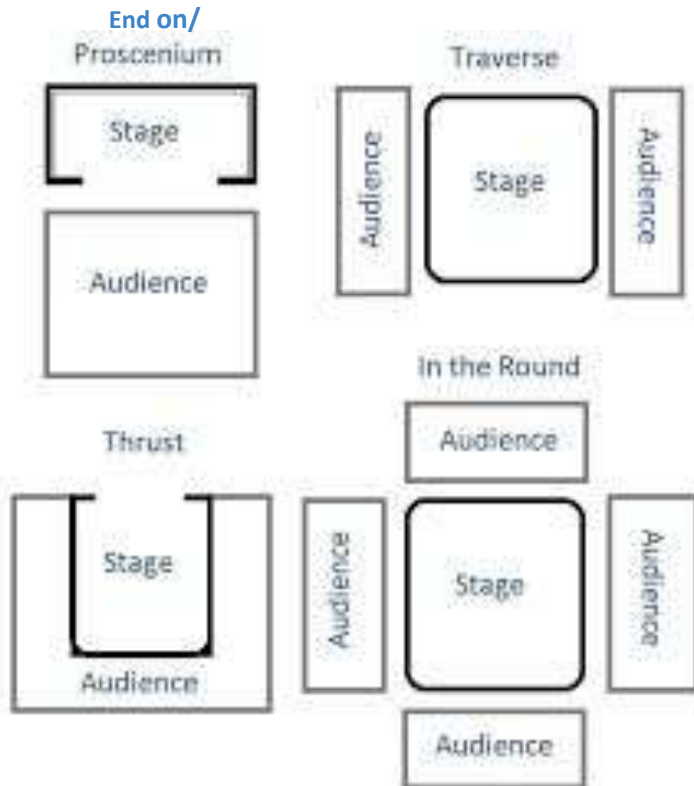


Drama: Brecht, Noughts and Crosses and Devising | Year 9 | April-July

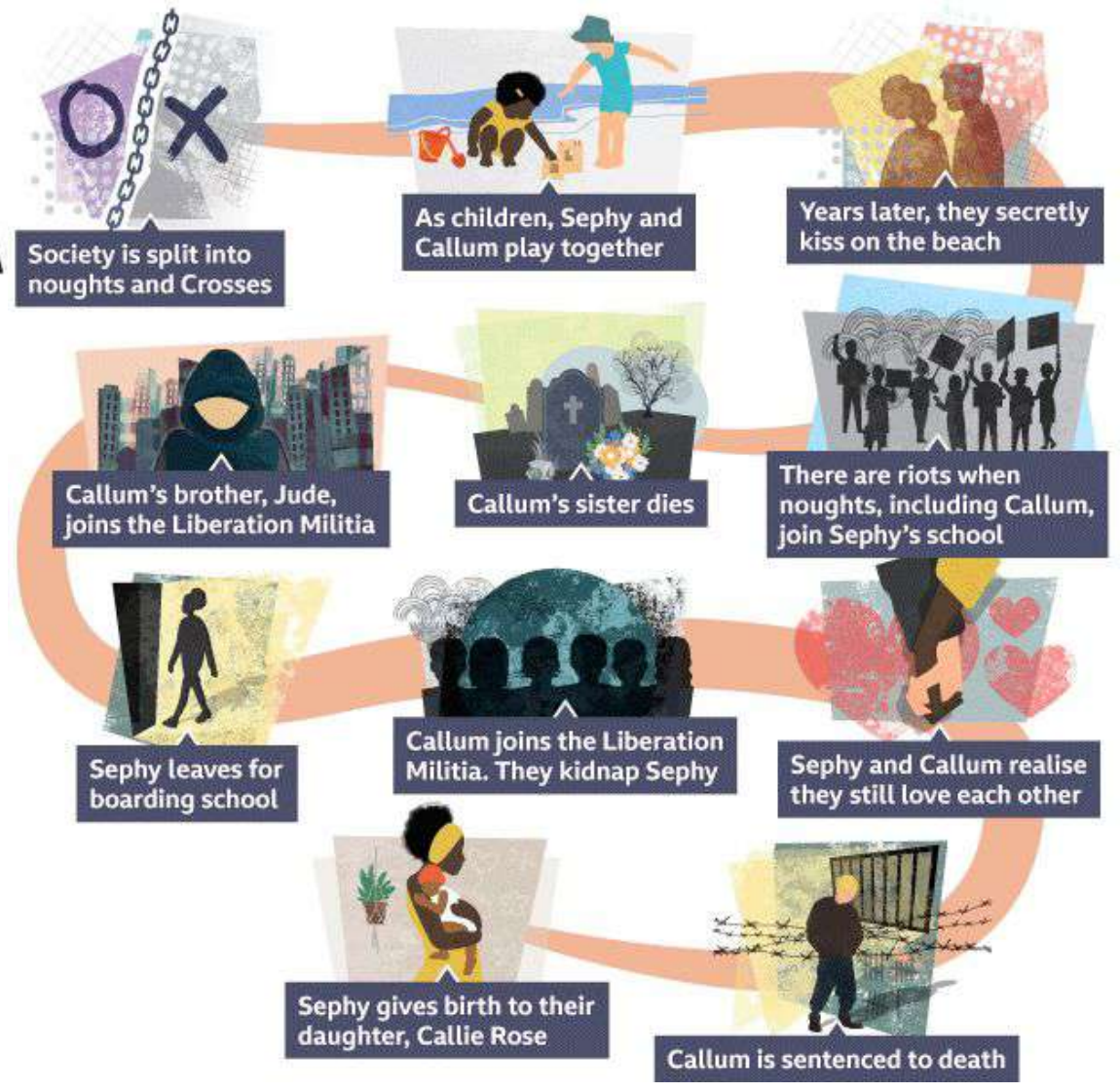
Devising			Roles and responsibilities			Physical and Vocal Skills		
1	Devising	To plan and create your own theatre	1	Collaboration	The skill of communicating to work creatively together	1	Pitch	How high or low your voice
			2	Ensemble	A group of people who share responsibility for creating and delivering a performance	2	Pace	How fast or slow you speak
2	Stimulus	A starting point	3	Playwright	The person who writes a play	3	Pause	A moment of silence
3	Initial ideas	The first ideas you have about a stimulus				4	Tone/Emphasis	The emotion of speech and which words are stressed
4	Narrative	A story	4	Director	The person who organises the actors	5	Volume/Projection	How loud you are/Sending your voice to the audience
			6	Producer	The person in charge of the money	6	Body language	Using your body to express feeling or character
5	Blocking	The first draft of staging	6	Designers	Lights, Sound, Costume, Set and Props	7	Facial expression	Using your face to express a feeling or thought
			7	Stage manager	Organises all off-stage activity	8	Posture	Having a balanced and solid physical position from which to perform
6	Monologue	Single actors speech about their inner thoughts and feelings	8	Technicians	Operates, lighting sound scenery	9	Gesture	Using hands and arms to communicate
			9	Actor	Performs on stage			
7	Choral speech/ movement	When a group of actors move or speak at the same time.	Noughts & Crosses			10	Level/Proximity	Using height and space to communicate
			1	Noughts and Crosses details	Written by Malorie Blackman in 2001	11	Eye contact	Interacting with another character or the audience. (Could include avoiding eye contact)
8	Placards	A sign or written information for the audience	2	Main Characters	Crosses: Persephone, Kamal, Jasmine, Minerva. Noughts: Callum, Ryan, Margaret, Jude and Lynette.	12	Inflection	Change in pitch or loudness of the voice.
9	Split-staging	The stage is split into two sections, so two different pieces of action can be seen alongside each other.	3	Noughts and Crosses Plot summary	The story is set in an imagined society where dark-skinned people, called Crosses, are the ruling class. White people are called noughts and were once enslaved.	13	Accent	A way of speaking in a local area or country.
			4	Themes	Racism & discrimination, love & relationships and growing up.	14	Gait	A person's manner of walking.
10	multi-roling	when an actor plays more than one character on stage	15	Interaction with other performers	Use of eye contact, focus, proxemics and physical contact with other performers.	15	Interaction with other performers	Use of eye contact, focus, proxemics and physical contact with other performers.



Audience



Noughts and Crosses plot summary



Othello: Knowledge Organizer

A. Plot	
Act 1, Scene 1	Roderigo is unhappy with Iago for failing to promote his marriage to Desdemona, who has secretly married Othello. Iago speaks of his hatred of Othello and seeks revenge on him. Iago and Roderigo tell Brabantio of Desdemona's elopement. Brabantio is furious and sets out to locate the couple.
Act 1, Scene 2	Iago, who feigns loyalty, warns Othello that Brabantio may have Othello arrested. Othello is confident that his reputation makes him a suitable match for Desdemona. Cassio informs Othello that he is required at a meeting of the Venetian council. Brabantio accuses Othello of bewitching Desdemona. Brabantio attends the council meeting too.
Act 1, Scene 3	Othello is told to prepare for war against the Turks after their invasion of Cyprus. He recounts his history of his relationship with Desdemona and she is brought to the council chamber to confirm his words. Desdemona asks permission to accompany Othello on his military campaign. Brabantio warns Othello against trusting Desdemona. Iago says he will help Roderigo cuckold Othello.
Act 2, Scene 1	All characters arrive in Cyprus. Othello is overjoyed to be reunited with Desdemona. Iago persuades Roderigo to provoke Cassio in the hope of discrediting him. Iago reiterates his desire to have revenge on Othello and Cassio as he suspects them both of cuckolding him.
Act 2, Scene 2	Peace is restored in Cyprus. There is to be a night that celebrates the destruction of the Turkish fleet and Othello's marriage.
Act 2, Scene 3	Desdemona and Othello leave to consummate their marriage. Iago persuades Cassio to get drunk. Roderigo antagonises Cassio and they fight. Othello dismisses Cassio from his post. Iago advises Cassio to seek help from Desdemona. Iago explains how he is going to poison Othello's mind by suggesting that Cassio has cuckolded him.
Act 3, Scene 1	Cassio hires musicians to serenade Othello and Desdemona. Iago plans to divert Othello's attention so that Cassio can speak with Desdemona alone and Emilia agrees to help.
Act 3, Scene 2	Othello sets out to inspect the fortifications in the town with Iago at his side.
Act 3, Scene 3	Desdemona agrees to help Cassio and pleads with Othello to reinstate him. Iago hints that Cassio has committed adultery with Desdemona. Othello doubts Desdemona and becomes jealous. Desdemona drops her handkerchief, which Emilia picks up and gives to Iago. Othello demands proof of the affair. Iago describes a dream where Cassio called out for Desdemona and says he has seen Cassio with the handkerchief. Othello asks Iago to kill Cassio and he promotes Iago. Othello intends to kill Desdemona.
Act 3, Scene 4	Desdemona is uneasy about losing the handkerchief. She tries again to get Othello to reinstate Cassio. Othello demands to see the handkerchief. Bianca is annoyed with Cassio as he has not visited her so he gives her Desdemona's handkerchief that he found in his room.
Act 4, Scene 1	Iago torments Othello with crude images of Desdemona's infidelity and he falls into a fit. Iago has a conversation with Cassio about Bianca but Othello watches and thinks it is about Desdemona. Othello sees the handkerchief in Bianca's hand and vows to murder his wife. Venetian visitors bring news that Cassio is to replace Othello. Othello strikes Desdemona.
Act 4, Scene 2	Othello questions Emilia about Desdemona and Cassio, but doesn't believe her when she says that Desdemona is true to him. Othello tries to get Desdemona to confess. Iago persuades Roderigo to kill Cassio.
Act 4, Scene 3	Othello sends Desdemona to prepare for bed. She sings a melancholy song whilst Emilia expresses her wishes that Desdemona had never met Othello. The women talk of infidelity.
Act 5, Scene 1	Cassio wounds Roderigo, then Iago stabs Cassio in the leg. Iago kills Roderigo. Iago accuses Bianca of involvement in a plot to kill Cassio. Emilia goes to inform Othello and Desdemona of what has happened.
Act 5, Scene 2	Desdemona sleeps and Othello explains he will kill her despite still loving her. Emilia is horrified at seeing Desdemona's body, but she revives briefly and says she caused her own death. Emilia reveals Iago's villainy so he stabs her and she dies next to Desdemona. Iago refuses to explain his actions. Othello kills himself.

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B. Structure	
Iago dominates the whole play. He has many more line than Othello. Act 1: Scene 1: Iago establish first; creates sense of importance and dual nature; Othello is absent in form and name. Iago begins and ends Act 1	
Denouement - the final part of a play, film, or narrative in which the strands of the plot are drawn together and matters are explained or resolved.	
Prose - Iago sometimes changes to prose which indicates he is telling the truth	
Most scenes are at night –allows for confusion, deception and the devil	
Rhyming couplets – used to indicate end of argument/topic. Symbol of speaker's power	

C. Stagecraft	
Stage Directions	Instructions for actors.
Aside	A character speaks & others don't hear.
Soliloquy	One character speaking to an audience.
Dramatic Irony	The audience knows what characters don't.
Hamartia	Fatal flaw
Hubris	Arrogance; too much pride.
Anagnoresis	Moment of realisation.
Peripeteia	Sudden reversal.
Catharsis	Emotional release to end a tragedy.

D. Vocabulary
Janus
cuckoldry
Machiavellian
psychopath
damnation
Moor
patriarchy
misogynistic
vice
Protestantism
malcontent
subversive
xenophobic
credulous
foil

E. Context
Shakespeare's drama and the Renaissance – Classical texts and culture of Greece and Rome were rediscovered resulting in the 'golden age' of English Literature to begin, in which Shakespeare's plays are part. This often promoted a curiosity in thought which challenged old assumptions and traditions.
Attitudes towards race – Othello as the first black 'hero' at a time where racial discrimination was prevalent. African Moors had visited London but would have been a rare and exotic spectacle. European racial views on moors put Othello into a undefined, mysterious world of otherness. Prejudices focus on their depraved, different and irrational natures. Elizabethans were against mixed marriage.
Religion – The nationalism of the English Renaissance was reinforced by Protestantism. Shakespeare's plays are free from direct religious sentiment, but their emphases are Protestant.
Female subordination – Women expected to be ruled by men. Many men saw women as possessions, and fathers expected to choose husbands for their daughters. They were believed to be intellectually inferior to men and incapable of rational thought and rarely received an education. Assertive and argumentative women were seen as a threat to the social order and were punished with forms of torture. Domestic abuse was common and rampant in cases of extreme cruelty, not considered unacceptable.
Setting – The military events of the play are based on historical facts. Turkey launched an attack on Cyprus, which was governed by Venice at the time. Venice was a popular Elizabethan setting for plays about intrigue, love, affairs and revenge. It had a reputation of wealth and sophistication, but was also perceived as a place of loose morals. Cyprus, a geographically isolated setting, is the 'warlike island' that is used to mirror the tragic events of the play.
Stage history of 'Othello' – The first recorded performance was at the Banqueting House at Whitehall in London on 1 st November 1604 and was attended by James I. A white actor with black make-up would have played Othello. Ira Aldridge was the first documented black actor to play Othello in 1833.
Tragedy – Aristotle (384 – 322 BCE) listed various aspects that he thought a play needed to be considered a true tragedy. Seneca (4 BC to 69 AD) popularised the idea of revenge in tragedy and introduced the inclusion of villains within them.

F. Characters	
Othello	Main protagonist, a Moor who is a successful mercenary general, believes Iago's false tales of his wife's adultery.
Desdemona	A wealthy young Venetian woman who secretly marries Othello.
Iago	The play's antagonist and Othello's ensign who seeks to destroy Othello.
Emilia	Iago's wife and Desdemona's lady in waiting in Cyprus.
Cassio	Florentine soldier, who is promoted to lieutenant. Othello believes that he has committed adultery with Desdemona. He is made governor of Cyprus at the end of the play.
Brabantio	A Venetian senator and Desdemona's father.
Roderigo	A wealthy Venetian gentleman who had hoped to marry Desdemona. Iago uses him to help in his mission to destroy Othello, but then kills him.
Bianca	A courtesan, who is in love with Cassio.
Montano	Governor of Cyprus before Othello takes over.
Lodovico	A noble Venetian and Desdemona's cousin.

G. Main Themes	
Jealousy	A driving force for conflict as experienced by multiple characters, including Othello, Iago, Bianca and Roderigo.
Appearance and Reality	Deceit is a key idea in the play, where Iago presents an 'honest' version of himself to gain advantage for his own ends, while concealing the sinister motives that underlie his performance . He also works as a 'director' of sorts in scenes of his own creation, creating false realities for others.
Race and prejudice	In spite of the honors conferred on him for service to the state, Othello finds the limits of preferment when he marries Brabantio's daughter. Iago's language conflates racial hatred and the idea of the sub-human ' other ', stereotypes which are exposed for the audience.
Gender	In common with the time, Desdemona is viewed as property by her father. Women are viewed as promiscuous by both Iago and Othello, their potential for sexual freedom is threatening. However, feminine tenderness in the play also carries a moral force.
Love	The strength of Desdemona's love is that she maintains it even in the face of Othello's violence. By contrast, he stops loving without having any real proof against her.

Symbols are objects, characters, figures, and colours used to represent abstract ideas or concepts.

H. Symbols and Motifs
The Handkerchief – At first a token of love, it becomes a symbol of faith and fidelity on the part of Desdemona.
The Song "Willow" - As she prepares for bed in Act V, Desdemona sings a song about a woman who is betrayed by her lover. The song's lyrics suggest that both men and women are unfaithful to one another.
Animal Imagery – Iago's bestiary is used as terms of abuse; shortly Othello adopts such language as his own.
Heaven and Hell – Heaven represents truth and certainty for Othello and this becomes clouded. Heavenly judgement becomes a dominant idea for Othello in Act 5. Elsewhere, devils serve as symbols of torment and sin .

Frankenstein: Knowledge Organizer

Year 9 Knowledge Organiser	Frankenstein
<p>Rising Action: Robert Walton is navigating his ship through the Arctic in search of new territory, when he finds a near-dead stranger floating perilously on the ice. This man is Victor Frankenstein who, restored to health aboard Walton's ship, narrates the story of his life. Frankenstein had hoped to become a revered scientist, attending university in Ingolstadt. Feeling the need to prove his worth through a daring experiment, Frankenstein stitched together a creature made from human body parts, before sparking it into life with electricity. Disgusted at this living thing, he rejected all responsibilities of fatherhood and abandoned his creature. When his brother William was killed, the creature revealed itself; now educated and worldly, it demanded Frankenstein create it a companion, or else it would make its creator's life a misery.</p> <p>Climax: Frankenstein reluctantly accepted, travelling to remote Scotland to begin his gruesome labour for a 2nd time. At the last minute, he decided he couldn't release a 2nd 'fiend' into the world, destroying his creation. The creature appeared once more, swearing revenge against his creator. True to its word, it left behind it a trail of death, murdering Frankenstein's friends and family in cold blood. Vowing to pursue it to whatever end, Frankenstein chased the creature across the continent and into the Arctic, bringing the narrative up to speed.</p> <p>Falling Action: Frankenstein, his life sustained only by his thirst for revenge, succumbs to his illness and dies. Seeing the despair of a life driven by blind ambition, Walton decides to turn his ship around and return to England. The creature is found in Frankenstein's cabin, weeping over his corpse. It takes no joy in its creator's demise, and tells Walton that it will bring its own sad life to an end.</p> <p>Key Characters: Frankenstein, the Creature, Elizabeth, Clerval, Justine, William, Alphonse, De Lacy family.</p>	<p>Literary Terminology:</p> <p>Frame narrative: a story within a story</p> <p>Verisimilitude: a novel structured so as to appear real (e.g. verisimilitude is created through the use of letters)</p> <p>Motif: a repeated idea/object that has a symbolic significance e.g. <i>light/dark, blood, ticking clock</i></p> <p>Foreshadowing: a warning/indication of a future even</p> <p>Unreliable narrator: a 1st person account that a reader is encouraged to question</p> <p>Cyclical narrative: a story that starts and ends in the same place</p> <p>Symbolism: the use of symbols to represent ideas/qualities</p> <p>Intertextual Reference: references to another work of fiction within a novel (sometimes called 'literary allusion')</p>
<p>Context</p> <p>Mary Shelley: Born in 1797. Mother, Mary Wollstonecraft, is a proto-feminist writer (proto = <i>early</i>) and dies days after childbirth. Father, William Godwin, is a radical political writer who called for 'universal benevolence' and wanted to see an overhaul of traditional government and social hierarchy. Mary meets Percy, a married Romantic poet, when she is 16. The two elope (run away) together, and he draws her into his literary circle of friends. Mary experiences a series of personal tragedies, with only one of five pregnancies bringing a child who would survive infancy. Whilst holidaying in Italy with another Romantic poet – Lord Byron – the friends decide to have a competition to see who can write the best ghost story: up against the foremost literary minds of her day, Mary more than holds her own and, at 18-years old, writes <i>Frankenstein</i>, publishing it anonymously in 1818.</p> <p>The Enlightenment: A philosophy that embraced scientific inquiry, challenging the status quo, and pushing the bounds of human understanding further. The ethos of the Enlightenment directly opposes Romanticism.</p> <p>Romanticism: A philosophy that embraced the power of nature over humanity, wild and rugged landscapes, and emotional sensitivity over ratiom and reason. The ethos of Romanticism directly opposes the Enlightenment. Mary Shelley and her husband embrace a Romantic philosophy, and urge caution from Enlightenment thinkers.</p> <p>Genre: Frankenstein is a cross-genre novel, incorporating ideas of both Gothic Horror and Science Fiction.</p> <p>Galvanism: Luigi Galvani was an Italian scientist who, in the 1790s, experimented on animals to see if he could re-animate dead tissue using electric current. His research intrigued the general public greatly.</p> <p>'The Modern Prometheus': Frankenstein's alternate title comes from 'Prometheus', a Greek myth about a Titan who stole fire from the Gods to give to mankind, and was to be eternally tortured by way of punishment.</p>	<p>Ambitious Vocabulary</p> <p>Doppelganger: from German, literally 'double-goer': the double of a living person, often condemned as <i>evil</i></p> <p>Wretch: an unhappy/unfortunate person OR a despicable person</p> <p>Benevolence: kindness</p> <p>Ennui: severe boredom</p> <p>Melancholy: a great sadness</p> <p>Indefatigable: persisting tirelessly</p> <p>Sublime: of great beauty</p> <p>Timorous: lacking in confidence</p> <p>Uncouth: lacking in manners/good grace</p>

A Raisin in the Sun: Knowledge Organizer

<u>Lorraine Hansberry & Context</u>	<u>Plot Summary</u>	<u>Key Themes & Motif</u>
<ul style="list-style-type: none"> ● She was born 1930 in Chicago, USA ● The play is inspired by her experiences as a child growing up on the South Side of Chicago ● In the early 1900s, many African American families moved from Southern to Northern States. This included Hansberry's family, who moved to Chicago. However, racial tensions increased and laws segregated black people to certain neighbourhoods. ● Hansberry's father moved the family to a predominantly white neighbourhood, where they experienced prejudice and a campaign of lobbying from their neighbours to move away from the area. He took a complaint about this to the Supreme Court and in 1943 won the case against segregation in his neighbourhood. This became known as "Hansberry vs. Lee", a landmark case. ● Hansberry wrote A Raisin in the Sun in 1959, and it won the New York Drama Critics' Circle Award: she was the first black woman to ever win the award. ● She was artistically inspired as a young writer by the Harlem Renaissance, a rebirth in African American music, art, fashion and literature during the 1930s. The name of her play is taken from the poem 'Harlem' by Langston Hughes, a Harlem Renaissance writer. 	<p><i>A Raisin in the Sun</i> portrays a few weeks in the life of the Youngers, a Black family living on the South Side of Chicago in the 1950s. When the play opens, the Youngers are about to receive an insurance check for \$10,000. This money comes from the deceased Mr. Younger's life insurance policy. Each of the adult members of the family has an idea as to what he or she would like to do with this money. The matriarch (female head) of the family, Mama, wants to buy a house to fulfil a dream she shared with her husband. Mama's son, Walter Lee, would rather use the money to invest in a liquor store with his friends. He believes that the investment will solve the family's financial problems forever. Walter's wife, Ruth, agrees with Mama, however, and hopes that she and Walter can provide more space and opportunity for their son, Travis. Finally, Beneatha, Walter's sister and Mama's daughter, wants to use the money for her medical school tuition. She also wishes that her family members were not so interested in assimilating into the white world. Beneatha instead tries to find her identity by looking back to the past and to Africa.</p> <p>As the play progresses, the Youngers clash over their competing dreams. Ruth discovers that she is pregnant but fears that if she has the child, she will put more financial pressure on her family members. When Walter says nothing to Ruth's admission that she is considering abortion, Mama puts a down payment on a house for the whole family. She believes that a bigger, brighter dwelling will help them all. This house is in Clybourne Park, an entirely white neighbourhood. When the Youngers' future neighbours find out that the Youngers are moving in, they send Mr. Lindner, from the Clybourne Park Improvement Association, to offer the Youngers money in return for staying away. The Youngers refuse the deal, even after Walter loses the rest of the money (\$6,500) to his friend Willy Harris, who persuades Walter to invest in the liquor store and then runs off with his cash.</p> <p>In the meantime, Beneatha rejects her suitor, George Murchison, whom she believes to be shallow and blind to the problems of race. Subsequently, she receives a marriage proposal from her Nigerian boyfriend, Joseph Asagai, who wants Beneatha to get a medical degree and move to Africa with him (Beneatha does not make her choice before the end of the play). The Youngers eventually move out of the apartment, fulfilling the family's long-held dream. Their future seems uncertain and slightly dangerous, but they are optimistic and determined to live a better life. They believe that they can succeed if they stick together as a family and resolve to defer (put off) their dreams no longer.</p>	<p>Key Themes & Motif</p> <p>The American Dream (a notion of equal opportunity: everyone can achieve success. The play questions the reality of such a dream).</p> <p>Discrimination</p> <p>Family</p> <p>Money</p> <p>The Younger Home</p> <p>Mama's plant</p> <hr/> <p>Theatrical Terminology</p> <p>Protagonist: main character (Walter)</p> <p>Antagonist: a threat to protagonist (Mr. Lindner)</p> <p>Motif: recurring symbol</p> <p>Tragic Hero: a noble character who falls from grace</p> <p>Hubris: extreme overconfidence</p> <p>Hamartia: tragic hero's fatal flaw</p> <p>Realism: a literary movement where stories explore challenges grounded in reality, not fantasy</p> <p>Exposition: introduction to characters and setting</p> <p>Rising Action: a challenge</p> <p>Climax: highest tension/drama</p> <p>Denouement: resolution</p> <p>Catharsis: emotional release from audience; a sense of justice at the end of a story</p> <p>In media res: a story that begins in the middle of the action.</p> <p>Subvert: to go against</p>

SENTENCE BUILDER 1

<p>Je pense qu' <i>I think that</i> À mon avis <i>In my opinion</i> Je crois qu' <i>I think (believe)</i> <i>that</i> Je dirais qu' <i>I would say that</i> Selon moi <i>In my opinion</i> <i>(according to me)</i></p>	<p>il faut <i>we must</i> on doit <i>we must</i> on devrait <i>we should</i> il est important de <i>it is important to</i> il est nécessaire de <i>it is necessary to</i></p>	<p>respecter <i>respect</i> traiter avec respect <i>treat with respect</i></p>	<p>l'identité de chacun <i>the identity of everyone</i> la diversité <i>diversity</i> les femmes <i>women</i> les hommes <i>men</i> les filles <i>girls</i> les garçons <i>boys</i> les êtres humains <i>human beings</i> les religions <i>religions</i> l'égalité des sexes <i>gender equality</i> les victimes <i>victims</i> les droits des (animaux) <i>the rights of (animals)</i> les personnes handicapées <i>disabled people</i></p>	
		<p>pouvoir se marier avec <i>be able to marry (with)</i> pouvoir être en couple avec <i>be able to be in a couple/relationship with</i></p>	<p>n'importe qui malgré... <i>whoever, in spite of...</i> ...leur couleur de peau <i>their skin colour</i> ...leur nationalité <i>their nationality</i> ...leur orientation sexuelle <i>their sexual orientation</i> ...leurs origines <i>their origins</i></p>	
		<p>lutter contre <i>fight against</i> combattre <i>fight/combat</i></p>	<p>le racisme <i>racism</i> le sexisme <i>sexism</i> la discrimination <i>discrimination</i> l'inégalité <i>inequality</i> la pauvreté <i>poverty</i> le chômage <i>unemployment</i></p>	
<p>On peut être <i>We can be</i></p>	<p>pauvre <i>poor</i> divers <i>diverse</i> égal <i>equal</i> religieux <i>religious</i> handicapé <i>disabled</i> gay <i>gay</i> bisexuel <i>bisexual</i> hétéro(sexuel) <i>straight</i> lesbien <i>lesbian</i></p>	<p>et avoir les mêmes <i>and have the same</i></p>	<p>valeurs <i>values</i> droits <i>rights</i></p>	
		<p>et être <i>and be</i></p>	<p>égaux <i>equal</i> divers <i>diverse</i></p>	



SENTENCE BUILDER 2

<p>Mon modèle célèbre c'est <i>My famous role model is</i></p> <p>Ma célébrité préférée c'est <i>My favourite celebrity is</i></p> <p>La personne que j'admire c'est <i>The person that I admire is</i></p> <p>Je suis fan d' <i>I am a fan of</i></p>	<p>un/une athlète <i>an athlete</i></p> <p>un sportif <i>a sportsman</i></p> <p>une sportive <i>a sportswoman</i></p> <p>un influenceur <i>an influencer (m.)</i></p> <p>une influenceuse <i>an influencer (f.)</i></p> <p>un footballeur <i>a footballer (m.)</i></p> <p>une footballeuse <i>a footballer (f.)</i></p> <p>un blogueur <i>a blogger (m.)</i></p> <p>une blogueuse <i>a blogger (f.)</i></p> <p>un personnage à la télé <i>a character on TV</i></p>	<p>qui s'appelle... <i>who is called</i></p> <p>parce qu' <i>because</i></p> <p>car <i>because</i></p> <p>puisque <i>because/since</i></p>	<p>il/elle <i>he/she</i></p> <p>m'inspire <i>inspires me</i></p> <p>a représenté son pays <i>(has) represented his/her country</i></p> <p>a lutté pour les droits des femmes <i>(has) fought for women's rights</i></p> <p>a combattu pour la paix/la justice <i>(has) fought for peace/justice</i></p> <p>a lutté contre la discrimination/le harcèlement <i>(has) fought against discrimination/bullying</i></p> <p>a encouragé l'égalité <i>(has) encouraged equality</i></p> <p>a participé à beaucoup de manifestations <i>(has) participated in lots of protests</i></p> <p>est devenu(e) (acteur) <i>became (an actor)</i></p> <p>est né(e) en (deux milles six) <i>was born in (2006)</i></p>
<p>je peux m'identifier avec lui/elle <i>I can identify with him/her</i></p> <p>parce qu' <i>because</i></p> <p>car <i>because</i></p> <p>puisque <i>because/since</i></p>	<p>il est <i>he is</i></p> <p>elle est <i>she is</i></p>	<p>amusant(e) <i>funny</i></p> <p>patient(e) <i>patient</i></p> <p>content(e) <i>happy</i></p> <p>fort(e) <i>strong</i></p> <p>fidèle <i>loyal</i></p> <p>pratique <i>practical</i></p> <p>agréable <i>nice</i></p> <p>responsable <i>responsible</i></p> <p>unique <i>unique</i></p> <p>heureux/euse <i>happy</i></p> <p>sérieux/euse <i>serious</i></p> <p>travailleur/euse <i>hardworking</i></p> <p>sportif/ive <i>sporty</i></p> <p>gentil/gentille <i>kind</i></p> <p>sympa <i>kind</i></p> <p>sûr(e) de lui/d'elle <i>self-confident (sure of himself/herself)</i></p>	<p>en fauteuil roulant <i>in a wheelchair</i></p> <p>adopté(e) <i>adopted</i></p> <p>fils unique <i>an only child (m)</i></p> <p>filles unique <i>an only child (f)</i></p> <p>religieux/euse <i>religious</i></p> <p>handicapé(e) <i>disabled</i></p> <p>gay <i>gay</i></p> <p>bisexuel/bisexuelle <i>bisexual</i></p> <p>hétéro(sexuel/elle) <i>straight</i></p> <p>lesbienne <i>lesbian</i></p> <p>une femme <i>a woman</i></p> <p>un homme <i>a man</i></p>



SENTENCE BUILDER 3

<p>Pendant la semaine <i>During the week</i></p> <p>Le week-end <i>At the weekend</i></p> <p>D'habitude <i>Usually</i></p> <p>Normalement <i>Normally</i></p> <p>Tous les jours <i>Every day</i></p> <p>Chaque jour <i>Each day</i></p>	<p>je me lève <i>I get up</i></p> <p>je m'habille <i>I get dressed</i></p> <p>je me change <i>I get changed</i></p> <p>je me repose <i>I relax</i></p> <p>je dors <i>I sleep</i></p> <p>je prends le petit-déjeuner <i>I have breakfast</i></p> <p>je fais mes devoirs <i>I do my homework</i></p> <p>je joue sur l'ordinateur <i>I play on the computer</i></p> <p>je sors de chez moi <i>I leave my house</i></p>	<p>à... <i>at</i></p> <p>vers... <i>around</i></p> <p>une heure <i>one o'clock</i> deux heures <i>two o'clock</i> trois heures <i>three o'clock</i> quatre heures <i>four o'clock</i> ...</p> <p>huit heures cinq <i>8.05</i> huit heures dix <i>8.10</i> huit heures et quart <i>8.15</i> huit heures vingt <i>8.20</i> huit heures vingt-cinq <i>8.25</i> huit heures et demie <i>8.30</i> neuf heures moins vingt-cinq <i>8.35</i> neuf heures moins vingt <i>8.40</i> neuf heures moins le quart <i>8.45</i> neuf heures moins dix <i>8.50</i> neuf heures moins cinq <i>8.55</i></p> <p>à midi <i>at midday</i> à minuit <i>at midnight</i></p>	<p>du matin <i>in the morning</i></p> <p>de l'après-midi <i>in the afternoon</i></p> <p>du soir <i>in the evening</i></p> <p>ensuite... <i>then...</i></p> <p>après ça... <i>after that...</i></p> <p> finalement... <i>finally...</i></p>
<p>mais... <i>but...</i></p> <p>cependant... <i>however...</i></p> <p>hier <i>yesterday</i></p> <p>le week-end dernier <i>last weekend</i></p> <p>la semaine dernière <i>last week</i></p>	<p>je me suis levé(e) <i>I got up</i></p> <p>je me suis habillé(e) <i>I got dressed</i></p> <p>je me suis changé(e) <i>I got changed</i></p> <p>je me suis reposé(e) <i>I relaxed</i></p> <p>j'ai dormi <i>I slept</i></p> <p>j'ai pris le petit-déjeuner <i>I had breakfast</i></p> <p>j'ai fait mes devoirs <i>I did my homework</i></p> <p>j'ai joué sur l'ordinateur <i>I played on the computer</i></p> <p>je suis sorti(e) de chez moi <i>I left my house</i></p>		

SENTENCE BUILDER 4

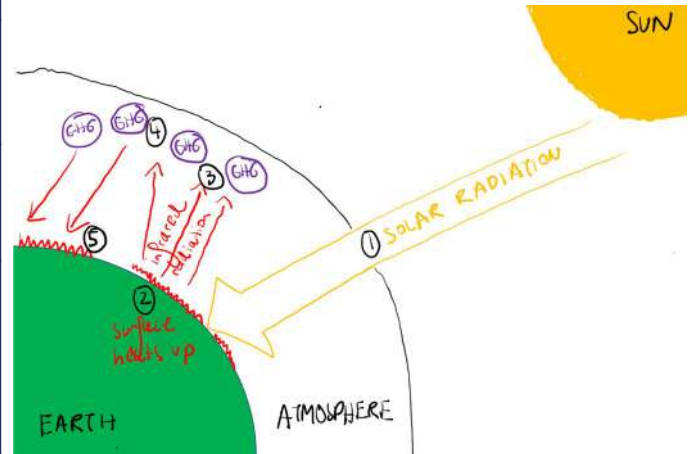
<p>Je ne me sens pas bien <i>I don't feel well</i></p> <p>Je suis malade <i>I am sick</i></p> <p>J'ai chaud <i>I am hot</i></p> <p>J'ai froid <i>I am cold</i></p> <p>J'ai faim <i>I am hungry</i></p> <p>J'ai soif <i>I am thirsty</i></p>	<p>je me suis cassé(e) <i>I have broken</i></p> <p>je me suis coupé(e) <i>I have cut</i></p> <p>j'ai mal au (t�) / � la (t�) / aux (t�s) / � l' (t�) <i>I have pain in (my... hurts)</i></p>	<p>le visage <i>my face</i> le genou <i>my knee</i> le nez <i>my nose</i> le dos <i>my back</i> le bras <i>my arm</i> le coeur <i>my heart</i> le corps <i>my body</i> le pied <i>my foot</i> le doigt <i>my finger</i> le doigt de pied <i>my toe</i> l'estomac <i>my stomach</i></p> <p>la gorge <i>my throat</i> la bouche <i>my mouth</i> la jambe <i>my leg</i> la t�te <i>my head</i> la main <i>my hand</i> l'�paule <i>my shoulder</i></p> <p>les yeux <i>my eyes</i> les oreilles <i>my ears</i> les dents <i>my teeth</i></p>	<p>depuis <i>since</i></p> <p>un jour <i>one day ago</i> un mois <i>one month ago</i> une heure <i>one hour ago</i> une semaine <i>one week ago</i> plus d'une semaine <i>more than one week ago</i> hier <i>yesterday</i> avant-hier <i>the day before yesterday</i> ce matin <i>this morning</i> cet apr�s-midi <i>this afternoon</i> mardi dernier <i>last Tuesday</i></p>
<p>Pour rester en bonne sant� <i>In order to be in good health</i></p> <p>Pour r�duire le stress <i>In order to reduce stress</i></p> <p>Pour mener une vie plus saine <i>In order to lead a healthier life</i></p> <p>Pour �tre en forme (physique) <i>In order to be in good (physical) shape</i></p>	<p>j'essaie de /d' <i>I try</i></p> <p>je tente de/d' <i>I attempt</i></p>	<p>participer � des activit�s sportives <i>to participate to sport activities</i></p> <p>gagner une competition sportive <i>to win a sport competition</i></p> <p>pratiquer des sports extr�mes <i>to practice extreme sports</i></p> <p>m'amuser un peu tous les jours <i>to have a fun a little every day</i></p> <p>manger des fruits et l�gumes <i>to eat fruits and vegetables</i></p> <p>marcher huit kilom�tres par jour <i>to walk 8 kilometers a day</i></p> <p>�tre actif/active <i>to be active</i></p> <p>�viter les sucreries <i>to avoid sugary food</i></p>	

Environmental issues

Weather	Short term state of the atmosphere in a particular location.
Climate	Long term state of the atmosphere (usually 30 years or more)
Climate change	Long-term shift in the state of the atmosphere.
Greenhouse gasses	Gasses which absorb and re-emit infrared radiation.
Mitigation strategies	Actions that prevent or reduce the causes of climate change.
Adaptation strategies	Actions that help people cope with the effects of climate change.

Natural Factor	Time-Frame	Diagram
Orbital Change	100,000 years	
Sunspots	11 years	
Volcanic Eruptions	Unpredictable	

The Greenhouse Effect



Responses To Climate Change

Mitigation	Adaptation
Electric vehicles, such as Tesla.	Flood resilient housing, such as elevated houses in Northern Bangladesh.
Carbon Capture and Storage, such as Boundary Dam Power Station.	Farmer field schools, such as saltwater growing techniques in Southern Bangladesh.
International agreements, such as Glasgow 2021 declaration to ban and reverse deforestation.	Rainwater storage, such as Hafirs in Sudan for irrigation.

Environmental issues

Climate change	Changes in the long-term temperature and precipitation patterns that can either be natural or linked to human activities.
Quaternary geological period	The most recent geological period covering the last 2.6million years, during which time there were several cold and warm periods.
Glacial period	Historic cold periods associated with the build up of snow and the growth of ice sheets and glaciers.
inter-glacial period	Historic warm periods in between glacial periods when conditions were like they are today.
Global warming	A trend associated with climate change involving a warming trend in temperature
Volcanic winter	Cooling trend caused by volcanic particles in the atmosphere blocking out some of the Sun's radiation.
Greenhouse effect	Natural warming of the atmosphere as heat given off from the Earth is absorbed by liquids and gases, such as carbon dioxide.
Climate zones	Divisions of the Earth's climates into belts, or zones, according to average temperatures and average rainfall. The three major zones are polar, temperate and tropical.
Tropical storm	Hurricane, cyclone, typhoon: an area of lowland pressure with winds moving in a spiral around the calm central point called the 'eye' of the storm. Winds are powerful and rainfall is heavy.
Intertropical convergence zone	A low-pressure belt that encircle the globe around the Equator; it is where the trade winds from the northeast and southeast meet; the Earth is tilted on its orbit around the Sun, causing the ITCZ to migrate between the Tropic of Cancer and Capricorn with the seasons.

Evidence for Climate Change	
Ice Cores	Buried layers of snow are compressed and gradually turned into ice. The water molecules in the ice can be tested and the scientists can work out the global temperature at the time the snow fell. This gives us a temperature record of over 400,000 years.
Tree Rings	Every year the growth of a tree is shown by a single ring. The narrower the ring the cooler and drier the year. If it is thicker the temperature was warmer and it was wetter.
Temperature Data	There is a warming trend for most of the world. Temperatures near the North Pole have risen the most.
Paintings and Diaries	Historical records, such as paintings and diaries, can provide additional evidence of climate change. Several painters at the time of the Little Ice Age captured the winter landscapes of ice fairs and markets on the River Thames.
An example of it in action	Tuvalu is a collection of 9 tiny islands that could all flood due to climate change. Water supply is an issue as droughts occur. The people of Tuvalu are responding by moving to New Zealand as environmental refugees and trying to restore damaged coral.

Environmental issues

Earth's Temperature through the ages



650 million years ago, the earth was a ball of ice called **snowball earth**. The only living things were cells



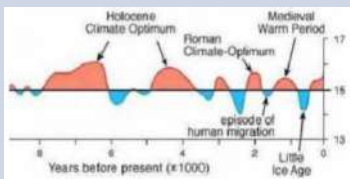
There have been many ice ages since that time, the most recent 110,000 years ago. It covered 30% of the Earth.



Today 10% of the Earth is covered in ice



When the ice age started people had to migrate to warmer areas. 11,000 people began to return to Britain



Since the last ice age the global temperature has kept changing.



Today the temperature is rising and this will influence everything on Earth.

Why does climate change?



- Greenhouse gases – act as a blanket around the earth and keep heat in
- Changes in the Earth's tilt – this affects how much of the sun's energy we receive
- Changes in the amount of energy the sun gives such as **sun spots**

The main greenhouse gases

Carbon Dioxide: CO₂

Methane: CH₄

People, fossil fuels produce CO₂. Trees and plants breathe it in.

Animals who eat grass, swamps and landfills all produce CH₄.



Who will suffer due to temperature rise?



Poorer countries do not produce as many carbon gases but will suffer the most with climate change.

Richer countries produce the most carbon gases due to the things we buy, the way we travel and how we heat our homes.

We can measure this using carbon footprints, this shows the carbon emissions per person in a country

How will climate change affect people?

Some places will be hotter others will be wetter

Sea levels will rise due to thermal expansion

There will be more extreme weather events such as droughts and hurricanes.

Some places will be able to grow things they couldn't grow before such as grapes in England.

Some places will flood

There could be famines.

Some animals will die out as their habitats will be lost.

We will see glaciers and ice sheets melting

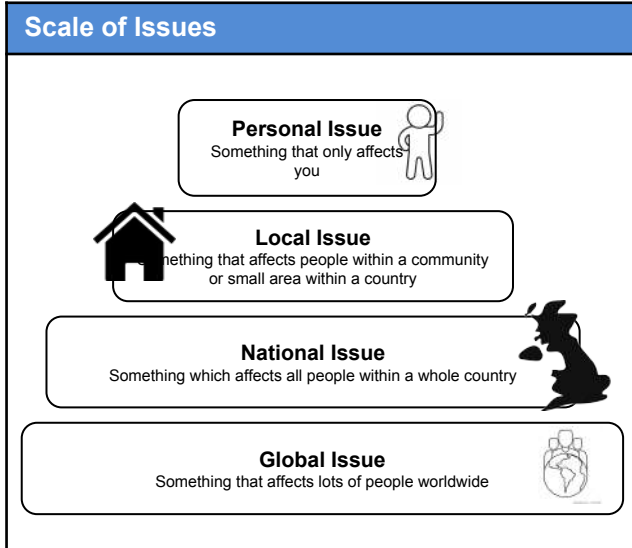
Some diseases will spread carried by animals moving to new locations.

Millions of people will become refugees as their homes are lost due to sea level rise.

Carbon Emissions per country, the darker the red the high the emissions. The darker the green the lower the emissions.



Environmental Issues



Global Issues

Climate change: From shifting weather patterns that threaten food production, to rising sea levels that increase the risk of catastrophic flooding.

Gender Equality: Women and girls represent half of the world's population and, therefore, also half of its potential.

Poverty: Its manifestations include hunger and malnutrition, limited access to education and other basic services, social discrimination and exclusion.

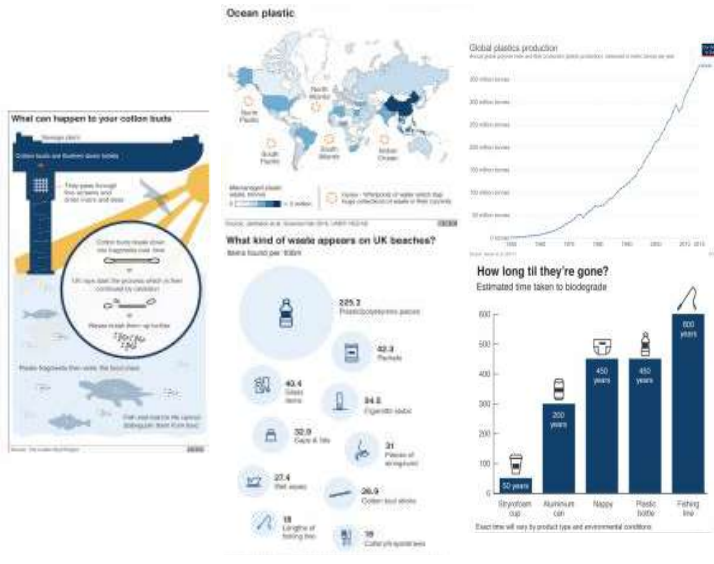
Migration: Some people move in search of labour or economic opportunities, to join family, or study. Others move to escape conflict, persecution or terrorism.

The Oceans: Growing concern over the toll taken on coastal fish stocks by long distance fishing fleets and over the threat of pollution.

Access to Water: Water is at the core of sustainable development and is critical for socio-economic development, energy and food production.

Environmental Issues

The problem with Plastics



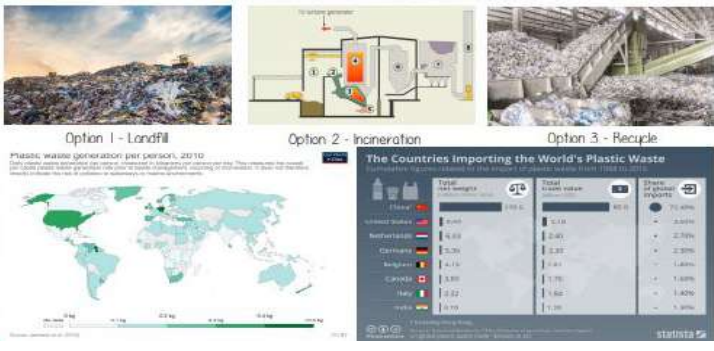
Sustainable Development Goals

"Sustainable development is development that meets the needs of the present, without compromising the ability of future generations to meet their own needs"

Source: Brundtland Report, 1987



The problem with Plastic Disposal

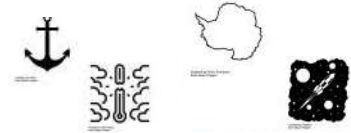


Who is Responsible

Global Commons

The global commons are defined under international law as "resource domains or areas that lie outside of the political reach of any one nation State" (United Nations Law Division). This means that an area defined as a global common is available for use by any country and cannot be claimed for exclusive use by any one country or privatised for the exclusive use of a company. The four global commons identified by international law are

- The High Seas
- The Atmosphere
- Antarctica
- Outer Space



Environmental Issues

The True Impact of Plastics

Nearly 400 million tons of plastics were produced worldwide last year. Since they practically last forever, they added to a stock of tens of billion of tons, only a scant percentage of which having been recycled. Nearly a third of packaging is estimated to be lost every year onto land, into rivers and oceans. According to some estimates, by 2050 the mass of plastics in oceans will exceed the mass of fish. The food chain, from minnows to humans, is already contaminated. And it's not all just about terrestrial and aquatic ecosystems: last April microplastic fibres, raised into the air by water evaporation, rained down over the Pyrenees



Managing Plastic pollution

There are a number of things that governments can do — from running public awareness campaigns, to offering incentives for recycling, to **introducing levies or even banning certain products outright**. In the last decade, dozens of national and local governments around the world have adopted policies to reduce the use of disposable plastic. And the number continues to grow.

UK POLICIES



5p carrier bag tax



Banning cotton buds



Engaging young people



Banning microbeads



Banning plastic straws



Making industries take responsibility



Plastic-free aisles in supermarkets



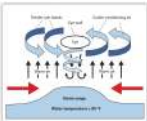
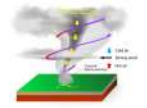

Cutting down on plastic bottles



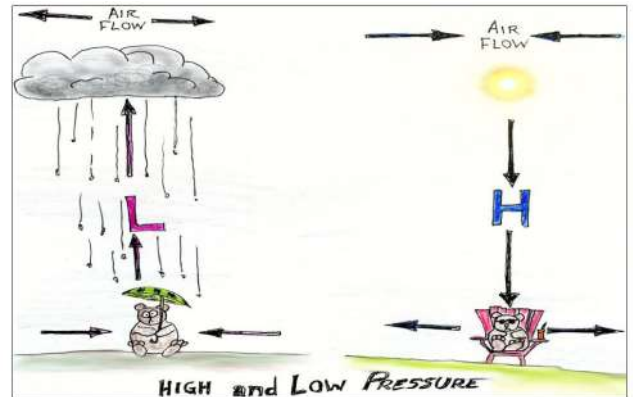
Removing disposable coffee cups

Natural Hazards

Weather	Short term state of the atmosphere in a particular location.
Climate	Long term state of the atmosphere (usually 30 years or more)
Tropical Cyclone	A tropical cyclone is a low-pressure weather system. It has strong winds and heavy rainfall that can be disruptive and dangerous
Tornado	A tornado is a violently rotating column of air that is in contact with both the surface of the Earth and a cumulonimbus cloud
Heatwave	A heatwave is an extended period of hot weather relative to the expected conditions of the area at that time of year, which may be accompanied by high humidity.
Thunderstorm	A storm characterized by the presence of lightning and its acoustic effect on the Earth's atmosphere, known as thunder.

Hazard	Examples	Diagram
Cyclone	Katrina 2005 Irma 2017 Beryl 2024	
Tornado	The Joplin Tornado 2011 Tornado Alley - USA	
Thunderstorm	Single Cell Multi Cell Supercell	

Air Pressure



Low pressure= air is **rising**

High pressure= air is **sinking**

Impacts of Natural Hazards

Human	Physical
High number of deaths/injuries	Habitats destroyed, farmland damaged and ecosystems disrupted
Cost of repairing the damage and infrastructure damaged	Clean drinking water supplies contaminated
A countries development can be hindered or even go backwards especially if a LIC	Flooding or droughts linked to high rainfall or lack of water

Natural Hazards

Cyclones – Also call hurricanes and typhoons are areas of low pressure that have a minimum wind speed of 74-95 mph. Cyclone often bring with the storm surges, mudslides and intense precipitation. They form in the sea, and when they move inland can cause mass devastation.

-The name of this type of storm changes depending upon where they happen.

- In the North Atlantic and Caribbean, they are known as hurricanes, those in the Northwestern Pacific are known as typhoons. Elsewhere, they are often simply known as tropical cyclones.

-Tornadoes are violently rotating columns of air that extend from the bottom of a cloud to the ground. They are often seen as a funnel shape. They tend to last for a much shorter time period than cyclones.

-Severe cyclones and tornadoes can be extremely dangerous, causing mass destruction and death.



Hurricane Katrina (2005) was a large Category 5 hurricane that caused mass damage in the southern United States.

Category	Wind Speed (mph)	Storm Surge (feet)	Damage
1	74-95	4-5	Minimal
2	96-110	6-8	Moderate
3	111-130	9-12	Extensive
4	131-155	13-18	Extreme
5	155+	18+	Catastrophic

The Saffir-Simpson **Hurricane** Wind Scale is a 1 to 5 rating based on a **hurricane's** sustained wind speed. This scale estimates potential property damage. **Hurricanes** reaching Category 3 and higher are considered major **hurricanes** because of their potential for significant loss of life and damage.

Natural Hazards

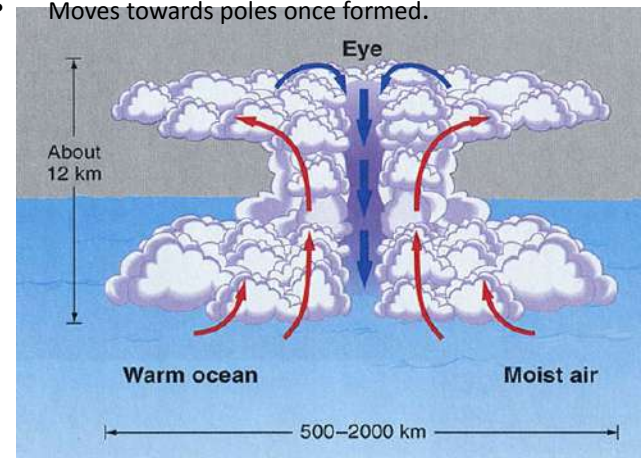
Key Term	Definition
Wind speed	The strength of the wind often measured in miles per hour.
Land slide	The mass movement of land often brought about by heavy rain.
Precipitation	Any moisture that fall from the sky. For example: snow, rain, hail.
Response	Humans attempts to limit erosion and so keep the coastline in the same place.
Government	The people in charge of running of a country.
Corruption	When people in power abuse this power for personal, often economic, gain .
Aid	Money often give by foreign governments or international organisation after a natural disaster
Evaporation	When a liquid turns from a liquid to a gas.

Condition for Hurricane to form:

- Sea surface temperature 26.5°C
- High level of evaporation.
- Low high altitude wind speeds.
- Area of low pressure.
- Forms in the tropics.

Key facts:

- More common due to climate change.
- Dissipates (break up/weakens) when moving over land.
- Moves towards poles once formed.



Categories of Cyclones

Category 1: Wind Speed 74-95 mph Minimal damage – may cause local flooding or trees to fall.

Category 2: Wind Speed 96-110 mph Moderate - No major destruction to buildings. More flooding, trees uprooted.

Category 3: Wind Speed 111-129 mph. Extensive: Structural damage to small buildings. Flooding of coastal areas. Evacuation may be needed.

Category 4: Wind Speed 130-156. Extreme: All signs and trees broken down. Extensive damage to roofs. Flat land inland may become flooded. Evacuation probable.

Category 5: Wind Speed greater than 156 mph. Catastrophic: Buildings destroyed, with small buildings being overturned. Evacuation up to 10 miles inland.

Natural Hazards

Answers to Important Questions

What is the difference between cyclones, hurricanes and typhoons?

-All three of these phenomena are types of tropical cyclones, and they are essentially the same thing. However, they are given different names depending upon where they appear (see the map on the right).

How are cyclones formed?

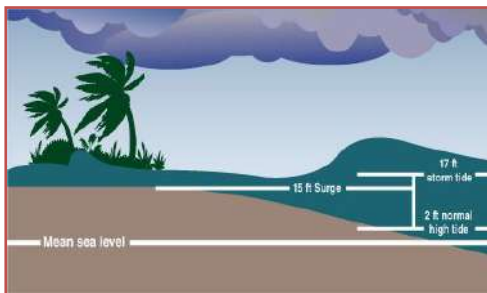
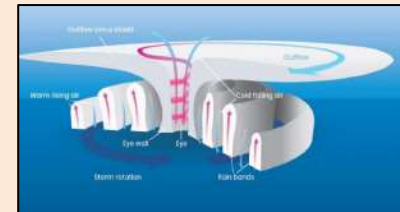
-Cyclones form over warm oceans. As the warm ocean air rises it begins to cool and clouds form. This is an area of high pressure. As the air rises, there is less air close to the ocean surface (an area of low pressure). More air moves to fill the gap, causing a spinning cycle of air movement. As more warm air rises, the spinning cycle grows and grows, becoming a tropical cyclone.

How are tornadoes formed?

-Tornadoes normally develop in thunderstorms. Cold, dry and warm, humid winds travelling in opposite directions collide, creating a circling funnel.

Why are tropical storms and cyclones given names?

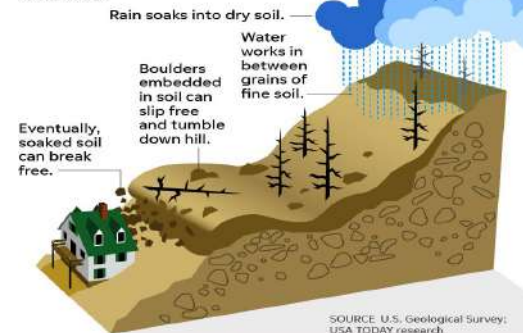
- They last a long time, and so they are given names so that they can be identified quickly. The first storm of the year is normally given a name beginning with 'A', the second will begin with 'B' and so on.



A storm surge, is a coastal flood or tsunami-like phenomenon of rising water commonly associated with low pressure weather systems. Frequently, the higher the category the larger the storm surge and the bigger its impacts.

Anatomy of a mudslide

How heavy rain can cause mud- and rockslides:

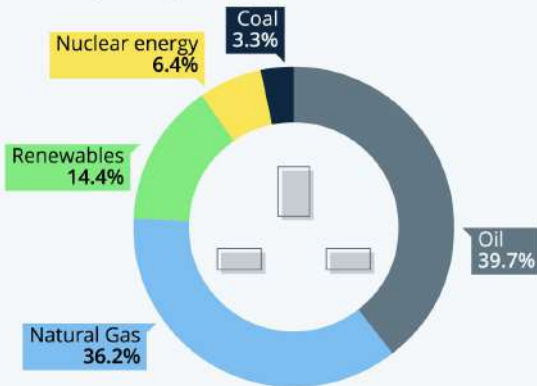


Resources

Resources	<p>Definition 1 - A naturally occurring substance which can be used.</p> <p>Definition 2 - A resource is a stock or supply of something that has value or a purpose. The three most important resources are food, water, and energy.</p>
Energy Conservation	Taking steps to reduce the amount of energy used.
Fossil Fuels	Mineral from the earth with unstable atoms which are finite (can run out)
Nuclear Power	Nuclear power is created from the release of energy from nuclear reactions. These reactions usually use uranium or plutonium. A relatively small amount of fuel is required to produce the energy.
Water Insecurity	When water availability is insufficient to ensure the good health and livelihood of a population, due to short supply or poor quality.
Resource inequality	describes the way that resources are not shared equally; some people have more, and some people have less. This means that some areas of the world have a resource surplus (more than necessary) or a resource deficit (not enough).

The UK's Energy Mix

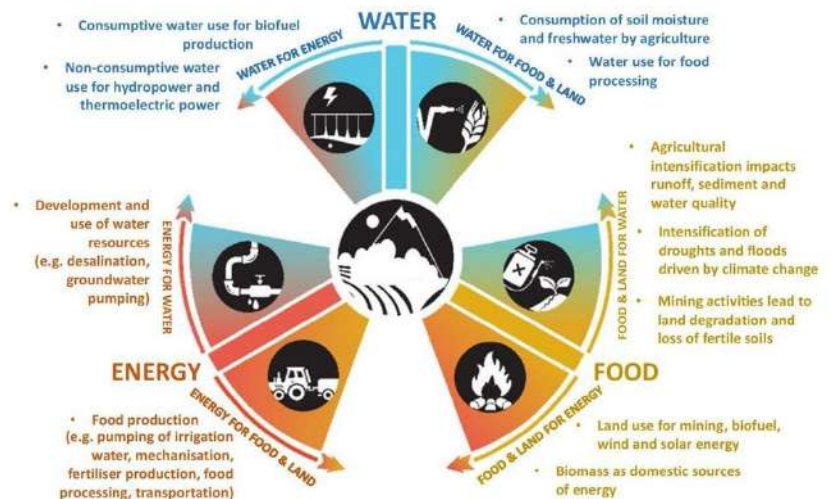
Primary energy consumption of the UK in 2019, by fuel type



Primary energy comprises commercially traded fuels, including modern renewables used to generate electricity.

Source: BP

Resources



Name of Fuel	Definitions
Oil	Liquefied remains of plants and animals
Coal	The solid remains of plants and animals
Gas	The gaseous remains of plants and animals
Nuclear	Power from uranium
Wave	Power from the movement of the waves
Solar	Power from the heat of the sun
Wind	Power from the wind
Geothermal	Power from the heat of the earth
HEP	Power from water moving through a turbine
Biomass	Power from waste material

Nuclear Power Station

Key figures for Hinkley Point C

£18 billion: EDF estimate of construction cost

3.2GW: Capacity of plant

5.8 million: Number of homes it could supply

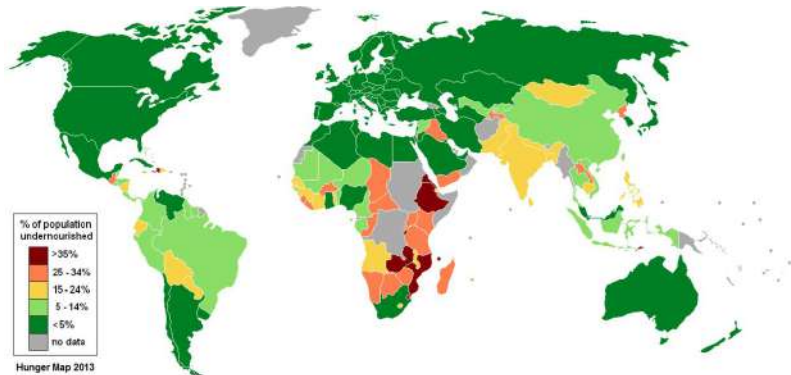
5600: People employed on site at peak construction

25,000: Total number of jobs that could be created

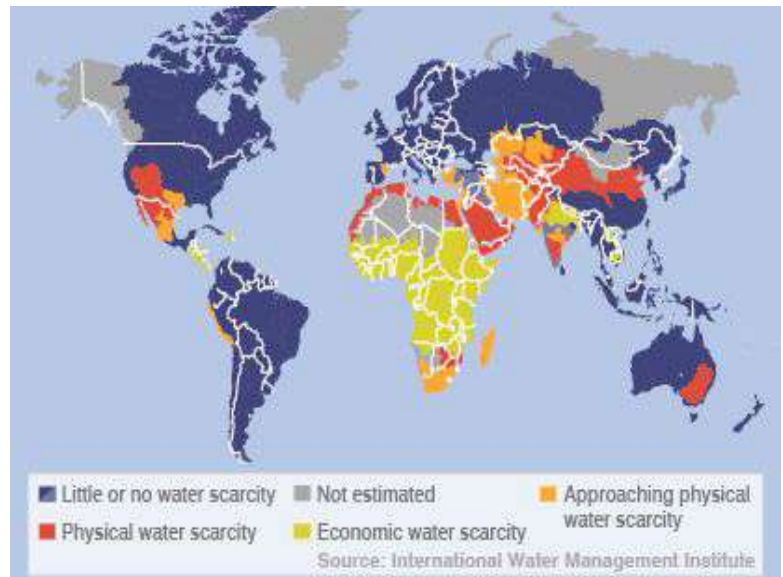
£92.50: Price (in 2012 money) for each MWh unit of electricity. This is more than double the current market price of electricity

2025: Earliest expected date for first power to be generated

DISTRIBUTION OF FOOD RESOURCES



DISTRIBUTION OF WATER RESOURCES



Urban World



Urban Areas

- Urban areas are more **densely populated**. This means lots of people living in a given area.
- **83.6%** of the UK's population live in urban areas.

Urban areas contain the majority of homes and businesses in the UK even though only **5.9%** of the UK's land is built on.



Urban areas on a map

- Contains many buildings
- Contains many roads
- Contains fewer areas of green spaces/woodland



Rural Areas

- Rural areas are more **sparsely populated**. This means fewer people living in a given area.
- **13.4%** of the UK's population live in rural areas.
- Rural areas have fewer homes and businesses containing mainly small villages or Hamlets.
- The primary industry in the rural area is agriculture. This accounts for **72%** of the UK's land use.



Rural areas on a map

Contains few buildings
Areas of woodland are shaded green
Contains fewer roads

What is Urbanisation

Urbanisation = The process by which an increasing percentage of a country's population comes to live in towns and cities.

RURAL VS URBAN 1950



RURAL VS URBAN 2050



HICs were the first to urbanise, and generally have the largest proportion of their population living in towns and cities. LICs currently have lower rates of urbanisation, but are urbanising rapidly.

Sustainable Cities

If something is sustainable it benefits the environment, people and the economy, without harming either. If it is damaging for any of those things, it is not sustainable - we can't keep doing it.

Many people are working towards trying to make cities more **sustainable**. A sustainable city offers a good quality of life to current residents but doesn't reduce the opportunities for future residents to enjoy.

Key features of a sustainable city

- o Resources and services in the city are accessible to all.
- o Public transport is seen as a viable alternative to cars.
- o Public transport is safe and reliable.
- o Walking and cycling is safe.
- o Areas of open space are safe, accessible and enjoyable.
- o Wherever possible, renewable resources are used instead of **non-renewable** resources.
- o Waste is seen as a resource and is recycled wherever possible.
- o New homes are energy efficient.
- o There is access to affordable housing.
- o Community links are strong and communities work together to deal with issues such as crime and security.
- o Cultural and social amenities are accessible to all.
- o Inward investment is made to the CBD.
- o A sustainable city will grow at a sustainable rate and use resources in a sustainable way.





Urban world

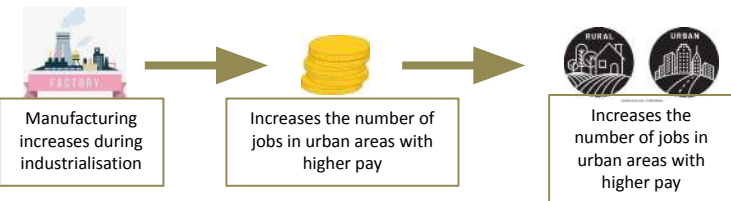
Rural to Urban Migration

Rural-urban migration is the movement of people from rural areas to urban areas. People move because of push and pull factors.

- A push factor is a reason to leave an area e.g. harsh climate, lack of jobs.
- A pull factor is a reason to move into an area e.g. better facilities, more job opportunities.

Push Factors	Pull Factors
 <p>Unemployment lower wages crop failure poor living conditions poor health and education services few facilities natural disasters civil war</p>	 <p>more jobs higher wages better living conditions better education and health services better facilities less chance of natural disasters</p>

- Many NEEs and LICs are rapidly urbanising due to **industrialisation**.
- This creates a growth in jobs in **manufacturing** which are often more well paid than jobs in rural areas.
- This then creates **rural to urban migration**.



Impacts of urbanisation

As the number of people living in urban areas increases the demand for **services** also increases.

- This creates the challenges of keeping up with the growing population.
- Many NEE and LICs find it difficult to keep up with demand.
- This causes people in urban areas to have poor access to housing, clean water, toilets, education, electricity and health care.
- As a result many people who have migrated to the city live in **squatter settlements** also known as **slums** or **favelas**. These are areas of land in cities which people have built homes on illegally using materials they have found. They become overcrowded and lack many basic services such as clean water.

Social and economic impacts

- Badly built and over crowded
- No access to basic services (running water, **sanitation**, electricity)
- Unclean conditions means diseases can spread quickly
- Lack of access to medical services mean people often have poor health
- No access to education
- High levels of unemployment
- High levels of crime

Environmental impacts

- Rubbish isn't collected so it leaves toxic rubbish heaps.
- **Air pollution** comes from burning fossil fuel from vehicles and factories
- Sewage and toxic chemicals can get into rivers, causing health problems and harming wildlife
- Roads can not cope with the increased amount of cars which causes congestion. This increases green house gas emissions which cause global problems.

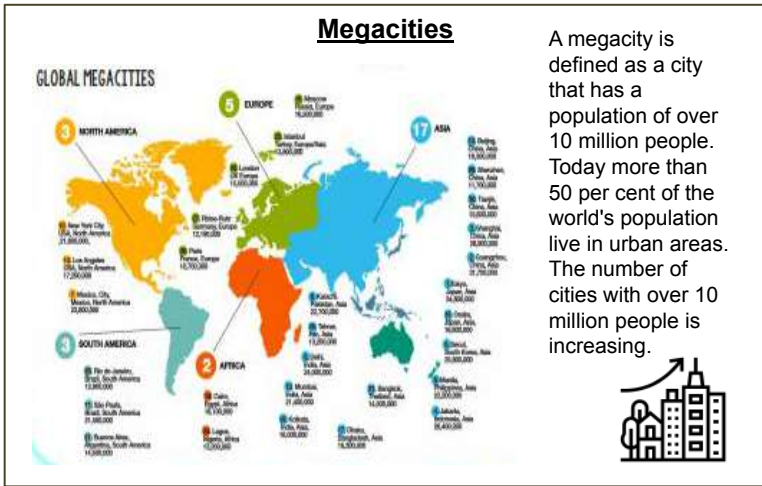
- Images of favelas and slums



Urban World

Megacities

A megacity is defined as a city that has a population of over 10 million people. Today more than 50 per cent of the world's population live in urban areas. The number of cities with over 10 million people is increasing.



Growth rate in Megacities

During the last Ice Age (10,000 BC) the World's population was 10 million. The first megacities to appear were New York and Tokyo in 1950's. Today we know there are 33 megacities, mainly in Asia.

The population of cities usually changes in one of two ways:

1. Natural increase (or decrease) - this is the difference between the number of births and the number of deaths.
2. Migration - this is the movement of people into or out of the city.



Squatter Settlements

- Squatter settlements are any collection of buildings where the people have no legal rights to the land they are built upon.
- The people are living there illegally and do not own the land. They provide housing for many of the world's poorest people and offer basic shelter usually in LICs.
- They are often constructed with poor materials initially, including plastic sheeting, corrugated metal, wood and cardboard. These are all materials that are available either freely as waste or cheaply.
- Squatter settlements also often lack proper sanitation, water supply, electricity or telephone services

Air Pollution

In late 2018, the European Environment Agency issued a warning that said close to 500,000 premature deaths are caused by air pollution. In this instance, they warned against polluted air particles too small to smell or see that could cause or worsen the symptoms of asthma, lung cancer and heart disease. The main air pollutants across Europe are:

- fuel-consuming transport vehicles;
- The production and distribution of energy;
- industry and agriculture;
- commercial buildings and homes;
- waste management.



Urban World

Urbanisation in Brazil

Brazil is an **NEE** and is rapidly **urbanising**. This has created many challenges in the cities of Brazil. **Sao Paulo** is a city in the south east of Brazil. It has a population of over **20 million** with **15%** of the population living in **favelas** and around **2000** people moving to the city each week.



Issues in Sao Paulo's Favelas

- Traffic** – Over **7 million cars** results in heavy traffic causing air and noise pollution.
- Services** – limited access to clean drinking water, electricity, schools and health care.
- Waste** – few rubbish collections and sewage is not properly treated meaning drinking water is often **contaminated** resulting in widespread **diseases**.
- Employment** – Due to a **lack of education** people in the favelas find it hard to get a good job. They are then forced to work in **poor conditions** with poor pay such as rubbish tips.
- Housing** – Houses are poorly built from whatever materials they can find. They are a fire hazard and at risk of being cleared by the government.
- Crime** – Theft, violence and drug trafficking are all major issues in the favelas. This is often the only way some are able to survive.

Solutions

Project

Cingapura Project

Clearing areas of the favelas to build new apartment blocks with a supply of clean water, sewage pipes and electricity.

Monte Azul Project

A charity that works with communities to improve education and create a healthier environment for people to live.

Benefits of the project

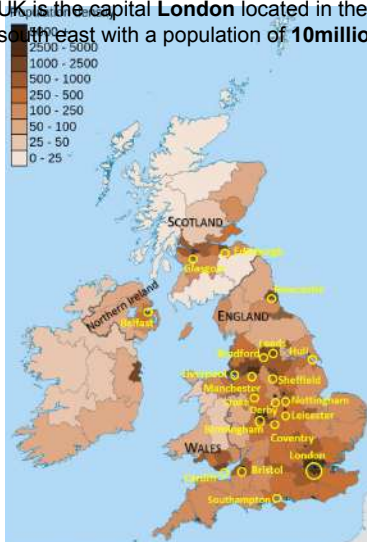
- The new housing had clean water supply and proper sanitation
- The new housing was built on the same land as the favelas, so people didn't have to leave the area they knew
- leisure areas were included in the developments
- Building materials were provided for free and many of the locals were employed to construct the apartments
- Have built a new school where more than 60% of children are illiterate
- Built two early years centres to provide a safe nurturing space for children aged 4 months – 4 years.
- One day every month they hold an integration day where adults can take part in activities to improve their employability and strengthen ties among the community.

Issues of the project

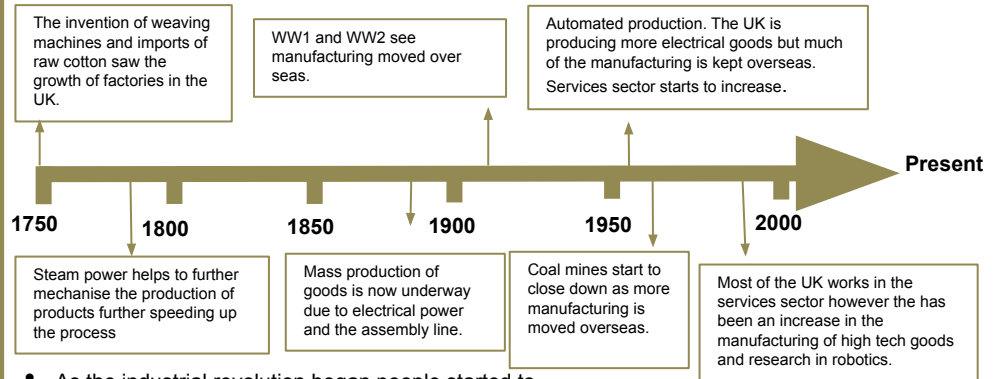
- Residents are expected to pay \$26 rent a month which many could not afford
- Inhabitants have no say in what is being built
- The living space in each apartment was very small.
- Many of the apartments are not yet finished, only 14,000 of the 140,000 have been built.
- Half of their funding comes from donations which are not always reliable.
- Are currently helping 20,000 people but 3million live in the slums.

Urban World

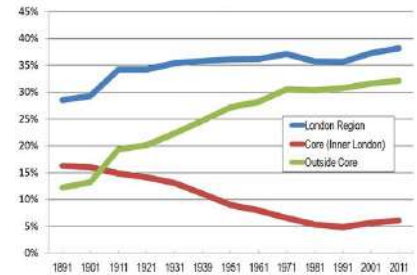
- The population and urban areas of the UK are not evenly distributed.
- Northern Scotland and **upland** areas of England and Wales tend to be **sparsely populated**.
- The majority of cities are located in **lowland** areas near a river.
- The highest areas of population density are located in the **UK's major cities**.
- **8 of the 10** largest urban areas are located in England. The map below shows the major urban areas of the UK.
- The most densely populated area of the UK is the capital **London** located in the **south east** with a population of **10million**.



Post industrial London



- As the industrial revolution began people started to move to into cities such as London for work.
- This increased over time as the jobs in manufacturing and coal mining also increased. The majority of people now live in urban areas.
- After WW1 and WW2 much of the manufacturing was kept overseas as it is cheaper. This caused inner city areas (where manufacturing and coal mining used to be) to fall into decline as there were fewer jobs.
- As jobs in the services sector increased people would move to other areas of the city for jobs while the population in inner city areas decreased due to a lack of jobs, as can be see in the graph.



Impacts

- People are leaving inner city areas have fallen into **deprivation** as there is a lack of jobs in these areas.
- People are still moving to other areas of London in search of higher paid jobs causing **urban sprawl** which is when green spaces are built on.
- Increased population has increased the amount of **traffic** also increasing **air and noise pollution**.
- The increased demand for housing in London has caused house prices to increase above the national average. **London = £514,000 UK average = £250,000**.
- People are now migrating from the urban area to the rural to live. This is called **counter-urbanisation**.

Urban World

Counter Urbanisation in the UK

Counter urbanisation = the movement of people from urban to rural areas.

Two factors have made moving to rural areas much easier.

- Advancements in **technology** e.g. internet speed, has made working from home easier, therefore people do not need to live in urban areas for jobs.
- Advancements in **transport** e.g. high speed rail, means people are more able to **commute** into the city for work but live in rural areas.

Push and pull factors for counter urbanisation

Push Factors from the Urban area

- Increased traffic
- Higher house prices
- Smaller house prices
- Fewer green spaces
- Higher crime rates
- Air pollution

Pull Factors to the Rural area

- Larger homes
- Cheaper house prices
- More green spaces
- Cleaner air
- Less traffic
- Lower crime rates
- Less noise

Impacts of counter urbanisation increased noise and overcrowding

Impacts on the Urban area

- Skilled workers leave. Leaving behind an unskilled work force who earn less. This means tax for the area to improve services.
- Fewer people are there to spend money in the shops/businesses so they fall into decline.
- Decreased demand for services so they fall into decline. The area becomes deprived.

Impacts on the Rural area

- Some services start to improve such as internet speed
- Increased income for local businesses
- Increased house prices means some are priced out of the area.
- Increased traffic as the population increases
- Original charm of the place might be lost as the area grows.

Urban World

Regeneration: Stratford, London

Regeneration = the long term improvement of an area that has become derelict.

Reasons for regeneration

After the **decline** in manufacturing along London docks in the 1960s many people left the area of **Stratford** so it fell into **deprivation**.

Stratford became one of the most deprived areas in the country.

Unemployment was **7.8%** higher than the London average of 4.5%.

Average household incomes were **£10,000 less** than the London average.

How it was regenerated

London was successful in its bid to host the **2012 Olympics** on the understanding that Stratford would be used during the games and **regenerated** for local people to use after the competitors had left. New homes were built, there was an improvement in infrastructure and investment into tourism and local sports facilities. After the Olympic Games were over, the park was named the **Queen Elizabeth Olympic Park**.



Impacts of the regeneration

Positive impacts of the regeneration

Negative impacts of the regeneration

Social

- By 2030, more than **10,000 new homes** will have been built.
- **Green spaces** planned for the new homes and around a third of those homes will be **affordable**.
- A new school has been built for **2,000 pupils** between the ages of 3 to 18.

- Many of the new affordable homes are still **unaffordable** for the poorest.
- Total cost was **£10 billion** funded by the **lottery fund** which meant other charity projects lost out.

Economic

- Stratford is now a well-connected area of London, which allows **commuters** to travel to work.
- **New jobs** in construction and tourism. It is estimated that over **20,000 jobs** could be created by 2030, bringing more than **£5 billion** into the area.
- **46,000** people worked on the construction of the park **10%** of which were previously **unemployed**.

- During the construction of the Olympic park **380 local businesses** had to relocate increasing **unemployment** in the area.
- House prices have increased, pricing people out of the area.
- The Olympic stadium cost **£701million 3x more than originally planned**.

Environmental

- New walking and cycling routes and public transport to **ease congestion** and reduce **emissions**.
- **water-efficient** design of homes helps to conserve water.
- protection of green spaces and natural **habitats**

- **Wildlife** had to be relocated; 4,000 smooth newts, 100 toads and 300 common lizards.
- Many of the materials for the stadiums and the Olympic Park came from **overseas**.
- The games produced **3.2 million tons of CO2**

Middle east and Caribbean






Where is the Middle East?



- The Middle East is a region in the western portion of Asia.
- It includes 17 countries, including those of the Arabian Peninsula, the area immediately north and east of this (including the Levant) and northwest Africa.
- Many countries of the region share similar human and physical geographical features.
- It is an arid region, which is dominated by hot temperatures and a mainly desert biome.
- The term 'Middle East' is from a European perspective (just as 'Far East' denotes China and Japan from a European perspective).

Human Features of Geography

Key Vocabulary

Languages		The middle east is a diverse region with lots of languages. Lots of countries of the Middle East have Arabic as the first language, and it is widely spoken in other countries too. Persian is the official language of Iraq, and Hebrew is the most spoken language in Israel.	Middle East
Settlements		Urbanisation is on the rise in the Middle East, with many people moving from rural areas to cities in search of employment and better living conditions. Some of the world's most advanced cities are in the region (particularly on the Arabian Peninsula).	Political
Politics/ Government		Several Middle Eastern countries, such as Saudi Arabia, Qatar, Oman, and the United Arab Emirates, are governed by monarchies. These countries have a king or queen as the head of state, many with power and influence over government affairs. Others are republics.	Arabic
Religion/ Festivals		Religion plays an important role in many Middle Eastern societies, with Islam being the dominant religion in many countries. Religious values and beliefs can shape social norms and behaviours, including attitudes towards gender, family, and social interactions	Islam
Trade/ Wealth		Although not all countries in the region are rich, many have benefitted from vast, natural resources, particularly oil and gas. In these places, such as Saudi Arabia and Qatar, efforts are being made to diversify the economy.	Maghreb
			Kurds
			Gulf
			Holy Land
			Ottoman
			Gulf Central Council

Middle East

Regions and Countries of the Middle East

Large Middle Eastern Countries

1. Saudi Arabia – 2.15 million km²
2. Iran – 1.68 million km²
3. Egypt – 1.01 million km²
4. Turkey – 783,562 km²
5. Yemen – 527,970 km²

There are 17 countries in the Middle East:

Bahrain, Cyprus, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Palestine, Qatar, Saudi Arabia, Syria, Turkey, the United Arab Emirates and Yemen.

Most Populous Middle Eastern Countries

1. Egypt – 103 million people
2. Iran - 85 million people
3. Turkey – 83 million people
4. Iraq – 41 million people
5. Saudi Arabia – 35 million people



The Arabian Peninsula

The Arabian Peninsula is the largest countries in the world. It is made up of 9 countries; the largest is Saudi Arabia, but it also includes tiny states such as Qatar and Kuwait. Its interior is dominated by the blazing hot Arabian desert, but the cooler interior is home to some of the regions largest cities, including the towering skyscrapers of Dubai, Abu Dhabi, Kuwait City and Jeddah.

The Levant



The Levant is the historical name given to a large region of the Eastern Mediterranean, to the North of the Arabian Peninsula. It includes present-day Syria, Israel, Jordan, Lebanon, Palestine and parts of Turkey and Iraq. The lands of the Levant are in the 'Fertile Crescent' close to the Mediterranean Sea.



Southern/ South Eastern Asia

Southern Asia refers to the Indian Subcontinent (e.g. India, Pakistan, and Bangladesh) and is a part of the Eurasia landmass. Much of South Eastern Asia encompasses peninsula/ island countries (e.g. Malaysia, Indonesia). Countries in this region are amongst the most densely populated in the world.



Longest Rivers

The Nile is the longest river in the world but is not entirely in the Middle East.

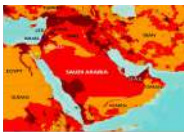




Nile – 6,650km

Amu Darya – 2,540km
Euphrates – 2,800km

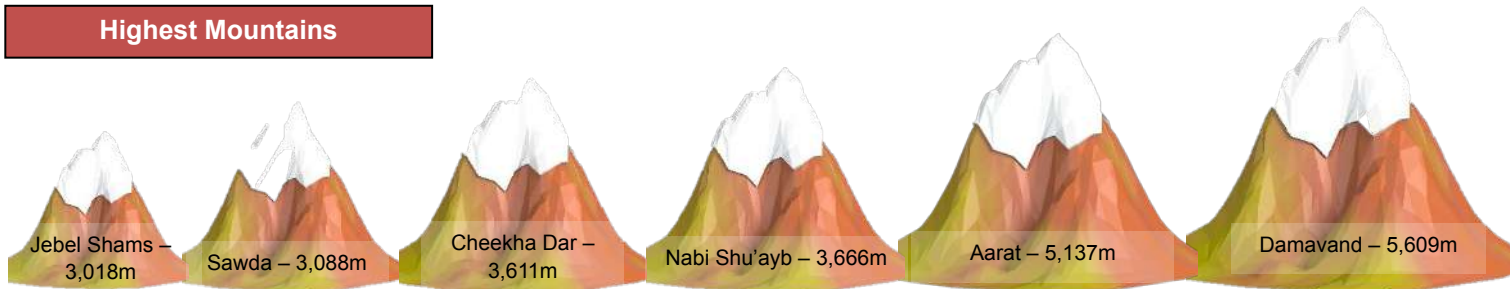
Due to the extremely hot and dry conditions in the Middle East, many areas do not have rivers and lakes. However, some extremely long rivers pass through the Middle East.



Middle East

Physical Geography Features			Key Vocabulary
Temperature Extremes		The Middle East is known for its extreme heat. During the summer months, temperatures can be extremely high, with some areas experiencing average daily highs of 40 to 45°C. In some areas, temperatures can reach as high as 50°C or more. These extreme temperatures can make outdoor activities difficult, and may cause people to seek refuge indoors during the hottest part of the day.	Arabian Peninsula Mediterranean Region
Deserts		Vast areas of the Middle East and Central Asia are hot, dry deserts. Some of the largest deserts are the Arabian Desert, the Syrian Desert and Negev Desert. The Sahara Desert extends into Egypt.	Levant Arabian Sea
Animals		The Middle East is home to a diverse array of animal species, many of which are well-adapted to the region's harsh desert climate. Examples include the Arabian Oryx, camels, the Arabian Leopard and the Nubian Ibex.	Persian Sea Desert
Rivers		The Middle East is home to several major rivers, including the Tigris and Euphrates in Iraq, the Nile in Egypt, the Jordan River in Israel/Jordan, and the Karun River in Iran.	River Nile Fertile Crescent
Mountain Ranges		The region is home to several mountain ranges, including the Zagros Mountains in Iran and the Taurus Mountains in Turkey. These mountains provide a natural barrier between different regions and have influenced the region's history and culture.	Damavand

Highest Mountains



Caribbean

Where is the Caribbean?



- The Caribbean is a sub-region of the North American continent that includes the Caribbean Sea and over 7000 islands – of only about 100 of which are inhabited.
- The region is bound by the Atlantic Ocean to the north and east, the South American continent to the south, and Central America and the Gulf of Mexico to the west.

- It stretches across an area that measures over 1000 miles from north to south and 2500 miles from east to west.
- The Caribbean can be divided into three groups of Islands: the Greater Antilles, the Lesser Antilles, and the Lucayan Archipelago.
- The Greater Antilles make up the largest portion of the region and consist of larger island countries such as Cuba, Haiti, and the Dominican Republic.
- The Lesser Antilles cover the east and the south and consist primarily of smaller islands.
- The Lucayan Archipelago occupies the northern portion of the region and is not always considered to be part of the region as the islands do not lie in the Caribbean Sea.

The Caribbean

Many of the islands in the Caribbean are independent countries, but there is also several territories that belong to other nations, such as Puerto Rico, which is a territory of the United States. There are 13 countries and 17 dependent territories in the Caribbean.

Puerto Rico is, by far, the largest and most populous territory in the Caribbean. It is about the same size as the US state of Connecticut. The territory has a population of nearly 3.3 million. Most of the other territories have populations below 100,000.






Saba, a special municipality of the Netherlands, is the smallest territory in the Caribbean. It measures just 5 square miles, which makes it four times larger than Central Park in New York City. It is also the least populous territory, with a population of just over 1500.





The Caribbean

The Caribbean is a region that stretches between Florida and the northern shores of South America. It consists of three sub-regions: the Greater Antilles, the Lesser Antilles and the Lucayan Archipelago (or the Bahamas). These groups of islands differ as they were formed in different ways. The three types of islands include continental islands, volcanic islands, and coral islands.

Three Sub-Divisions of the Caribbean

Greater Antilles		The Greater Antilles consist of several larger islands, including Cuba, Hispaniola, Jamaica, and Puerto Rico. They were formed many millions of years ago when two giant pieces of the earth's crust (tectonic plates) moved into each other.. The landscapes of the islands are marked by mountain ranges and coastal plains. Cuba is the largest island in the Greater Antilles and the Caribbean.
Lucayan Archipelago		The Lucayan Archipelago makes up the northern portion of the Caribbean region and consists of about 700 islands. Geographically, the Lucayan Archipelago is not part of the Caribbean region, as the islands do not lie in the Caribbean Sea. The islands in the region are coral islands. The land of the islands is primarily covered in rocks, mangroves, beaches, and low scrubs.
Lesser Antilles		The Lesser Antilles are a volcanic chain of islands that stretch about 500 miles from Anguilla in the north to Trinidad in the south. They lie along the North American and the Caribbean tectonic plates. These islands were formed when underwater volcanoes erupted and built-up layers of lava. Most of the islands are mountainous and narrow coastal plains.

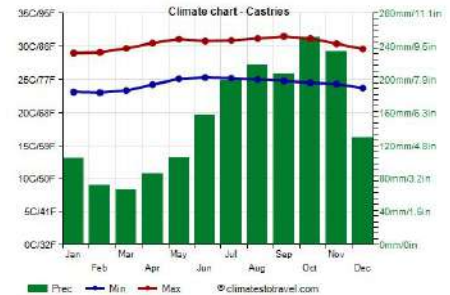
The Caribbean

Physical Geography Features			Key Vocabulary
Coastal Plains		Cuba is the largest island in the Greater Antilles and the Caribbean. About two-thirds of its land is made up of flat rolling plains, which lie about 300 feet about sea level.	Greater Antilles Lesser Antilles Lucayan Archipelago Cordillera Central Massif du Nord Pico Duarte
Coral Islands		The islands surrounding the Lucayan Archipelago are coral islands and were formed by a build-up of decaying coral. For the most part, they are just several feet about sea level. The highest peak of this region is just 207 feet above sea level.	
Volcanoes		The Lesser Antilles are a volcanic chain of islands. There are 20 active volcanoes in the area spread across 11 islands. Dominica, consisting of seven volcanoes, is the most volcanically active, followed by Granada, which has three active volcanoes.	
Mountain Ranges		The eastern and western sides of the Greater Antilles are covered with mountain ranges with elevations ranging between 1000 and 6500 feet. Hispaniola, Jamaica, and Puerto Rico area covered with mountains. The Cordilla Central, which runs through the island of Hispaniola, is the largest mountain range in the Caribbean. In the west of the island, which is occupied by Haiti, these mountains are known as the Massif du Nord. Pico Duarte is the highest point of the Cordilla Central, and the Caribbean region. It is 10,164 feet and is situated in the Dominican Republic. The mountains in the Lesser Antilles are typically between 2500 and 4500 feet.	

The Caribbean

The Caribbean has a tropical climate, with temperatures averaging between 24°C and 29°C year-round. The climate of the region is influenced by its location near the equator, trade winds, and the seas and oceans.

The islands typically have a wet season and a dry season. The wet season is between June and October and is marked by heavy rains as well as periods of clear skies and lots of sunshine. The dry season takes place during November and March. Rainfall is not very frequent during this time and some areas even experience droughts.



The amount of rainfall largely depends on the side of the islands. Most precipitation occurs where the winds reach the islands. When there are mountains in the middle of the island, they block rainclouds from reaching the other side, so there is barely any rainfall on that side. This phenomenon is known as the rain shadow effect and causes variations in the local climate. Rainfall in areas where winds arrive often exceeds 200 inches per year, while areas on the other side receive an average of just 50 inches per year. Because of this, some islands have rainforests on one side, while the other side is covered in semi-deserts.

Natural Disasters

Many Caribbean islands are at risk of natural disasters. The region's location near warm ocean waters and along cracks in the Earth's surface are the main reasons why the islands are so exposed.





Tropical cyclones, such as hurricanes, hit the Caribbean from June to November. Some of these violent storms are very destructive, as they have extreme wind speeds and bring large floods. Most storms form above warm waters of the Atlantic Ocean in the east. Because of the rotation of the Earth, these storms move in a westward direction toward the Caribbean. When the storms reach wind speeds of over 75mph, they are called hurricanes. They usually hit the northern part of the region and rarely occur in the south.



The Lesser Antilles lie along the edge of large pieces of the Earth's crust called tectonic plates. Because of this, the region is prone to earthquakes and volcanic eruptions. Since 1900, 21 volcanic eruptions have occurred in the region. Fortunately, these disasters do not happen too often. However, if they do, they can be extremely devastating.

The Caribbean

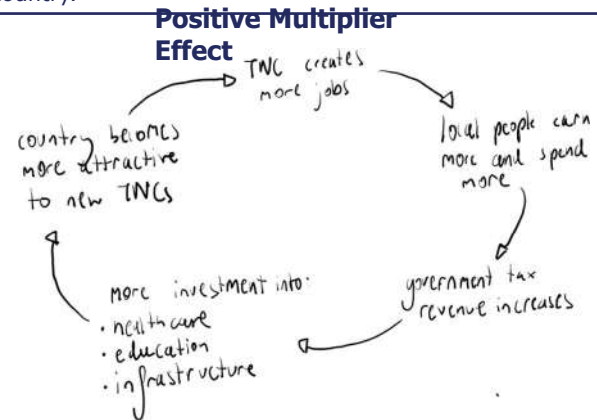
The Caribbean people have a vibrant culture that was strongly influenced by European and African cultures as well as some Native American elements. Each Caribbean island has its own history, cuisine, and traditions though many cultural elements overlap. The African elements of Caribbean culture are most noticeable in music, dance, and food, while the Europeans mostly influenced the region in terms of language, politics and religion.

Human Features of Geography		
<p>Language</p>		<p>Various languages are spoken throughout the Caribbean because of its history with European and African influences. Generally, most people speak the language of their former colonisers, including English, Spanish, French and Dutch. Apart from these European languages, there are various creole languages. These are a mixture of European, African, and indigenous languages. These include Haitian Creole, Jamaican Patois, and Antillean Creole.</p>
<p>Music</p>		<p>The Caribbean is known for its vibrant and rhythmic music styles. Some of the main styles include reggae, salsa, calypso, and rumba. These styles often a mixture of African and European elements, which reflect the region's history. The musical styles were mostly developed by slaves who worked on plantations in colonial times, as well as their descendants.</p> <p>Reggae is probably the most famous musical style from the Caribbean. It originated in Jamaica, and it has off-beat rhythms, deep bass lines, and lyrics about social issues. Bob Marley is the most famous and iconic reggae figure. Calypso is a music style from Trinidad and Tobago. It is characterised by catchy tunes and often has funny lyrics. The music style is often played during carnival celebrations. Cuba is famous for its Afro-Cuban jazz, mambo, and salsa. These styles feature a mix of Spanish melodies and lyrics and African rhythms and beats.</p>
<p>Food</p>		<p>Caribbean cuisine is a unique blend of various flavours and cooking traditions. Each island has its own cooking styles and specialities. Each island has its own specialities, but certain ingredients are widely used across the region. Some of these ingredients include staple foods such as rice, beans, plantains, and cassava. Seafood is also an important ingredient in many Caribbean dishes because of the abundant access to a wide range of seafood, such as fish and shellfish. Another typical element of Caribbean cuisine is the use of tropical fruits such as mangoes, pineapples, and papayas. They are often enjoyed as a snack, or they are used to prepare desserts or salads.</p>
<p>Religion/ Festivals</p>		<p>Christianity is the most dominant religion in the Caribbean. It is practiced by over three-quarters of the population. The religion was introduced by European explorers and colonists in colonial times. The islands with Spanish and French heritage are mostly Catholic, while former colonies of Britain and the Netherlands are mostly Protestant.</p> <p>A large group of people with African backgrounds practice Afro-Caribbean religions. These beliefs are a mixture of African beliefs with Christian and Native American elements. Some examples of these religions include Vodou (Haiti), Santería (Cuba), and Obeah (Jamaica). Most of these religions based on the worship of ancestors and spirit possessions. The rituals often revolve around communication with spirits or deities and take place during ceremonies with lots of music.</p> <p>Rastafari is a dominant religion and way of life in Jamaica. It is a movement that began in Jamaica in the early 1900s. Followers believe that Haile Selassie I, the former emperor of Ethiopia, is the Messiah of their faith, and they regard Ethiopia as their spiritual homeland. Rastafarians further believe that black people are the chosen people of God and that they have been oppressed through colonisation and slavery. There are also certain elements of Christianity and Rastafari, such as the use of the Bible and Biblical figures. Rastafarians do not drink alcohol, do not cut their hair, and do not eat meat.</p>

Conflict and human rights

Newly emerging economy	A country experiencing high levels of industrialisation, improvements to quality of life and economic development.
Mechanisation	When jobs previously done by humans are replaced by machinery.
Subsidy	Money given by a government to a company to help them make more profit.
Tax break	A reduction in tax over a fixed period of time.
Informal sector	Jobs with no formal contract.
Favela	Brazilian term for a squatter settlement or informal housing.
Transnational corporation	A company that operates across more than one country.

Sector	Definition	Country
Primary	Extraction of raw materials	LIC
Secondary	Manufacturing of products	NEE
Tertiary	Provision of services	HIC



Impacts Of Shell On Nigeria

Advantages	Disadvantages
Shell creates 65,000 direct and 250,000 indirect jobs.	Environmental damage e.g. Bodo Oil Spills.
Shell invested \$1.5m into improving medical equipment in the Central Hospital, Abuja.	Leakage effect – Shell is an Anglo-Dutch company.
Shell launched a development programme, called Shell LiveWire, which supports young entrepreneurs.	Corruption – Shell paid \$1.3bn to a corrupt former government minister for an oil field.

Conflict

Industrialisation	The development of industries in a country or region on a wide scale
Sustainable	Able to be maintained at a certain rate or level.
Poverty	The state of being extremely poor.
Development	The improvement of something.
Renewable Energy	Energy from a source that is not depleted when used, such as wind or solar power.

What is conflict?

Conflict is a serious disagreement or argument. It is often to do with a clash of opinion or idea.



BP Oil Spills.

The Deepwater Horizon oil spill is regarded as one of the largest environmental disasters in American history.

For years after the incident there was continued conflict between BP and the US Government. BP accepted partial blame but also said the US Government caused more issues rather than helping.



What is life like for a war child?

Kidnapping, girls raped, girls made to be wives at a young age, no access to education, no food or water, lack of shelter.



What type of things do people have conflict about?

- Political beliefs
- Religious beliefs
- Cultural Differences
- Unequal distribution of resources
- Land
- Territories



Crimea and Russia.

The Republic of Crimea came into existence as a republic within the Russian Federation following the events of 2014.

Russia and 17 UN member states including China officially recognize Crimea as part of the Russian Federation.

Ukraine and 114 other UN member states including the UK claim it is still an important territory belonging to Ukraine



Conflict

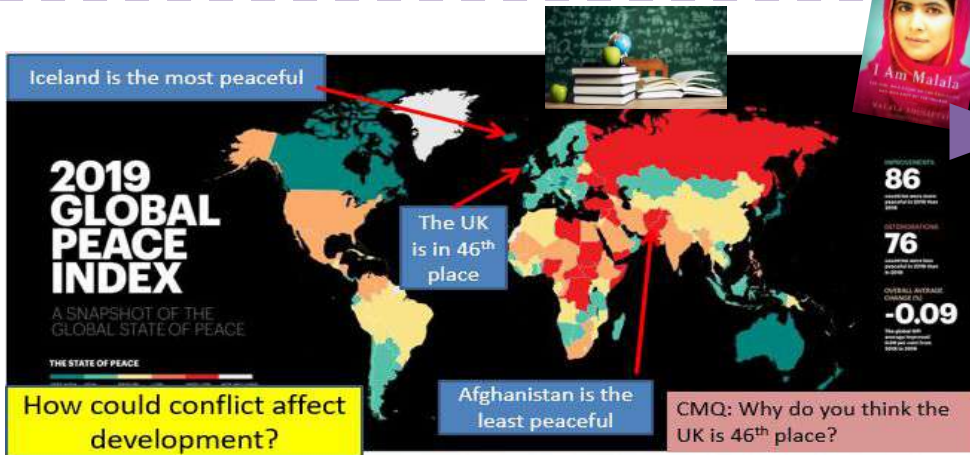


Malala.

Malala started speaking about education rights in 2008. Her father took her to Peshawar to speak at the local press club. **"How dare the Taliban take away my basic right to education?"** Malala told her audience in a speech that was covered by newspapers and television channels, throughout the region.

Chico Mendes.

He fought to preserve the Amazon rainforest, and advocated for the human rights of Brazilian peasants and indigenous peoples. He was assassinated by a rancher on December 22, 1988. The Chico Mendes Institute for Conservation of Biodiversity, a body under the jurisdiction of the Brazilian Ministry of the Environment, is named in his honour.



How could conflict affect development?

Water Wars.

Water conflict is a term describing a **conflict** between countries, states, or groups over the rights to access **water** resources. The United Nations recognizes that **water** disputes result from opposing interests of **water** users, public or private



What was the conflict at Heathrow Airport?

UK's busiest airport has been pushing for an expansion with a third runway while facing stiff opposition from climate activists and the community at the same time. With its third-quarter revenue down nearly 60% from 2019 numbers and many industry experts projecting a multi-year-long recovery, should the airport carry on with expansion plans?



Human Rights

Key Words

Ageism: Discrimination against someone because of their age

Community: A group of people who share something in common, e.g. live in the same area

Compassion: Loving kindness; helping others simply because it is right

Discrimination: Treating someone differently because of a prejudice

Equality: Belief that everyone is of equal value and worth

Fair pay: Payment that is appropriate for the work done

Gender: Being male or female

Harmony: Living together in society in peace or without conflict

Human Rights: The rights a person should be entitled to simply because they are a human, e.g. education, fair treatment, etc

Human Rights Act: UK law which protects the rights of individuals and allows a challenge when these are breached

Interest: Money paid back on loans, aside from the original amount loaned

Justice: Getting fairness; getting reparation for unfairness

Loan: Money borrowed from a lender

People trafficking: Illegal trade of humans for slavery, e.g. for sex / work

Poverty: Having less than the basic needs of life, so that day-to-day living is a struggle

Prejudice: Prejudging someone based on a characteristic they have, e.g. their ethnicity

Racism: Prejudice against someone because of their ethnicity / skin colour

Responsibility: Duty, e.g. the responsibility to work; to earn money for oneself and contribute to the state

Rights: What a person is entitled to, e.g. the right to education

Sexuality: A person's sexual orientation, i.e. straight, gay, bisexual, etc

Social justice: Bringing fairness to society so that all within a society have the same opportunities and can take advantage of them; includes projects to improve the life situation of those at the poorest end of society, e.g. by educational support or redistributing wealth through charity

Stewardship: Duty to look after and care for the world (for God). This extends to looking after all life, including other human beings

Tolerance: Acceptance of difference rather than seeing it as a problem

UN Declaration of Human Rights: A statement adopted by the United Nations (and all their signatories, including the UK) to protect human beings in specific regards

Wealth: Money and possessions a person has, usually in such quantities as to give a very comfortable lifestyle

Wealth and Poverty

- Wealth, including:
 - The right attitude to wealth
 - The uses of wealth
- The responsibilities of wealth, including the duty to tackle poverty and its causes
- Exploitation of the poor, including issues relating to:
 - Fair pay
 - Excessive interest on loans
 - Human trafficking
- The responsibilities of those living in poverty to help themselves to overcome the difficulties they face
- Charity, including issues relating to giving money to the poor



Human Rights



Human Rights

- Prejudice and discrimination in religion and belief, including the status and treatment within religion of **women** and **homosexuals**
- Issues of equality, freedom of religion and belief including **freedom of religious expression**
- **Human rights** and the **responsibilities** that come with rights, including the responsibility to respect the rights of others
- **Social Justice**
- Racial prejudice and discrimination
- Ethical arguments related to racial discrimination (including positive discrimination), including those based on the ideals of equality and justice

History | Year 9 – Early 20th Century Britain | September to October

Early 20 th Century Britain		Early 20 th Century Britain		Vocabulary					
1	Major changes happening in Britain	During the first half of the 20 th century there were a number of significant changes that took place in Britain.		1	Votes for Women	19 th century Britain was a highly patriarchal society . Women were expected to remain in the domestic sphere and did not have the right to vote.	1	Apogee	High point
		<ul style="list-style-type: none"> - Britain's position internationally changed forever. Britain went from having a large and powerful Empire in 1921 to facing colonies battling for independence. - The changing role of women in Britain. Women's role in British society changed from not having political rights or equal opportunities to gaining the right to vote and actively serving in the armed forces. - The development of the British welfare state. British governments actively introduced reforms to help people - for example the benefits system and creation of the NHS in 1948. 		2	The Suffrage Movement	Suffragists protested for the right to vote using peaceful and legal methods. Suffragettes used more extreme, often illegal and violent tactics. The actions of the Suffragettes gained huge publicity for the cause of women's suffrage but some people continued to argue against granting women the right to vote	2	Boers	Dutch farmers who lived in South Africa
				Early 20th Century Britain			3	Council houses	Homes built by the government
2	The Boer War	In 1899 Britain went to war with Boer farmers in South Africa over control of diamonds and farm land. Britain came close to an embarrassing defeat, leading to the Liberal Reforms 1906-1914		1	The First World War	In 1914, war broke out between two great alliances: the Triple Entente of France, Britain, and Russia and the Triple Alliance of Germany, Austria-Hungary, and Italy. British women played an important role in the war, working in munitions factories and taking traditionally 'male' jobs such as bus drivers and bank clerks After the war, the 1918 Representation of the People Act gave the vote to women over 30. However, women were forced to give up their wartime jobs as men returned home	4	Domestic Sphere	The home - women expected to stay home to take care of children/family
				2	Apogee of Empire	The British Empire reached its most powerful point in 1921. Two points that were especially important for the defence of Empire: -The Suez Canal -The Singapore Naval Base Britain had to borrow money and crush protests to keep control of the Empire	5	Franchise	The right to vote
				3	The Interwar Years 1918-1939	In these years, British governments aimed to build a 'country fit for heroes to live in'. However, despite some successes, they failed in many areas	6	Great Depression	Economic problems during the 1930s following the Wall Street Crash in 1929
3	Liberal Reforms 1906-1914	40% of new recruits who wanted to fight in the Boer war were found to be unhealthy and unfit. The government introduced free school meals, pensions and sick pay for workers to try to improve living conditions for people.					7	Munitions	Weapons and ammunition
							8	Patriarchal	A society dominated by men
							9	Recruits	New soldiers
							10	Suffrage	The right to vote
							11	Suffragettes	A protest group who used extreme methods to try and gain the right to vote.
							12	Suffragists	A protest group who used legal methods to try and gain the right to vote.
							13	Welfare State	Government programmes to help people
							14	Western Front	Area of fighting between Germany and Britain/France during World War One

History | Year 9 – Black British History and Communist Russia | Nov - Dec

Black British History		
1	Before 1914	Black people had lived in Britain since the earliest times. By the start of the 20 th century, Britain's Empire meant there were establish Black British communities
2	First World War	During the First World War many Black Britons and Black people in the British Empire volunteered to fight for Britain. The immediate post war period highlighted the racism of the British government. The increase in the numbers of Black people in Britain led to racism when the war finished and unemployment was high.
3	The Second World War	Two different stories - the experience of American Black GIs in Britain and the treatment of Black soldiers in the British army
4	Post War migration	After the Second World War Britain needed over 1 million workers to help it rebuild. Despite this the British government tried to discourage Black citizens from the Empire migrating to Britain.

Communist Russia – The Soviet Union		
1	Capitalism	The ideology of Communism was developed by Karl Max. Marx's communist society would have a worker's government which would share out the wealth of society equally
2	The Russian Revolution	The Russian Revolution replaced the Tsar with a communist government. In October 1917, the Bolsheviks took control of Russia in the Russian Revolution. The Bolsheviks established a communist government in Russia, they renamed the country the USSR or Soviet Union. They also murdered the Tsar and his family
3	Lenin	The Bolshevik party leader. Lenin changed Russia completely but did not always live up to Marx's idea of communism. Lenin believed he needed to make decisions on the Russia's people behalf so he introduced a series of decrees including creating a secret police
Communist Russia – The Soviet Union		
1	Stalin	Joseph Stalin established a dictatorship in the Soviet Union. Stalin secured power by: <ul style="list-style-type: none"> -Removal of Trotsky -The Purges -Propaganda
2	Industrialisation	Russia was much less industrialised than other European countries so Stalin launched the Five Year Plans to increase the production of industrial resources
3	Collectivisation	Stalin's agricultural policy <ul style="list-style-type: none"> -Collectivisation meant that peasants in each village united their farms into one collective farm - known as a kolkhoz

Vocabulary		
1	American GIs	American soldiers from WW2
2	Charles Wooton	A black Briton murdered by an angry white mob during race riots
3	Walter Tull	A professional footballer who volunteered to fight in World War One for Britain and became the first Black British army officer.
6	Push factors	Reasons to emigrate or leave a country
7	Pull factors	Reasons to immigrate and persuade people to move to a country
8	Capitalism	An economic system in which property is owned by individuals for private profit
9	Communism	An economic system in which all property is owned by the community, rather than by individuals
10	Collectivisation	Stalin's agricultural policy to join farms to work
11	Dictator	A leader with complete power
12	Five Year Plan	A series of industrial targets for producing resources
13	Gulag	Soviet prison camp
14	Kolkhoz	A collective farm
15	Kulaks	Rich Russian farmers
16	Magnitogorsk	A new industrial city
17	The Purges	The murder of Stalin's rivals in the 1930s
18	Tsar	The King of Russia - removed from power in 1917
19	Worker's government	A government run by ordinary workers that will divide resources and wealth equally

Year 9 History | The Impact of the Second World War | Jan-Feb |

Britain and the Second World War

1	1939-1945 World War Two	Between 1939-1945 Britain fought with the USA, France and the Soviet Union to defeat Nazi Germany, Italy and Japan..
2	1940-41 Battle of Britain	Between 1940-41 Britain faced the real threat of a German invasion. The European mainland including France had fallen under the control of Nazi Germany after France surrendered in 1940. Through incredible spirit and bravery the RAF and Royal Navy prevented a German invasion and eventually won the Battle of Britain.
3	The importance of the British Empire in World War Two	Britain relied heavily on support from its allies and the Empire. Food was imported from colonies such as India, Australia and New Zealand. The majority of British weapons were manufactured in the United States. Over 5 million soldiers from across the Empire fought with the British. Britain borrowed £3.4 billion from the USA, this debt was not fully paid back until 2010.
4	Victory in World War Two	In 1943 there was a key Soviet victory at the Battle of Stalingrad. This victory signalled the beginning of the end for Nazi Germany. British and American troops landed in France on D-Day, 6 June 1944, and advanced on Germany to win the war

The Home Front – Britain

1	The Blitz	In 1940-41 the Luftwaffe (German Air Force) bombed British cities and industrial areas, causing the deaths of 40,000 British civilians and extensive damage to areas such as London. This period of time was known as the Blitz. The government took action to protect the British people, including: <ol style="list-style-type: none"> 1. Evacuating children to the countryside 2. Enforcing black outs (no lights on in homes) in cities 3. Organising ARP (Air Raid Precautions) wardens to manage shelters during air raids, put out fires and enforce black out rules.
2	Rationing	Before the start of the War Britain relied on imports to feed its population. With German U-boats (submarines) attacking British supply ships, the government introduced strict rationing of food, clothing and petrol.
3	Women's roles	Women were conscripted into war work such as working in munitions factories, on farms and in ARP teams Over 80% of all women were involved in the war effort. However, by 1945 they were paid less than men and lost their jobs when the men returned.
4	Government involvement in peoples lives	All of the above illustrates how the government played a much larger role in the lives of ordinary people during the conflict of World War Two.

Key Vocabulary

1	Air Raid	A bombing attack on a city
2	Blackout	No visible lights, street lights, etc
3	The Blitz	German Air force bombing British cities
4	Colonies	Countries/areas of territory that belong to an Empire
5	D-Day	The US/British invasion of Nazi occupied France
6	Luftwaffe	German air force
7	Munitions	Ammunition and weapons of war
8	RAF	The British Air Force The Royal Air Force
9	Rationing	Limiting the amount of food the public can buy
10	Soviet Union	Communist Russia
11	Welfare State	The government looking after people

Year 9 History | The Impact of the Second World War | Feb-April |

Labour and the NHS			Windrush and Immigration		Indian Independence			
1	1945 General Election	Labour won a landslide election victory in 1945. They defeated war time leader Winston Churchill and Clement Attlee became the new prime minister. Attlee promised to use the power of government to 'win the peace'.	1	Empire Windrush	Immigration to Britain accelerated after Second World War. 1948 – The Empire Windrush arrived in London carrying 492 Jamaicans hoping to make a new life in Britain.	1	1947	India finally gained independence from the British Empire. There were a variety of factors that led to this.
2	Reasons for Labour's election victory	The War showed the need for change which the laissez-faire Conservative party could not deliver. British people felt the government should reward them for their sacrifices	2	Post-war Immigration to the UK	Labour shortages in the NHS, in schools and in transport led the British government to recruit migrants from the Caribbean to Britain. Many colonial migrants had served in the British army during the Second World War and were now returning to the 'Mother country' of the Empire	2	Gandhi and the Independence Movement	During WW2 Gandhi had been arrested for refusing to support the British and launched the Quit India movement His arrest alongside a terrible famine in 1943 led to violent protests against British rule
3	Labour and the Welfare State	Labour expanded the welfare state. Introduced reforms and services to look after citizens 'from the cradle to the grave' -Free education until 15 -Increased sick pay -Pensions 12 New towns built to house people outside of overcrowded cities	3	Post-war Immigration to the UK	Economic problems in colonies such as Jamaica led to high unemployment and young people migrated to Britain to find work Later groups of migrants came to Britain as refugees escaping civil wars in their countries	3	British Bankruptcy	Following WW2 Britain was bankrupt and could not afford to carry on running India as a colony
4	Labour and the NHS – 1948	Aneurin Bevan, the Minister for Health created the National Health Service. NHS provided free access to healthcare. Was funded by taxation, by 1950 NHS cost £358 million per year	4	Migrant arrivals from across globe	1970s – Indian and Pakistani migration to Britain begins 1980s – Ugandan Asians migrate	4	American Pressure	The USA opposed the British Empire – wanted people to have right to choose their own government.
						5	Fall of Singapore	In 1942 the Japanese captured the British military base in Singapore – this showed colonies Britain could be defeated
Key Vocabulary								
						1	Laissez-Faire	Against government action
						2	Immigration	The movement of people into a country
						3	Gandhi	Indian independence leader

The Miners Strike | Year 9 | Summer 1 May-June

Key topics			1984 – 1985 Miners Strike		Vocabulary				
1	‘King Coal’	Coal was vital to the British economy – by 1913 British coal mines produced 300 million tonnes each year. Britain exported coal to the rest of the world for profit.	1	Miners Tactics	Miners used various tactics including using Pickets , Flying Pickets and targeting Scabs to try and stop the supply of energy to the country and force the government to give in.	1	Pit	Small communities that developed around coal mines for families of miners	
2		The Coalfields	Before World War 1, 1.2 million people were employed in coal mining – the largest coalfields in the UK were in Northumberland, South Wales and Yorkshire			2			Pickets and the Police
3	National Union of Miners		The NUM was the most powerful trade union in Britain. It was led by Arthur Scargill , he was a militant meaning he believed strike action was the only way to save jobs.	3	Miners Support groups	During the strike, the miners did not get paid. Miner’s wives set up support groups such as Women against Pit closures to provide support	3	Margaret Thatcher	The UK’s first female prime minister (elected 1979) who wanted to privatise coal, reduce the size of the Welfare state and limit the powers of trade unions
				The Failure of the Miners Strike					
4	1970s	The Miners went on strike in 1972 and 1974 demanding higher wages. Their aim was to force the government to give in to their demands by stopping Britain’s supply of energy	1	Government Preparation	The Conservative government had stockpiled coal	4	Battle of Saltley Gate 1972	15,000 miners successfully closed a fuel storage depot in Birmingham	
			2	Police Tactics	The government trained the police in new military-style techniques.	5			Picket
5			Three Day Week	Ongoing strikes forced Prime Minister Heath to introduce a Three Day Week.	3	Economic Pressure	Many miners returned to work as their families were starving	6	Flying Pickets
	4	Role of the Media			All major newspapers supported the government	7	Picket Line	A group of pickets trying to close a mine	
6	1984 – 1985 Miners Strike	In 1984 the government announced that 20 pits would close and 20,000 jobs would be lost. This caused the NUM to announce a strike.	5	Divide and Conquer	Some regions did not strike (e.g. Nottinghamshire)	8	Scabs	Miners who did not on strike and worked	
			6	No National Ballot	Law said the unions had to have a ballot before strike action				

The Holocaust | Year 9 | Summer 2 June-July

The Holocaust			Jewish life in Europe before WW2		Lien's Story (Case study)					
1	Nazi Germany	1930s Germany under the Nazis brought anti-Semitic laws and violence	1	Western Europe	The Jewish population was small and assimilated Jewish children went to school with Christian children and spoke the same language.	1	Lien's Childhood	Lien grew up in the 1930s in the Netherlands. Lien went to school with all sorts of children and whilst her family was Jewish she did not go to a synagogue or wear religious clothes		
2	Kristallnacht	In November 1938, synagogues were destroyed, Jews killed and arrested							2	Eastern Europe
3	The Holocaust	During the Second World War the Nazis attempted to exterminate the Jewish population of Europe		3						
4	The Einsatzgruppen	As the German army advanced eastwards, mobile killing squads found and murdered whole Jewish towns and villages.	Key information		2				Lien Under Nazi Occupation	Lien was attacked by Dutch children She was forced along with all Jews to wear the Yellow star of David. Jews were banned from public places
5		The Final solution	After 1942, the Nazis set up death camps across Eastern Europe. This was described as the Final Solution.	1						
6	Death camps	These were designed to kill large numbers of people. Jewish populations were moved to camps such as Auschwitz from ghettos.	2	Ghettos	Segregated areas of cities where Jews were controlled and the rights significantly limited	3	Lien and the Holocaust	Lien's parents were murdered in Auschwitz. Nearly all of Lien's extended family was killed		
7		Auschwitz							The largest death camp, 1.1 million people were murdered at this camp	3
8	Consequences	6 millions Jews were murdered 90% of Jewish children in Europe	4	Resistance	In Denmark the population helped smuggle Jews to Sweden The Warsaw Ghetto uprising	5	Lien's life after the Holocaust	Lien trained as a teacher and married in 1959 having three children		

Fractions, decimals and percentages

1	Convert decimals to fractions	<p>Write the following as fractions in their simplest form.</p> <p>a) 0.8</p> $0.8 = \frac{8}{10} \quad \frac{8}{10} \xrightarrow{\div 2} \frac{4}{5}$
2	Convert fractions to decimals	<p>Write the following fractions as decimals:</p> $\frac{1}{20} \xrightarrow{\times 5} \frac{5}{100} = 0.05$
3	Convert percentages to fractions	<p>Write the following as fractions in their simplest forms:</p> <p>a) 70%</p> <p>A percentage is a number out of 100</p> $70\% = \frac{70}{100} \xrightarrow{\div 10} \frac{7}{10}$
4	Convert fractions to percentages	<p>Write the following fractions as percentages:</p> <p>a) $\frac{7}{20}$</p> <p>A percentage is a number out of 100</p> $\frac{7}{20} \xrightarrow{\times 5} \frac{35}{100} = 35\%$
5	Convert decimals to percentages	<p>Write the following decimals as percentages:</p> <p>a) 0.29</p> $0.29 \times 100 = 29$ <p>so, $0.29 = 29\%$</p>
6	Convert percentages to decimals	<p>Write the following percentages as decimals</p> <p>a) 28%</p> $28 \div 100 = 0.28$ <p>so, $28\% = 0.28$</p>


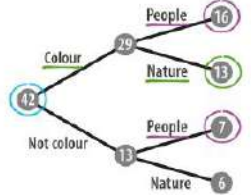
Fractions and percentages

1	Fractions of amounts	<p>Calculate $\frac{3}{5}$ of 35</p> $\frac{3}{5} \text{ of } 35 = \frac{3}{5} \times \frac{35}{1}$ $= \frac{3 \times \overset{7}{\cancel{35}}}{\cancel{5} \times 1}$ $= \frac{21}{1}$ $= 21$
2	Percentages of amounts without a calculator	<p>Work out 15% of 25</p> $15\% = 10\% + 5\%$ $10\% \text{ of } 25 = 25 \div 10 = 2.5$ $5\% \text{ of } 25 = 2.5 \div 2 = 1.25$ $15\% \text{ of } 25 = (10\% + 5\%) \text{ of } 25 = 2.5 + 1.25 = 3.75$
3	Percentages of amounts without a calculator	<p>Work out 1.3% of 900</p> $1.3\% = 1\% + 0.3\%$ $1\% \text{ of } 900 = 9$ $0.1\% = 1\% \div 10$ $0.1\% \text{ of } 900 = 0.9$ $0.3\% \text{ of } 900 = 3 \times 0.9 = 2.7$ $1.3\% \text{ of } 900 = (1\% + 0.3\%) \text{ of } 900 = 9 + 2.7 = 11.7$
4	Percentages of amounts with a calculator	<p>Work out</p> $17 \div 100 = 0.17$ $17\% \text{ of } 300 = 0.17 \times 300 = 51$
5	Percentages of amounts with a calculator	<p>Work out 148% of 99</p> $148 \div 100 = 1.48$ $148\% \text{ of } 99 = 1.48 \times 99 = 146.52$

Percentage change

1	Percentage increase without a calculator	Increase 400 by 5% $5\% = 10\% \div 2$ $10\% \text{ of } 400 = 400 \div 10 = 40$ $5\% \text{ of } 400 = 40 \div 2 = 20$ $400 + 20 = 420$
2	Percentage increase with a calculator	Increase 21 by 46% $100\% + 46\% = 146\%$ $146 \div 100 = 1.46$ $146\% \text{ of } 21 = 1.46 \times 21 = 30.66$
3	Percentage decrease with a calculator	What number is 4% smaller than 31? $100\% - 4\% = 96\%$ $96 \div 100 = 0.96$ $96\% \text{ of } 31 = 0.96 \times 31 = 29.76$
4	Calculate the original amount when given a percentage of that amount	28% of a value is 63 Work out the original value. $28 \div 100 = 0.28$ $28\% \text{ of original} = 63$ $\div 0.28 \quad 0.28 \times \text{original} = 63 \quad \div 0.28$ $\text{original} = 225$
5	Calculate percentage change	Calculate the percentage increase when 80 is increased to 96 $\text{percentage change} = \frac{\text{difference}}{\text{original value}} \times 100$ $= \frac{96 - 80}{80} \times 100$ $= \frac{16}{80} \times 100$ $= 0.2 \times 100$ $= 20\%$
6	Calculate simple interest	Azaan puts £1700 into a savings account which gathers simple interest at a rate of 3% per annum. How much will be in the account after 20 years? $\text{interest gathered each year} = 3\% \text{ of } 1700$ $= 0.03 \times 1700 = 51$ $\text{total interest after 20 years} = 51 \times 20 = 1020$ $\text{total amount in account} = 1700 + 1020 = 2720$

Probability

1	Calculate the probability of an event and use to find expected result	Ivy spins the fair spinner shown below.  a) What is the probability that the spinner will land on a shaded section? $P(\text{shaded}) = \frac{\text{number of shaded sections}}{\text{total number of sections}} = \frac{3}{8}$ b) How many times would you expect the spinner to land on a shaded section if it were spun 40 times? $P(\text{shaded}) \times \text{total spins} = \frac{3}{8} \times 40 = 15$												
2	Calculating relative frequency	Amelia spun a spinner with five coloured sections several times. The table below shows how many times the spinner landed on each colour. <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #cccccc;">Colour</th> <th>Green</th> <th>Red</th> <th>Yellow</th> <th>Black</th> <th style="border: 2px solid pink;">Pink</th> </tr> </thead> <tbody> <tr> <th style="background-color: #cccccc;">Frequency</th> <td>8</td> <td>10</td> <td>12</td> <td>3</td> <td style="border: 2px solid pink;">7</td> </tr> </tbody> </table> What is the relative frequency of the spinner landing on pink? $\frac{\text{number of spins on pink}}{\text{total number of spins}} = \frac{7}{40}$	Colour	Green	Red	Yellow	Black	Pink	Frequency	8	10	12	3	7
Colour	Green	Red	Yellow	Black	Pink									
Frequency	8	10	12	3	7									
3	Theoretical probability	A six-sided dice is numbered from 1 to 6. The dice is rolled 24 times and lands on a number less than 3 a total of 16 times. a) Work out the theoretical probability of the dice landing on a number less than 3. $P(\text{less than } 3) = \frac{\text{number of outcomes less than } 3}{\text{total number of outcomes}} = \frac{2}{6}$												
4	Calculate probability from frequency tree diagrams	The frequency tree below shows information about photos in a gallery.  a) Work out the probability that a photo chosen at random is in colour and of nature. $P(\text{colour and nature}) = \frac{13}{42}$												

Standard form

1	<p>Multiplying with standard form</p>	<p>Work out $(2 \times 10^5) \times (4 \times 10^7)$ Give your answer in standard form.</p> $= 2 \times 10^5 \times 4 \times 10^7$ $= 2 \times 4 \times 10^5 \times 10^7$ $= 8 \times 10^{5+7}$ $= 8 \times 10^{12}$
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2	<p>Dividing with standard form</p>	<p>Work out $(9 \times 10^5) \div (2 \times 10^8)$ Give your answer in standard form.</p> $= \frac{9 \times 10^5}{2 \times 10^8}$ $= \frac{9}{2} \times \frac{10^5}{10^8}$ $= 4.5 \times 10^{5-8}$ $= 4.5 \times 10^{-3}$
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3	<p>Adding with standard form</p>	<p>Work out $4.3 \times 10^4 + 2 \times 10^3$ Give your answer in standard form.</p> $= 4.3 \times 10^4 + 2 \times 10^3$ $= 4.3 \times 10^4 + 0.2 \times 10^1 \times 10^3$ $= 4.3 \times 10^4 + 0.2 \times 10^{1+3}$ $= 4.3 \times 10^4 + 0.2 \times 10^4$ $= (4.3 + 0.2) \times 10^4$ $= 4.5 \times 10^4$
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4	<p>Subtracting with standard form</p>	<p>Work out $3.8 \times 10^5 - 6.5 \times 10^4$ Give your answer in standard form.</p> $= 3.8 \times 10^5 - 6.5 \times 10^4$ $= 3.8 \times 10^5 - 0.65 \times 10^1 \times 10^4$ $= 3.8 \times 10^5 - 0.65 \times 10^{1+4}$ $= 3.8 \times 10^5 - 0.65 \times 10^5$ $= (3.8 - 0.65) \times 10^5$ $= 3.15 \times 10^5$
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Inequalities

1	<p>Solving inequalities</p>	<p>Solve $8u + 5 < 2u + 47$</p> $\begin{array}{r l} -2u & 8u + 5 < 2u + 47 \\ -5 & 6u + 5 < 47 \\ \div 6 & 6u < 42 \\ & u < 7 \end{array}$
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2	<p>Represent inequalities on a number line</p>	<p style="text-align: center;">$1 \leq x < 9$</p>
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3	<p>Solving double inequalities</p>	$\begin{array}{r l} -5 & 12 \leq 7k + 5 \leq 40 \\ \div 7 & 7 \leq 7k \leq 35 \\ & 1 \leq k \leq 5 \end{array}$
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4	<p>Forming and solving inequalities</p>	<p>The area of a rectangle is at least 36 cm². The length is 9 cm and the width is w cm.</p> <p>Write and solve an inequality to find the possible values of w.</p> $\begin{array}{r l} \div 9 & \text{area} \geq 36 \\ & 9w \geq 36 \\ \div 9 & \text{area} = 9 \times w \\ & w \geq 4 \end{array}$
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5	<p>Forming and solving inequalities</p>	<p>Ahmad has saved £459, and Orla has saved £540. At the end of each month, Ahmad adds £30 to his savings and Orla adds £26 to her savings.</p> <p>What is the minimum number of months Ahmad must save for his savings to total more than Orla's?</p> $\begin{array}{r l} -26m & 459 + 30m > 540 + 26m \\ -459 & 459 + 4m > 540 \\ \div 4 & 4m > 81 \\ & m > 20.25 \end{array}$ <p style="text-align: center;">Ahmed will have more savings than Orla in 21 months</p>
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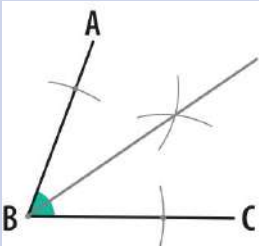
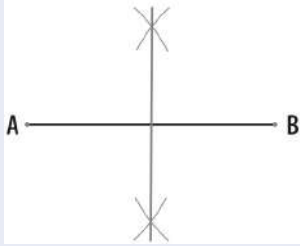
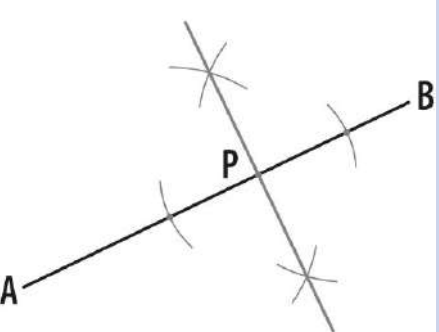
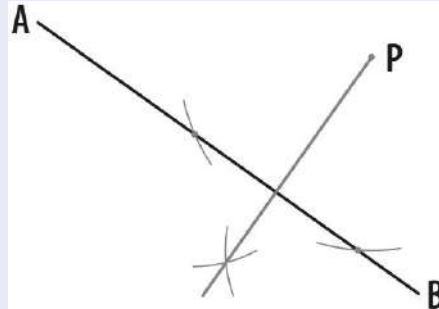
Quadratic equations

1	Factorising quadratics	<p>Factorise $x^2 + 2x - 15$</p> $x^2 + 2x - 15$ <p>factor pairs of -15</p> <table style="margin-left: 20px; border-collapse: collapse;"> <tr> <td style="padding-right: 10px;">1 and -15</td> <td style="padding-right: 10px;">-1 and 15</td> </tr> <tr> <td style="padding-right: 10px;">3 and -5</td> <td style="border: 1px solid green; padding: 2px;">-3 and 5</td> </tr> </table> <p style="text-align: center; margin-left: 20px;">$-3 + 5 = 2$</p> $x^2 + 2x - 15 = (x - 3)(x + 5)$	1 and -15	-1 and 15	3 and -5	-3 and 5
1 and -15	-1 and 15					
3 and -5	-3 and 5					
2	Factorising quadratics with repeated brackets	<p>Factorise $x^2 - 10x + 25$</p> $x^2 - 10x + 25 = (x - 5)(x - 5)$ $= (x - 5)^2$				
3	Factorising - the difference of two squares	<p>Factorise $x^2 - 25$</p> $a^2 - b^2 = (a + b)(a - b)$ $x^2 - 25 = x^2 - 5^2$ $= (x + 5)(x - 5)$				
4	Factorising - the difference of two squares	<p>Factorise $9x^2 - 16$</p> $a^2 - b^2 = (a + b)(a - b)$ $9x^2 - 16 = (3x)^2 - 4^2$ $= (3x + 4)(3x - 4)$				
5	Solving by factorising - single bracket	<p>Solve $x^2 - 7x = 0$</p> $x^2 - 7x = 0$ $x(x - 7) = 0$ $x = 0 \text{ or } x - 7 = 0$ $x = 7$				
6	Solving by factorising - double brackets	<p>Solve $x^2 + 7x - 60 = 0$</p> <table style="margin-left: 20px; border-collapse: collapse;"> <tr> <td style="padding-right: 20px;">$x^2 + 7x - 60 = 0$</td> <td>$-5 \times 12 = -60$</td> </tr> <tr> <td>$(x - 5)(x + 12) = 0$</td> <td>$-5 + 12 = 7$</td> </tr> </table> $x - 5 = 0 \text{ or } x + 12 = 0$ $x = 5 \text{ or } x = -12$	$x^2 + 7x - 60 = 0$	$-5 \times 12 = -60$	$(x - 5)(x + 12) = 0$	$-5 + 12 = 7$
$x^2 + 7x - 60 = 0$	$-5 \times 12 = -60$					
$(x - 5)(x + 12) = 0$	$-5 + 12 = 7$					

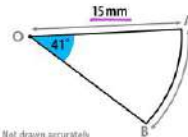
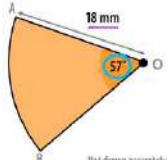
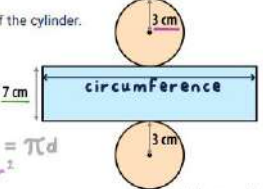
Formulae

1	Rearranging formulae - one step	<p>Make x the subject of $x - 6 = t$</p> <table style="margin-left: 20px; border-collapse: collapse;"> <tr> <td style="padding-right: 10px;">$+ 6$</td> <td style="padding-right: 10px;">$x - 6 = t$</td> <td style="padding-right: 10px;">$+ 6$</td> </tr> <tr> <td></td> <td>$x - 6 + 6 = t + 6$</td> <td></td> </tr> <tr> <td></td> <td>$x = t + 6$</td> <td></td> </tr> </table>	$+ 6$	$x - 6 = t$	$+ 6$		$x - 6 + 6 = t + 6$			$x = t + 6$				
$+ 6$	$x - 6 = t$	$+ 6$												
	$x - 6 + 6 = t + 6$													
	$x = t + 6$													
2	Rearranging formulae - one step	<p>Make d the subject of $h = df$</p> <table style="margin-left: 20px; border-collapse: collapse;"> <tr> <td style="padding-right: 10px;">$\div f$</td> <td style="padding-right: 10px;">$h = df$</td> <td style="padding-right: 10px;">$\div f$</td> </tr> <tr> <td></td> <td>$\frac{h}{f} = \frac{df}{f}$</td> <td></td> </tr> <tr> <td></td> <td>$\frac{h}{f} = d$</td> <td></td> </tr> </table>	$\div f$	$h = df$	$\div f$		$\frac{h}{f} = \frac{df}{f}$			$\frac{h}{f} = d$				
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	$\frac{h}{f} = d$													
3	Rearranging formulae - two steps	<p>Make x the subject of $3x + 7 = y$</p> <table style="margin-left: 20px; border-collapse: collapse;"> <tr> <td style="padding-right: 10px;">$- 7$</td> <td style="padding-right: 10px;">$3x + 7 = y$</td> <td style="padding-right: 10px;">$- 7$</td> </tr> <tr> <td></td> <td>$3x = y - 7$</td> <td></td> </tr> <tr> <td style="padding-right: 10px;">$\div 3$</td> <td>$x = \frac{y - 7}{3}$</td> <td style="padding-right: 10px;">$\div 3$</td> </tr> </table>	$- 7$	$3x + 7 = y$	$- 7$		$3x = y - 7$		$\div 3$	$x = \frac{y - 7}{3}$	$\div 3$			
$- 7$	$3x + 7 = y$	$- 7$												
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$\div 3$	$x = \frac{y - 7}{3}$	$\div 3$												
4	Rearranging formulae - two steps	<p>Make b the subject of $t = \frac{b + m}{c}$</p> <table style="margin-left: 20px; border-collapse: collapse;"> <tr> <td style="padding-right: 10px;">$\times c$</td> <td style="padding-right: 10px;">$t = \frac{b + m}{c}$</td> <td style="padding-right: 10px;">$\times c$</td> </tr> <tr> <td></td> <td>$ct = b + m$</td> <td></td> </tr> <tr> <td style="padding-right: 10px;">$- m$</td> <td>$ct - m = b$</td> <td style="padding-right: 10px;">$- m$</td> </tr> </table>	$\times c$	$t = \frac{b + m}{c}$	$\times c$		$ct = b + m$		$- m$	$ct - m = b$	$- m$			
$\times c$	$t = \frac{b + m}{c}$	$\times c$												
	$ct = b + m$													
$- m$	$ct - m = b$	$- m$												
5	Rearranging formulae - three steps	<p>Make h the subject $\frac{7h}{y} + m = p$</p> <table style="margin-left: 20px; border-collapse: collapse;"> <tr> <td style="padding-right: 10px;">$- m$</td> <td style="padding-right: 10px;">$\frac{7h}{y} + m = p$</td> <td style="padding-right: 10px;">$- m$</td> </tr> <tr> <td></td> <td>$\frac{7h}{y} = p - m$</td> <td></td> </tr> <tr> <td style="padding-right: 10px;">$\times y$</td> <td>$7h = y(p - m)$</td> <td style="padding-right: 10px;">$\times y$</td> </tr> <tr> <td style="padding-right: 10px;">$\div 7$</td> <td>$h = \frac{y(p - m)}{7}$</td> <td style="padding-right: 10px;">$\div 7$</td> </tr> </table>	$- m$	$\frac{7h}{y} + m = p$	$- m$		$\frac{7h}{y} = p - m$		$\times y$	$7h = y(p - m)$	$\times y$	$\div 7$	$h = \frac{y(p - m)}{7}$	$\div 7$
$- m$	$\frac{7h}{y} + m = p$	$- m$												
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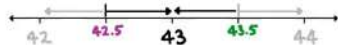
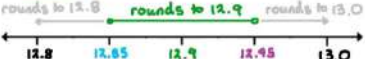
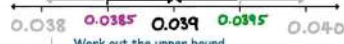

Constructions

1	Construction lines for an angle bisector	
2	Construction lines for a perpendicular bisector of a line	
3	Construction lines for a perpendicular line through a point on a line	
4	Construction lines for a perpendicular line through a point off a line	

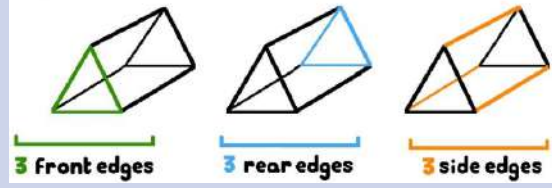
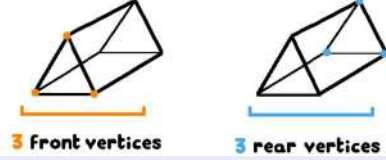
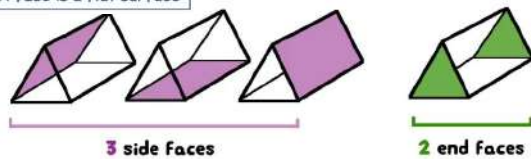
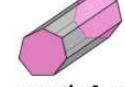
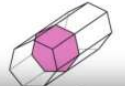
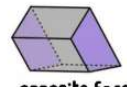

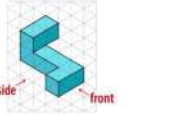


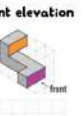
Circles

1	Arc length of a sector	<p>OAB is a sector of a circle. Work out the length of the arc AB. Give your answer to 2 d.p.</p>  <p style="text-align: right;"><i>circumference = 2πr</i></p> $\text{arc length} = \frac{\text{central angle}}{360} \times \text{circumference}$ $\text{arc length AB} = \frac{4.1}{360} \times 2\pi \times 15$ $= 10.73377\dots$ $= 10.73 \text{ to 2 d.p.}$ <p><small>Not drawn accurately</small></p>
2	Area of a sector	<p>OAB is a sector of a circle. Work out the area of OAB. Give your answer to 2 d.p.</p>  <p style="text-align: center;"><i>area of a circle = πr²</i></p> $\text{sector area} = \frac{\text{central angle}}{360} \times \text{area of circle}$ $\text{sector area OAB} = \frac{57}{360} \times \pi \times 18^2$ $= 161.16370\dots$ $= 161.16 \text{ to 2 d.p.}$ <p><small>Not drawn accurately</small></p>
3	Surface area of a cylinder	<p>The net of a cylinder is shown. Use the net to work out the surface area of the cylinder. Give your answer to 1 d.p.</p>  <p style="text-align: center;"><i>circumference</i></p> $\text{circumference} = 2\pi r = \pi d$ $\text{area of a circle} = \pi r^2$ $2\pi r \times \text{length} = 2\pi \times 3 \times 7 = 131.94689\dots$ $\pi r^2 = \pi \times 3^2 = 28.27433\dots$ $\text{surface area} = 131.94689\dots + 2 \times 28.27433\dots$ $= 188.49555\dots$ $= 188.5 \text{ to 1 d.p.}$ <p><small>Not drawn accurately</small></p>

Error intervals

1	Error interval - rounded to the nearest integer	<p>A number, y, rounded to the nearest integer is 43. Write down the error interval for y.</p> <p>Find half of 1 $1 \div 2 = 0.5$</p>  <p>Work out the lower bound $43 - 0.5 = 42.5$</p> <p>Work out the upper bound $43 + 0.5 = 43.5$</p> <p>Write an inequality showing the lower and upper bounds of y</p> <p>< Less than ≤ Less than or equal to</p> <p style="text-align: center;">$42.5 \leq y < 43.5$</p>
2	Error interval - rounded to decimal places	<p>A number, n, rounded to one decimal place is 12.9. Write an inequality to show the lower and upper bounds of n.</p> <p>Find the values that round to 12.9 when rounded to 1 d.p.</p>  <p>the lower bound is 12.85 the upper bound is 12.95</p> <p style="text-align: center;">$12.85 \leq n < 12.95$</p>
3	Error interval - rounded to significant figures	<p>A number, x, rounded to 2 significant figures is 0.039. Write down the error interval for x.</p> <p>Find half of 0.001 $0.001 \div 2 = 0.0005$</p>  <p>Work out the lower bound $0.039 - 0.0005 = 0.0385$</p> <p>Work out the upper bound $0.039 + 0.0005 = 0.0395$</p> <p>< Less than ≤ Less than or equal to</p> <p style="text-align: center;">$0.0385 \leq x < 0.0395$</p>
4	Truncating numbers	<p>a) What is 19.72519 truncated to 1 decimal place?</p> <p>b) What is 19.72519 truncated to 2 decimal places?</p> <p>a.) Split the number after the first decimal place</p> <p style="text-align: center;">19.7 2519</p> <p>Remove any digits after the split = 19.7 truncated to 1 decimal place</p> <p>b.) Split the number after the second decimal place</p> <p style="text-align: center;">19.72 519</p> <p>Remove any digits after the split = 19.72 truncated to 2 decimal places</p>
5	Error interval - truncated	<p>A number, x, truncated to 2 d.p. is 11.96 Write an inequality to show the lower and upper bounds of x.</p> <p>Numbers that truncate to 11.96 start with 11.96</p> <p>example: $11.96\overline{)825} = 11.96$ truncated to 2 d.p.</p>  <p>Work out the lower bound The smallest number that truncates to 11.96 is 11.96</p> <p>Work out the upper bound $11.96 + 0.01 = 11.97$</p> <p style="text-align: center;">$11.96 \leq x < 11.97$</p>

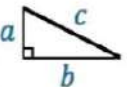
3D shapes

1	Edges	<p>An edge is a line where two surfaces meet</p>  <p>3 front edges 3 rear edges 3 side edges</p>
2	Vertices	<p>A vertex is a single point where edges or surfaces form a corner</p>  <p>3 front vertices 3 rear vertices</p>
3	Faces	<p>A face is a flat surface</p>  <p>3 side faces 2 end faces</p>
4	Prisms	<p>Compare the properties of each shape with the properties of a prism</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid gray; padding: 5px; width: 40%;"> <p style="text-align: center;">A prism:</p> <ul style="list-style-type: none"> 2 opposite faces that are identical polygons Constant cross-section between these faces </div> <div style="text-align: center;">  <p>opposite faces are identical</p>  <p>constant cross-section</p> </div> <div style="text-align: center;">  <p>opposite faces are identical</p>  <p>constant cross-section</p> </div> </div>
5	Plans and elevations	<p>Draw the plan, front elevation and side elevation of this 3D shape.</p>  <p>Identify which faces can be seen from the direction of the arrow</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Plan</p>  </div> <div style="text-align: center;"> <p>Side elevation</p>  </div> <div style="text-align: center;"> <p>Front elevation</p>  </div> </div> <p style="font-size: small;">Plans and elevations are 2D views of 3D shapes. • A plan is the view from the top • An elevation is a view from the front or the side</p>

Pythagoras' theorem

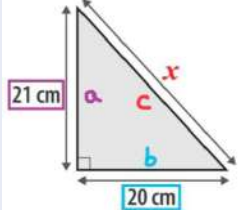
1 Pythagoras' theorem

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



c is the length of the **hypotenuse** (longest side) and a and b are the other side lengths of a right-angled triangle

2 Finding the hypotenuse

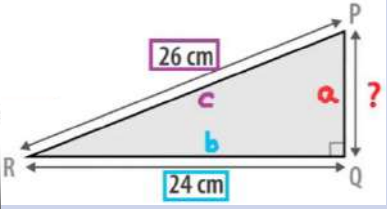


$a^2 + b^2 = c^2$
 $21^2 + 20^2 = x^2$
 $841 = x^2$
 $29 = x$

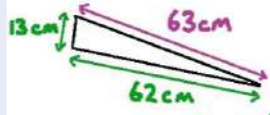
3 Finding a shorter side

$a = \text{length of PQ}$

$a^2 + b^2 = c^2$
 $a^2 + 24^2 = 26^2$
 $a^2 = 26^2 - 24^2$
 $a^2 = 100$
 $a = 10$



4 Use pythagoras to determine if a triangle is right-angled



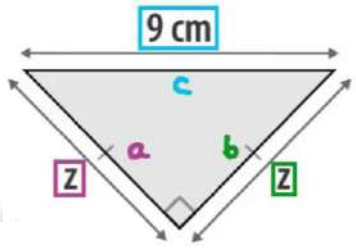
$a^2 + b^2 = 13^2 + 62^2$
 $= 4013$
 $c^2 = 63^2$
 $= 3969$

If $a^2 + b^2$ does not equal c^2 , the triangle is not right-angled

No

5 Find the shorter sides of isosceles triangles

$a^2 + b^2 = c^2$
 $z^2 + z^2 = 9^2$
 $2z^2 = 81$
 $z^2 = 81 \div 2$
 $z^2 = 40.5$
 $z = 6.363...$
 $z = 6.4 \text{ to 1 d.p.}$



Ratio and proportion

1 Writing and simplifying ratios

There are 30 pens and 18 pencils in a pencil case. What is the ratio of pens to pencils in its simplest form?

pens : pencils
 $30 : 18$
 $\div 6 \left(\begin{array}{c} 30 : 18 \\ \hline 5 : 3 \end{array} \right) \div 6$

2 Writing ratios in the form 1:n

$12 : 18$
 $\div 12 \left(\begin{array}{c} 12 : 18 \\ \hline 1 : 1.5 \end{array} \right) \div 12$

3 Sharing in a given ratio

Frazer and Michael share £27 in the ratio 5 : 4. How much do they each get?

total parts = 5 + 4 = 9

Frazer : Michael total
 $5 : 4 \quad 9$
 $\times 3 \left(\begin{array}{c} 5 : 4 \\ \hline 15 : 12 \end{array} \right) \times 3 \quad \left(\begin{array}{c} 9 \\ \hline 27 \end{array} \right) \times 3$

4 Direct proportion - worded problems

It costs £202.50 to buy 9 shirts. How much does it cost to buy 4 shirts?

The total cost and the number of shirts bought are in proportion. If we change the number of shirts, we have to change the total cost by the same factor.

	number of shirts	total cost (£)
Calculate the cost of 1 shirt	9	202.50
	$\div 9$	$\div 9$
	1	22.50
Calculate the cost of 4 shirts	4	90
	$\times 4$	$\times 4$

5 Inverse proportion - worded problems

It takes 28 minutes for 2 people to polish a car. How long would it take for the car to be polished by 14 people?

The number of people and the time are **inversely proportional**. If we multiply or divide one quantity, the other quantity will change by the same factor, with the inverse operation.

	number of people	time (minutes)
Work out the time 1 person would take	2	28
	$\div 2$	$\times 2$
	1	56
Work out the time 14 people would take	14	4
	$\times 14$	$\div 14$

Linear graphs

a) Draw a table of values for the graph of $y = 5 - 3x$ where the values of x are from -1 to 2 .
 b) Plot the graph of $y = 5 - 3x$ on the grid below.

a) Substitute each x value into the equation of the line to find the corresponding y value

x	-1	0	1	2
y	8	5	2	-1

b) On a set of axes, mark the coordinates of each point in the table
 Draw a straight line through the coordinates

answer: b)

The equation of a straight line can be written as $y = mx + c$

- m is the gradient
- c is the y -intercept

Work out the **gradient, m**

$$\text{gradient} = \frac{\text{change in } y}{\text{change in } x}$$

$$m = \frac{15 - 12}{1 - 0}$$

$$m = \frac{3}{1}$$

$$m = 3$$

Work out the **y -intercept, c**

The y -intercept is where the line crosses the y -axis

$$c = 12$$

$y = 3x + 12$

The y -intercept is where the line crosses the y -axis
 The line crosses the y -axis where $x = 0$

Write out the equation $7y = 63 + 42x$

Substitute 0 in place of x $7y = 63 + 42 \times 0$

$$7y = 63 + 0$$

Get y on its own $\div 7$ $7y = 63$ $\div 7$ $y = 9$

The equation of a straight line can be written as $y = mx + c$

- m is the gradient
- c is the y -intercept

Rearrange each equation into the form $y = mx + c$

Get y on its own

What is the gradient?

a) $5y = 15x$ $\div 5$ $4 = 3x$ $\div 3$ $m = 3$

Compound measures

1 Calculating speed

Work out the speed of an object that travels **465 miles** in **12 hours**

$$\text{speed} = \frac{\text{distance}}{\text{time}}$$

$$\text{speed (mph)} = \frac{\text{distance (miles)}}{\text{time (h)}}$$

$$= \frac{465}{12}$$

Remember units
 answer: **38.75 mph**

2 Calculating time

An object travels **3410 km** at an average speed of **248 km/h**.
 Work out how long this journey takes, giving your answer

$$\text{time (h)} = \frac{\text{distance (km)}}{\text{speed (km/h)}}$$

$$= \frac{3410}{248}$$

$$= 13.75$$

13.75 hours

3 Calculating distance

Emma walked for **5.25 hours** at an average speed of **2 miles per hour (mph)**.
 Work out how far Emma walked.

Rearrange the speed formula

$$\text{distance (miles)} = \text{speed (mph)} \times \text{time (h)}$$

Work out the distance Emma walked

$$= 2 \times 5.25$$

$$= 10.5$$

4 Calculating rates - money per hour

A charity collected **£18.66** in **3 hours**.
 Calculate the rate at which the charity collected money in pounds per hour.

$$\text{rate} = \frac{\text{amount of money}}{\text{time}}$$

$$\text{rate (£ per hour)} = \frac{\text{amount of money (£)}}{\text{time (hours)}}$$

Substitute the values into the formula

$$= \frac{18.66}{3}$$

$$= 6.22$$

£6.22

5 Calculating with flow rates

A chemical solution contains **21.8 ml** of water. A chemist adds more water to the solution at a rate of **0.02 ml/s**.
 How many seconds will it take for the solution to contain **25 ml** of water?

$$\text{rate} = \frac{\text{amount of water}}{\text{time}}$$

Rearrange the formula to make time the subject

$$\text{time (s)} = \frac{\text{amount of water (ml)}}{\text{rate (ml/s)}}$$

Work out how much water needs to be added $25 - 21.8 = 3.2$

Work out how long this will take

$$\text{time (s)} = \frac{3.2}{0.02}$$

160 seconds

1

Plotting straight line graphs

2

Finding the equation of a straight line

3

Finding the y -intercept from the equation of a line

4

Finding the gradient from the equation of a line

Motion-time graphs

1 Distance-time graphs

Eleanor travelled 15 km from home to a shop at a constant speed, which took her 30 minutes. She stayed for 10 minutes, before travelling home at a constant speed in 20 minutes. Draw the distance-time graph of Eleanor's journey.

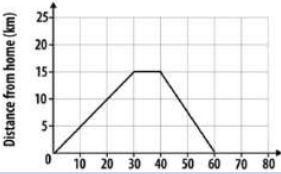
Draw the journey to the shop on the graph

Constant speed is shown by a straight line on the graph

Draw the stop on the graph

A stop is shown by a horizontal line on the graph

Draw the journey home on the graph



2 Interpreting distance-time graphs

This distance-time graph shows Juliet's journey to a shop and back again. How far is the shop from Juliet's home?

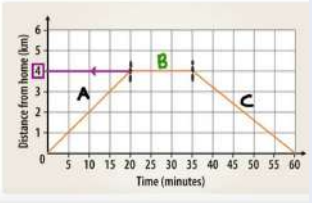
When the line is increasing, she is travelling away from home **A**

When the line is horizontal, she has stopped **B**

When the line is decreasing, she is travelling towards home **C**

Find when she has stopped at the shop

Read across to the "distance from home" axis



3 Calculating speed from distance-time graphs

This distance-time graph shows part of the journey of a train. Calculate the speed of the train.

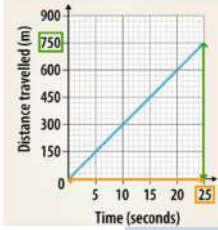
speed = $\frac{\text{distance travelled}}{\text{time taken}}$

$$= \frac{750 - 0}{25 - 0}$$

$$= \frac{750}{25}$$

$$= 30$$

30 m/s



4 Calculating average speed from distance-time graphs

This distance-time graph shows the journey of a drone. Calculate the average speed of the drone for the whole journey.

average speed = $\frac{\text{total distance travelled}}{\text{total time taken}}$

Work out how far the drone travels for each section of the journey

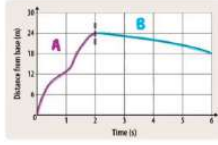
Away from base **A**: $24 - 0 = 24$

Towards base **B**: $24 - 18 = 6$


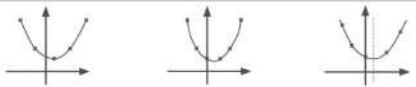



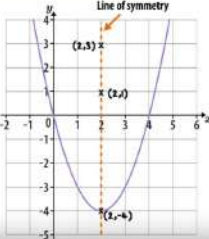
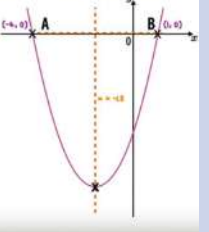
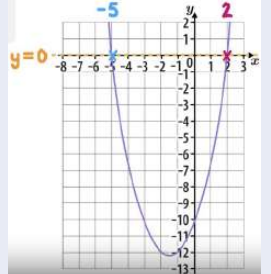
Work out the total distance: $24 + 6 = 30$

Work out the average speed: $\text{average speed} = \frac{30}{6 - 0} = \frac{30}{6}$



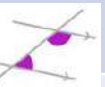
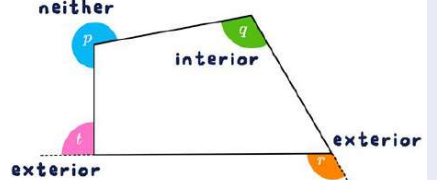
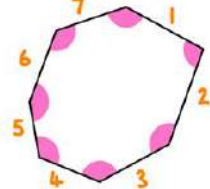
5 m/s



Quadratic graphs

1	Plotting the graphs of quadratic functions	<p>Quadratic graphs should be one of these shapes:</p>  <p>When plotting a quadratic graph:</p> <ul style="list-style-type: none"> - Join all of the points with a smooth curve - The curve should have a vertical line of symmetry <p>Correct:</p>  <p>Incorrect:</p> <ul style="list-style-type: none"> Not all points joined:  Not a smooth curve:  Not symmetric: 
2	Lines of symmetry of quadratic graphs	<p>The line of symmetry for a quadratic curve is shown on the diagram. What is the equation of this line?</p> <p>Quadratic curves are symmetrical about a vertical line.</p> <p>What are the values of the x-coordinate for any point on this line of symmetry?</p> <p>All the points on this line of symmetry have an x-coordinate of 2</p> <p>Line of symmetry is: $x=2$</p> 
3	Finding turning points of quadratic graphs	<p>For the graph $y = x^2 + 3x - 4$, work out the coordinates of the turning point</p> <p>Step 1: Use two points on the curve with the same y-coordinate to work out the line of symmetry.</p> <p>coordinates of midpoint of (x_1, y_1) and $(x_2, y_2) = \left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$</p> <p>Step 2: Use the line of symmetry to find the x-coordinate of the turning point.</p> <p>Step 3: Substitute the x-coordinate back into the equation to find the y-coordinate of the turning point</p> <p>answer: $(-1.5, -6.25)$</p> 
4	Solving quadratic equations graphically	<p>Here is the graph of $y = x^2 + 3x - 10$ Write down the values of x for which $y = 0$</p> <p>Find the line $y = 0$</p> <p>Find the values of x where the graph crosses $y = 0$</p> <p>answer: $x = -5$ and $x = 2$</p> 

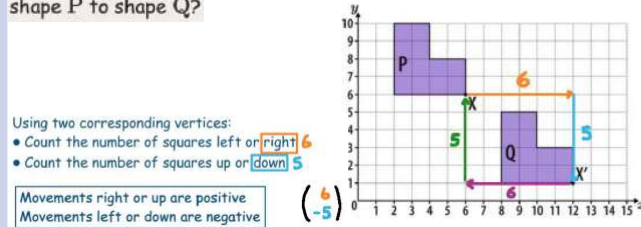
Angles and bearings

1	Corresponding angles	<p>corresponding angles</p>  <p>corresponding angles are equal</p>
2	Alternate angles	<p>alternate angles</p>  <p>alternate angles are equal</p>
3	Co-interior angles	<p>co-interior angles sum to 180°</p> 
4	Interior and exterior angles of polygons	<p>Write down whether each of the angles labelled below are interior, exterior or neither.</p> 
5	Sum of interior angles of a polygon	<p>Work out the sum of the interior angles of this polygon.</p>  <p>sum of interior angles = $180 \times (n-2)$ 7 sides, so $n = 7$</p> <p>$= 180 \times (7 - 2)$ $= 180 \times 5$ $= 900$</p>
6	Bearings	<p>A bearing is the angle in degrees measured clockwise from North</p> <p>Bearings are written with three digits</p>

Transformations

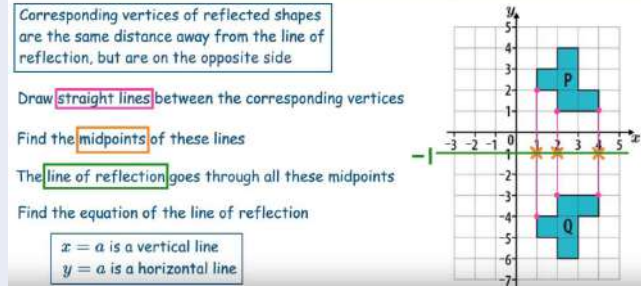
1 Translations

What vector describes the translation from shape P to shape Q?



2 Reflections

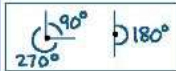
What is the equation of the line of reflection that transforms shape P onto shape Q?



3 Rotations

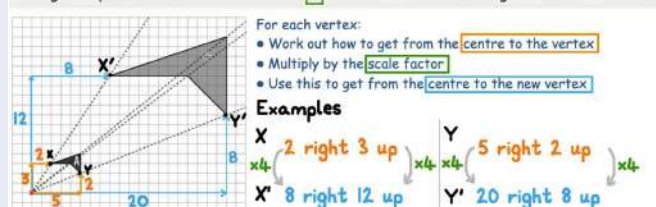


A quarter turn is 90°
A half turn is 180°
A three-quarter turn is 270°



4 Enlargements

Enlarge shape A with a scale factor of **4** and the centre of enlargement at the cross.



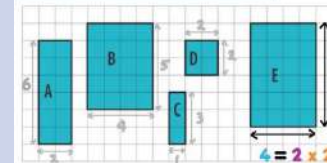
Similarity and congruence

1 Similar shapes

Which shape below is similar to rectangle R?

Two shapes are similar if one is an enlargement of the other
They can be rotations or reflections

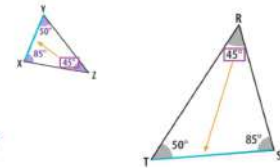
With similar shapes, the lengths are all multiplied by a **scale factor**



2 Similar shapes - all angles are the same

The two triangles shown are similar. Which side of triangle RST corresponds to side XYZ?

Two shapes are similar if one is an enlargement of the other
They can be rotations or reflections



Corresponding sides and angles in similar shapes are in the same positions relative to each other

XY is **opposite** the 45° angle in XYZ
ST is **opposite** the 45° angle in RST

XY in XYZ corresponds to ST in RST

answer: ST

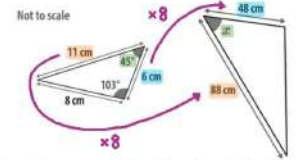
3 Similar shapes - corresponding sides and angles

These two triangles are similar. Work out the size of angle x .

Two shapes are similar if one is an enlargement of the other
They can be rotations or reflections

Work out corresponding sides by finding the **scale factor** between them

$$48 = 6 \times 8 \quad 88 = 11 \times 8$$



Corresponding angles are in the same position relative to the corresponding sides of each triangle

x is **between** the **48cm** and **88cm** sides

x **corresponds to** the **angle between the 6 cm and 11 cm sides**

Corresponding angles are equal

$$x = 103^\circ$$

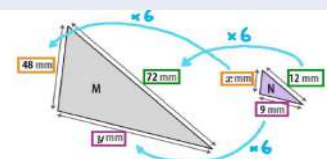
answer: 103°

4 Similar shapes - calculating missing sides

Triangles M and N are similar.

- What is the value of x ?
- What is the value of y ?

With similar shapes, the side lengths are multiplied by a **scale factor**



Look for **two corresponding sides** that we know the lengths of

Use these to work out the scale factor

a) Use the scale factor to work out x

$$\begin{aligned} x \times 6 &= 48 \\ x &= 8 \end{aligned}$$

$$\begin{aligned} 12 \times \text{scale factor} &= 72 \\ \text{scale factor} &= 6 \end{aligned}$$

b) Use the scale factor to work out y

$$\begin{aligned} 9 \times 6 &= y \\ 54 &= y \end{aligned}$$

Handling data and statistical diagrams

1	Qualitative data	Descriptive; cannot be numerical e.g. favourite subject, eye colour.
2	Quantitative data	Only has a numerical value e.g. number of siblings, height.
3	Continuous data	Can take any numerical value within a range e.g. weight
4	Discrete data	Can only take certain numerical values e.g. shoe size
5	Primary data	Information that you have collected yourself
6	Secondary data	Information that someone else has collected

Correlation Correlation is the relationship between variables

The closer the points lie to a line of best fit, the stronger the correlation

Strong correlation 	Weak correlation 	No correlation There is no clear relationship between the variables.
-------------------------------	-----------------------------	--

Positive correlation
As one variable increases, the other variable increases

Negative correlation
As one variable increases, the other variable decreases

Oliver asked a group of people what distance, x , their journey to work was each day. He recorded their responses in the table below. Calculate an estimate of the **mean** distance travelled.

Distance (km)	Frequency	Midpoint	Total
$0 < x \leq 10$	11	5	$11 \times 5 = 55$
$10 < x \leq 20$	14	15	$14 \times 15 = 210$
$20 < x \leq 30$	0	25	$0 \times 25 = 0$

Find the midpoint for each interval
 $\text{midpoint} = \frac{\text{sum of values} + \text{number of values}}{2}$

Estimate the total for each row
 $\text{total for each row} = \text{frequency} \times \text{midpoint}$

Add the row totals to estimate the **total distance**
 $55 + 210 + 0 = 265$

Add the frequencies to find the **number of people**
 $11 + 14 + 0 = 25$

Estimate the **mean**
 $265 \div 25 = 10.6$

Vectors

1 Column vectors

A column vector is given in the form $\begin{pmatrix} a \\ b \end{pmatrix}$ where

- a is the distance moved in the positive x direction
- b is the distance moved in the positive y direction

2 Column vector - example

Write \vec{DC} as a column vector.

The vector \vec{DC} describes how to get from D to C

A column vector is given in the form $\begin{pmatrix} a \\ b \end{pmatrix}$ $\vec{DC} = \begin{pmatrix} a \\ b \end{pmatrix}$

a is the distance moved in the positive x direction
 \vec{DC} goes 3 squares to the right, so $a=3$

b is the distance moved in the positive y direction
 \vec{DC} goes 4 squares down, so $b=-4$

answer: $\vec{DC} = \begin{pmatrix} 3 \\ -4 \end{pmatrix}$

3 Adding column vectors

$a = \begin{pmatrix} 15 \\ 3 \end{pmatrix}$ and $b = \begin{pmatrix} 0 \\ 2 \end{pmatrix}$. Calculate $a + b$.

Substitute in the column vectors for a and b

$$a + b = \begin{pmatrix} 15 \\ 3 \end{pmatrix} + \begin{pmatrix} 0 \\ 2 \end{pmatrix}$$

To add column vectors, add the **top numbers** together and the **bottom numbers** together

$$= \begin{pmatrix} 15 + 0 \\ 3 + 2 \end{pmatrix} = \begin{pmatrix} 15 \\ 5 \end{pmatrix}$$

4 Multiplying column vectors

$p = \begin{pmatrix} 2 \\ -8 \end{pmatrix}$ and $q = \begin{pmatrix} 6 \\ 4 \end{pmatrix}$. Work out $5p + q$.

Substitute in the column vectors for p and q

$$5p + q = 5 \begin{pmatrix} 2 \\ -8 \end{pmatrix} + \begin{pmatrix} 6 \\ 4 \end{pmatrix}$$

To multiply a vector by a **scalar**, multiply each part of the vector by the scalar

$$= \begin{pmatrix} 5 \times 2 \\ 5 \times (-8) \end{pmatrix} + \begin{pmatrix} 6 \\ 4 \end{pmatrix} = \begin{pmatrix} 10 \\ -40 \end{pmatrix} + \begin{pmatrix} 6 \\ 4 \end{pmatrix}$$

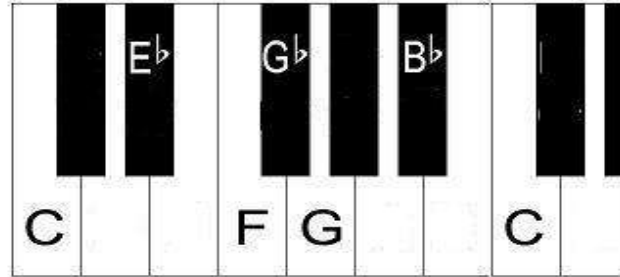
To add column vectors, add the **top numbers** together and the **bottom numbers** together

$$= \begin{pmatrix} 10 + 6 \\ -40 + 4 \end{pmatrix} = \begin{pmatrix} 16 \\ -36 \end{pmatrix}$$

Keywords

1	RIFF OSTINATO	Short, repeated musical patterns often used in SOLOS .
2	IMPROVISATION	music created 'on the spot' (previously unprepared performance)
3	SEVENTH CHORD – a TRIAD	(root, third and fifth) with a fourth note added which is seven notes about the root/tonic. C7 = C, E, G (triad) + B flat .
4	SWING/SWUNG RHYTHMS	performing a regular 'straight' rhythm with a 'lilt' in a " ONE and A, TWO and A " style (using TRIPLETS) common in swing music.
5	BLUES SCALE	a series of notes often used within improvisations in blues music (<i>the Blues Scale on C is shown to the right</i>).
6	BLUE NOTES	additional or extra sharpened or flattened notes in a melody
7	Polyrhythms	Many rhythms at the same time
8	Improvisation	Make it up as you go

BLUES SCALE



12 Bar Blues chord sequence

CHORD I	CHORD I	CHORD I	CHORD I
CEG	CEG	CEG	CEG
CHORD IV	CHORD IV	CHORD I	CHORD I
FAC	FAC	CEG	CEG
CHORD V	CHORD IV	CHORD I	CHORD I
GBD	FAC	CEG	CEG

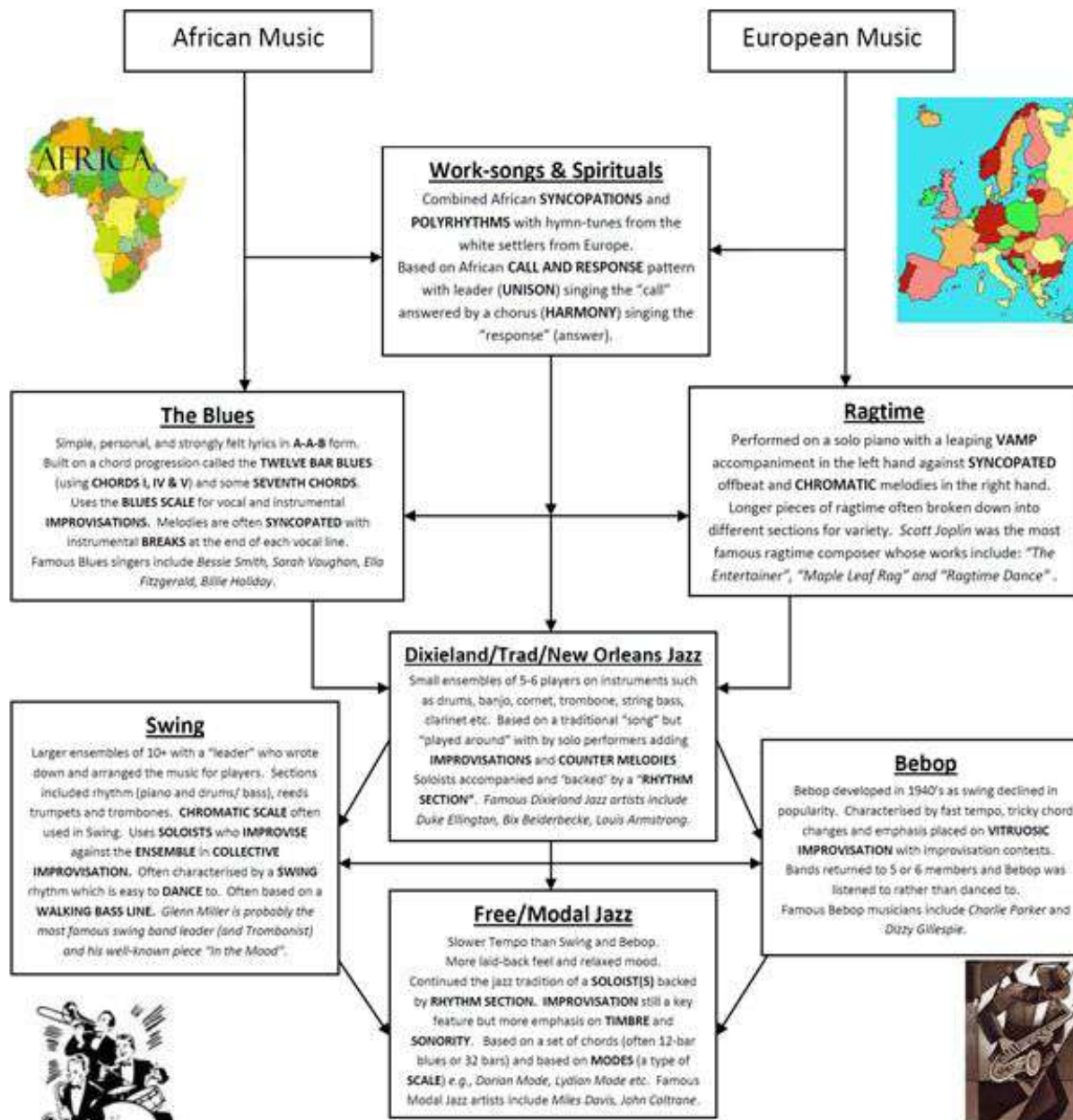
African Music

1	Walking Bassline	A bassline which goes up and down
2	Chromatic Scale	Different notes not in the scale
3	The Blues	A simple strong felt lyrics in AAB form
4	Swing	Large ensemble with a leader

European Music

Ragtime	Piano solo with Syncopated (off beat) chords
Dixieland/New Orleans Jazz	5/6 players drums, banjo, cornet, trombone, string bass, clarinet.
Bebop	1940's as swing declined. Listened to rather than danced
Work songs	African songs. Call and response. Leader calls and the chorus responds
Unison	All together
Rhythm Section	Piano, Double Bass, Drum Kit, Electric guitar
Frontline	Trumpets, Trombone, Sax, Clarinet
Free Modal Jazz	Slower relaxed mood. Soloist and rhythm section

Exploring Jazz and The Blues




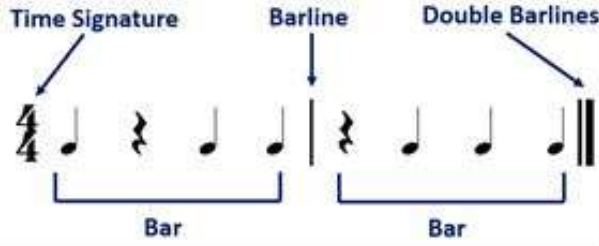
Instruments of Jazz and Blues



A. Pulse, Time and Metre in Dance Music

Exploring Rhythm, Chords and Metre in Music for Dance

The **RHYTHMS** of dance music always match the **STEPS** of the dance: the two are inter-related. Dance music is based on **CHORD PATTERNS**: mainly **PRIMARY CHORDS (I, IV & V(7))** and has a clear **MELODY** with an **ACCOMPANIMENT (HOMOPHONIC TEXTURE)**. Different dances and their music use different **METRES/TIME SIGNATURES**.

1	BEAT or PULSE	Dance music is always REGULAR . Here is a regular crotchet pulse of 12 beats: 
2	BEAT	A single BEAT is a basic unit of musical time. In dance music, beats are grouped together to make a repeating pattern – normally made up of either twos, threes or fours.
3	The repeating pattern of beats gives us the METRE or the TIME of the music, shown by the TIME SIGNATURE at the start of a piece of music. Each repetition of the beat-pattern is called a BAR and bars are separated by vertical lines called BARLINES . A DOUBLE BARLINE always comes at the end of a piece of music or section of music. 	

4 The **TOP NUMBER** of a time signature tells you how many beats there are in each bar. The **BOTTOM NUMBER** tells you what types or note values these beats are (as divisions of a semibreve = 1):

4/4 can also be shown by a "C" meaning **COMMON TIME**

1 = Semibreve 2 = Minim

4 = Crotchet

8 = Quaver

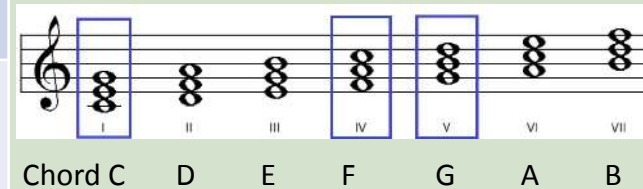
16 = Semiquaver



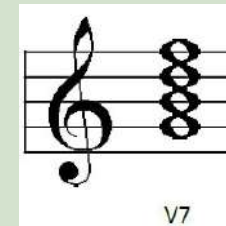
4/4 can also be shown by a "C" meaning **COMMON TIME**

Chords in Dance Music

Dance music is based on **CHORD PATTERNS**. **PRIMARY CHORDS: CHORD I, CHORD IV** and **CHORD V** are most commonly used in dance music



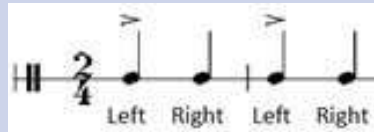
with **SEVENTH CHORDS** featuring in popular dance music such as **DISCO** and **CLUB DANCE** (adding a note seven notes above the root of a chord, such as and **DOMINANT SEVENTH CHORD**). All seventh chords have 4 notes. Chords are often performed in different ways as an **ACCOMPANIMENT** in dance music.



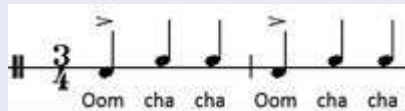
Chord GBD with F as 7th

Characteristic Rhythms in Dance Music

- 1 The **MARCH** has a strong **LEFT**, right, **LEFT**, right rhythm:



- 2 The **WALTZ** has a strong **OOM**-cha-cha, **OOM**-cha-cha rhythm:



- 3 **FOUR-ON-THE-FLOOR** is a common rhythm in **DISCO** and more modern dance music:

Count	1	and a	2	and a	3	and a	4	and a
Bass Drum	●		●		●		●	
Snare Drum or Hand Claps			●				●	
Hi-Hat		●		●		●		●
Cymbal		●		●		●		●

4 Marches

Often with military connections or performed at ceremonies by large groups together.

2/4 time signature, although some marches can be in 4/4).

Strong emphasis on the first beat of the bar (**LEFT**, right, **LEFT**, right).

Clear **MELODY** and **ACCOMPANIMENT** (**HOMOPHONIC TEXTURE**).

Uses mainly **PRIMARY CHORDS (I, IV & V)**.

Often performed by **MARCHING BANDS**:

BRASS, DRUMS and **PERCUSSION**.



Characteristic Rhythms in Dance Music

1 Irish Jig and Reel



Traditional **FOLK DANCES** from Ireland with intricate footwork and arms by sides.

REEL: COMPOUND TIME (6/8);

JIG: SIMPLE TIME (2/4 or 4/4) both with "two in a bar" feel, continuous bouncy quaver or semiquaver rhythms, fast tempo and **DECORATED** melodies.

BINARY FORM.

MAJOR/MINOR or **MODAL.**

Folk Instruments include: **FIDDLE, FLUTE, TIN WHISTLE, ACCORDION, BODHRAN, UILLEANN PIPES, HARP.**

2 Disco

1970's as an individual, **IMPROVISED DANCE** in clubs from a mix of jazz, funk and soul. **METRE (4/4)**

FAST TEMPO (around 120 BPM)

FOUR-ON-THE-FLOOR RHYTHM SYNCOPATED bass line parts.

Simple **CHORD PATTERNS** using **CHORDS I and V** and **SEVENTH CHORDS.**

POPULAR SONG FORM with a strong **GROOVE** (long repeated rhythm section) and fade out endings, and catchy **HOOKS/RIFFS.**

GUITARS, VOCALS, DRUMS, STRING/BRASS SOUNDS, SYNTHESISERS, SAMPLES.

Characteristic Rhythms in Dance Music

1 The Waltz



A **PAIRED DANCE**. Popular in Vienna and became a fashionable **BALLROOM DANCE**. (3/4 time signature)

Emphasis on first beat of the bar. Clear **OOM**-cha-cha, **OOM**-cha-cha rhythm. Clear **MELODY** and **ACCOMPANIMENT (HOMOPHONIC).**

REGULAR 4-BAR PHRASES.

Slow **HARMONIC RHYTHM** using **PRIMARY CHORDS (I, IV & V).**

Performed by **ORCHESTRAS.**

STRINGS (occasionally **WOODWIND**) normally have the **MELODY LINE.**

2 Disco

1970's as an individual, **IMPROVISED DANCE** in clubs from a mix of jazz, funk and soul. 4/4 beats

FAST TEMPO (around 120 BPM)

FOUR-ON-THE-FLOOR SYNCOPATED bass line parts.

Simple **CHORD PATTERNS** using **CHORDS I, V, SEVENTH POPULAR SONG FORM** with a strong **GROOVE** (long repeated rhythm section) and fade out endings, and catchy **HOOKS/RIFFS.**

GUITARS, VOCALS, DRUMS, STRING/BRASS SOUNDS, SYNTHESISERS, SAMPLES.



A. The Purpose of Music in Film

1	Film Music is a type of DESCRIPTIVE MUSIC that represents a MOOD, STORY, SCENE or CHARACTER through music, it is designed to SUPPORT THE ACTION AND EMOTIONS OF THE FILM ON SCREEN . Film Music can be used to:	
2	Create or enhance a mood (though the ELEMENTS OF MUSIC)	
3	Function as a LEITMOTIF	
4	MICKEY-MOUSING	To emphasise a gesture (MICKEY-MOUSING – when the music fits precisely with a specific part of the action in a film e.g. cartoons)
5	Provide unexpected juxtaposition/irony (using music the listener wouldn't expect to hear giving a sense of uneasiness or humour!)	
6	Link one scene to another providing continuity	
7	Influence the pacing of a scene making it appear faster/slower	
8	Give added commercial impetus (released as a SOUNDTRACK) – sometimes a song, usually a pop song is used as a THEME SONG for a film.	
9	Illustrate the geographic location (using instruments associated with a particular country) or historical period (using music 'of the time').	

B. How the Elements of Music are used in Film Music

1	<u>PITCH AND MELODY</u>	RISEING MELODIES are often used for increasing tension, FALLING MELODIES for defeat. Westerns often feature a BIG THEME . Q&A PHRASES can represent good versus evil. The INTERVAL OF A FIFTH is often used to represent outer space with its sparse sound.
2	<u>DYNAMICS</u>	FORTE (LOUD) dynamics to represent power; PIANO (SOFT) dynamics to represent weakness/calm/resolve. CRESCENDOS used for increasing threat, triumph or proximity and DECRESCENDOS or DIMINUENDOS used for things going away into the distance. Horror Film soundtracks often use EXTREME DYNAMICS or SUDDEN DYNAMIC CHANGES to 'shock the listener'.
3	<u>HARMONY</u>	MAJOR – happy; MINOR – sad. CONSONANT HARMONY OR CHORDS for "good" and DISSONANT HARMONY OR CHARDS for "evil". SEVENTH CHORDS often used in Westerns soundtracks
4	<u>DURATION</u>	LONG notes often used in Westerns to describe vast open spaces and in Sci-Fi soundtracks to depict outer space; SHORT notes often used to depict busy, chaotic or hectic scenes. PEDAL NOTES – long held notes in the BASS LINE used to create tension and suspense.
5	<u>TEXTURE</u>	THIN/SPARE textures used for bleak or lonely scenes; THICK/FULL textures used for active scenes or battles.
	<u>ARTICULATION</u>	LEGATO for flowing or happy scenes, STACCATO for 'frozen' or 'icy' wintery scenes. ACCENTS (>) for violence or shock.
	<u>RHYTHM & METRE</u>	2/4 or 4/4 for Marches (battles), 3/4 for Waltzes, 4/4 for "Big Themes" in Westerns. IRREGULAR TIME SIGNATURES used for tension. OSTINATO rhythms for repeated sounds e.g. horses.


To create or enhance a mood

1	OSTINATO	A repeating Pattern
2	TREMOLO	Strings repeating the same not very quickly
3	CRESCENDO	DYNAMICS (Volume) gradually getting louder
4	SILENCE	No sound before something dramatic (to make you jump!)
5	Drone	Two notes sounded together as an accompaniment, a long held note
6	Chords	3 notes played at the same time.

To function as a Leitmotif

1		
2	Leitmotif	A frequently recurring short melodic
3	MONOTHEMATIC	One theme throughout
4	MICKEY-MOUSING	Sound mimics actions of cartoons
5	CLICK TRACKS	To time the action to the music

Theory

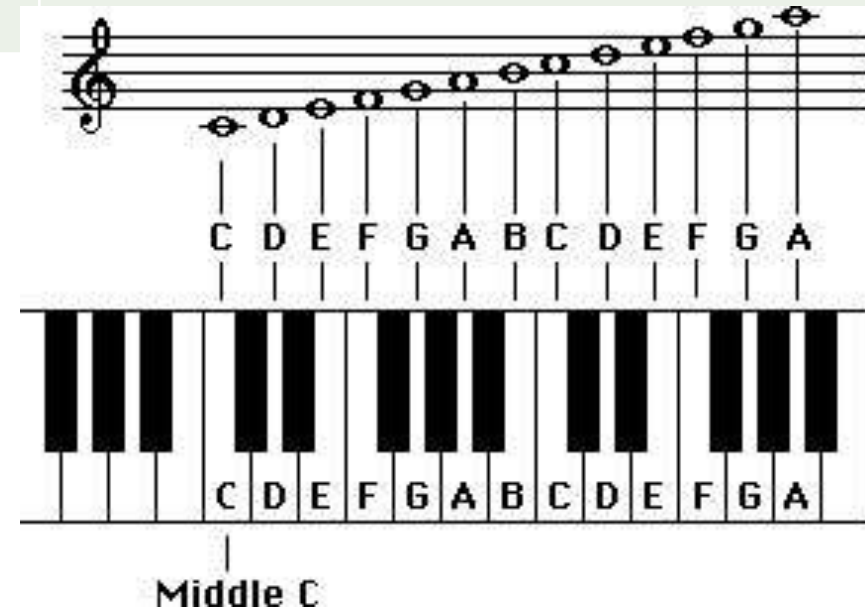
1	Time signature 4 or 3 4 4	This tells us how many beats in a bar, that you need to count. The top number tells how many beats; Eg. 4 or 3
2		This is a repeat mark. It means you go bar to the beginning and play the music again.
3	Rhythm	Is a pattern of sound which can be repeated to a regular beat.
4	Rests	A rest is a musical sign that indicates a beat of silence. It still counts in the value of the bar .
5	Pulse	A pulse is a steady, regular beat that continues throughout a song.

C. Film Music Key Words

1	<u>SOUNDTRACK</u>	The music and sound recorded on a motion-picture film. The word can also mean a commercial recording of a collection of music and songs from a film sold individually as a CD or collection for digital download.
2	<u>MUSIC SPOTTING</u>	A meeting/session where the composer meets with the director and decides when and where music and sound effects are to feature in the finished film.
3	<u>STORYBOARD</u>	A graphic organiser in the form of illustrations and images displayed in sequence to help the composer plan their soundtrack.
4	<u>CUESHEET</u>	A detailed listing of MUSICAL CUES matching the visual action of a film so that composers can time their music accurately.
5	<u>CLICK TRACKS</u>	An electronic METRONOME which helps film composers accurately time their music to on-screen action through a series of 'clicks' (often heard through headphones) – used extensively in cartoons and animated films.
	<u>DIEGETIC FILM MUSIC</u>	Music within the film for both the characters and audience to hear <i>e.g. a car radio, a band in a nightclub or sound effects.</i>
6	<u>NON-DIEGETIC FILM MUSIC</u>	Music which is put “over the top” of the action of a film for the audience’s benefit and which the characters within a film can’t hear – also known as UNDERScore or INCIDENTAL MUSIC .

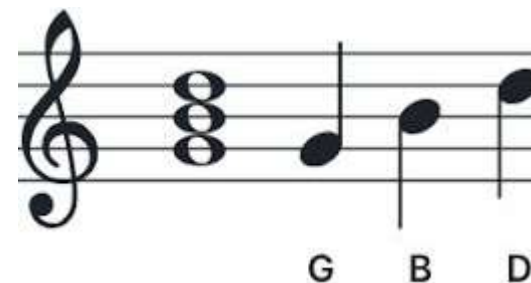
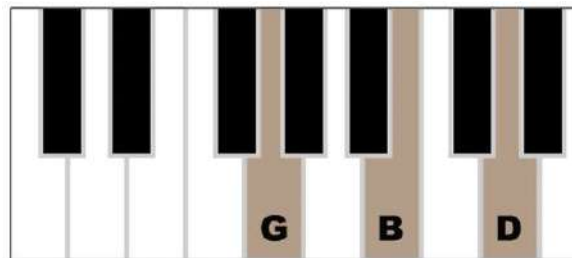
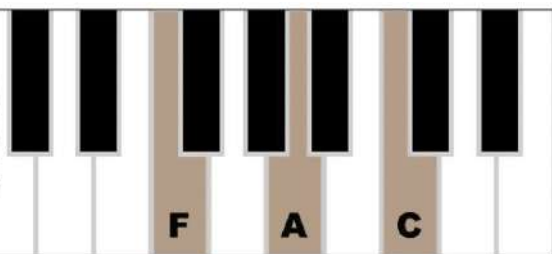
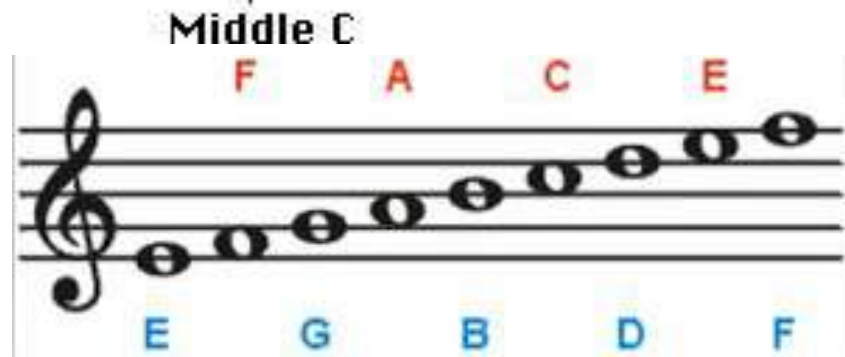
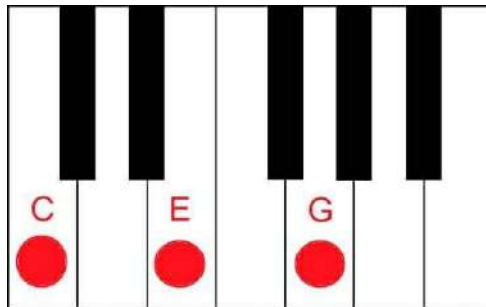
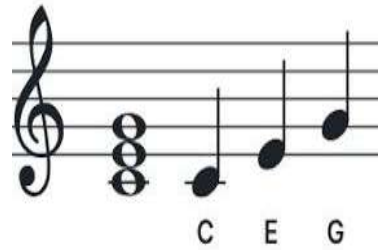
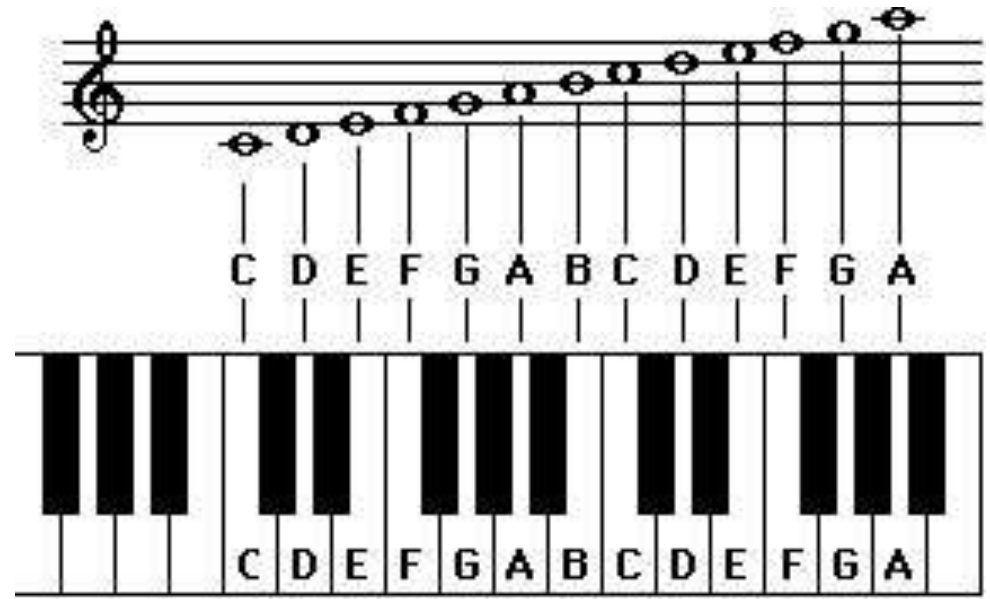
D. Leitmotifs

- LEITMOTIF**
A frequently recurring short melodic or harmonic idea which is associated with a character, event, concept, idea, object or situation which can be used directly or indirectly to remind us of one not actually present on screen.
- Leitmotifs can be changed through **SEQUENCING**, **REPETITION** or **MODULATION** giving a hint as to what may happen later in the film or may be heard in the background giving a “subtle hint” to the listener *e.g. the “Jaws” Leitmotif*




Chords

1	Chord/Triad	3 notes played at the same time
2	C Chord	CEG notes
3	F Chord	FAC notes
4	G Chord	GBD notes
5	Middle C	This is the middle of the Piano





Early Computer and Video Game Music

1	SOUND EFFECTS	Early video game music an artificially created or enhanced sound used to emphasize certain actions within computer and video games
2	CHIPTUNES or 8-BIT MUSIC	A style of electronic music which used simple melodies made for programmable sound generator (PSG) sound chips in vintage computers, consoles and arcade machines)
3	SYNTHESISER 	Technology (an electronic musical instrument that generates audio signals that may be converted to sound
4	SAMPLING	The technique of digitally encoding music or sound and reusing it as part of a composition or recording) began in the 1980's allowing sound to be played during the game, making it more realistic and less "synthetic-sounding"

How Computer and Video Game Music is used within a Game

1	CUES	Music within a computer or video game is often used for CUES (knowing when a significant event was about to occur).
2	GROUND THEME	Video game music is often heard over a game's title screen (called the GROUND THEME)
3	DECISION MOTIF	Music can be used to INCREASE TENSION AND SUSPENSE <i>e.g. during battles and chases</i> , when the player must make a decision within the game (a DECISION MOTIF) and can change, depending on a player's actions or situation <i>e.g. indicating missing actions or "pick-ups"</i> .

Musical Features of Computer and Video Game Music

JUMPING BASS LINE



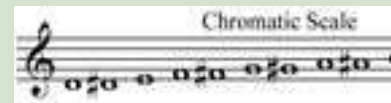
Where the bass line often moves by **LEAP (DISJUNCT MOVEMENT)** leaving 'gaps' between notes

STACCATO ARTICULATION



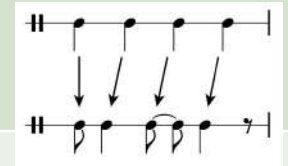
Performing each note sharply and detached from the others. Shown by a dot

CHROMATIC MOVEMENT



Melodies and bass lines that ascend or descend by semitones.

SYNCOPIATION



Accenting the weaker beats of the bar to give an "offbeat" jumpy feel to the music.

How Computer and Video Game Music is Produced

1 MUSIC TECHNOLOGY



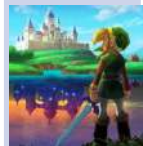
Fully-orchestrated **SOUNDTRACKS** (video game music scores) are now popular – technology is used in their creation but less in their performance. The composer uses **MUSIC TECHNOLOGY** to create the score, it is then played by an **ORCHESTRA** and then digitally converted and integrated into the game.

2 SOUNDTRACKS

Become popular and are now commercially sold and performed in concert with some radio stations featuring entire shows dedicated to video game music.

Character Themes in Computer and Video Game Music

1



CHARACTER THEMES or **CHARACTER MOTIFS** – like **LEITMOTIFS**

Characters within a video game can also have their own **CHARACTER THEMES** or **CHARACTER MOTIFS** – like **LEITMOTIFS** within Film Music.

2



ORCHESTRATION

These can be manipulated, altered and changed – adapting the elements of music – **ORCHESTRATION** (the act of arranging a piece of music for an orchestra and assigning parts to the different musical instruments), **TIMBRE, SONORITY, TEXTURE, PITCH, TEMPO, DYNAMICS** – depending on the character's situation or different places they travel to within the game.

A1. Melody & Dynamics

1	CONJUNCT	wide leaps, angular and spiky.
2	CHROMATIC	Uses all 12 notes (black and white) of the CHROMATIC SCALE .
3	EXTREMES OF DYNAMICS -	<i>(pppp-ffff)</i> Very quiet-very loud
4	No clear melody/"tune"	

A3. Rhythm

1	SYNCOPIATION	Off Beat half beat followed by full beat emphasising weaker beats of the bar.
2	IRREGULAR ACCENTS	(>) – e.g. <i>The Rite of Spring</i>
3	IRREGULAR TIME SIGNATURES	5 or 7 beats per bar.





A2. Harmony

1	ATONALITY	no (sense of) key.
2	POLYTONALITY	two or more keys played at once.
3	DISCORDS	Dissonant, clashing chords.

A4. Timbres and Sonorities Instrumentation


1	Strange, intriguing, and exotic sounds; striking, sometimes explosive, contrasts.
2	PERCUSSION – expanded in orchestra and more emphasis on percussion timbre and sonorities.
3	Unfamiliar sounds from strange instruments such as EXTREME PITCH RANGES and playing instruments in different and unusual ways.
4	TOTALLY NEW SOUNDS often involving ELECTRONIC EQUIPMENT and MAGNETIC TAPE .

B. Minimalism

1	MOTIFS	Based on CELLS or MOTIFS – short simple ideas.
2	LOOPING	Use of REPETITION – also called LOOPING . LAYERED TEXTURES NO CLEAR MELODY GRADUAL CHANGES OVER TIME
		
3	PHASE SHIFT (PHASE IN/OUT)	when two or more motifs or cells begin in UNISON and gradually become “out of sync” with each other through displacement, either forwards or backwards.
4	METAMORPHOSIS	tiny changes are made over time to one note or to one part of the rhythm. This can go a “full circle” and end up exactly the same at the end.
		
5	ADDITIVE MELODY	adding notes to an original melodic cell gradually. 
7	ISORHYTHMIC OVERLAP	combining different length motifs or ostinato patterns
8	AUGMENTATION	doubling the note values of a motif or cell.
9	DIMINUTION	halving the note values of a motif or cell. RETROGRADE/INVERSION/RETROGRADE INVERSION (see D. Serialism)


C. Expressionism

1	“Expressionism” is borrowed from painting and is concerned with dark, secret terrors, mental breakdowns, and fantastic visions
2	Expressionist composers often use HEXACHORDS as a form of ACCOMPANIMENT . Hexachords are chords formed of SIX NOTES . A hexachord can be formed on any note of the CHROMATIC SCALE , but must follow a strict pattern of TONES and SEMITONES : Semitone – Tone – Semitone – Tone + Semitone – Semitone The notes can then be arranged in any order in different extreme pitch ranges.
3	Famous Expressionist Composers include: Arnold Schoenberg, Alban Berg, Anton Webern



D. Serialism

1	STONE/NOTE ROWS	use the 12 notes of the CHROMATIC SCALE
2	PRIME Row	ORIGINAL row on which the entire composition is based.
3	INVERSION	(intervals upside down)
4	RETROGRADE	(backwards)
5	RETROGRADE INVERSION	(the inversion row backwards) These 4 rows would then become the bases of the composition, used either vertically (as chords) or horizontally (as melody).
6	Famous Serialist Composers include: Arnold Schoenberg, Alban Berg, Anton Webern, Igor Stravinsky	



A. Popular Song Structure

1	SONG STRUCTURE	How a song is made up of or divided into different sections and the order in which these sections occur.
2	INTRO	often shortened to 'intro', the first section of a song which sets the mood of the song and is sometimes, but not always, an instrumental section using the song's chord pattern.
3	VERSES	Verses introduce the song's theme and have the same melody but different lyrics for each verse which helps develop the song's narrative and story. Songs made up entirely of verses are called STROPHIC .
4	LINK	An optional short section often used to join different parts of a song together, often instrumental, sometimes joins verses together or appears at other points within a song.
5	PRE-CHORUS	An optional section of music that occurs before the CHORUS which helps the music move forward and "prepare" for what is to come.
6	CHORUS	Occurs several times within a song and contains the most memorable HOOK/RIFF . The chorus relays the message of the song it is repeated with the same melody/lyrics each time it is heard. In popular songs, the chorus is often repeated several times towards the end of the song.
7	MIDDLE 8/BRIDGE	A section (8 bars in length) that provides contrasting music often featuring an instrumental or vocal solo using new musical material allowing the performer to display their technical skill on their instrument or voice.
8	CODA/ OUTRO	The final section of a popular song which brings it to an end (Coda is Italian for "tail"!)

B. Key Words

1	LYRICS	The words of a song, usually consisting of VERSES and a CHORUS .
2	HOOK	A 'musical hook' is usually the 'catchy bit' of the song that you remember. Often short and repeated in different places throughout the piece. Hooks can be either MELODIC, RHYTHMIC or VERBAL/LYRICAL
3	RIFF	A repeated musical pattern often in the introduction/instrumental breaks in a song or piece. Riffs can be rhythmic, melodic or lyrical, short /repeated
4	MELODY	The main tune of the song often sung by the LEAD SINGER
5	COUNTER -MELODY	An 'extra' melody often performed 'on top of' the main melody that 'fits' with it a DESCANT or INSTRUMENTAL SOLO .
6	TEXTURE	Layers that make up a song <i>e.g., Melody, Counter-Melody, Hooks/Riffs, Chords, Accompaniment, Bass Line.</i>

C. Lead Sheet Notation and Arrangements

A **LEAD SHEET** is a form of musical **NOTATION** that contains only the essential elements of a popular song such as the **MELODY, LYRICS, RIFFS, CHORDS** (often as guitar chord symbols) and **BASS LINE**; it is not as developed as a **FULL SCORE ARRANGEMENT** and is open to interpretation by performers who need to use and adapt the given elements to create their own musical **ARRANGEMENT**: their “version” of an existing song. **COVER (VERSION)** – A new performance, remake or recording by someone other than the original artist or composer of the song.

Ed Sheeran
"Shape of You"
Songsheet

Lead Sheet

Chorus

Verse

Bridge

Outro

Chords

Lyrics

D. Conjunct and Disjunct Melodic Motion

1	CONJUNCT MELODIC MOTION	Melodies which move mainly by step or use notes which are next to or close to one another.
2	DISJUNCT MELODIC MOTION	Melodies which move mainly by leap or use notes which are not next to or close to one another.
3	MELODIC RANGE	The distance between the lowest and highest pitched notes in a melody.

Conjunct



Disjunct



E. Song Timbre and Sonority (Instruments that are used to Accompany Songs)

Pop Bands often feature a **DRUM KIT** and **PERCUSSION** to provide the rhythm along with **ELECTRIC GUITARS (LEAD GUITAR, RHYTHM GUITAR and BASS GUITAR)** and **KEYBOARDS**. Sometimes **ACOUSTIC INSTRUMENTS** are used such as the **PIANO** or **ACOUSTIC GUITAR**. **ORCHESTRAL INSTRUMENTS** are often found in pop songs such as the **STRINGS, SAXOPHONE, TROMBONE** and **TRUMPET**.

E. Song Timbre and Sonority (Instruments that are used to Accompany Songs)

Singers are essential to a pop song - **LEAD SINGER** – Often the “frontline” member of the band (most famous) who sings most of the melody line to the song. **BACKING SINGERS** support the lead singer providing **HARMONY** or a **COUNTER-MELODY** (a melody that is often higher in pitch and different, but still ‘fits with’ the main melody) and do not sing all the time but just at certain points within a pop song e.g. in the chorus.



AUTUMN TERM - Science - Year 9		
Number	Questions	Answer
1	What is an atom?	The smallest part of an element
2	What is meant by an element?	A substance made of only one type of atom
3	What is meant by a compound?	A substance made of two or more different atoms chemically bonded together
4	What is meant by a molecule?	A substance made of more than one atom chemically bonded together (can be atoms of the same element)
5	What is meant by a mixture?	A substance made of more than one thing not chemically bonded together
6	What elements are in sodium fluoride?	Sodium and fluorine
7	What elements are in potassium nitrate?	Potassium nitrogen and oxygen
8	True or false: oxygen gas (O ₂) is an element.	True: only one type of atom (O) present.
9	True or false: carbon dioxide (CO ₂) is an element.	False: two types of atom (C and O) present.
10	True or false: water (H ₂ O) is an element.	False: two types of atom (H and O) present.
11	What famous scientific table contains all the known elements?	Periodic Table
12	Is the first letter of a chemical symbol always A) capital, or B) lower case?	A) capital
13	Is the second letter of a chemical symbol always A) capital, or B) lower case?	B) lower case
14	True or false: all symbols in the periodic table are made up of two letters.	False: some are made up of one letter, some are made up of two.
15	Which element has the chemical symbol H?	Hydrogen
16	Which element has the chemical symbol C?	Carbon
17	Which element has the chemical symbol N?	Nitrogen
18	Which element has the chemical symbol O?	Oxygen
19	Which element has the chemical symbol Cu?	Copper
20	Which element has the chemical symbol Fe?	Iron
21	Which element has the chemical symbol Na?	Sodium
22	Which element has the chemical symbol K?	Potassium
23	What name is given to vertical columns in the periodic table: periods or groups?	Groups
24	What name is given to horizontal rows in the periodic table: periods or groups?	Periods
25	Where are metals found in the periodic table?	Left and centre
26	Where are non-metals found in the periodic table?	Right

27	What do we call two or more atoms chemically bonded together to make a larger particle: mixture, molecule or matter?	Molecule
28	How many elements are present in a molecule of CO ₂ ?	Two (C and O)
29	How many atoms are present in a molecule of CO ₂ ?	Three (1 C atom and 2 O atoms)
30	How many elements are present in a molecule of O ₂ ?	One (O)
31	How many atoms are present in a molecule of O ₂ ?	Two (2 O atoms)
32	How many elements are present in a molecule of NH ₃ ?	Two (N and H)
33	How many atoms are present in a molecule of NH ₃ ?	Four (1 N atom and 3 H atoms)
34	What do we call the substances present before a chemical reaction takes place?	Reactants
35	What do we call the substances present after a chemical reaction takes place?	Products
36	What symbol do we use to show a chemical reaction has taken place?	Arrow
37	Magnesium is heated in air to form magnesium oxide. Is magnesium a reactant or a product?	Magnesium is a reactant
38	Magnesium is heated in air to form magnesium oxide. Is magnesium oxide a reactant or a product?	Magnesium oxide is a product
39	Magnesium is heated in air to form magnesium oxide. Which gas in air reacts with the magnesium?	Oxygen
40	If there are only two elements present in a compound, what will the name of the compound usually end with: -ide or -ate?	-ide
41	If there are three elements present in a compound and one is oxygen, what will the name of the compound usually end with: -ide or -ate?	-ate
42	Name the elements present in magnesium chloride.	Magnesium, chlorine
43	Name the elements present in copper sulphate.	Copper, sulphur, oxygen
44	What is meant by a pure substance in science?	A substance that contains only one element or compound.
45	What is meant by a mixture in science?	A substance that contains two or more elements or compounds not chemically bonded together.
46	What name is given to a mixture caused by one substance dissolving in another: solute, solvent or solution?	Solution
47	What name is given to a solid that is dissolved in a liquid: solute, solvent or solution?	Solute
48	What name is given to a liquid in which a solid is dissolved: solute, solvent or solution?	Solvent
49	What is meant by a soluble substance?	A substance that can be dissolved.

50	What is meant by an insoluble substance?	A substance that cannot be dissolved.
51	If the temperature of a liquid increases, does the rate of dissolving increase, decrease or stay the same?	Rate of dissolving increases.
52	What word is used to describe a solution in which no more solute can be dissolved?	Saturated
53	Which method of separating mixtures can be used to separate an insoluble solid from a liquid: distillation, evaporation, chromatography or filtration?	Filtration
54	Which method of separating mixtures can be used to separate a soluble solid from a liquid: distillation, evaporation, chromatography or filtration?	Evaporation
55	Which method of separating mixtures can be used to separate two liquids of different boiling points: distillation, evaporation, chromatography or filtration?	Distillation
56	Which method of separating mixtures can be used to separate substances of different solubilities: distillation, evaporation, chromatography or filtration?	Chromatography
57	What do we call the insoluble solid that is left behind in the filter paper after filtration?	Residue
58	What do we call the liquid that passes through the filter paper and is collected after filtration?	Filtrate
59	What shape do we usually fold filter paper into during filtration?	Cone
60	True or false: boiling can only happen at the boiling point of a liquid.	True: boiling only happens at the boiling point.
61	True or false: evaporation can only happen at the boiling point of a liquid.	False: evaporation can happen at temperatures below the boiling point.
62	Where in a liquid does evaporation happen?	The surface of the liquid
63	Where in a liquid does boiling happen?	Throughout the whole liquid
64	True or false: you need to use a Bunsen burner to make water evaporate.	False: evaporation will happen at room temperature, just relatively slowly.
65	What shaped flask do we add the mixture to during distillation?	Round flask
66	During distillation, what do we add to the mixture to help it boil more smoothly?	Anti-bumping granules
67	Which two changes of state are involved in distillation?	Boiling and condensing
68	What is left behind in the round flask after distillation: the liquid with the lower boiling point or the liquid with the higher boiling point?	The liquid with the higher boiling point
69	Two dyes are separated by chromatography. Which one travels further: the more soluble dye or the less soluble dye?	More soluble dye
70	During chromatography, why do we draw a line in pencil to show where the dots started from?	Pencil is insoluble so does not move through the paper
71	What is an atom?	The smallest part of an element

72	What is meant by an element?	A substance made of only one type of atom
73	What is meant by a compound?	A substance made of two or more different atoms chemically bonded together
74	What is meant by a molecule?	A substance made of more than one atom chemically bonded together (can be atoms of the same element)
75	What is meant by a mixture?	A substance made of more than one thing not chemically bonded together
76	Describe the plum pudding model of the atom.	A ball of positive charge with negative electrons studded into it
77	State the findings of the gold foil experiment.	That atoms have dense nuclei with a positive charge
78	State the names of the three subatomic particles.	Protons, neutrons, electrons
79	State the masses of the subatomic particles.	Protons: 1, neutrons: 1, electrons: 0
80	State the relative charges of the subatomic particles	Protons: +1, neutrons: 0, electrons: -1
81	Describe how the subatomic particles are arranged in an atom.	Protons and neutrons in the nucleus, electrons orbiting in shells
82	Define the atomic number of an atom.	The number of protons in an atom
83	Define the mass number of an atom.	The number of protons + the number of neutrons in an atom
84	Describe how you would calculate the number of neutrons in an atom.	Mass number - atomic number
85	Explain how the electrons are arranged in atoms.	Orbiting the nucleus in shells
86	How many electrons can go in the first shell?	2
87	How many electrons can go in the second and third shells?	8
88	State what the groups tell you about the electrons in an atom	How many electrons in the outer shell. E.g. carbon is in group 4 so has 4 electrons in the outer shell
89	Explain what the periodic table tells you about the electrons in an atom	How many shells an atom has. E.g. carbon is in the second period so has two shells
90	Explain why Mendeleev put some elements in groups.	Because they had similar chemical properties (e.g. they reacted violently with water)
Number	Questions	Answer
1	What is a scalar quantity?	A quantity that only has a magnitude A quantity that isn't direction dependent
2	What is a vector quantity?	A quantity that has both a magnitude and direction.

3	How can a vector quantity be drawn and what does it show?	As an arrow, the length of the arrow represents the magnitude, the arrow points in the associated direction.
4	What are the two categories that all forces can be split into?	Contact forces & non-contact forces
5	Give three examples of contact forces.	Friction, Air resistance, Drag, Tension, Reaction
6	Give three examples of non-contact forces.	Gravitational forces, Electrostatic, Magnetic
7	Is force a vector or a scalar quantity?	Vector, it has both magnitude & direction
8	Give three examples of vector quantities.	Velocity, displacement, force, momentum
9	Give three examples of scalar quantities	Temperature, Time, Mass, Speed, Distance, Energy, Pressure
10	What is weight?	The force that acts on an object due to gravity and the object's mass.
11	What is the relationship between gravitational field strength, mass and weight?	Weight = mass x gravitational field strength
12	What are the units of weight?	Newtons (N)
13	What are the units of mass?	kilograms (kg)
14	What are the units of gravitational field strength?	Newtons / kilogram (N/kg)
15	What is the value of the gravitational field strength on the earth's surface?	9.81 N/kg
16	Is the gravitational field strength on the surface of the moon likely to be larger or smaller than on the earth's surface? Explain your answer.	Smaller. Moon has lower mass than earth so gravity is weaker.
17	What piece of equipment can be used to measure an object's weight?	A calibrated spring-balance or newton meter.
18	What is the name given to the single force that is equivalent to all other forces acting on a given object?	The resultant force
19	What does it mean if a force is said to do 'work'?	The force causes an object to be displaced through a distance.
20	What distance must be used when calculating work done?	It must be the distance that is moved along the line of action of the force.
21	What occurs when work is done against frictional forces?	Thermal energy dissipated to the surroundings (energy wasted).
22	What is the relationship between the force applied and the extension of an elastic object?	Extension is directly proportional to the force applied, provided that the limit of proportionality is not exceeded.
23	What is meant by inelastic deformation?	Deformation which results in the object being permanently stretched.
24	What is the equation linking extension, force & spring constant?	Force = spring constant x extension

25	What are the units of force?	Newtons (N)
26	What are the units of extension?	metres (m)
27	What are the units of spring constant?	Newtons / metre (N/m)
28	What type of energy is stored in a spring when it is stretched?	Elastic potential energy
29	What is the opposite action to extending a spring?	Compression (this also causes elastic potential energy to be stored)
30	What is meant by the term fluid?	A liquid or a gas
31	In any fluid, at what angle do the forces due to pressure act on a given surface?	At right angles (normal) to the surface

SPRING TERM - Science - Year 9

Number	Questions	Answer
1	What are the differences between eukaryote and prokaryote cells?	Prokaryotes do not contain a nucleus, whereas eukaryotes do. Prokaryotes have cell walls, whereas eukaryotes do not.
2	Name the 5 common features of a plant and animal cell	Cell membrane, Cytoplasm, nucleus, mitochondria, ribosomes
3	State the 3 organelles that a plant cell contains and an animal cell does not	Chloroplasts, vacuole, cell wall
4	What is the function of the nucleus?	Contains DNA
5	What is the function of the cell membrane?	To controls the movement of substances in and out of the cell
6	What is the function of the cytoplasm?	Contains all the organelles and is where most chemical reactions takes place
7	What is the function of the mitochondria?	Site of respiration where energy is released
8	What is the function of the ribosomes?	The site of protein synthesis, where new proteins are made
9	What is the function of the permanent vacuole?	Contains water and cell sap
10	What is the function of the chloroplasts?	Site of photosynthesis (contains chlorophyll)
11	What material makes up the cell walls?	Cellulose
12	What is a specialised cell?	A cell that has specific features or adaptations to perform a particular job
13	What is cell differentiation?	When a cell becomes a specialised cell
14	When do most cells differentiate in an animal?	Foetal stage
15	When do cells differentiate in a plant?	They can differentiate at any time
16	In animals, what is cell differentiation used for?	Repair of damaged tissues or cells
17	Name two types of microscopes	Light/optical microscope Electron microscope
18	State 2 advantages and disadvantages of a light/optical microscope	Advantages: Portable, easy to use, see colour, inexpensive, live specimens Disadvantages: 2D, low resolution, low magnification
19	State 2 advantages and disadvantages of an electron microscope	Advantage: 3D images, high magnification, high resolution Disadvantage: Expensive, black and white images only, specimen must be dead
20	What is meant by the resolution or resolving power of a microscope?	The finess of detail that can be seen in an image. The higher the resolution of an image, the more detail it holds. The ability to distinguish between 2 points.
21	How do you calculate magnification?	Magnification = Image size / Actual size
22	How many chromosomes does a human adult cell have?	46 or 23 pairs
23	What happens to the cell before it divides?	The nucleus disappears, chromosomes becomes short, fat and they double
24	What is produced during mitosis?	Genetically identical daughter cells
25	What is produced during meiosis?	Gametes
26	Why is mitosis important?	Growth, repair and maintaining the chromosome number

27	What do we call a cell with 2 sets of chromosomes?	Diploid
28	What do we call a cell with 1 set of chromosomes	Haploid
29	What is a stem cell?	An undifferentiated cell that has the potential to specialise
30	Name another type of stem cell found in animals	Embryonic stem cells
31	Where are embryonic stem cells found?	Embryos, umbilical cord
32	Where are adult stem cells found?	Bone marrow
33	What is a plant stem cell called?	Meristems
34	Where would you find plant stem cells?	Meristem (tip of plant)
35	How are plant stem cells different to adult stem cells or embryonic stem cells?	They can differentiate at any time, throughout the life of the plant
36	What is an advantage of using plant stem cells?	Can be used to produce clones of plants quickly and economically. Rare species can be cloned and prevented from extinction. Crop plants with special (e.e disease resistance) can be cloned to produce lots of identical plants for farmers
37	What are the advantages of using adult stem cells?	Easier to obtain, effective, no ethical issues, abundant supply, little or no problems with immune rejection
38	What are the advantages of using embryonic stem cells?	Can differentiate into any type of cell. Potential to cure diseases such as blindness, diabetes and cancers
39	Why might people be against the use of stem cells?	Ethical reasons surrounding the use of embryos, may not know the side effect, infection, expensive, potential rejection
40	What is the definition of organ?	A collection of different tissues working together to carry out a specific function.
41	What is the definition of an organ system?	A group of organs that work together to carry out a specific function and form organisms.
42	What is the definition of tissue?	A group of specialised cells with a similar structure and function.
43	Enzymes in the stomach work best in what conditions?	Acidic.
44	Enzymes made in the pancreas and small intestines work best in what conditions?	Alkaline.
45	What are proteins broken down into?	Amino acids.
46	Name three digestive enzymes and what they do?	Amylase breaks down starch to sugar. Protease breaks down proteins to amino acids. Lipase breaks down fats to fatty acids and glycerol.
47	Which enzyme breaks starch into glucose?	Amylase.
48	What is the name for a biological catalyst?	An enzyme.
49	What does bile do?	Bile neutralises the acid added to the food in the stomach and emulsifies fats.
50	What food group is tested using Biuret reagent?	Proteins.
51	What colour does Biuret reagent turn if there are proteins?	Biuret reagent turns from blue to purple in the presence of proteins.
52	What is the chemical symbol for glucose?	C ₆ H ₁₂ O ₆
53	What do carbohydrates do?	Carbohydrates are used as an energy store.

54	What are simple sugars?	Carbohydrates that contain only one or two sugar units.
55	Cellulose and starch are examples of?	Complex carbohydrates.
56	What do fatty acids do?	Fatty acids are used as an energy store.
57	What does glycerol do?	Glycerol is used as an energy store.
58	Where is bile produced?	In the liver.
59	Where is amylase produced?	In the salivary glands and the pancreas.
60	What colour will starch turn Iodine solution?	Iodine solution will change from orange-brown to blue-black when starch is present.
61	How is the small intestine adapted to increase absorption of soluble food molecules?	It has a large surface area as it is covered in villi, thin walls and a good blood supply.
62	If the bonds in a protein molecule are broken, by temperature of pH, and the protein loses its shape - what can we say about the protein?	It is denatured.
Number	Questions	Answer
1	State what the groups tell you about the electrons in an atom	How many electrons in the outer shell. E.g. carbon is in group 4 so has 4 electrons in the outer shell
2	Explain what the periodic table tells you about the electrons in an atom	How many shells an atom has. E.g. carbon is in the second period so has two shells
3	Explain why Mendeleev put some elements in groups.	Because they had similar chemical properties (e.g. they reacted violently with water)
4	Explain why Mendeleev left gaps in his periodic table.	For elements that had not been discovered yet
5	What is an ion?	An atom which has lost or gained an electron
6	In terms of electrons, what do group 1 elements have in common?	1 electron in the outer shell
7	In terms of electrons, what do group 7 elements have in common?	7 electrons in the outer shell
8	In terms of electrons, what do group 0 elements have in common?	Full outer shell
9	Define the term inert.	Unreactive
10	Explain why the noble gases are inert.	They have full outer shells, so do not need to gain or lose electrons
11	What is a trend?	A pattern in properties
12	State the trend in the melting points of the alkali metals.	Melting point reduces further down the group
13	Write a name for this chemical equation LiOH	Lithium hydroxide
14	Write a name for this chemical equation KOH	Potassium hydroxide
15	Define a displacement reaction?	A reaction in which a more reactive element takes the place of a less reactive element in a compound
16	Explain why fluorine is more reactive than chlorine.	Fewer shells/electrons, less shielding (or stronger attraction from nucleus), easier to gain electrons
17	Explain why potassium is more reactive than lithium.	More shells/electrons, less shielding (or weaker attraction from nucleus), easier to lose electrons

18	Explain why bromine is less reactive than chlorine.	More shells/electrons, more shielding (or weaker attraction from nucleus), harder to gain electrons
19	Explain why sodium is less reactive than caesium	Fewer shells/electrons, less shielding (or stronger attraction from nucleus), harder to lose electrons
20	What did Chadwick discover?	The neutron
21	What elements are in sodium fluoride?	Sodium and fluorine
22	What elements are in potassium nitrate?	Potassium nitrogen and oxygen
23	Write down the charge of a lithium ion.	1
24	Write down the charge of a chlorine ion.	-1
Number	Questions	Answer
1	What is acceleration?	The rate of change of velocity.
2	What does an inclined gradient of a velocity time graph tell us about the motion of an object?	It is accelerating
3	What does a flat line on a velocity time graph, tell us about the motion of an object?	Constant velocity
4	What does the inclined gradient of a distance time graph, tell us about the motion of an object?	The speed of an object.
5	What does a flat line on a distance time graph, tell us about the motion of an object?	The object is at rest/stationary
6	What does a diagonal line of constant gradient on a distance time graph tell us about the motion of an object?	The object is moving at constant speed
7	A velocity time graph starts with a steep gradient. The gradient gradually decreases until the line becomes flat. Describe the motion of the object in these stages.	Object starts moving with rapid acceleration. Acceleration then decreases until it reaches zero. From that point, object is moving at constant speed (terminal velocity).
8	A distance time graph starts with a steep gradient. The gradient gradually decreases until the line becomes flat. Describe the motion of the object in these stages.	Object initially moving at high speed. Speed then decreases until it reaches zero. From that point, object is stationary.
9	Which two factors does the stopping distance of a car depend on?	Thinking distance and braking distance
10	What is the relationship between thinking distance, reaction time and speed?	thinking distance = speed x reaction time
11	How would thinking distance change if the speed of the car doubles?	Thinking distance will double
12	How would the braking distance change if the speed of the car doubles?	Braking distance would increase (by a factor of 4).
13	What is the term used to describe the time taken for the driver to see the hazard and press the brake pedal?	Reaction time
14	What factors can increase the thinking distance of a car?	Using a mobile phone, speed, intoxications, distractions
15	What factors can increase the braking distance of a car?	poor road conditions, poor driving weather, poor tyre condition, poor condition of the brakes, speed

16	What is the distance moved by a car during the reaction time called?	thinking distance
17	Newtons second law can be expressed as an equation. Write down the equation.	Resultant force = mass x acceleration
18	What is the equation linking acceleration, change in velocity and time?	acceleration = change in velocity / time
19	What is the SI unit of velocity?	metres per second
20	What is the SI unit of acceleration?	metres per second per second metres per second squared
21	Write down the definition of inertia.	The tendency of objects to continue in their state of rest or of uniform motion.
22	What is Newton's first law of motion?	No resultant force => no change in motion (object carries on moving at constant speed or remains stationary)
23	What is Newton's second law of motion?	If there is a resultant force, then the object's velocity will change (either speed or direction of motion), i.e. it will accelerate or decelerate.
24	What is Newton's third law of motion?	When two bodies interact, they apply forces to one another that are equal in magnitude and opposite in direction
25	What is the acceleration of an object in free fall on the earth's surface?	9.81 metres per second squared
26	When a parachutist first jumps out of an aeroplane, is the resultant force large, small, or zero?	LARGE - weight much bigger than drag force.
27	As the parachutist's speed increases, does the resultant force increase or decrease?	DECREASE - drag force increases as speed increases but weight remains constant.
28	When the parachutist reaches top speed, is the resultant force large, small, or zero?	ZERO - drag force equal to weight so parachutist stops accelerating.
29	What is the maximum speed reached by an object called?	Terminal velocity
30	How can the maximum speed of objects be increased?	Make them more streamlined to reduce drag; increase force supplied by engine.
31	True or False: The Moon orbits the earth in approximately a circular orbit. It travels at constant speed. This means it is not accelerating.	FALSE - its direction constantly changes therefore it constantly accelerates.
32	In which direction does the Moon accelerate as it orbits the Earth?	Towards the Earth
33	What is the equation linking momentum, mass and velocity?	Momentum = mass x velocity
34	What is the symbol equation linking momentum, mass and velocity?	$p = m \times v$
35	What are the units of momentum?	kgm/s
36	What is the law of conservation of momentum?	Total momentum before an event = total momentum after the event, in a closed system.
37	What is meant by a closed system?	A system in which no matter can enter or escape.

SUMMER TERM - Science - Year 9

Number	Questions	Answer
1	What is cardiovascular disease?	Any disease that involves the heart or blood vessels.
2	What are the three main types of blood vessels?	Arteries, veins and capillaries.
3	Which type of blood vessel carries blood away from the heart?	Arteries.
4	Which blood vessel has a small lumen and a thick layer of muscle and elastic fibres?	Artery.
5	What can be used to correct irregularities in the heart rhythm?	Artificial pacemakers.
6	What is the network of tiny vessels linking arteries to veins called?	Capillaries.
7	Which blood vessel has a thin wall that allows diffusion of gases and nutrients?	Capillary.
8	What does the natural pacemaker do?	Controls a group of cells in the right atrium that controls the resting heart rate.
9	What does the vena cava do?	It carries deoxygenated blood from the body into the heart.
10	What does the pulmonary artery do?	It carries deoxygenated blood from the heart to the lungs.
11	What does pulmonary vein do?	It carries oxygenated from the lungs to the heart.
12	What does the heart do?	It pumps blood around the body.
13	What does the aorta do?	It takes oxygenated blood away from the heart to the rest of the body.
14	What does plasma do?	It transports blood cells and other substances around the body.
15	What is the name of the fluid part of the blood?	Plasma.
16	Which part of the blood consists of small fragments of blood cells that help clotting?	Platelets.
17	What are the bi-concave cells that contain haemoglobin and carry oxygen around the body in the blood?	Red blood cells.
18	What can be used to reduce cholesterol levels in the blood?	Statins.
19	Which major blood vessel carries oxygenated blood away from the heart?	The aorta.
20	Name the three parts of the human circulatory system.	The blood, blood vessels and the heart.
21	What does the trachea branch into?	The bronchi.
22	What is the definition of a 'double circulatory system'?	The circulation of blood from the heart to the lungs is separate from the circulation of the heart to the rest of the body.
23	What separates your lungs from your abdomen?	The diaphragm.
24	Which chamber of the heart does oxygenated blood flow into?	The left ventricle.
25	Which blood vessel carries deoxygenated blood from the heart to the lungs?	The pulmonary artery.
26	Which bones protect your lungs?	The ribs.

27	What is the name of the long tube that takes air down into the lungs?	The trachea.
28	Which blood vessels have valves and carry deoxygenated blood back to the heart?	The veins.
29	Which major blood vessel carries deoxygenated blood back to the heart?	The vena cava.
30	What do white blood cells do?	They engulf pathogens and make antibodies and antitoxins.
31	What do the lungs do?	They exchange gases between the body and the air.
32	How are the alveoli adapted to diffuse gases in and out of the blood as efficiently as possible?	They have a large surface area, thin walls and a good blood supply.
33	What are stents used for?	To keep narrowed or blocked arteries open.
34	What is the job of the valves in veins?	To stop the blood from flowing in the wrong direction
Number	Questions	Answer
1	What is the attraction between the individual molecules in a covalently bonded substance called?	Intermolecular forces
2	What bonding occurs between a metal and a non-metal?	Ionic
3	What type of bonding occurs if electrons are transferred?	Ionic
4	What type of bonding occurs if electrons are shared?	Covalent
5	What type of bond is an electrostatic force of attraction between positively and negatively charged ions?	Ionic bond
6	What happens when an ionic bond is formed?	One atom loses electrons to another atom to form oppositely charged ions that attract each other.
7	Why do atoms form ions?	To get a full outer shell / become more stable (like a noble gas)
8	Explain why group 1 elements like sodium and lithium form a 1+ ion.	They both have one electron in their outer shell and lose it to become stable.
9	What are the charges on calcium, oxide and chloride ions?	2+, 2- and 1-
10	What structure of regularly repeating ions do ionic compounds form?	Lattice structure
11	What is the formula of the nitrate ion?	NO ₃ ⁻
12	What is the charge on the ions of elements in group 6 of the periodic table?	-2
13	What is the name of the ionic compound containing calcium and bromine only?	Calcium bromide
14	What is the name of the ionic compound containing potassium, chlorine and oxygen?	Potassium chlorate
15	How many more electrons does an oxygen atom need to get a complete outer shell?	2
16	What kinds of elements usually form molecules?	Non-metals
17	What kinds of bonds are found in molecules?	Covalent

18	In what types of bonds are pairs of electrons shared?	Covalent bonds
19	What can you say about the formula of small, simple molecules?	They are fixed.
20	What type of bonding is between the atoms in a molecule of water?	Covalent
21	What type of structure does water have?	Simple covalent molecule
22	What type of bonding involves sharing electrons?	Covalent
23	Name two types of bonding model.	From: molecular formula; structural formula; dot and cross diagram; all shells; dot and cross diagram outer shell only; 3D ball and stick; 2D space-filling; or 3D space-filling (other answers are possible)
24	Name a type of bonding model that is used to show what happens to the electrons in a covalent bond.	A dot and cross model

Number	Questions	Answer
1	Name five energy stores	Kinetic, Thermal, Gravitational Potential, Chemical Potential, Elastic Potential, Electric Potential, Nuclear Potential, Magnetic Potential
2	What are the four energy transfer pathways?	Mechanical, Heating, Electrical, Radiation
3	What is the law of Conservation of Energy?	Energy cannot be created or destroyed, but only transferred from one store to another or dissipated to the surroundings.
4	Which energy transfer pathway does Work represent?	Work represents the mechanical energy pathway.
5	What is the word equation for Work?	Work = Force x Distance
6	What is the symbol equation for Work?	$W = F \times d$
7	What is the unit for Work?	Joule (J)
8	What is the unit for Force?	Newtons (N)
9	What is the unit for distance?	metres (m)
10	What store of energy is associated with moving objects?	Kinetic energy
11	What is the word equation for kinetic energy?	kinetic energy = 0.5 x mass x (speed) ²
12	What is the symbol equation for kinetic energy?	$E_k = 1/2 m v^2$
13	What are the units of mass?	kilograms, kg
14	What are the units of kinetic energy?	Joules, J
15	What store of energy is associated with a stretched spring?	Elastic potential energy
16	What is the word equation for elastic potential energy?	elastic potential energy = 0.5 x spring constant x (extension) ²
17	What is the symbol equation for elastic potential energy?	$E_e = 1/2 k e^2$
18	What are the units of spring constant?	Newtons / metre (N/m)
19	What are the units of extension?	metres (m)

20	What are the units of elastic potential energy?	Joules, J
21	What store of energy is associated with an object lifted above ground level?	Gravitational potential energy
22	What is the word equation for gravitational potential energy?	g p e = mass x gravitational field strength x height
23	What is the symbol equation for gravitational potential energy?	$E_g = m g h$
24	What are the units of gravitational field strength?	Newtons / kilogram (N/kg)
25	What are the units of gravitational potential energy?	Joules, J
26	What is the store of energy that is associated with temperature changes?	Thermal energy
31	What is the definition of power?	Power is defined as the rate at which energy is transferred or the rate at which work is done.
32	What is the word equation for power?	power = energy transferred ÷ time, power = work done ÷ time
33	What is the symbol equation for power?	$P = E / t$ $P = W / t$
34	What is the unit of power?	Watts, W
35	What does 1 Watt mean in terms of Joules and seconds?	1 Joule of energy is transferred every second.
36	What is the most common way that energy is "wasted"?	Thermal energy / heating the surroundings
37	Give some examples of how to reduce unwanted energy transfers.	Thermal insulation, lubrication.
38	What does thermal conductivity mean?	The higher the thermal conductivity of a material the higher the rate of energy transfer by conduction across the material.
39	What factors affect the rate of cooling of a building?	The thickness and thermal conductivity of its walls.
40	What does the efficiency of an energy transfer tell us?	How much of the total input energy is transferred usefully
41	What is the word equation for efficiency?	efficiency = useful output energy transfer ÷ total input energy transfer x 100% OR efficiency = useful power output ÷ total power input x 100%

SENTENCE BUILDER 1

Pienso que <i>I think that</i> En mi opinión <i>In my opinion</i> Creo que <i>I think (believe) that</i> Diría que <i>I would say that</i> Según yo <i>In my opinion (according to me)</i>	se debe <i>we must</i>	respetar (a) <i>respect</i> tratar con respeto (a) <i>treat with respect</i>	la identidad de todos <i>the identity of everyone</i> la diversidad <i>diversity</i> las mujeres <i>women</i> los hombres <i>men</i> las chicas <i>girls</i> los chicos <i>boys</i> los ancianos/las ancianas <i>elderly people</i> los mayores <i>the elders</i> los seres humanos <i>human beings</i> las religiones <i>religions</i> la igualdad de género <i>gender equality</i> las víctimas <i>victims</i> los derechos de (los animales) <i>the rights of (animals)</i> las personas con discapacidad <i>disabled people</i>		
	se debería <i>we should</i>	es importante <i>it is important to</i>	poder casarse con <i>be able to marry (with)</i> tener una cita con <i>go on a date with</i> estar en pareja con <i>be in a couple with</i> poder compartir tu vida con <i>be able to share your life with</i>	quien sea, a pesar de <i>whoever, in spite of...</i> ...el color de su piel <i>their skin colour</i> ...su nacionalidad <i>their nationality</i> ...su orientación sexual <i>their sexual orientation</i>	
	es necesario <i>it is necessary to</i>	luchar contra <i>fight against</i>	el racismo <i>racism</i> el sexismo <i>sexism</i> la discriminación <i>discrimination</i> la desigualdad <i>inequality</i>		
Se puede ser <i>We can be</i>	pobre <i>poor</i> rico <i>rich</i> diverso <i>diverse</i> religioso <i>religious</i> discapacitado <i>disabled</i> gay <i>gay</i> bisexual <i>bisexual</i> heterosexual <i>straight</i> lesbiana <i>lesbian</i> no binario <i>non-binary</i> transgénero <i>transgender</i>	y tener los mismos <i>and have the same</i>	valores <i>values</i> derechos <i>rights</i>		
		y sentirse <i>and be</i>	igual <i>equal</i> incluido en la sociedad <i>included in society</i>		



SENTENCE BUILDER 2

<p>Mi personalidad favorita es <i>My favourite celebrity is</i></p> <p>Mi modelo a seguir es <i>My role-model is</i></p> <p>La persona que admiro es <i>The person that I admire is</i></p> <p>Soy fanático de <i>I am a fan of</i></p>	<p>un atleta <i>an athlete</i></p> <p>un deportista <i>a sports person</i></p> <p>un futbolista <i>a footballer</i></p> <p>un personaje de televisión <i>a TV character</i></p>	<p>que se llama... <i>who is called</i></p> <p>porque <i>because</i></p> <p>dado que <i>because</i></p> <p>puesto que <i>because/since</i></p>	<p>trabaja duro <i>he/she works hard</i></p> <p>ayuda a otra gente <i>he/she helps other people</i></p> <p>representa a su país <i>he/she represents his/her country</i></p> <p>lucha por los derechos de las mujeres <i>he/she fights for women's rights</i></p> <p>lucha por la paz/la justicia <i>he/she fights for peace/justice</i></p> <p>lucha contra la discriminación/racismo <i>he/she fights against discrimination/racism</i></p> <p>participa en manifestaciones <i>he/she participates in protests</i></p>
<p>puedo identificarme con él/ella <i>I can identify with him/her</i></p> <p>porque <i>because</i></p> <p>dado que <i>because</i></p> <p>puesto que <i>because/since</i></p>	<p>es <i>he/she is</i></p>	<p>contento/a(s) <i>happy</i></p> <p>divertido/a(s) <i>fun</i></p> <p>simpático/a(s) <i>kind</i></p> <p>bonito/a(s) <i>beautiful</i></p> <p>activo/a(s) <i>active</i></p> <p>único/a(s) <i>unique</i></p> <p>monótono/a(s) <i>boring</i></p> <p>enfadado/a(s) <i>angry</i></p> <p>bello/a(s) <i>beautiful</i></p> <p>alegre(s) <i>happy</i></p> <p>fuerte(s) <i>strong</i></p> <p>triste(s) <i>sad</i></p> <p>responsable(s) <i>responsible</i></p> <p>feliz/felices <i>happy</i></p> <p>individual(es) <i>individual</i></p> <p>trabajador(a)(es/as) <i>hardworking</i></p> <p>hablador(a)(es/as) <i>chatty</i></p> <p>sociable(s) <i>social</i></p>	<p>(va) en silla de ruedas <i>in a wheelchair</i></p> <p>adoptado/a <i>adopted</i></p> <p>hijo único <i>an only child (m)</i></p> <p>hija única <i>an only child (f)</i></p> <p>religioso/a <i>religious</i></p> <p>discapacitado/a <i>disabled</i></p> <p>gay <i>gay</i></p> <p>bisexual <i>bisexual</i></p> <p>heterosexual <i>straight</i></p> <p>lesbiana <i>lesbian</i></p> <p>una mujer <i>a woman</i></p> <p>un hombre <i>a man</i></p>

SENTENCE BUILDER 3

<p>Durante la semana <i>During the week</i></p>	<p>me despierto <i>I wake up</i></p> <p>me levanto <i>I get up</i></p>	<p>a... <i>at</i></p>	<p>por la mañana <i>in the morning</i></p>
<p>Los fines de semana <i>At the weekend</i></p>	<p>me lavo los dientes <i>I brush my teeth</i></p>	<p>la una <i>one o'clock</i> las dos <i>two o'clock</i> las tres <i>three o'clock</i> las cuatro <i>four o'clock</i> ...</p>	<p>por la tarde <i>in the afternoon</i></p>
<p>Normalmente <i>Normally</i></p>	<p>me peino <i>I comb my hair</i></p>	<p>las ocho y cinco <i>8.05</i> las ocho y diez <i>8.10</i> las ocho y cuarto <i>8.15</i> las ocho y veinte <i>8.20</i> las ocho y veinticinco <i>8.25</i> las ocho y media <i>8.30</i> las nueve menos veinticinco <i>8.35</i> las nueve menos veinte <i>8.40</i> las nueve menos cuarto <i>8.45</i> las nueve menos diez <i>8.50</i> las nueve menos cinco <i>8.55</i></p>	<p>por la noche <i>in the evening</i></p>
<p>Generalmente <i>Usually</i></p>	<p>me ducho <i>I shower</i></p> <p>me visto <i>I get dressed</i></p>		
<p>Todos los días <i>Every day</i></p>	<p>me maquillo <i>I put make-up on</i></p> <p>me relajo <i>I relax</i></p>		<p>luego... <i>then...</i></p>
<p>Cada día <i>Each day</i></p>	<p>me divierto <i>I have fun</i></p>		<p>después... <i>after...</i></p>
<p>Para llevar una vida sana <i>In order to lead a healthy lifestyle</i></p>	<p>me muevo <i>I move</i></p> <p>me acuesto <i>I go to bed</i></p> <p>me duermo <i>I sleep</i></p> <p>desayuno <i>I eat breakfast</i></p> <p>hago mis deberes <i>I do my homework</i></p> <p>salgo de mi casa <i>I leave my house</i></p> <p>juego en el ordenador <i>I play on the computer</i></p> <p>descanso <i>I relax</i></p>	<p>al mediodía <i>at midday</i> a la medianoche <i>at midnight</i></p>	<p>finalmente... <i>finally...</i></p>

SENTENCE BUILDER 4

<p>No me encuentro bien <i>I don't feel well</i></p> <p>Estoy enfermo <i>I am sick</i></p> <p>Tengo calor <i>I am hot</i></p> <p>Tengo frío <i>I am cold</i></p> <p>Tengo hambre <i>I am hungry</i></p> <p>Tengo sed <i>I am thirsty</i></p>	<p>Me duele <i>... hurts</i></p> <p>Me duelen <i>... hurt</i></p> <p>Tengo dolor de <i>I have pain of</i></p> <p>Me he roto <i>I have broken</i></p> <p>Me he cortado <i>I have cut</i></p>	<p>la cabeza <i>my head</i></p> <p>la cara <i>my face</i></p> <p>la mano <i>my hand</i></p> <p>la nariz <i>my nose</i></p> <p>la espalda <i>my back</i></p> <p>la garganta <i>my throat</i></p> <p>la boca <i>my mouth</i></p> <p>la pierna <i>my leg</i></p> <p>la rodilla <i>my knee</i></p> <p>el estómago <i>my stomach</i></p> <p>el brazo <i>my arm</i></p> <p>el corazón <i>my heart</i></p> <p>el cuerpo <i>my body</i></p> <p>el hombro <i>my shoulder</i></p> <p>el pie <i>my foot</i></p> <p>el dedo <i>my finger/toe</i></p> <hr/> <p>los ojos <i>my eyes</i></p> <p>los oídos <i>my ears</i></p> <p>los dientes <i>my teeth</i></p>	<p>desde <i>since</i></p>	<p>hace un día <i>one day ago</i></p> <p>hace un mes <i>one month ago</i></p> <p>hace una hora <i>one hour ago</i></p> <p>hace una semana <i>one week ago</i></p> <p>hace más de una semana <i>more than one week ago</i></p> <p>ayer <i>yesterday</i></p> <p>anteayer <i>the day before yesterday</i></p> <p>esta mañana <i>this morning</i></p> <p>esta tarde <i>this afternoon</i></p> <p>el martes pasado <i>last Tuesday</i></p>
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SENTENCE BUILDER 5

<p>Lo que me preocupa <i>What concerns me</i></p> <p>Lo que más me preocupa <i>What worries me the most</i></p>	<p>es <i>is</i></p> <p>son <i>are</i></p>	<p>el racismo <i>racism</i></p> <p>el estado del planeta <i>the state of the planet</i></p> <p>el hambre <i>hunger (famine)</i></p> <p>el medio ambiente <i>the environment</i></p> <p>el cambio climático <i>climate change</i></p> <p>el sexismo <i>sexism</i></p> <p>la violencia <i>violence</i></p> <p>la salud <i>health</i></p> <p>la crisis económica <i>the economic crisis</i></p> <p>la polución <i>pollution</i></p> <p>los animales en peligro de extinción <i>animals in danger of extinction</i></p>	<p>se puede <i>you can</i></p> <p>hay que <i>we must</i></p>	<p>luchar contra el hambre <i>fight against hunger</i></p> <p>actuar ahora <i>act now</i></p> <p>comprar productos verdes <i>buy eco-friendly products</i></p> <p>trabajar con los mayores <i>work with older people</i></p> <p>ayudar otras personas <i>other people</i></p> <p>aprender sobre el planeta <i>learn about the planet</i></p>
<p>En mi región <i>In my region</i></p>	<p>en verano <i>in summer</i></p> <p>en invierno <i>in winter</i></p> <p>en otoño <i>in autumn</i></p> <p>en primavera <i>in spring</i></p>	<p>hace <i>it is (does)</i></p> <p>hay <i>there is</i></p> <p>el cielo es claro <i>the sky is clear</i></p> <p>el clima es templado <i>the climate is mild</i></p> <p>llueve mucho <i>it rains a lot</i></p> <p>nieva mucho <i>it snows a lot</i></p>	<p>buen tiempo <i>nice weather</i></p> <p>mal tiempo <i>bad weather</i></p> <p>calor <i>hot (heat)</i></p> <p>frío <i>cold</i></p> <p>sol <i>sunny (sun)</i></p> <p>viento <i>windy (wind)</i></p> <p>nieve <i>snow</i></p> <p>nubes <i>clouds</i></p>	



SENTENCE BUILDER 6

<p>Para salvar el medio ambiente <i>In order to save the environment</i></p> <p>Para proteger el medio ambiente <i>In order to protect the environment</i></p>	<p>se puede <i>you can</i></p> <p>hay que <i>you must</i></p> <p>se debe <i>you must</i></p> <p>se debería <i>you should</i></p> <p>no se debe <i>you mustn't</i></p>	<p>apagar las luces <i>to turn off the lights</i></p> <p>reciclar <i>to recycle</i></p> <p>cerrar la puerta <i>to close the door</i></p> <p>limpiar las calles <i>to clean the streets</i></p> <p>prohibir el uso de... <i>to prohibit the use of...</i></p> <p>caminar en vez de conducir <i>walk instead of driving</i></p>
		<p>usar <i>to use</i></p> <p>energía renovable <i>renewable energy</i></p> <p>bolsas de plástico <i>plastic bags</i></p> <p>recursos naturales <i>natural resources</i></p>

PATTERN AND FABRIC DESIGN | YEAR 9 | TEXTILES | AUTUMN TERM

TEXTILES EQUIPMENT		KEY TERMS		STENCILLING PROCESS STEPS	
Pins	A device, with a head, shaft and point, used for fastening objects or fabrics together.	Frottage	An art technique (French for “Texture Rubbing”) where textures are picked up by rubbing wax or chalk over a textured surface to pick up a shape and image.	H&S	Craft knives are sharp and can cut your fingers easily. Always use a cutting mat and cut away from your hand.
Embroidery Thread	A yarn that is manufactured or hand-spun specifically for embroidery and other forms of needlework. Thicker than machine thread and able to be split.		Pattern	A pattern is a design in which lines, shapes, forms or colours are repeated. The part that is repeated is called a motif. Patterns can be regular or irregular.	Equipment
Iron	A handheld electrical tool with a heated flat steel base, used to smooth out creases and remove wrinkles from fabric.	Shape		Shapes are two-dimensional. Positive shapes represent solid objects and negative shapes show the surrounding space. Geometric shapes are perfect and regular. Organic shapes are irregular and natural.	Frame
Pinking Shears	Scissors with a serrated blade, used to cut zigzag edges onto fabric to prevent fraying.		Texture	Texture means how something feels. There are two types of texture: actual texture and visual texture.	Design
Fabric Crayons	A wax like crayon that is designed to be used on fabric. Gives a smooth, matte finish with no lumps on fabric – unlike traditional wax crayons. Can be heat fixed with an iron.	Applique		A needlework technique in which one or more pieces of fabric are attached to a larger background fabric to create pictures or patterns.	
Bondaweb	A soft adhesive web attached to transfer paper. Makes bonding or attaching two fabric layers together quick & easy. Peel when cold only.		Machine Embroidery	The process of using a sewing machine or specialist embroidery machine to create a pattern on a textile of your choice.	Print
Ironing Board	A stable and solid fabric covered and heat resistant surface to iron fabric on.	Hand Embroidery		The art of decorative stitching on fabric with needle and thread by hand.	
Greaseproof Paper	A non-stick paper that is used in textiles to reduce damage, staining and destruction to work when ironing.		Line	A mark made on a surface that joins different points. Lines can vary in length, width, direction and shape.	
Sewing Machine	A machine used to sew fabric and materials together with thread.	Free-Motion Embroidery		The art of drawing with a sewing machine in thread onto fabric using a free-motion embroidery foot and different machine settings.	
Machine Thread	Thread that is thin and fine and designed to be used to be used on a sewing machine.		Bondaweb	Double-sided iron-on adhesive attached to transfer paper, used to glue two fabrics together.	
Fabric Paint	Paint that is designed to be used on fabric. Can be applied by brush, sponge or thinned to a spray.				
Fabric	Any thin, flexible material made from yarn, directly from fibres, plastic film or foam.				
Free-Motion Embroidery Foot	A sewing machine presser foot designed for embroidery that lifts and lowers as the machine sews with less movement of fabric layers.				
Craft Knife	A sharp thin changeable blade on a handle made for cutting delicate material, used for cutting stencils into card or paper.				

HAND SEWING PROCESS STEPS

Tying a Knot



1. Place the needle and longer end of the thread together.
2. Pinch them between your thumb and index finger.
3. Take the thread (NOT the one closer to the needle), and wind it twice or thrice around it.
4. Clump it down to the bottom by pulling the thread downwards.
5. Now, gently pinching the needle, the end of the thread, and the clumped thread between the fingers, slowly pull out the needle.
6. The wound and clumped thread form a knot at the end of the thread as you finish pulling out the needle completely.

Running Stitch



1. Begin the running stitch by poking your threaded needle up through the fabric (A).
2. Poke the needle back down through the fabric next (B) to where you just came up and pull the thread down into your first stitch.
3. Now poke your needle back up through the fabric, leaving a space from the previous stitch. Then poke the needle back down through the fabric again making your second stitch.

Back Stitch



1. Bring the thread through (A) from the back to the front and take it through (B) to the back. This creates one stitch.
2. Bring the thread through (C) and take it in through (B). This way we are creating a stitch by taking the thread backwards.
3. Bring the thread through (D) and take it in through (C). Continue this pattern to finish the design.

Chain Stitch



1. Bring the thread out through A. Put the needle back in A and bring it out through point B, but don't pull the needle out completely.
2. Now, take the thread around the needle from left to right to form a loop.
3. Pull out the needle now to tighten the loop and you will get the first part of the chain.
4. Now, put the needle in through B (now inside the loop) and bring it out on C (outside of the loop).
5. Continue the action by taking the thread around the back of the needle from left to right to form a loop and pull out the needle to get the next loop of the chain. Keep on with this procedure till the finish.

French Knots



1. Bring the needle up from the back of the fabric. (A)
2. Place the needle close to the fabric. Wrap the thread that is coming out of the fabric (A) around the needle twice – don't pull too tight or it won't work!
3. Hold the longer end (not the bit coming out of the fabric) of the thread between your fingers.
4. Thread the needle back into the fabric close to the starting point (A) but not in the same hole.
5. Whilst holding the longer end of the thread, pull the needle through the fabric until you see a French Knot form.

Couching



1. You will need two threads – one sits on the top (B) and the other hurdles over it (R).
2. Place your top thread on the fabric. Bring the needle up from the back of the fabric with your hurdle thread.
3. Jump over the placed thread with the needle and thread into the fabric on the other side of the top thread (next to) to fasten the top thread down.
4. Bring the needle out a short distance from the previous stitch. Make sure your top thread is near this.

THREADING THE SEWING MACHINE

STEP 1

Turn Off the Sewing Machine: Before you begin threading up **TURN OFF** your sewing machine! This is for safety, as your hands will be near the needle and moving machinery.

STEP 2

Put the Needle Up: Turn the handwheel on the side of the sewing machine towards you until the needle is fully up.

STEP 3

Positioning the Thread Spool: Begin by putting the thread spool onto the spool holder. You may also have a spool holder that is sitting sideways.

STEP 4

Back Thread Guide: Holding the thread place it through the back thread guide. There should be a small groove or hook. Make sure the thread goes through this otherwise the machine won't sew correctly.

STEP 5

Front Thread Guide: Take the thread down the front channel and around the front tension guide at the bottom.

STEP 6

Through the Take-up Leaver: Take the thread up from the front thread guide and through the take-up lever hook.

STEP 7

Above Needle Hook: Pull the thread down the channel from the take-up lever and through the small hook above the needle. This hook is usually around the same spot the top of the needle sits.

STEP 8

Thread The Needle: Place the thread in the eye of the needle from the front through to the back. Pull the thread under the presser foot and past the back of the machine to create a long thread tail.

STEP 9

Insert the Bobbin: Remove the bottom cover by pulling it towards you and place the bobbin into the bobbin case. Follow the arrow directions on the bobbin cover for the way to position the bobbin correctly.

STEP 10

Pull Up the Bobbin Thread: Hold the top thread tail while turning the handwheel towards you on the sewing machine. You should see the bobbin thread looped around the top thread. Pull until you can grab the bobbin thread. Replace the bobbin cover on the machine.

PATTERN AND FABRIC DESIGN | YEAR 9 | TEXTILES | SUMMER TERM

KEY PROCESSES AND THEIR STEPS

TEXTURAL RUBBINGS

1. Place newspaper on the table.
2. Place a leaf (with the veins facing up) on top of the newspaper.
3. Place the paper/fabric on top of the textured surface (example could be a leaf).
4. Using the fabric crayon or wax crayon (lying flat), rub over the surface of the paper/fabric to capture the textural surface. Swipe the surface, do not scrub.
5. Repeat this until the entire piece of paper/fabric is filled with patterns and rubbings of the textured surface.
6. Once filled with rubbings, place the fabric (not for paper) between two layers of greaseproof paper (top and bottom) and iron until the fabric no longer feels waxy.

INTEGRATED WEAVING

1. Cut a selection of fabric strips from fabric that are not stretchy, too thick or thin and give good colour.
2. On a piece of fabric that fits on your book page, fold it in half and cut ACROSS the fold to create slices. *****Do not cut all the way to the end of the fabric.*****
3. Once you have cut long slices down the length of the fabric, unfold your fabric and thread your needle. You will need a knot on the long tail end of the thread.
4. Begin on one side of sliced fabric (*WEFT*) and weave (using *PLAIN* weave) the fabric strips (*WARP*) through the slices from top to bottom.
5. Repeat this process until the entire piece of *WARP* fabric has *WEFT* strips woven through.
6. Using a running stitch (in and out like a dolphin) to secure the top of the weft strips in place. Once done, repeat to secure the bottom.

INK AND WATER PAINTING

1. Draw onto the surface of a piece of paper or fabric with water soluble marker pen.
2. Add in details with mark making (e.g. cross hatching or stippling) to add more ink onto the surface.
3. Using water and a paintbrush, apply water to the surface, this then turns the pigment from the marker into a paintable surface.
4. Blend and mix the ink around the fabric or paper to allow the marker to be painted onto the surface of your work.
5. Let dry, if you want to add detail in again, you can.

POLYPRINTING

1. Draw pattern lightly onto polystyrene block.
2. Using sweeping motion, imprint the pattern into the block deeper with a biro – this must be done in layers, not just “gouging” holes in the block.
3. Make sure that all ridges and lines are deeply drawn into place in the pattern.
4. Using a sponge and fabric paint, print the polystyrene block onto fabric and paper in repeating patterns.
 - Formal Pattern – deliberate and organised pattern placement.
 - Informal Pattern – random and disorganised pattern placement.

THREADING THE SEWING MACHINE

STEP 1

Turn Off the Sewing Machine: Before you begin threading up **TURN OFF** your sewing machine! This is for safety, as your hands will be near the needle and moving machinery.

STEP 2

Put the Needle Up: Turn the handwheel on the side of the sewing machine towards you until the needle is fully up.

STEP 3

Positioning the Thread Spool: Begin by putting the thread spool onto the spool holder. You may also have a spool holder that is sitting sideways.

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