



LIONHEART
EDUCATIONAL
TRUST


















MARTIN
HIGH SCHOOL
Lionheart Educational Trust

Knowledge Organiser Booklet

Year 7
Autumn Term

Ways to use your knowledge organiser

	Look, Cover, Write, Check	Self Quizzing	Mind Maps	Paired Retrieval	Definitions to Key Words
Step 1	<p>Look at and study a specific area of your knowledge organizer.</p> 	<p>Use your knowledge organizer to create a mini quiz. Write down questions using your knowledge organizer.</p> 	<p>Create a mind map with information from your knowledge organiser.</p> 	<p>Like self quizzing, use your knowledge organizer to create a quiz.</p> 	<p>Write down the key words and definitions.</p> 
Step 2	<p>Cover or flip the knowledge organizer over and write down everything you remember.</p> 	<p>Cover or flip the knowledge organizer over and answer the questions and remember to use full sentences and key words/vocabulary.</p> 	<p>Add pictures to represent different facts, knowledge. Try to categorise different areas in different colours.</p> 	<p>Ask a family member to ask you the questions and tell you which ones you get right and which ones you get wrong.</p> 	<p>Try not to use your knowledge organiser to help you.</p> 
Step 3	<p>Check what you have written down. Correct any mistakes in a different coloured pen and add anything you missed. Repeat.</p> 	<p>Check your answers. Correct any mistakes in a different coloured pen and add anything you missed. Repeat.</p> 	<p>Try to make connections that link information together.</p> 	<p>Following the quiz, summarise which areas you got wrong and need to revise further.</p> 	<p>Use a different coloured pen to check you work and correct any mistakes you may have made.</p> 

Lionheart Literary Canon: Curating a Lifelong Love of Literature

Recommended books to have read by the end of Year 7



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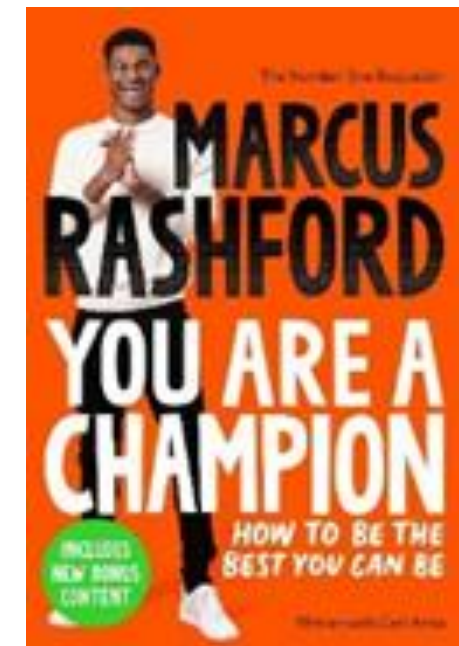
Pax (2017)
Sara Pennypacker



Oh My Gods (2019)
Alexandra
Sheppard



Kick (2017)
Mitch Johnson



**You Are A
Champion (2021)**
Marcus Rashford

All books can be purchased online, or loaned from our library

Features of the Victorian Novel

- Realistic
- Purpose to entertain
- Often has a hero or a heroine at the heart of it
- Presents all aspects of society
- Several genres; romance, gothic and social commentary
- Victoriana refers to mock Victorian culture such as *The Ruby in the Smoke*.

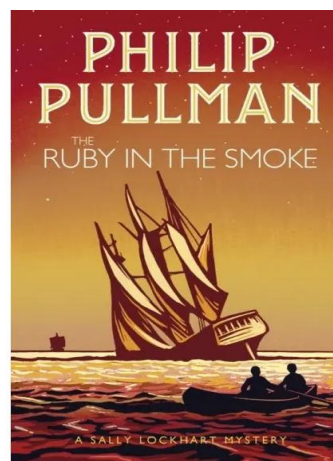
The Detective tradition as a genre

- Many based on true crime stories
- Often a hero like Sherlock Holmes
- Presents a range of characters involved in these mysteries
- Offers elements of social commentary.
- First serialised in magazines, so lends themselves to short stories or sections with cliff-hangers.

- What?** **What** is the writer presenting? **What** is your area of focus?
How? **How** are these ideas demonstrated or developed? *Introduce and embed a quotation to develop your argument. Analyse the connotations of words and how we are encouraged to react as a reader.*
Why? **Why** is this effective? **Why** might it create a reaction? **Why** might the writer have made this decision?

How to structure a well organised, analytical paragraph

1. Start with your **topic sentence** which should make explicit reference to the task (using key words from the title) and explain what the focus of the paragraph will be. (The what)
2. Refer to the writer's methods to show how this particular idea is presented in the text. You must remain focused on the idea you flagged up in your topic sentence.
3. Develop by considering why this is significant in terms of either reader response, the wider plot of the text, the genre or the literary context.
4. Make explicit reference back to the title to ensure you have remained focused on the question.



Evaluative vocabulary		Emotional vocabulary	
Subtle	Skilful	Outrage	Empathy
Challenging	Striking	Sympathy	Approval
Crucial	Significant	Pity	satisfaction
Pivotal	Provocative	Remorse	Compassion

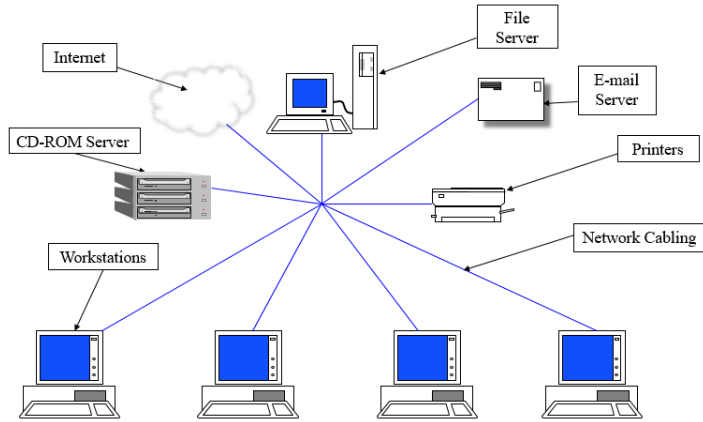
Year 7 The Ruby in the Smoke Vocabulary Lists

Covetous	Villain	Henchman	Timid
Outsider	Hypocritical	Malevolent	Addiction
Reclusive	Mutiny	Naive	Etiquette
Inherit	Empire	Cunning	Entrepreneur
Sinister	Reckless	Belligerent	Resourceful
Predatory	Vigilante	Clue	Orphaned
Slum	Protagonist	Charismatic	Courageousness
Bohemian	Victoriana	Poverty	Perilous
Victim	Nightmarish	Cutthroat	Neglected

What is a network?

Two or more devices connected together to communicate and share resources.

What could a network look like?



Word processing software

Used when wanting to write a lot of text inside of a document. E.g. letter, story



Publishing software

A great choice when combining text with images. E.g. leaflets, posters



Presentation software

The best choice when creating a presentation to show to an audience.



Spreadsheet software

The ideal choice when working with data and formulas in a logical way

Top tips when using search engines

AND	Can be used to specify words that must appear in your results.
NOT	Can be used to search for pages which must not include a certain word.
OR	Can be used when you want to find pages that contain several words.
“ ”	Used to search for phrases.

What are computers good at

Storing large quantities of information
Doing as they are told
Completing boring and repetitive task
Completing complex equations efficiently

What are computers bad at

Making assumptions
Empathy
Fixing themselves

Computer Security

An example of personal information	date of birth
A program designed to corrupt your system is called	Malware
When you wind someone up by sending them abuse online.	Trolling
What can help avoid viruses?	Anti-virus/firewall
When someone pretends to be a trusted company to get your information (normally through email)	Phishing
Using the internet to send intimidating or threatening messages.	Cyberbullying

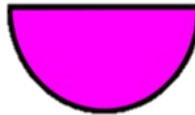
KNOWLEDGE

ORGANISER

Keywords for Vector Graphics	
Vector Graphic	A computer made image that is made up of points, lines and curves based upon mathematical equations.
Raster Graphic	A detailed image created with pixels.
Pixel	A tiny square of colour.
Logo	A symbol that is used to represent an organisation or product.
Union	An operation used to combine two or more paths to create a single path.
Intersection	An operation use to create a single path from the overlapping portion of two paths.
Scalable	When an object or image is able to be made bigger or smaller.
Path	A line or a shape used to create vector graphics.
SVG	Scalable Vector Graphic



Six-cornered star
Rounded corners
Green fill
Red dotted stroke



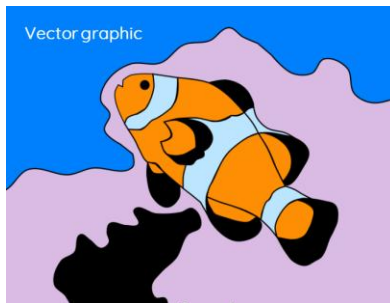
Arc
Pink fill
Black stroke



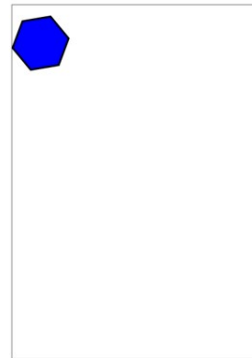
Three-cornered polygon
Rounded corners
Yellow fill
Blue dashed stroke



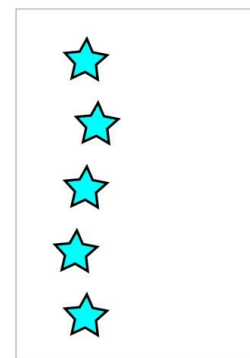
Vector	Raster
Made up with paths	Made up with pixels
Simple images	Detailed/complex images
Maintains image quality when scaled	Loses image quality when scaled
Used for logos, icons and illustrations	Used for real photos



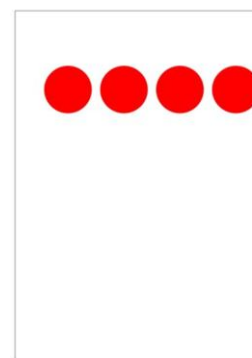
Alignment



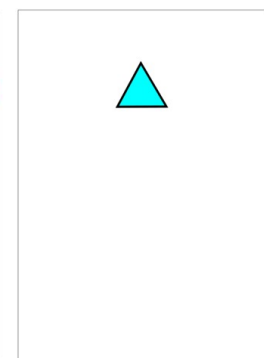
Align left edges to page



Distribute centres equidistantly vertically



Distribute centres equidistantly horizontally



Centre on vertical axis to page

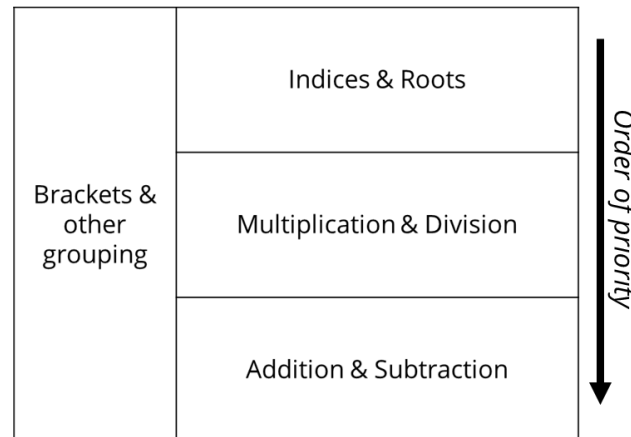
Sequence	An ordered list that follows a particular rule.
Arithmetic	A sequence which increases or decreases by the same amount each time.
Increasing	Each number is larger than the previous one.
Decreasing	Each number is smaller than the previous one.
Common difference	The number that you add or subtract to get to the next term.
Finite	A sequence that has a certain number of terms and then ends.
Infinite	A sequence which continues forever, shown by using ...

Term	A mathematical form expressed symbolically, separated by an operator (usually + or –) or in brackets.
Coefficient	The multiplier in a term.
Expression	An algebraic form consisting of a number of terms. There is no equal sign.
Like Terms	Terms that have the same unit. Algebraic like terms have the same letter(s) and power(s).
Identity Symbol (\equiv)	Used algebraically to indicate where something is identical for all values of the variable(s).

Variable	A quantity that can take on a range of values, often denoted by a letter a, b, c,.....,x, y, z.....etc.
Unknown (or specific unknown)	Similar to a variable, but used more widely to mean a specific value to be determined.
Integer	Whole numbers and their opposites. (positive, negative and zero; ... -3, -2, -1, 0, 1, 2, 3, ...)

Function	A rule that transforms one number or expression to another. E.g. A “plus 3” function will turn 7 into 10 E.g. A “plus 3” function will turn x into $x + 3$
Function Machine	A way of writing a rule(s) using a flow diagram. (Sometimes called a “number machine” but “function machine” is a more accurate noun).
Input	What is taken in and operated on by a function. One input results in exactly one output.
Output	What is produced after a function has been applied to an input. One input results in exactly one output.

Inverse	The operation that reverses the effect of another operation. Addition and subtraction are inverse operations. Multiplication and division are inverse operations.
Function / One-to-one mapping	A rule that transforms one number or expression to another. Can be described as a 'one-to-one mapping' as well as a 'function'.
Domain	Set of allowed inputs into a function.
Range	Set of possible outcomes of a function.
One-to-one	A single inputted value has one and only one possible output.
One-to-many	A single inputted value has more than one possible output.
Substitute	To replace. In algebra, substitution is to replace a letter with a number.
Distributive property of multiplication	Multiplying a term by a group of terms added together is the same as doing each multiplication separately. In general: $a(b + c) \equiv ab + ac$
Factorise	Writing an expression as a product of its factors.
Fully factorise	Writing an expression as a product of its highest common factor and another expression.



Priority of Operations

Where operations have equal priority, we work from left to right.

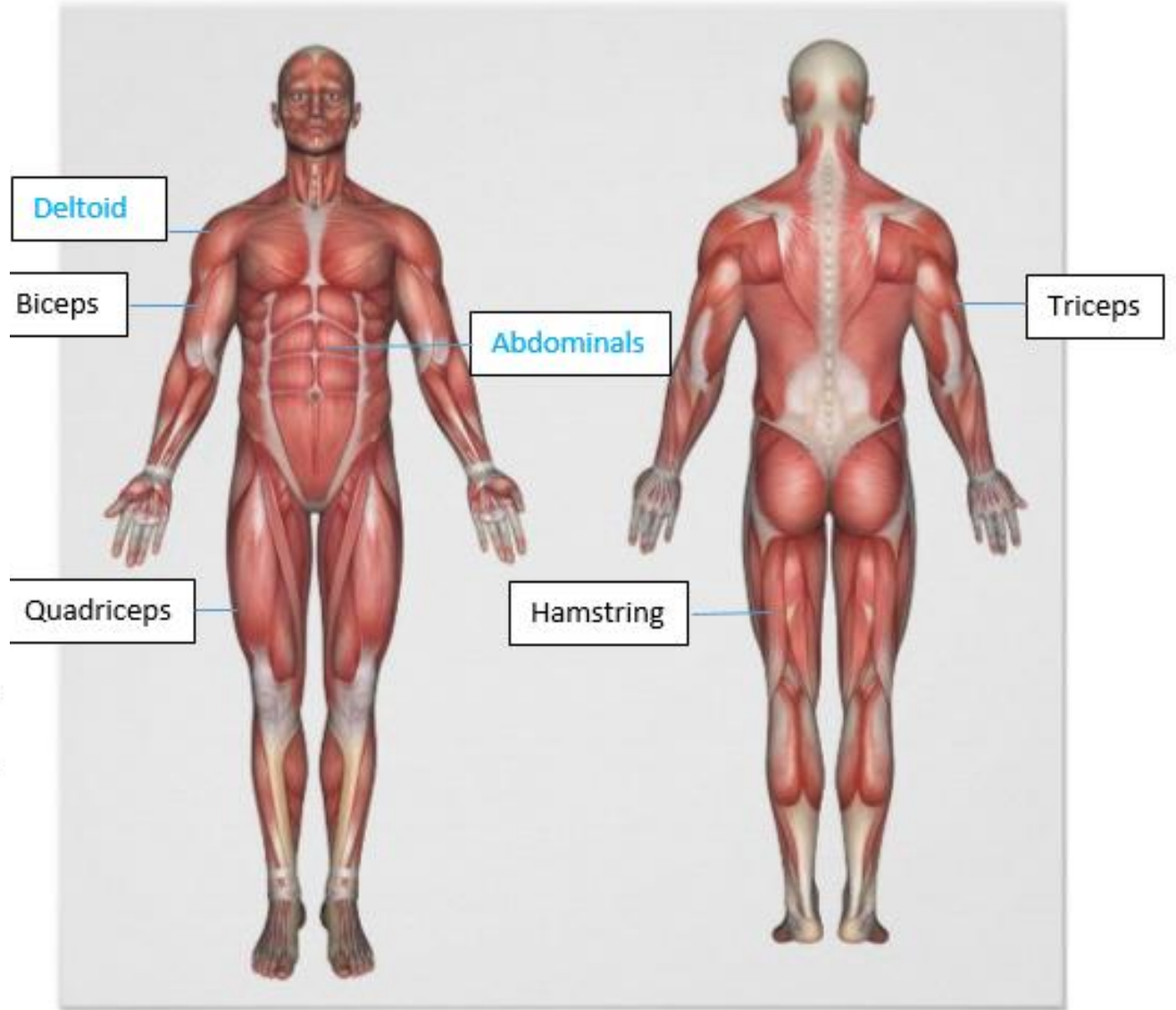
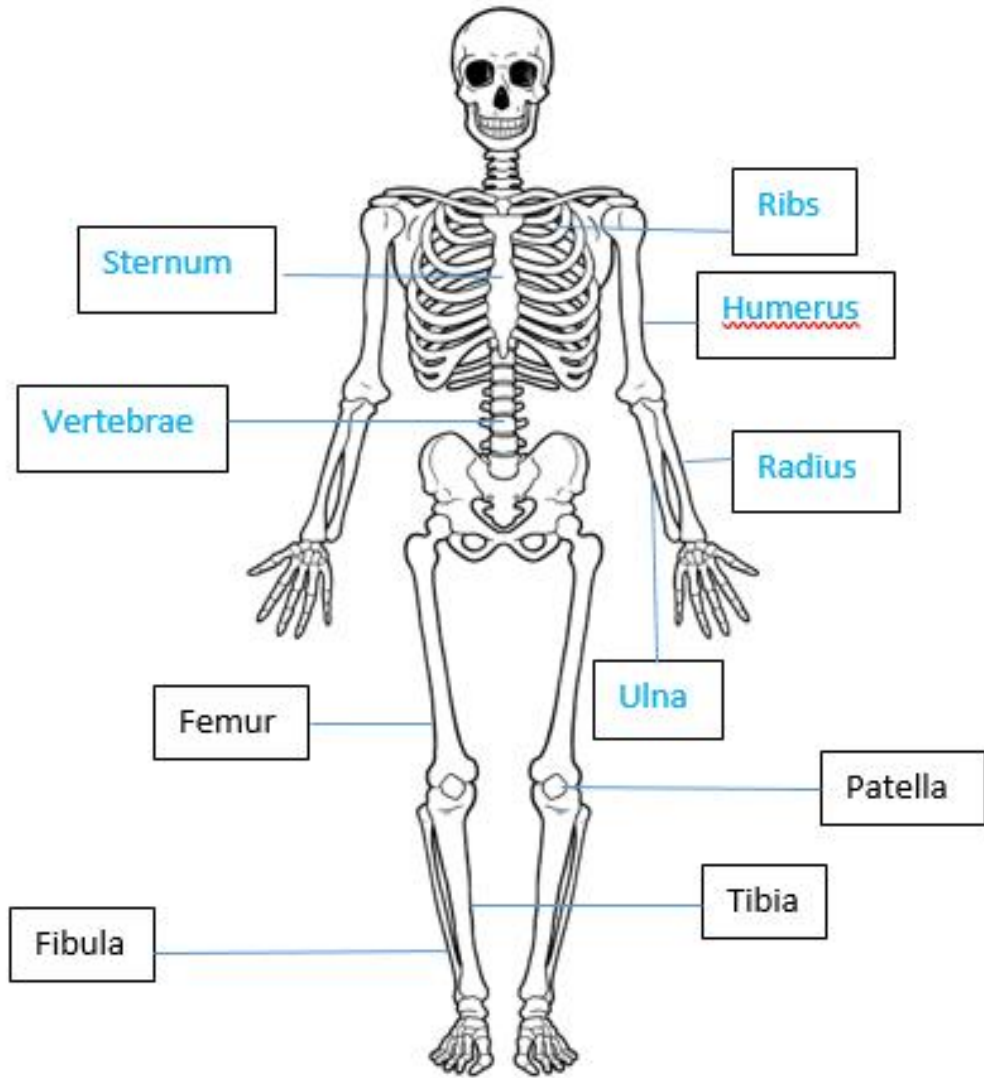
Brackets (and other groups) change the priority of the operations.

Unit 1 Physical Education Knowledge Organiser: Staying safe in Physical Activity

Key learning content	Description / Explanation/ Example
Stages of a warm up <ul style="list-style-type: none"> • Stage 1 – pulse raiser (5 mins) • Stage 2 – mobility exercises • Stage 3 – stretching (10s+) • Stage 4 – dynamic movement • Stage 5 – skills practice 	Examples of warm up <ul style="list-style-type: none"> • Stage 1 – (Low intensity exercise) A 5 minute jog around a netball court. • Stage 2 – (To a move a joint through its full range of motion) Arm circles, ankle circles, hip circles. • Stage 3 – (Static or dynamic stretches) quadriceps stretch. • Stage 4 – (high intensity exercise) Shuttle runs • Stage 5 – (Practice the skills you will be using) Chest/ shoulder passes (netball)
Benefits of a warm up <ul style="list-style-type: none"> • Increase temperature and HR • Decreased chance of injury • Increased oxygen transport • Increased flexibility • Increased speed / strength of muscle contractions • Mental preparation 	Benefits explained <ul style="list-style-type: none"> • Allow more oxygen to reach muscles • Better for overall health. Can maintain involvement in physical activity . • More oxygen gets to muscles, so can create more energy. • Increased flexibility can enhance performance (Reach higher to catch a ball) • Faster/ stronger movements - perform skills more effectively. • Mental preparation – feel more alert/ focussed/ confident/ concentrating/ motivated/ relaxed etc.
Stages of a cool down <ul style="list-style-type: none"> • Stage 1 – Low intensity exercise • Stage 2 – Stretching 	Examples of cool down <ul style="list-style-type: none"> • Stage 1 – Steady jog on netball court, can move onto a walk • Stage 2 – (Static stretches) Quadriceps stretch, hamstring stretch.
Benefits of cool down <ul style="list-style-type: none"> • Gradually lower heart rate • Gradually lower breathing rate and temperature. • Speeds up removal of waste products. • Speeds up recovery 	Benefits explained <ul style="list-style-type: none"> • Gradually lower heart rate from 150bpm when working to 70bpm when resting. • To maintain blood flow/ oxygen transport/ carbon dioxide removal • Carbon dioxide and lactic acid removed faster. Reduces aching, recovery is faster.
Preparing for physical activity <ul style="list-style-type: none"> • Wear appropriate PE kit • Long hair tied back • Jewellery removed • No chewing gum or food • Water for hot weather 	Preparation explained <ul style="list-style-type: none"> • Sports trainers, shorts, t-shirt to avoid injury yourself or others. • So you can see when playing • Earrings taken out, bracelets off to avoid injuring yourself or others. • To avoid choking when active. • To stay hydrated /avoid headaches/ feeling weak
Risks and hazards to check for <ul style="list-style-type: none"> • Area free from rubbish • Equipment tidied away • Equipment undamaged • Surface dry/ undamaged 	Hazards explained <ul style="list-style-type: none"> • Check there is no debris such as broken glass on football pitch, to avoid someone injuring themselves. • Check there are no equipment such as bibs left out on a basketball court from a previous activity, to avoid someone slipping/ tripping over when warming up. • Check the trampoline is up properly, to avoid injury to a player. • Check there is no water spilled on the badminton court, to avoid a player slipping and hurting an arm.

Year 7 Physical Education: Key Terms and Vocabulary

Key word	Description
Aerobic	Use of oxygen for the duration of the exercise. Usually at moderate intensity at a continuous rate e.g. long distance running. Can be performed for a long period of time.
Anaerobic	Exercise which creates energy without the use of oxygen. Usually high or very high intensity for a short period of time. E.g. sprinting up a hill.
Flexibility	Range of movement available around a joint.
Mobility	The ability to move freely.
Dynamic movement	Movements performed at high speed/ intensity.
Oxygen	The gas we breathe in, transport and use to create energy.
Oxygen transport	Oxygen is transported through blood vessels within the red blood cells.
Gaseous exchange	The movement of oxygen and carbon dioxide within the lungs, muscles and vital organs.
Contraction	A muscle contracts and (usually) gets shorter to apply a force and create movement.
Heart rate	Number of heart beats per minute.
DOMS	Delayed Onset Muscle Soreness. Usually occurs 1 or 2 days after high intensity exercise.
Lactic acid	A waste product produced in the muscle tissues during anaerobic exercise.
Waste products	Bi-products of aerobic exercise are carbon dioxide and water. Lactic acid is also a bi-product of anaerobic exercise.
Carbon dioxide	We produce carbon dioxide as a waste product. We transport it back to the lungs and breathe it out.
Recovery process	Returning the body to resting levels.
Intensity	How hard you work.
Team work	Working together to achieve a common goal. Requires good communication skills.
Reciprocity	Working positively with others as a group.
Demonstration	Showing someone how something should be done.
Communication	Transferring information by speaking, writing, demonstrating and using body language.
Risk	The chance or probability that someone will be harmed.
Hazard	A source of potential danger.
Injury	Damage or harm to the body.
Sprain	Damage to a ligament.
Mental Preparation	Getting your mind ready for competition through visualising the skills and imagining yourself being successful.



Key Word	Description/ Location/ Role
Muscle pair	Muscles that work together to produce a movement. Also called antagonistic pairs.
Hamstrings	A group of muscles located at the back of your thigh. Muscle pair with quadriceps
Quadriceps	A group of muscles located at the front of the thigh. Muscle pair with hamstrings
Biceps	A muscle located at the front of your upper arm.
Triceps	A muscle located at the back of your upper arm.
Abdominals	A group of muscles at the front of your body between the ribs and pelvis.
Deltoids	A group of muscles located at the shoulder.
Femur	A bone in your thigh
Tibia	A bone in your lower leg on the inside
Fibula	A bone in your lower leg on the outside
Patella	A small bone at the front of your knee
Humerus	A bone in your upper arm
Ulna	One of 2 bones in your forearm. The ulna runs down to your little finger
Radius	One of 2 bones in your forearm. The radius runs down to your thumb.
Flexion	Bending a joint. This occurs when the angle of a joint decreases. For example, the elbow flexes when performing a biceps curl.
Extension	Straightening a joint. This occurs when the angle of a joint increases, for example, at the elbow when putting a shot.
Contraction	When a muscle produces a force which pulls on a bone.
Agonist	The name given to a muscle which is contracting and causing a movement/ producing a force.
Antagonist	The name given to a muscle which is relaxing while it's paired muscle contracts to perform an action.
Hinge Joint	These include the elbow and knee. They allow flexion and extension to occur.
Ball and Socket Joint	These include the shoulder and hip.
Concentric	A type of muscle contraction where the muscle shortens while it is contracting. E.g. biceps when lifting a weight.

Homework 1:

Learn the information on this knowledge organiser ready for a quiz.

Drama Year 7 – Topic 1 Darkwood Manor



Physical skills

These skills are linked to the ways an actor uses their body language to communicate their character. They are all non verbal communication skills, meaning you do not talk or make any sound!

Posture

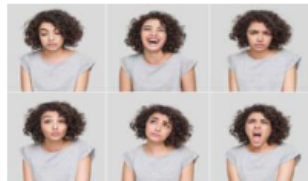
The way you hold your posture on stage shows your character's age, personality and mood.



Gestures

A gesture is shown using your arms and hands. They send messages to the audience about your character's mood and situation.

Facial expressions Shows your thoughts, feelings and emotions of the character you are playing by changing the shape and expression on your face.



Vocal skills

These skills are linked to the ways an actor uses their voice to communicate their character. There are 3 key elements you are going to explore this topic.

Volume ~ How loud or quite you are

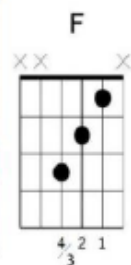
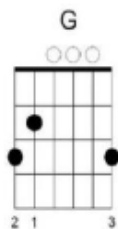
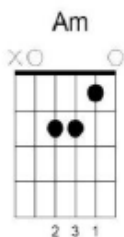
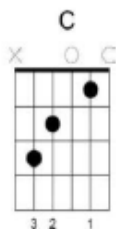
Tone ~ The mood and emotion you show

Pace ~ How fast or slow you speak



Year 7 Jingle Bells & Guitar Knowledge Organiser

Guitar Chords



Jingle Bells



Key Skills

- ♪ Listen to and appraise songs using guitars
- ♪ Read and play from guitar chord grids
- ♪ Combine guitar playing and singing in 'Jingle Bells'
- ♪ Use guitars with confidence to accompany singing
- ♪ Maintain different strumming patterns
- ♪ Compose a melody and chords using musical notation
- ♪ Compose a melody and chords using a graphic score
- ♪ Perform as a class ensemble 'Jingle Bells' by James Pierpont

Key Vocabulary

Strumming Pattern - The movement of your right hand (right handed guitarist) when strumming the strings. This would usually be in an 'Up Down' motion

Chords - 2 or more notes (strings) played at the same time

Chord Chart - A visual representation of the finger position for each chord on the neck of the guitar

Dexterity - Your ability to move quickly between finger positions/chords


Intonation - How clearly you deliver your music part. Pressing firmly on the fretboard ensuring your notes are clearly performed

Resilience - Continuing to practice and develop, recovering quickly from difficulties


Music Knowledge Organiser - Elements of Music

How Music is Organised (Structure)


BINARY




TERNARY



RONDO



THEME & VARIATIONS



SONATA FORM

EXPOSITION: A:1 B:1 V V V (and other keys)
DEVELOPMENT: V V V
RECAPITULATION: A:1 B:1

	Introduction	Try to avoid putting words here, however the intro. Can be a point for ad-lib.
A1	Verse 1	Recognized as 1 Verse with 2 parts. Generally a repeated melody on two stanzas.
	Verse 2	
	Build up	A full or half round of progression (optional)
B	Chorus	Try to keep it simple, easy to remember and in apposing 'wordiness' to the verses, also it is generally kept the same throughout the song.
A2	Verse 3	Recognized as 1 Verse with 2 parts. Generally a repeated melody on two stanzas.
	Verse 4 (Optional)	
	Build Up	Only used the second time if used the first, if changing the lyrics here, maintain the melody and vice versa.
B	Chorus	Generally kept them the same as the previous chorus.
C	Bridge	Can last the equivalent of verse 1+2. Can be instrumental or sung. Can be completely different to the chorus/verses, or similar. Optional key changes are put in here.
B	Chorus	Generally kept them the same as the previous chorus.
B2	Chorus repeated	Generally kept them the same as the previous chorus, but can include extra lyrics that you wish to include.
	Outro	Try like the introduction to keep this part as a fade hook or ad-libbing, avoid the introduction of new lyrics.

Instruments and Sound (Timbre)

THE INSTRUMENT FAMILIES

Woodwind Family



Brass Family



String Family

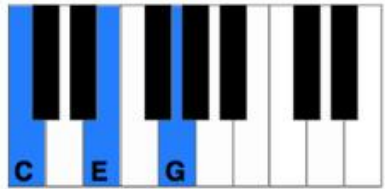


Percussion Family



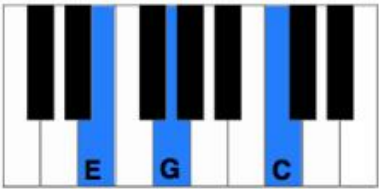
Chords (Harmony)

Root Position



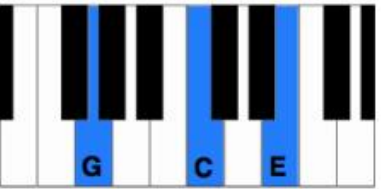
C E G
1 3 5

First Inversion



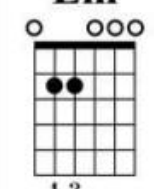
E G C
1 2 5

Second Inversion



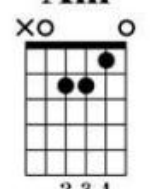
G C E
1 3 5

Em



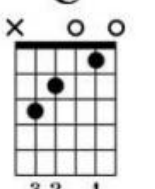
1 2

Am



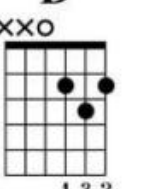
2 3 1

C



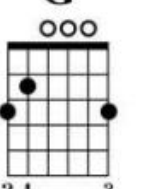
3 2 1

D



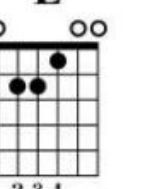
1 3 2

G



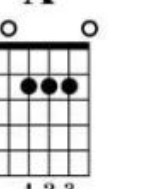
2 1 3

E



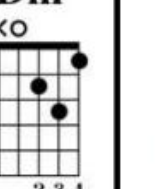
2 3 1

A



1 2 3

Dm



2 3 1



G	A	B	C	D	E	F	G
E	F	G	A	B	C	D	E
C	D	E	F	G	A	B	C

C	Dm	Em	F	G	Am	Bdim	C
I	ii	iii	IV	V	vi	vii	I
PRIMARY	SECONDARY	SECONDARY	PRIMARY	PRIMARY	SECONDARY	DIMINISHED	

Major Chords =

Minor Chords =

C Major C E G	F Major F A C
D Minor D F A	G Major G B D
E Minor E G B	A Minor A C E

C	Am
F	G

Chord Inversions (order of the notes)

Root Position	1st Inversion	2nd Inversion
C,E,G	E,G,C	G,C,E

C	D	E	F	G	A	B
Cm	Dm	Em	Fm	Gm	Am	Bm



Music Knowledge Organiser - Elements of Music

Notes on the TREBLE CLEF (Pitch)

Notes on the BASS CLEF (Pitch)

Speed of Music (Tempo)

Lento	Adagio	Andante	Moderato	Allegro	Presto
Very slow	Slow	Walking pace	Slightly fast	Fast	Very Fast

Notes VALUES (Rhythm)

Term	Symbol	Value
whole note		4 beats
half note		2 beats
quarter note		1 beat
eighth note		1/2 beat
joined eighth notes		1/2 + 1/2 = 1
sixteenth note		1/4 beat
joined sixteenth notes		1/4 + 1/4 + 1/4 + 1/4 = 1

Beats in Bar (Time Signature)

The top number indicates how many beats will be in each measure. The bottom number indicates what type of note will equal 1 beat.

2/4 **3/4** **4/4** **6/8**

An 4 on the bottom means a quarter note will equal 1 beat. As a beginner, this is all you need to know for the majority of your music.

An 8 on the bottom means an eighth note will equal 1 beat. These types of time signatures are very common, but as a beginner, you don't need to work with them until later in your learning.

Layers of Sound (Texture)

Volume of Music (Dynamics)



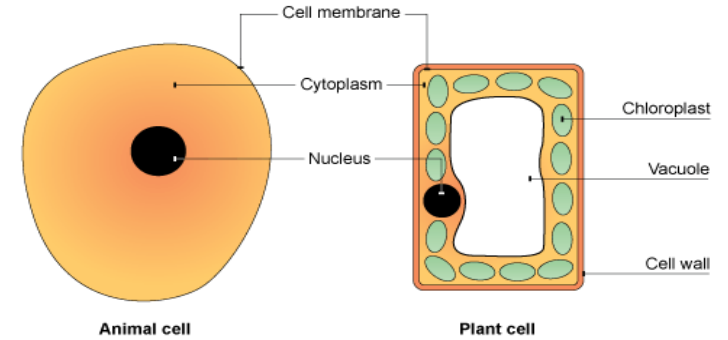
Father Charles **G**oes **D**own **A**nd **E**nds **B**attle (Sharps/#)
Battle **E**nds **A**nd **D**own **G**oes **C**harlies' **F**ather (Flats/b)



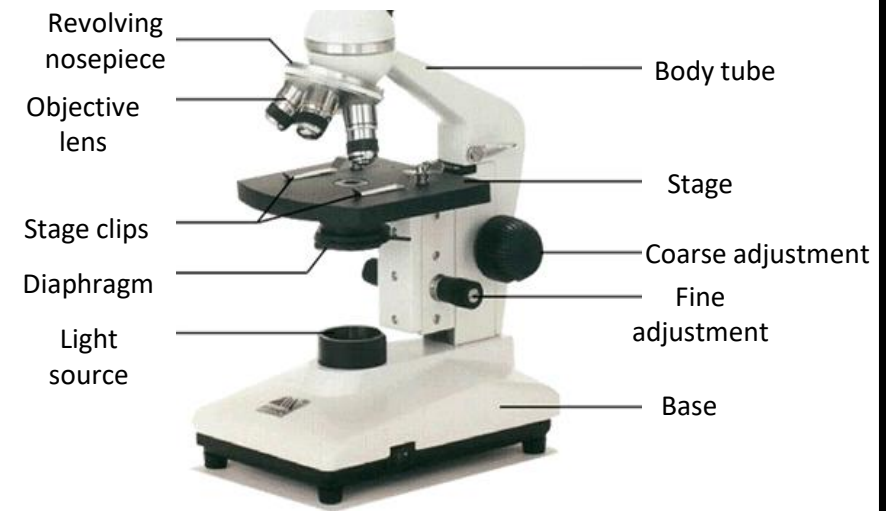
KNOWLEDGE ORGANISER BIOLOGY: CELLS

Key word	Definition
amoeba	A unicellular organism.
cell wall	The plant cell component that surrounds the cell, providing support.
cells	The smallest functional units in an organism – the building blocks of life.
Cell membrane	The cell component that surrounds the cell and controls movement of substances in and out.
chloroplasts	The plant cell component where photosynthesis takes place.
concentration	A measure of the number of particles of a substance in a given volume.
Cytoplasm	Jelly like substance in cells where most chemical processes happen
diffusion	The movement of liquid or gas particles from a place of high concentration to a place of low concentration.
euglena	Unicellular organism that performs photosynthesis.
flagellum	A tail-like structure that allows euglenas to move.
leaf cell	The plant cells that contain chloroplasts, where photosynthesis takes place.
microscope	An optical instrument used to magnify objects, so small details can be seen clearly.
nerve cell	An animal cell that transmits electrical impulses around the body.
nucleus	The cell component that controls the cell and contains genetic material.
observation	Carefully looking at an object or process.
organisms	Living things.
red blood cell	An animal cell that transports oxygen around the body.
root hair cell	A plant cell that takes in water and minerals from the soil.
specialised cell	A cell whose shape and structure enable it to perform a particular function.
sperm cell	A cell containing male genetic material.
unicellular	Consisting of just one cell.
vacuole	The plant cell component that contains cell sap and helps to keep the cell firm.

Animal 'V' Plant Cells




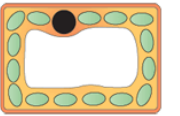
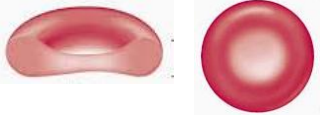
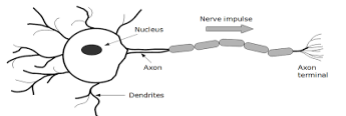


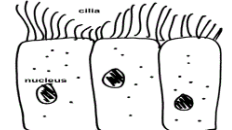
Microscopes



**Total magnification =
magnification of eye piece lens x magnification of objective lens**



KNOWLEDGE ORGANISER BIOLOGY: CELLS

Type of plant cell	Function	Special features
Root hair cell 	To absorb water and minerals	Large surface area
Leaf cell 	To absorb sunlight for photosynthesis	Large surface area Lots of chloroplasts
Type of animal cell	Function	Special features
Red blood cells 	To carry oxygen	Large surface area, for oxygen to pass through. Contains haemoglobin, which joins with oxygen
Nerve cells 	To carry nerve impulses to different parts of the body	Long Connections at each end. Can carry electrical signals
Female reproductive cell (egg cell) 	To join with male cell, and then to provide food for the new cell that's been formed	Large Contains lots of cytoplasm
Male reproductive cell (sperm cell) 	To reach female cell, and join with it	Long tail for swimming. Head for getting into the female cell
Ciliated Cells 	The hairs sweep hair, mucus, trapped dust and bacteria up to the back of the throat where it can be swallowed	Hair like structures Present in many structures e.g. ear, nose, trachea

Movement of substances

Substances move from an area where they are in high concentration to an area where they are in low concentration. This process is called **diffusion**.

Oxygen diffuses into cells from an area of high concentration outside the cell to a low concentration of oxygen inside the cell. Carbon dioxide moves out of the cell.

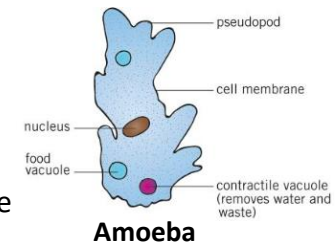
Water moves into a plant from a high concentration of water in the soil to a low concentration of water in the root hair cells.

Unicellular Organisms

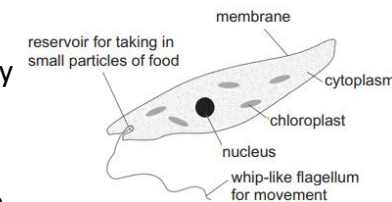
Amoebas and Euglenas are examples of unicellular organisms. This means that they are only made up of one cell.

Both organisms reproduce by binary fission.

Amoebas have to find food to survive but Euglenas can carry out photosynthesis to produce their own food.



Amoeba



Euglena



1. Organisation

Organism – group of organ systems working together eg animal

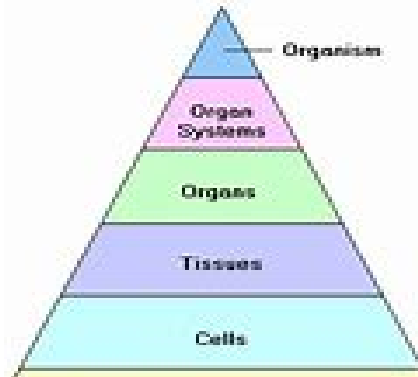
Organ system – group of organs working together eg circulatory system

Organ – group of tissues working together eg heart

Tissue – group of similar cells working together eg muscle tissue

Cell – building blocks of life eg muscle cells

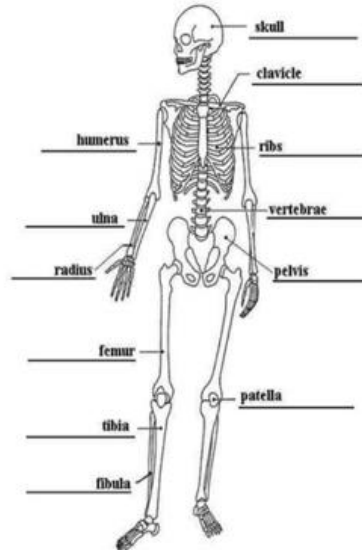
Structural Organization of the Body



2. Skeleton

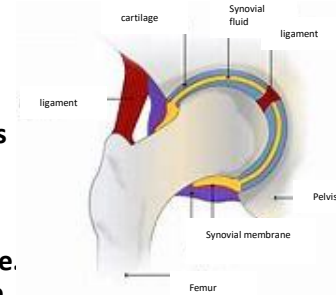
The skeleton is made up of bones. The skeleton has four important functions –

1. to protect organs,
2. to help the body move,
3. to support the body
4. to make red and white blood cells.



3. Movement of joints

Joints occur where 2 or more bones join together. Different types of joint allow movement in different directions. For example, ball and socket joints in the hip and shoulder allow movement in all directions. Cartilage covers the end of the bones in joints to stop the bones from rubbing together. Ligaments attach bone to bone. You can measure muscle strength using a Newton scale. The harder you push on the scale the greater the force exerted on the Newton scale.



4. Movement of muscles

Muscles are attached to bones by tendons. When a muscle contracts it shortens and pulls on the bone. If the bone is part of a joint this will cause the bone to move. Pairs of muscles work together to control movement at a joint. They are called antagonistic muscles, this means when one muscle contracts (eg biceps) the other muscle in the pair relaxes (eg the triceps).

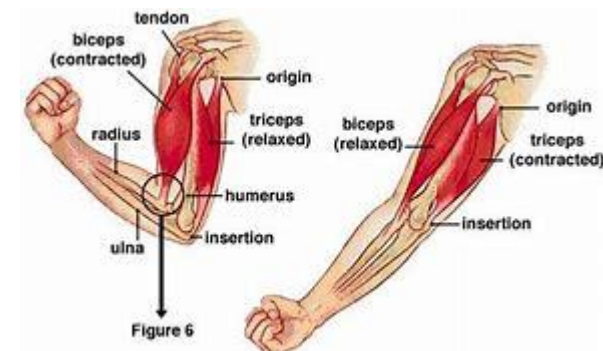


Figure 6

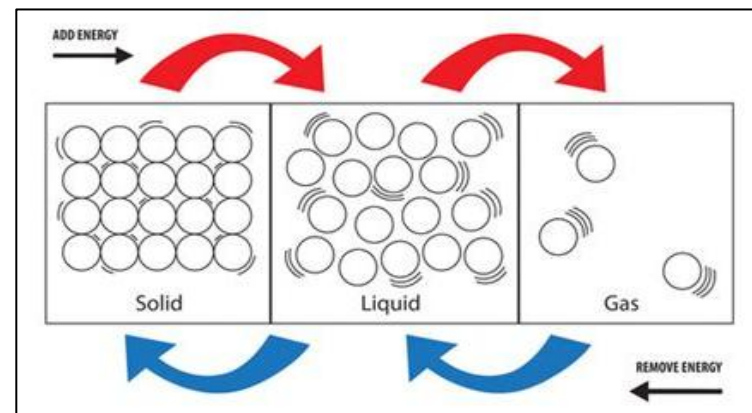


KNOWLEDGE ORGANISER CHEMISTRY: Matter

Properties of States of Matter

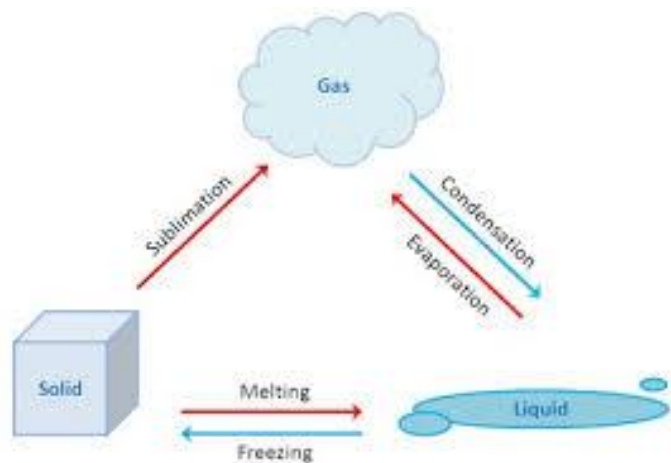
State	Can you compress (squash) the substance in this state?	Does the substance flow ?	Shape
Solid	No	No	Fixed, unless you apply a force
Liquid	No	Yes	Takes the shape of the bottom of its container
Gas	Yes	Yes	Takes the shape of the whole container

States of Matter

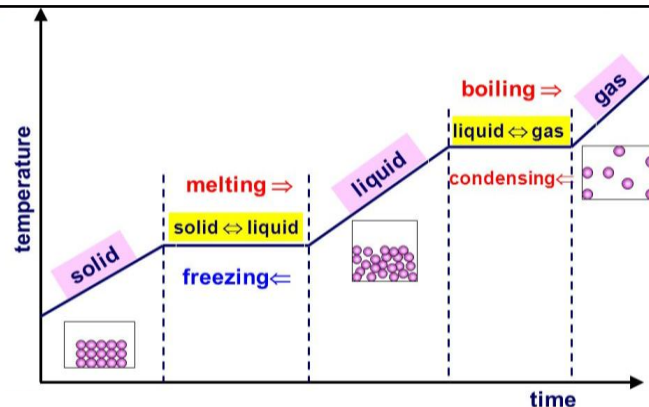


Changes in the States of Matter

- Particles lose energy to the surroundings
- Particles gain energy from the surroundings



Heating/Cooling Curves



Sharp/ distinct melting and boiling points can be used to identify *pure* substances.

If these points are not sharp then a substance must be impure (mixture of substances).

The Particle Model

Advantage

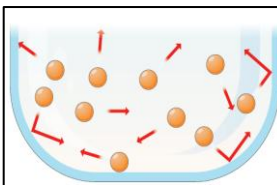
- Explains properties of particles.

Disadvantage

- Assumes all particles (of different elements) are the same size
- Assure all particles are the same distance apart



KNOWLEDGE ORGANISER CHEMISTRY: Matter



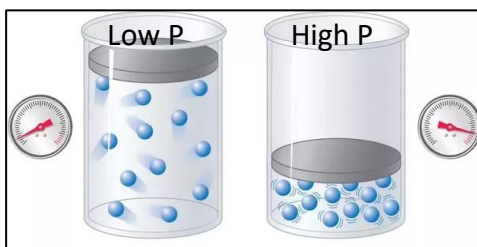
Gas Pressure

Gas ONLY

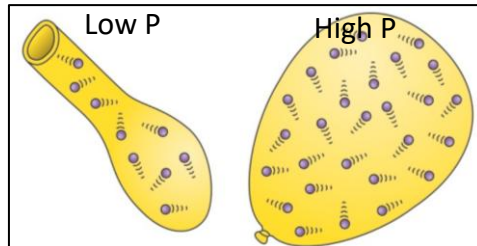
The pressure created by gas particles colliding with the side of a container.

Factors that affect pressure include:

1. Number of particles



- **Smaller volume**
- More crowded particles
- More collisions with surface
- Higher Gas Pressure (P)



- **More particles**
- More crowded particles
- More collisions with surface
- Higher Gas Pressure (P)

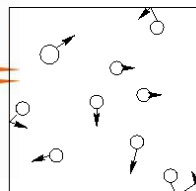
2. Temperature



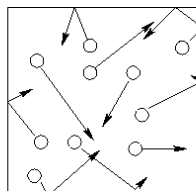
Cooling Down



Heating Up



Cool gas, fewer and less energetic collisions



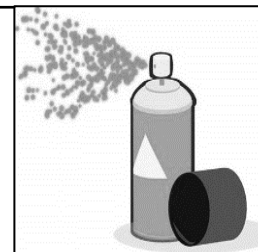
Hot gas, more and more energetic collision

Gas and Liquid

Diffusion

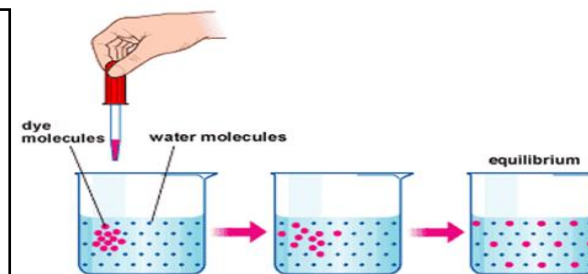
The random moving and mixing of particles from a high to low concentration.

Factors that affect pressure include:



Experiment:

Diffusion of a dye in water



Factors	Effect	Reason
1. Temperature	↑ Temperature ↑ Rate of diffusion	More Energy for Particles. More Particles move faster.
2. Particle Size	↑ Particle Size ↓ Rate of diffusion	More heavy/big particle. Particles move slower.
3. State of Particle	Liquids ↓ Rate of diffusion Gases ↑ Rate of diffusion	Gas particles are further apart and have more energy. More Particles move faster.



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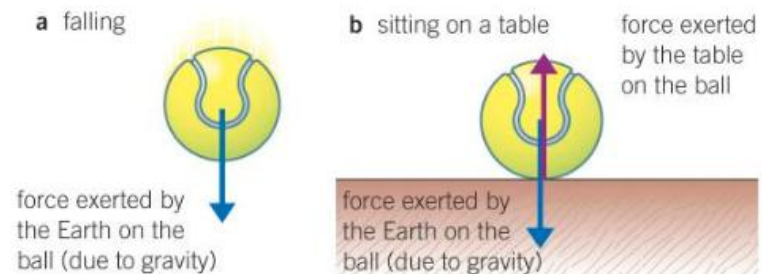
PHYSICS: FORCES Speed and gravity

Keyword	Definition
Force	Forces can make things speed up, slow down, change direction or change shape.
Contact force	These forces only act when two things are touching.
Non-contact force	These forces can act when things are not touching
Newtons	The units for measuring forces (N)
Gravity	The force that earth uses to pull things towards it
Air resistance	The force that slows something down because air particles hit it.
Friction	The forces that slows things down when they move on a surface e.g. a car on a road.
Upthrust	The force on an object in liquid or gas that pushes them up
Interaction pairs	When two objects interact there is a force on each one that is the same size but in opposing directions.
Speed	A measure of how far something travels in a particular time, measured in meters per second (m/s)
Average speed	The overall distance travelled by overall time for a journey
Acceleration	How quickly speed increases or decreases
Mass	The amount of matter something is made of
Weight	The force that acts on a mass because of gravity
Equilibrium	When all of the forces on something are balanced and cancel out.

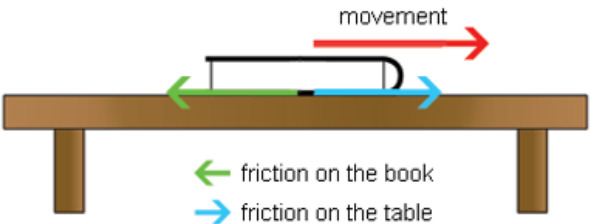
Introduction to forces

A force can be a push or a pull. Forces explain why objects move in the way that they do or why they don't move at all. Forces can change the direction that objects are moving in and change their shape.

Force arrows



▲ These force arrows show the forces acting on a tennis ball.

Contact forces	Are forces that act when you are touching something. friction, and air resistance are contact forces. Support forces like upthrust are also contact forces.
Non-contact forces	The force of gravity acts on a tennis ball when travels through the air. The Earth pulls the ball down even though it isn't touching it. Gravity is a non-contact force. The force between magnets is another example.
Interaction pairs	When two objects interact there is a force on each one that is the same size but in opposing directions. 



KNOWLEDGE ORGANISER

PHYSICS: FORCES Speed and gravity

Balanced and unbalanced

When the forces acting on an object are the same size but act in opposite directions we say that the resultant force is zero, the forces are **balanced** and the object is in **equilibrium**.

Balanced forces

An object can either:

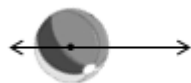
- Stop
- Move at a steady (constant) speed



Unbalanced forces

An object can either:

- Speed up
- Slow down
- Change direction
- Change shape



Resultant forces



- Single force that can replace all the forces acting on an object and have the same effect

Gravity

Gravity (or gravitational force) is a **non-contact force** which acts between two masses. It depends on the mass of each object and how far they are apart. On Earth the Gravitational field strength on Earth is 10 N/kg. Gravitational field strength is different on other planets.

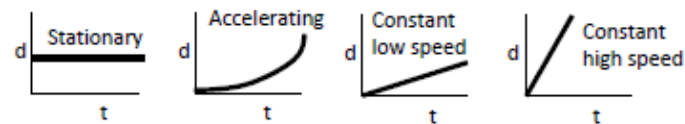
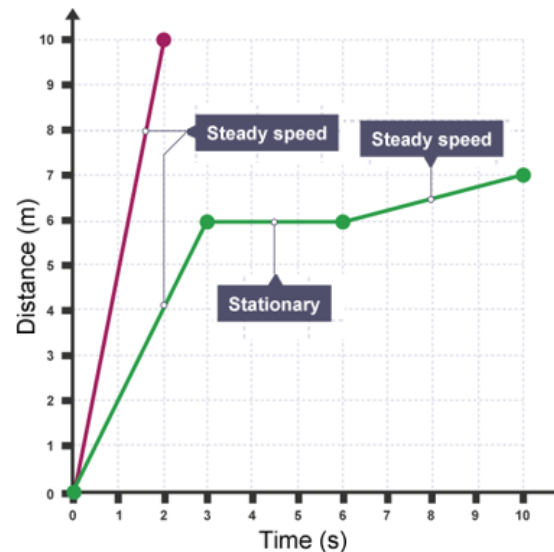
Gravity keeps things in orbit because the Earth exerts a force on the Moon. The force of gravity acts on the Moon keeping it in orbit around the Earth.

Difference between weight and mass

Weight	Is the effect of gravity on an object. Measured in newtons (N). Its value differs on different planets.
Mass	Amount of matter in an object measured in Kg. Same value on different planets.

Distance-time graphs

A distance-time graph is a useful way to represent the motion of an object. It shows how the distance moved from a starting point changes over time.



The slope of a distance-time graph tells you the speed. If the line is steep, the object is moving fast, if its not very steep then the object is moving more slowly.

Equations to learn

Distance = speed x time $s = v \times t$	Distance – metres (m) Speed – meters per second (m/s) Time – seconds (s)
---	--

Weight (N) = mass (kg) × gravitational field strength (N/kg)

Knowledge Organiser Year 7 Topic 1

'How did we get here?'

Key words and Secular language	
Secular	not connected with religious or spiritual matters
Philosophy	Philosophy comes from the Greek word meaning 'the love of knowledge'. It is the study of the basic ideas about knowledge, right and wrong, reasoning, and the value of things.
Humanism,	Humanists believe that human experience and rational thinking provide the only source of both knowledge and a moral code to live by. They reject the idea of knowledge 'revealed' to human beings by gods, or in special books
Monotheism	the doctrine or belief that there is only one God
Polytheism	The belief in or worship of more than one god.
Creationism	the belief that God created all things out of nothing as described in the Bible and that therefore the theory of evolution is incorrect
cosmological	relating to the origin and development of the universe
Revelation	the divine or supernatural disclosure to humans of something relating to human existence
Evolution	The process by which different kinds of living organism are believed to have developed from earlier forms during the history of the earth.
Natural Selection	Natural selection means that some individuals in a species are better at surviving than others and will have more children
Big Bang	the cosmic explosion that marked the beginning of the universe according to the big bang theory
Red shift	It is a result of the space between the Earth and the galaxies expanding. This expansion stretches out the light waves during their journey to us, shifting them towards the red end of the spectrum. The more red-shifted the light from a galaxy is, the faster the galaxy is moving away from Earth.
Einstein	Albert Einstein was a German-born theoretical physicist, widely acknowledged to be one of the greatest physicists of all time. Einstein is known for developing the theory of relativity
Dawkins	Richard Dawkins FRSE FRSL is a British evolutionary biologist and author
Darwin	Charles Robert Darwin FRSE FRGS FLS FZS was an English naturalist, geologist and biologist, best known for his contributions to the science of evolution
Darwinism	Darwinism is a theory of biological evolution developed by the English naturalist Charles Darwin and others, stating that all species of organisms arise and develop through the natural selection of small, inherited variations that increase the individual's ability to compete, survive, and reproduce.

Hinduism, Buddhism and Sikhism	
Ahimsa	Hindu and Buddhist practice of non-injury to living things: the rule of non-violence
Diety	a god or goddess (in a polytheistic religion).
Hinduism	<i>Hinduism</i> is an Indian religion, which has many gods and teaches that people have another life on earth after they die.
Trimurti	in Hinduism, triad of the three gods Brahma, Vishnu, and Shiva.
Brahman	the ultimate reality underlying all phenomena in the Hindu scriptures "Brahman is formless but is the birthplace of all forms in visible reality"
Bhrama	a Hindu god: in later Hindu tradition, the Creator who, with Vishnu, the Preserver, and Shiva, the Destroyer, constitutes the triad known as the Trimurti
Vishnu	the second god in the Hindu triumvirate (or Trimurti). ... Vishnu is the preserver and protector of the universe. His role is to return to the earth in troubled times and restore the balance of good and evil
Shiva	One of the principal Hindu deities, worshiped as the destroyer and restorer of worlds and in numerous other forms
Buddhism	a religion, originated in India by Buddha (Gautama) and later spreading to China, Burma, Japan, Tibet, and parts of southeast Asia, holding that life is full of suffering caused by desire and that the way to end this suffering is through enlightenment.
Enlightenment	the state of having knowledge or understanding
Buddha	<i>Buddha</i> is the title given to Gautama Siddhartha, the religious teacher and founder of <i>Buddhism</i>
Dalai Lama	the spiritual head of Tibetan Buddhism and, until the establishment of Chinese communist rule, the spiritual and temporal ruler of Tibet
Sikhism	a monotheistic religion founded in Punjab in the 15th century by Guru Nanak
Guru Granth Sahib	The sacred text of Sikhism, considered by Sikhs as the eleventh and final <i>guru</i> and as the repository of God's revelation to humankind
Guru Nanak	Indian religious leader who founded Sikhism
Gurus	an influential teacher

Abrahamic religions—Christianity, Judaism and Islam	
Abrahamic religions	Islam, Christianity and Judaism are the three main Abrahamic religions because Abraham - or Ibrahim - is important to them all. They consider him an important prophet or father figure.
Islam	Islam, major world religion that emphasizes monotheism, the unity of God ('Allah' in Arabic), and Muhammad (PBUH) as his final messenger in a series of revelations.
Christianity	Christianity is the most widely practiced religion in the world, with more than 2 billion followers. The Christian faith centers on beliefs regarding the birth, life, death and resurrection of Jesus Christ
Judaism	Judaism is the world's oldest monotheistic religion, dating back nearly 4,000 years. Followers of Judaism believe in one God who revealed himself through ancient prophets.
Quran	the Islamic sacred book, believed to be the word of God as dictated to Muhammad by the archangel Gabriel and written down in Arabic.
Bible	the Christian scriptures, consisting of the Old and New Testaments
Tanakh	The Jewish Bible is known in Hebrew as the Tanakh, an acronym of the three sets of books which comprise it: the Pentateuch (Torah), the Prophets (Nevi'im) and the Writings (Ketuvim).
stewardship	the job of supervising or taking care of something
Dominion	ruling or controlling power
Genesis	The Book of Genesis is the first book of the Hebrew Bible and the Christian Old Testament. In Judeo-Christian traditions it is viewed as an account of the creation
Eden	the garden where according to the account in Genesis Adam and Eve first lived
Adam & Eve/Hawa	Adam and Eve (Hawa in Islam) are the Bible's first man and first woman. Adam's name appears first in Genesis 1 with a collective sense, as "mankind"

Knowledge Organiser: Topic 2—'How should we care for the environment?'

Key words		
1	Stewardship	The basis that God owns the world as seen in Genesis but has given humans the responsibility to look after, and care for, the world.
2	Dominion	The idea that God allows us to rule over his creation. It still does not mean we own it but can use it.
3	Instrumental worth	Having value based on its usefulness (usually to humans due to anthropocentrism).
4	Intrinsic worth	Having value in itself, not due to usefulness.
5	Humanism	The idea that the scientific method, evidence, and reason ought to be used to discover truths about the universe and thus human welfare and happiness are at the centre of their ethical decision making.
6	Sanctity of Life	The idea that all HUMAN life has value and so therefore we need to care for all.
7	Ahimsa	The concept of 'non-violence' within the Vedic religions e.g. Hinduism and Buddhism.
8	Halal	Means to be 'permissible' under Islamic law and haram means to be 'not permissible' according to Islamic law.
9	Ecological sin	Pope Francis has shown a care for the environment by stating that not caring for the world is sinful (sin = going against God).
10	Sustainability	Avoidance of the depletion of natural resources in order to maintain an ecological balance; not wasting things and conserving for the future.

Key Knowledge on the environment		
1	Stewardship	A good example of stewardship is a steward at a sports match/concert- the look after the people on behalf of the company; we look after God's creation on his behalf.
2	Dominion	The idea that God allows us to rule over his creation Some say to do as we see fit but this is often tied to stewardship and therefore requires an element of compassion. Stewardship is about being responsible for the care of the planet.
3	Sanctity of life	The belief that all human life has value and therefore needs to be cared for. This concept can be linked to stewardship e.g using air con excessively and other western luxuries have an impact on LEDC's. It is only about humans.
4	Green Christians	These are Christians who respond to the ecological crisis that they believe has deepened so they seek to live more gently on the earth, and lessen their impact on God's creation as a whole.
5	Environmental rights	Having access to the unspoiled natural resources that enable survival, including land, shelter, food, water and air.

Key Knowledge on animals		
1	Ahimsa	The concept of 'non-violence' within the Vedic religions e.g. Hinduism and Buddhism. In Buddhism, this links to the First Moral Precept of 'abstain from harming any living thing' as it causes dukkha (suffering) which is an unskillful action. In Hinduism, all living beings have souls therefore it is wrong to harm.
2	Halal	Means to be 'permissible' under Islamic law and haram means to be 'not permissible'. In the context of food, there are several rules regarding this that reflect the Qu'ran and Sharia law. The most famous are the methods of slaughter but some food is forbidden too such as pork.
3	RSPCA view on the slaughter of animals	They think that animals should only be killed if it is as free from suffering as possible. "We're opposed to the slaughter of any animal without first ensuring it is... stunned prior to slaughter. Evidence clearly indicates that slaughter without pre-stunning can cause unnecessary suffering."
4	Animal rights	This refers to the idea that animals deserve certain kinds of consideration—consideration of what is in their best interests.
5	Greenpeace	Greenpeace is an organisation and movement of people who are passionate about defending the natural world from destruction. Their vision is a greener, healthier and more peaceful planet, one that can sustain life for generations to come.

Y7 French - Je me présente Core Vocabulary	
Greetings	
Bonjour	Hello / good day
Salut	Hi
Bonsoir	Good evening
Bonne nuit	Goodnight
Au revoir	goodbye
ça va?	How's it going? / How are you?
bien / pas mal / mal	good / not bad / bad
Introducing yourself	
je m'appelle	My name is
prénom	first name
nom de famille	family name/surname
ça s'écrit	it's spelled...
See French alphabet sheet	
Age and birthday	
j'ai onze ans	I'm 11 years old
j'ai douze ans	I'm 12 years old
mon anniversaire c'est le...	my birthday is the...
See numbers and months sheet	
le cinq septembre	the 5th September
le vingt-trois février	the 23rd February
Likes and dislikes	
J'aime	I like
J'adore	I love
Je n'aime pas	I don't like
Je déteste	I hate
le sport	sport
le foot	football
le basket	basketball
le tennis	tennis
la danse	dance
le chocolat	chocolate
les croissants	croissants
les chiens	dogs
les chats	cats
les animaux	animals
ma famille	my family
mes amis	my friends
mon collègue	my (secondary) school

Les nombres

1	un	11	onze	21	vingt-et-un
2	deux	12	douze	22	vingt-deux
3	trois	13	treize	30	trente
4	quatre	14	quatorze	40	quarante
5	cinq	15	quinze	50	cinquante
6	six	16	seize	60	soixante
7	sept	17	dix-sept	70	soixante-dix
8	huit	18	dix-huit	80	quatre-vingts
9	neuf	19	dix-neuf	90	quatre-vingt-dix
10	dix	20	vingt	100	cent

Les mois:

janvier (January)
 fevrier (February)
 mars (March)
 avril (April)
 mai (May)
 juin (June)
 juillet (July)
 août (August)
 septembre (September)
 octobre (October)
 novembre (November)
 decembre (December)

Les jours:

lundi (Monday)
 mardi (Tuesday)
 mercredi (Wednesday)
 jeudi (Thursday)
 vendredi (Friday)
 samedi (Saturday)
 dimanche (Sunday)

Important literacy tip!

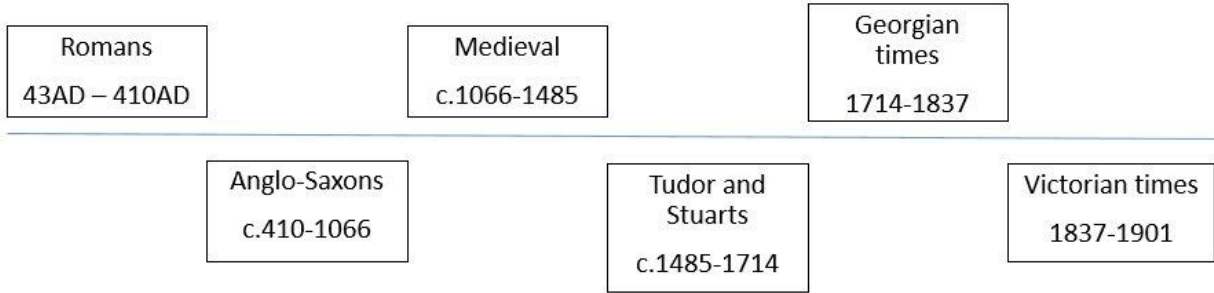
In English, days of the week and months must begin with a capital letter. In French they do not.

	FRENCH	ENGLISH
1	bonjour	hello
2	salut	hi/bye
3	bonsoir	good evening
4	bonne nuit	good night
5	au revoir	goodbye
6	merci	thank you
7	s'il vous plaît	please
8	monsieur	mister
9	madame	mrs
10	mademoiselle	miss
11	je voudrais	I would like
12	un stylo	a pen
13	un cahier	an exercise book
14	un livre	a book (text/reading)
15	une gomme	a rubber
16	rouge	red
17	noir	black
18	jaune	yellow
19	blanc	white
20	vert	green
21	rose	pink
22	c'est	it is
23	ce n'est pas	it is not
24	je m'appelle	I am called
25	et	and
26	mais	but
27	ou	or
28	aussi	also
29	hiver	winter
30	printemps	spring
31	été	summer
32	automne	autumn
33	très	very
34	trop	too
35	assez	quite/fairly
36	un chien	a dog
37	une tortue	a tortoise
38	j'aime	I like
39	j'adore	I love
40	je n'aime pas	I don't like
41	je déteste	I hate
42	la famille	family
43	une maison	a house
44	mon père	my dad
45	ma mère	my mum
46	j'habite	I live
47	anniversaire	birthday
48	ans	years
49	il y a	there is / are
50	il n'y a pas de	there is not

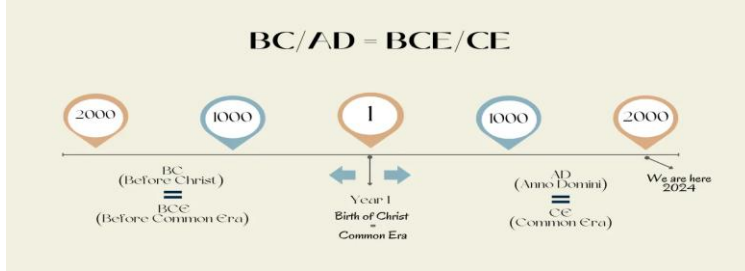
History

Knowledge Organiser: What can my local area tell me about History?

The timeline below show the eras (roughly) you will cover in your first Year 7 topic:



How do I know if a year is BC (BCE) or AD (CE)?



BC = Before Christ / BCE = before common era

AD = Anno Domini (the year of our Lord) / CE = Common Era

To correctly know whether a year as 'BC/BCE' or 'AD/CE', you can use this timeline the same way you would use a number line in Maths.

The year '0' represents the year Christians believe Christ was born. Anything before that is 'BC/BCE' and anything after that is 'AD/CE'.

How do I know which century a year is in?

We will use AD/CE years to demonstrate:

If the year is between 0 – 100 CE, this means it was in the 1st century CE. Following this pattern, it means...

- 100-199 = 2nd century
- 200-299 = 3rd century
- 300-399 = 4th century....

...right up until today, where 2025, for example, is in the 21st century

Your key terms for this topic:

Word	Definition
History	The study of the past
Chronological	When events are stated in the order in which they occurred
Primary source	Information or artefacts produced first-hand by those who experienced the time-period, or topic
Secondary source (interpretation)	Information about a time period or topic that is created later. It analyses, interprets, or summarizes information from primary sources, offering a second-hand account.
Inference	A conclusion which is drawn using reasoning or evidence rather than explicit information
Decade	A period of 10 years
Century	A period of 100 years
Millennium	A period of 1000 years
Historian	A person who studies and writes about the past and is regarded as an authority on it
Archaeologist	A person who studies artefacts and physical remains from the past
Anglo-Saxon	An inhabitant of England between the 5th century and the Norman Conquest, originally from Germanic area of Europe
Medieval	Relating to the Middle Ages (c.5 th -15 th centuries)
Early Modern	The time from roughly the 15th to 18th centuries
Modern	Relating to the present or recent times

Knowledge Organiser: Norman England

1066: why was there a succession crisis?

- King Edward the Confessor died without an heir
- Harold Godwinson is announced as king by the Witan
- There are main 3 claimants to the throne

Harold Godwinson

- He was English
- Earl of Wessex
- Had been an advisor to the king and acted as regent
- His sister was married to the king
- He had gone on embassy to Normandy for King Edward
- Experienced military leader

Harald Hardrada

- He was King of Norway
- He was a fearsome Viking warrior, feared across Europe
- Claim to the throne was based on Viking secret deals and treaties
- Tostig Godwinson convinced Hardrada that Harold Godwinson was unpopular in England

Duke William of Normandy

- He was a relative of Edward the Confessor
- He was a strong military leader
- Supposedly Edward the Confessor had promised him the throne and Harold Godwinson had agreed
- Was supported by the Pope

The Battle of Stamford Bridge - 25th September 1066

- Harold Godwinson's army marched 210 miles North in 5 days and defeated Harald Hardrada's army by launching a surprise attack
- Hardrada was killed and only 24 out of his 300 ships were needed to carry the surviving Vikings home.
- William of Normandy had postponed his invasion of England due to poor weather

The Battle of Hastings – 14th October 1066

- The weather improved and William travelled to England while Harold Godwinson was still in the north
- Harold G and his exhausted men travel back south to fight William at the Battle of Hastings
- Harold G was killed (supposedly with an arrow in the eye) and William took the throne as King of England

How did William win the Battle of Hastings?

1. Tactics/army

- Harold's main tactic was the shield wall
- William had a mix of professional knights, huscarls (trained fighters), archers and cavalry. He also had powerful crossbows.
- William weakened the shield wall with the feigned retreat tactic (pretended to run away and then circled the Normans from behind)

2. Leadership

- **William's knights brought their own horses and started to build wooden castles as soon as they landed in England**
- **Harold decided to launch a surprise attack on William on the south coast, straight after the Battle of Stamford Bridge instead of waiting for him to reach London. Harold only had 8,000 troops when he could have had 40,000 if he waited for back up**

3. Luck

- **Harold faced 2 invasions in 2 weeks. His men had marched over 420 miles.**
- **The weather meant William arrived in England just after the Battle of Stamford Bridge (the wind had been blowing the wrong way in September).**
- **Medieval battles were chaotic. Both sides were quite evenly matched and William was lucky to have won. This is shown by the fact the battle lasted all day.**

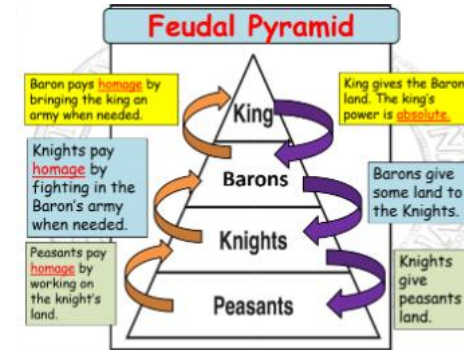
How did William I take control of England?

1069: Opposition to William (the harrying of the north)

- Some Anglo-Saxons did not accept William I as **The harrying of the north (1096-70):**
- Northern Anglo-Saxons started a mass uprising in Yorkshire. William defeated them and ordered villages to be destroyed, killing any person or animal in the way
- Seen as cruel even at the time. Years later the Domesday Book still listed destroyed areas as 'waste'

Landowning and feudal system

- The Normans introduced the feudal system - a hierarchy based on social, political and economic status

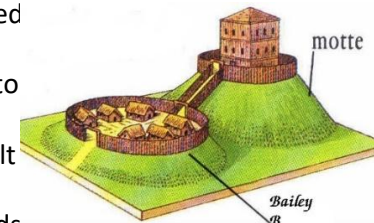


The Domesday Book (1086)

- The book shows that William I directly owned about 20% of the land, Norman nobility controlled about 50% - many Normans had moved to England and replaced the Anglo-Saxon landowners

Motte and Bailey Castles:

- Defensive structures introduced by Normans.
- Built with a keep (wooden or stone building) on a hill (motte) surrounded by a moat (water)
- Usually small making them easier to defend.
- Most built in wood first then rebuilt later in stone
- They housed soldiers and their lords
- Helped the new Norman landowners to control the Anglo-Saxon population



What makes up the UK?

The **UK** is a country in western Europe that is made up of 4 nations; England (the largest), Scotland, Wales and Northern Ireland.

Great Britain: England, Scotland and Wales.

United Kingdom: England, Scotland, Wales and Northern Ireland.

British Isles: England, Scotland, Wales, Northern Ireland and Republic of Ireland

Physical Landscape of the UK

Relief: The shape of the land – how high or low, flat or steep it is.

Mountainous (upland) areas tend to be in the north and west of the UK. Low lying (lowland) areas tend to be in the south east of the UK.

Some examples of mountain ranges are the Cambrian Mountains in Wales, the Pennines in northern England and the Grampian Mountains in Scotland.

The longest river in the UK is the River Severn (354km) which has its source in Wales.

The River Thames is the longest river in England and flows through London.



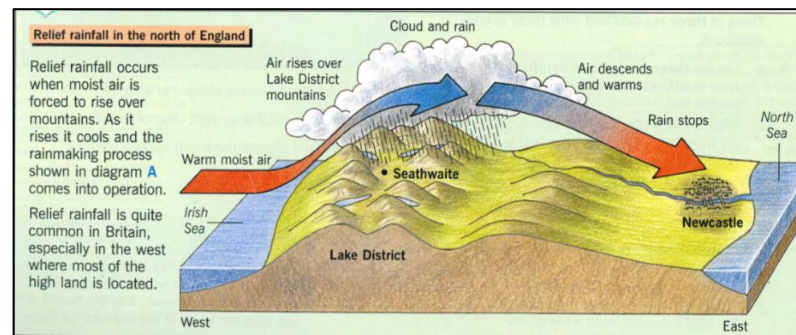
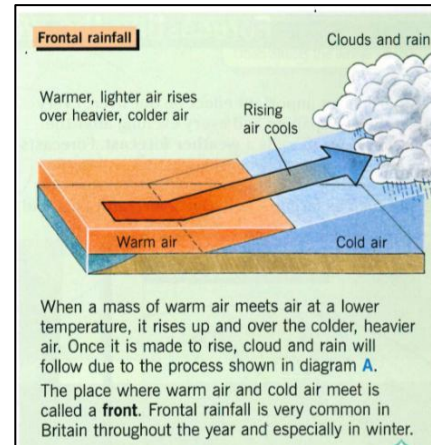
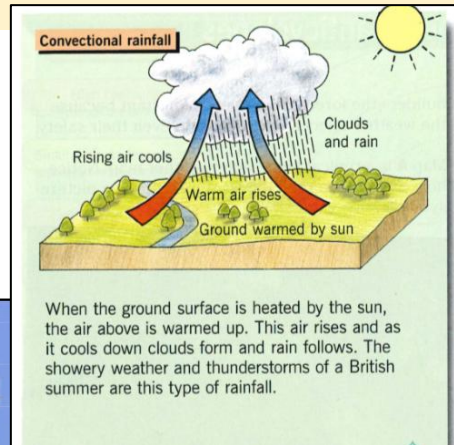
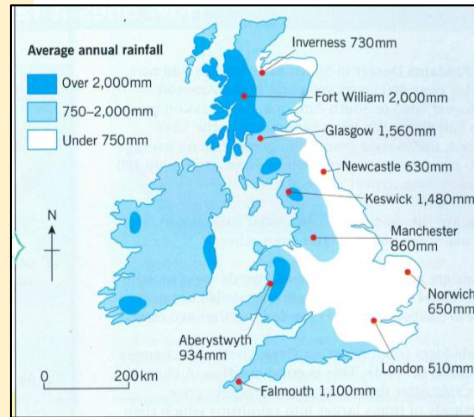
Rainfall in the UK

Precipitation means rain, snow, sleet or hail that falls to or condenses on the ground.

Wales and the north west (upland areas) of the UK see larger amounts of rainfall compared to the further south and east you go.

There are 3 types of rainfall:

- **Convective** rainfall
- **Relief** rainfall
- **Frontal** rainfall



The British climate

Britain has a mild climate. It is in the **temperate climatic zone** and the sea affects the weather. This means that Britain gets cool, wet winters and warm, wet summers. The weather conditions are also very changeable.

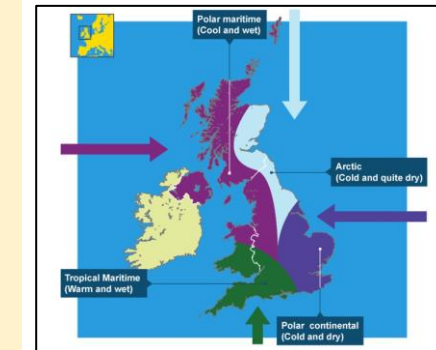
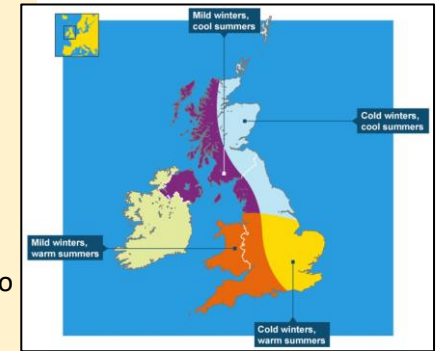
Prevailing wind: the dominant direction from where the wind blows

Air mass: a large body of air with similar characteristics

There are a number of factors that affect the British climate:

- **Prevailing winds** – direction from where the winds come from
- **Latitude** – locations that are further north receive less concentrated energy from the sun

- **Altitude** - Temperatures decrease with altitude. There is a 1°C drop for every 100 m in height as the air is less dense.
- **Distance from the sea** - The sea takes longer to heat up and cool down than land. So in the winter the sea keeps coastal areas warm and in summer, it cools them down.
- **Ocean currents** - Britain's mild climate is partly due to the Gulf Stream, a large Atlantic Ocean current of warm water from the Gulf of Mexico.



Population

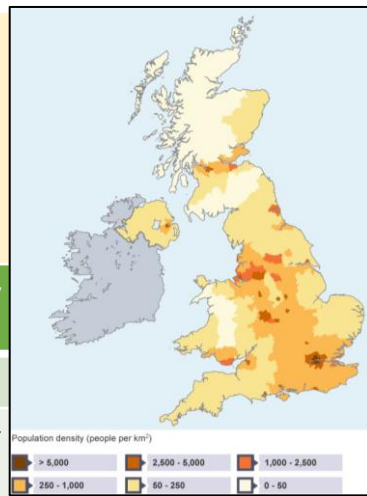
Population **distribution** – the way people are spread out

Sparsely populated – few people in an area

Densely populated – many people in an area

The UK has a population density of approximately 260 people per sq km.

Factors leading to densely populated areas	Factors leading to sparsely populated areas
Flat or gently sloping land	Steep slopes
Mild climate	Harsh climate – very hot or very cold
Good (fertile) soils	Dense forests
Lots of job opportunities	Few job opportunities
Lots of resources e.g. coal and oil	Lack of resources
Water	Dry conditions (lack of water)



Migration

Some people choose to migrate (voluntary) or others may be forced to move (forced).

Internal migration when someone moves within a country.

International migration when someone moves across country borders.

Emigration is when people are leaving or exiting a country.

Immigration is when people are moving into a country.

Push factor – something negative that makes a person leave where they live.

Pull factor – something positive that attracts a person to a place

Push factors	Pull factors
Lack of services	Better services
Low employment	Higher employment
Lack of safety	Safe society
High crime	Less crime
Crop failure	Fertile land
Drought	Lower risk of natural hazards
Flooding	Good climate
Poverty	More wealth
War	Political stability

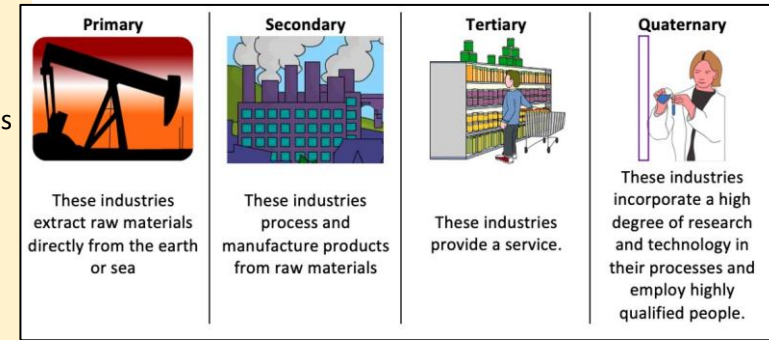
Positives of tourism

Creates jobs. It brings money into the area. New infrastructure and facilities are created.

Negatives of tourism

Jobs are seasonal. An increase in traffic, litter and noise. Overcrowding and conflict between locals and tourists.

UK employment structure



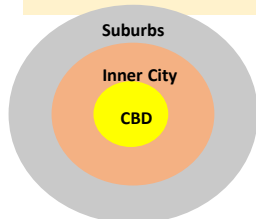
Most people in the UK work in the tertiary sector providing a service.

Zones of a town/city

CBD – The central business district is the commercial centre of the city. There are many tall buildings, land is expensive to rent/buy, few people live here and railway and bus stations are often found here.

Inner city – The area next to the CBD usually built before World War II. You often find terraced houses and abandoned run down factories and warehouses.

Suburbs – This is the area on the outskirts/edges of a city. Here are large detached and semi-detached houses with garages, land is cheaper than the CBD and there is lots of open space.



Remember - lots of things in Geography can be categorized into **social** (to do with people), **economic** (to do with money) and **environmental**.

Leicester

Located in the East Midlands region of England and in the county of Leicestershire.

Leicester's population is very diverse. Population in 2016: 348,343

- Over 70 languages spoken
- Close to M1 and M69 motorways
- Hosts large multicultural events:
 - Caribbean carnival
 - Diwali celebrations
- Has 2 universities
 - Leicester University
 - De Montfort University



UK Nations Human Geography

The map shows the UK nations and their capital cities.

England has the largest population and London is the biggest capital city.

England is also the largest country by land area.

Key words:

Weather: The short term state of our atmosphere which can vary on a daily basis, e.g. sunny, rainy, windy.

Climate: The long term average temperature and precipitation for a specific location., normally measured over a 30 year time period.

Climate change: significant changes in temperature, rainfall and wind as a result of a warmer atmosphere.

Why is studying the weather important?

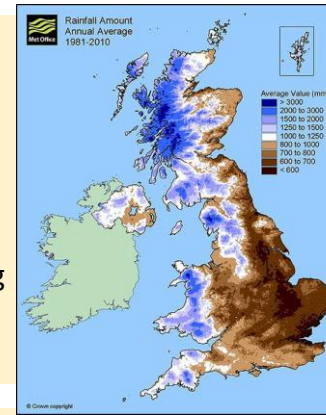
- Farmers study the weather so they know whether rain is forecast for their crops.
- Extremes of weather can lead to flooding which can damage homes and cost money.
- Changes to weather can disrupt transport e.g. roads can become icy which can be dangerous.

How do we measure the weather?

Weather measurement	Units	Instrument
Air temperature	°Celsius	Thermometer
Rainfall	mm	Rain gauge
Wind speed	m/s	Anemometer
Wind direction	Compass directions	Wind vane
Humidity	% water in air	Hygrometer

How do temperature and rainfall vary across the UK?

The western side of the UK receives more rainfall (shown in blue on map) than the east (shown in brown) as the UK's weather comes from the Atlantic Ocean so the air contains more moisture. The air is forced to rise over higher ground forming relief rainfall in western areas. The clouds have then lost their moisture so the east is much drier.



The south of the UK is warmer than the north as it is closer to the Equator (a factor called latitude).

The UK has 4 distinct climate zones. The higher relief upland areas are also colder as temperature decreases with altitude (height above sea level).

Why does climate vary around the world?

Global Circulation System: The Equator receives the most energy from the Sun and so the global circulation system works to re-distribute the heat around the world. Air rises in some places (Equator and 60°N and S) creating high rainfall, whereas air sinks at other places (30°N and S and 90°N and S), creating dry conditions or deserts.

Ocean circulation: Water also moves around the oceans to help spread heat around the world. This idea was seen when a container of ducks opened and the ducks floated all around the world.

How does climate influence the world's biomes?

There are 7 main climate zones as shown on the map – these are areas with distinct temperatures and rainfall totals. The climate in these areas influences the plants and animals that are found there and the location of biomes.

Biomes: A large scale community of plants and animals occupying a particular habitat.

What are the main features of the major biomes?

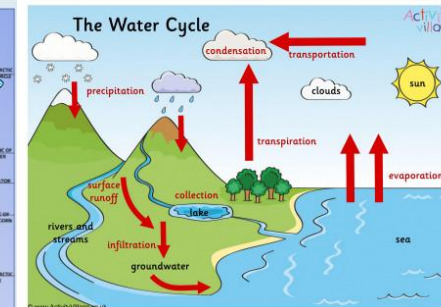
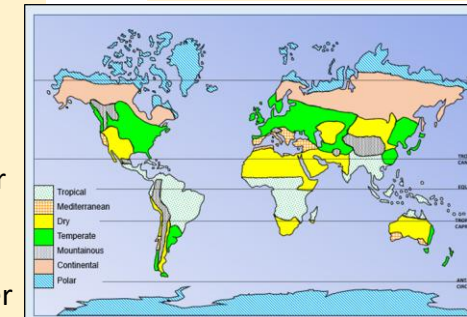
Polar: Very low temperatures and low rainfall. Animals are adapted e.g. polar bears have thick fur. Few plants grow here due to cold, e.g. Arctic.

Temperate: Moderate temperature and rainfall, range of animals and plants found here, good conditions for plant growth, e.g. UK.

Mediterranean: Warm temperatures and moderate rainfall, plants such as olive trees found here, e.g. southern Spain.

Hot desert: Very high temperatures and v. low rainfall, few plants can survive except cacti, animals are adapted, e.g. Sahara desert, north Africa.

Tropical rainforest: High temperatures and high rainfall, rapid plant growth, many animals found here, e.g. Amazon rainforest, Brazil.



How much water is available?

- There is a fixed volume of water on the Earth which has not changed over time.
- 97% of water is salt water and 3% is fresh water.
- However, the demand for water has increased by 600% as population has increased and people use more water in their daily lives.

What is water scarcity?

- Water scarcity occurs when there is more demand for water than there is water available leading to a shortage of water.
- This can be due to lack of rainfall – physical water scarcity.
- Or lack of money to provide clean drinking water for people – economic water scarcity.

What is drought and what are the causes?

- Drought is a prolonged period of unusually low rainfall that can lead to water shortages.**
- The main physical cause of drought is a lack of rainfall, but it can be made worse by human actions such as building dams and deforestation.

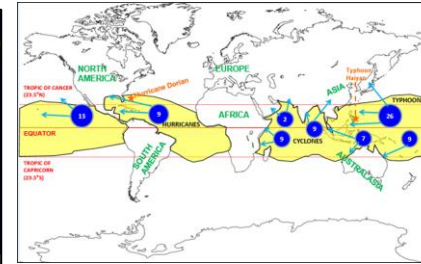
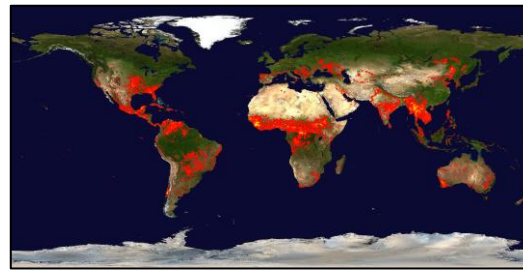
Drought in the Horn of Africa

Causes: the area only received 30% of the normal rainfall totals in 2011 and 2012.

Social impacts (people): 12 million people needed food aid, 920 000 people left Somalia as there was so little food available.

Economic impacts (money): price of food went up by 68% and \$2.48bn was requested to help.

Environmental impacts: too much grazing of animals harmed the soil and trees were cut down.

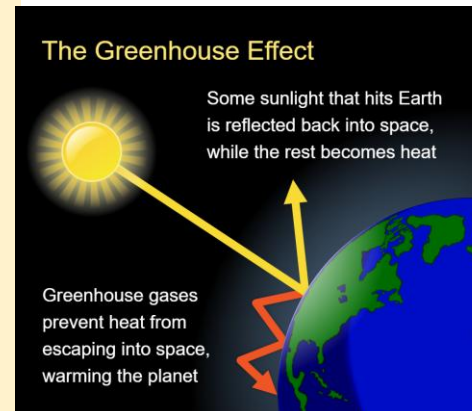


Why are wildfires becoming more common?

- A wildfire is a large, destructive fire that spreads quickly over scrubland (type of trees) or bushes.
- Heat, fuel and oxygen are needed for wildfires to burn.
- Climate change is increasing the size, frequency, intensity and seasonality of wildfires.
- While climate change might not ignite (start the fire burning) the fire, it is giving fires the chance to turn into large, dangerous blazes.
- It creates warmer temperatures, increasing the amount of fuel (dried vegetation) available, and reduces water availability.

What causes flooding?

- River flooding occurs when there is too much water in the river so some of the water overflows onto the land around.**
- Some of the main causes of flooding:
- Extreme rainfall – too much rainfall for the river to hold.
- Steep slopes – rainfall reaches river faster so flooding more likely.
- Deforestation – soil not held together by roots so blocks river.
- Urbanisation – impermeable surfaces mean water cannot soak in and reaches the river quickly.



What are tropical storms?

Tropical storms are powerful low pressure systems which create heavy rainfall of 25cm a day and very strong winds of 120km/hr

- They occur in tropical waters (shown in map to left) as this provides more energy so the water evaporates and forms large rain clouds.
- Tropical storms cause damage as flooding destroys homes and the strong winds can damage vegetation, homes and power lines.

How do urban areas influence climate?

Urban areas: these are towns and cities with lots of buildings and higher population densities.

Rural areas: these are the countryside and small villages – lots of green open spaces, fields etc.

- Urban areas have warmer temperatures than rural areas as the darker surfaces absorb more heat from the sun and there is less water and bare ground which cools air.
- Urban areas have more rainfall as the pollutants that are produced allow water droplets to form around them which forms clouds which creates rainfall.

How is the climate changing?

- There are natural and human reasons why the climate is changing.
- Greenhouse gases trap more of the Sun's radiation which increases temperature.
- Human activity is producing more greenhouse gases such as carbon dioxide and methane.
- Trees and plants are able to absorb greenhouse gases.



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