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

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Lionheart Literary Canon:
Curating a Lifelong Love of Literature

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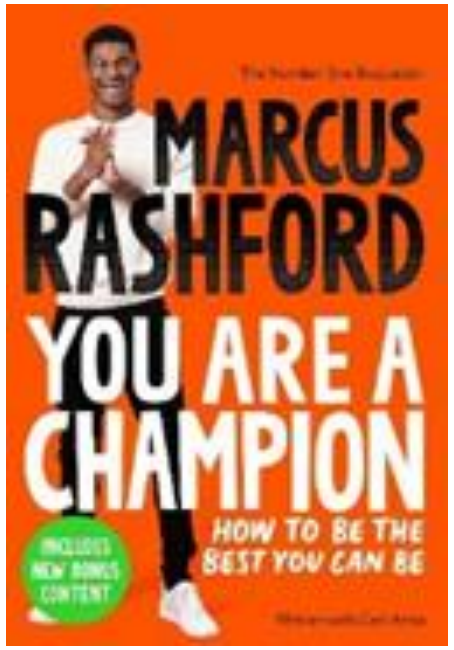
Recommended books to have read by the end of Year 7

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

English

Unit 1: The Ruby in the Smoke

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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.

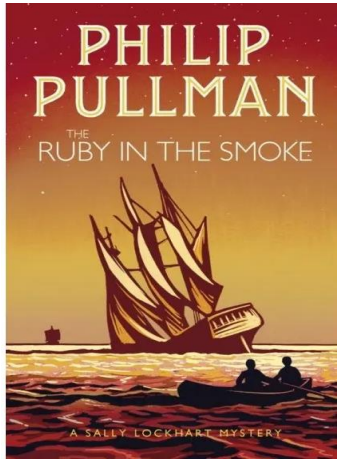
What? **What** is the writer presenting? **What** is your area of focus?

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

Computer Science

KNOWLEDGE

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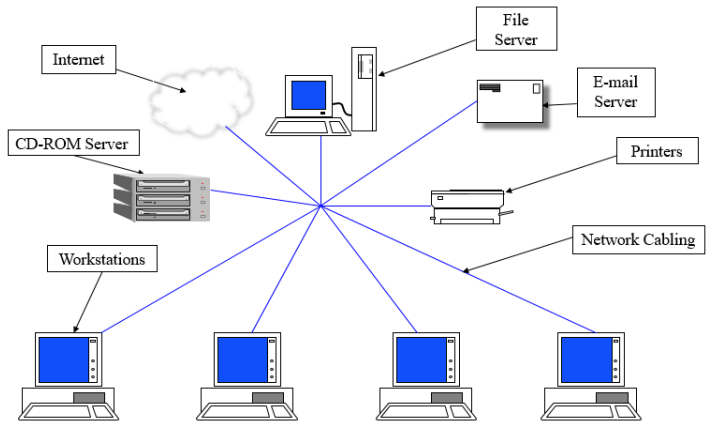
KS3 – Computing Fundamentals

ORGANISER

What is a network?	Two or more devices connected together to communicate and share resources.

What could a network look like?



Word processing software	Publishing software	Presentation software	Spreadsheet software
Used when wanting to write a lot of text inside of a document. E.g. letter, story	A great choice when combining text with images. E.g. leaflets, posters	The best choice when creating a presentation to show to an audience.	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	What are computers bad at
Storing large quantities of information	Making assumptions
Doing as they are told	Empathy
Completing boring and repetitive task	Fixing themselves
Completing complex equations efficiently	

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

Computer Science

KS3 – Computer Networks

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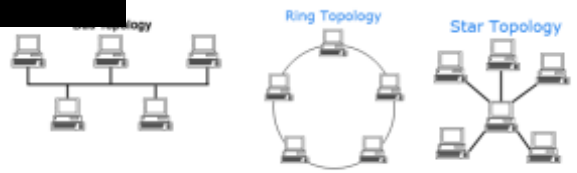
KNOWLEDGE ORGANISER



What is a computer network?	A group of two or more computer systems linked together.

Describe the steps used when accessing websites via the DNS (Domain Name System Server)

1. The **Client** types in a **URL** and this is sent to the **DNS**

2. The **DNS** looks up the **URL** and finds the **IP Address.** This is then sent back to the **Client.**

3. The **client** can now use the **IP Address.** To **Request** the website fro the correct **Web Server.**

4. If this **request** is accepted, the **web server** will send back the website to the **client.**

Advantages of Networks	Disadvantages of Networks
Computers can communicate with each other.	It costs more money to build a network than it does a stand-alone machine.
Users on a network can easily share resources such as printers, scanners etc.	It is possible for one faulty machine on a network to cause other machines on the network to stop working.
Users on a network can share data.	Viruses and other types of malware can spread very easily across networks.

Hardware	Description
Server	A large computer system that keeps resources within a network centralised.
Router	Provides the internet to devices of a network from Internet Service Providers (ISPs)
Switch	Allows multiple/additional devices to connect a router through Ethernet cables.
Wireless Access Point (WAP	Allows devices to connect to a network without the use of cables.
Ethernet Cable	Used to connect devices to a network locally.
Fibre Optic Cables	Used to connect networks to WAN's

Protocol	Sub Domain	Domain Name	Top Level Domain
https://	www.	Google.	com
This tells the computer that we are documents on the internet.	This tells the computer that it is a website on the world wide web.	This is the name of the website.	This communicates the purpose of a domain name.

Maths – Year 7

Block 1 – The Grammar of Algebra

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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 (≡)	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.

Maths – Year 7

Block 1 – The Grammar of Algebra

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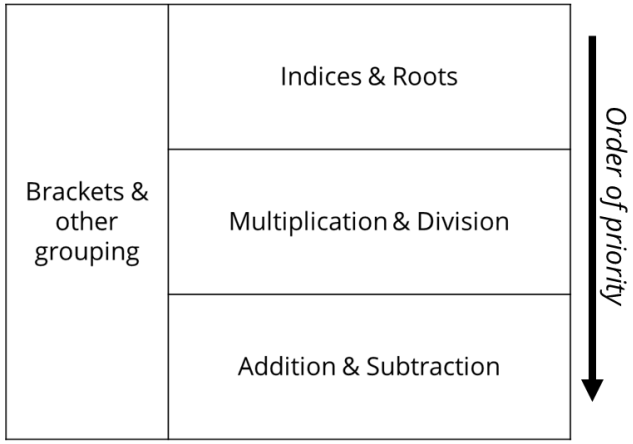
Inverse	The operation that reverses the effect of another operation. Addition and subtraction are inverse operations. Multiplication and division are inverse operations.
Function / One-to-one mapping	A rule that transforms one number or expression to another. Can be described as a 'one-to-one mapping' 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: $\mathbf{a(b+c) \equiv ab + ac}$
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.

PE

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

Key learning content	Description / Explanation/ Example
Stages of a warm up • 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** • 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 • Increase temperature and HR • Decreased chance of injury • Increased oxygen transport • Increased flexibility • Increased speed / strength of muscle contractions • Mental preparation	**Benefits explained** • 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 • Stage 1 – Low intensity exercise • Stage 2 – Stretching	**Examples of cool down** • Stage 1 – Steady jog on netball court, can move onto a walk • Stage 2 – (Static stretches) Quadriceps stretch, hamstring stretch.
Benefits of cool down • Gradually lower heart rate • Gradually lower breathing rate and temperature. • Speeds up removal of waste products. • Speeds up recovery	**Benefits explained** • 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 • Wear appropriate PE kit • Long hair tied back • Jewellery removed • No chewing gum or food • Water for hot weather	**Preparation explained** • 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 chocking when active. • To stay hydrated /avoid headaches/ feeling weak
Risks and hazards to check for • Area free from rubbish • Equipment tidied away • Equipment undamaged • Surface dry/ undamaged	**Hazards explained** • 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.

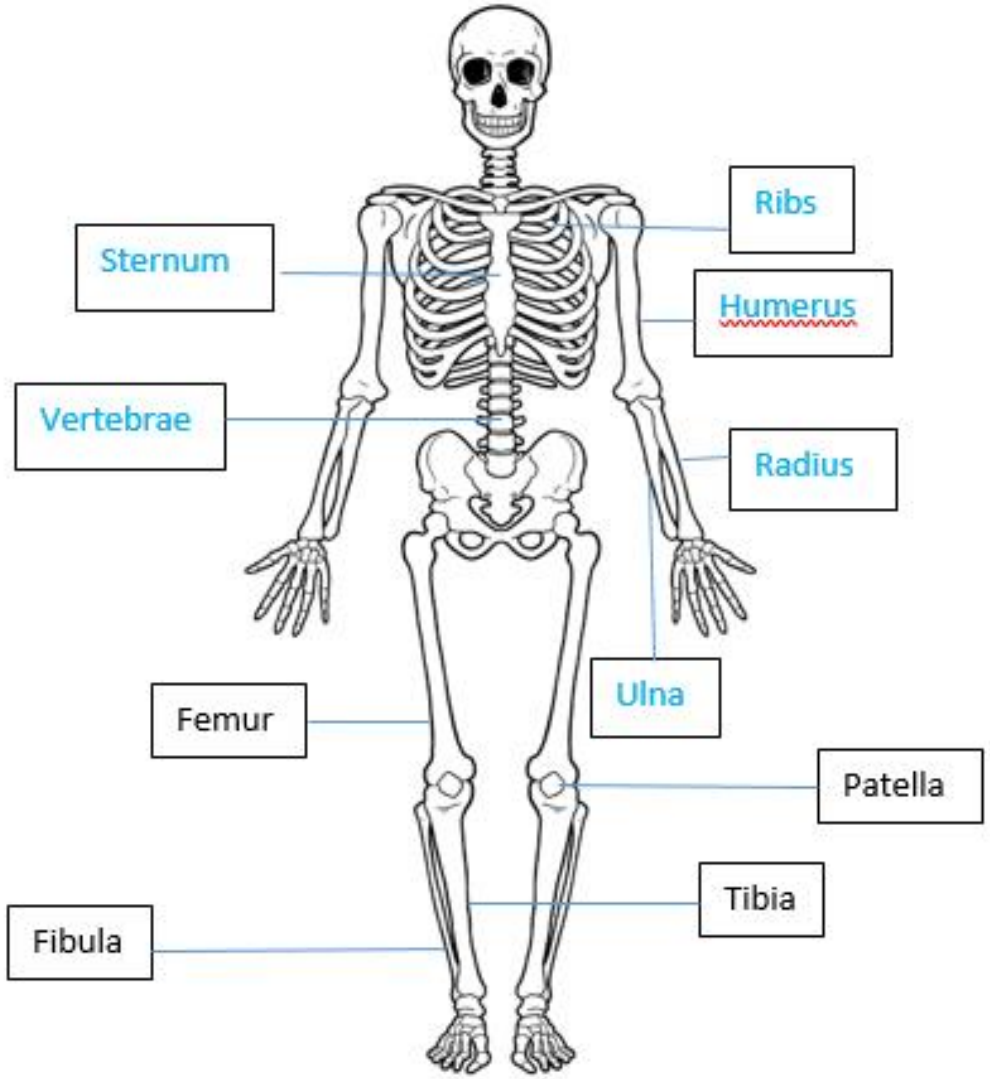
PE

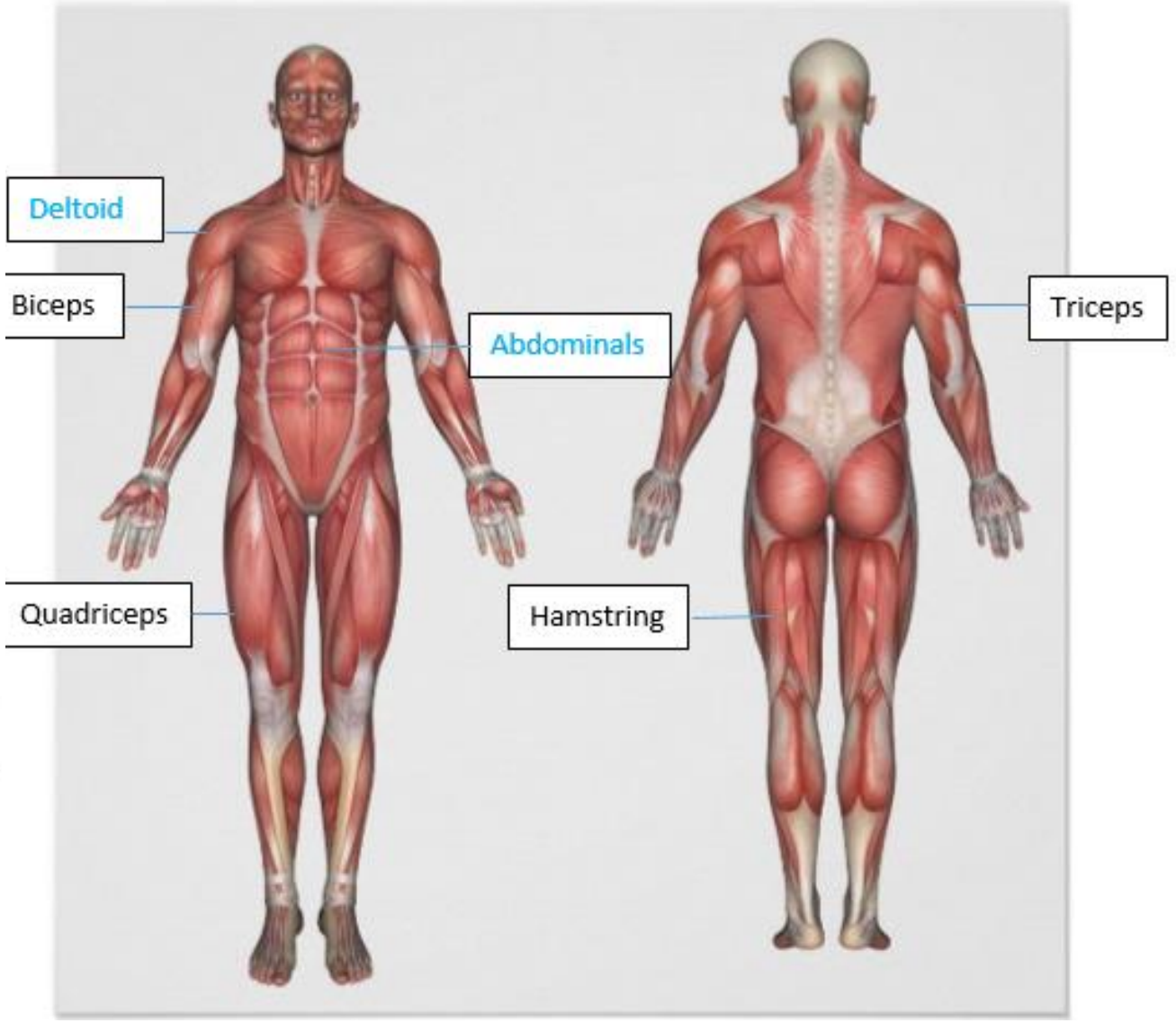
Year 7 Physical Education: Key Terms and Vocabulary

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-produce 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.

PE

Unit 2: Muscles and movement knowledge organiser Black = key content, Blue = extension





PE

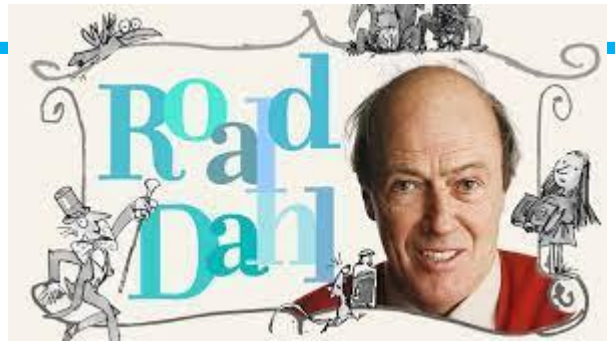
Key Word	Description/ Location/ Role
Muscle pair	Muscles that work together to produce a movement. Also called antagonistic pairs.
Hamstrings	A group of muscles located at the back of your thigh. Muscle pair with quadriceps
Quadriceps	A group of muscles located at the front of the thigh. Muscle pair 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.

Drama

Year 7 Drama 'Charlie and the Chocolate Factory' Knowledge Organiser

Key Knowledge

- Charlie and the Chocolate factory by Roald Dahl
- The three most important events, central to the plot, of Charlie and the Chocolate Factory are the announcement of the golden ticket contest, when Charlie finds a golden ticket, and when Mr. Wonka invites Charlie to inherit the factory
- Roald Dahl invented 500 new words and character names

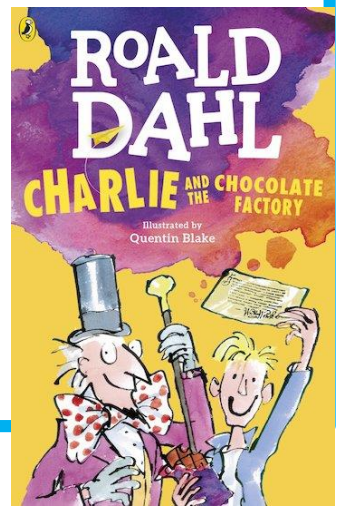


Key Vocabulary

- Freeze frame – freeze all movement
- Thought Tracking - a character steps out of a scene to address the. audience about how they're feeling
- Narration - the telling of a story or of happenings
- Physical theatre - a form of theatre that puts emphasis on movement rather than dialogue
- Movement Techniques - Unison and Canon – all as one or separately
- Speaking and listening – who, what, where, when, why, how; projection

Key Skills

- Characterisation Skills
  voice, movement, gestures, body language, facial expressions
- Still-Image
  A freeze frame which highlights a key moment to your audience
- Language
  What does speech and language reveal about a character?
- Role Play
  A rehearsed performance
- Mime
  Performing without speech
- Soundscape
  Using voice to create atmosphere
- Space and Levels
  To show importance



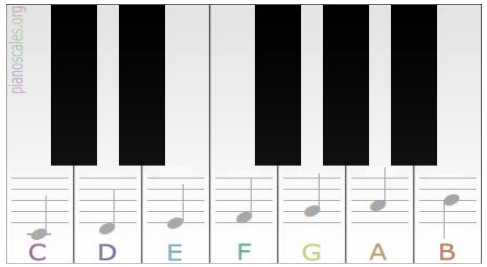
Year 7
Musical notation and Rhythm Skills
Knowledge Organiser

Key Vocabulary

- TREBLE CLEF - G clef at the start of the stave
- STAVE - the 5 lines which we write music on
- MIDDLE C - C key in the middle of the keyboard/piano
- CROTCHET – a one beat note
- QUAVER - a half beat note
- SEMIBREVE – 4 beat note
- REPEAT – sign used to tell you to play the section again
- CROTCHET REST – sign for a one beat rest
- MINIM REST – sign for a two beat rest

Key Skills

- Singing – 'Kumala Vista'
- Singing - 'Sing' by Gary Barlow
- Keyboard melodies using notes middle C, D, E, F and G
- Learning treble clef note names on the stave
- Performing – solo and ensemble work using keyboards and percussion
- Composition – creating music using voices, keyboards and percussion instruments

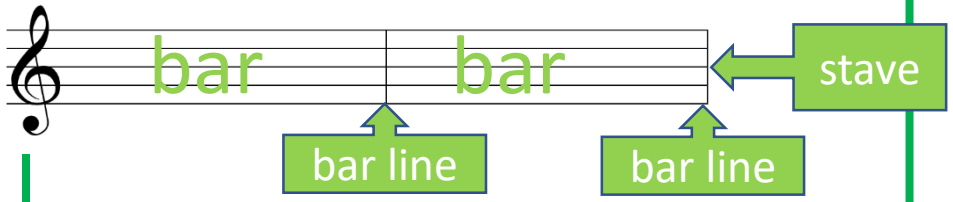


Key Knowledge

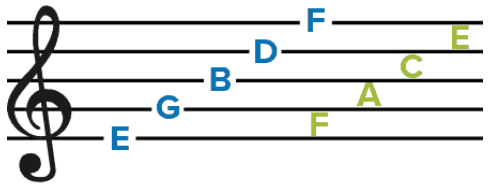
Pulse - the underlying count in the music. Like a heartbeat. You clap/dance to this. You *feel* it rather than *hear* it.

Rhythm - long and short notes, and the gaps between them:

Bars – Notes on the stave are divided up into bars by bar lines



TREBLE CLEF



Gary Barlow

Music

Music Knowledge Organiser - Elements of Music

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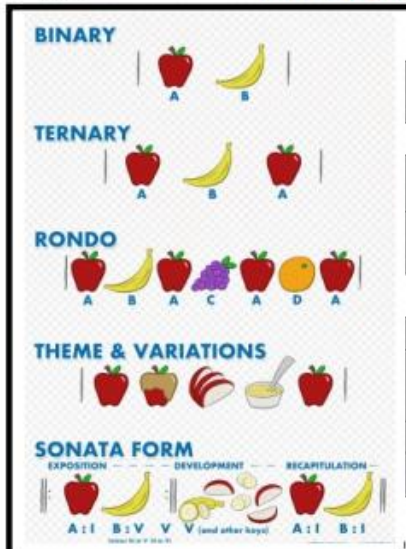
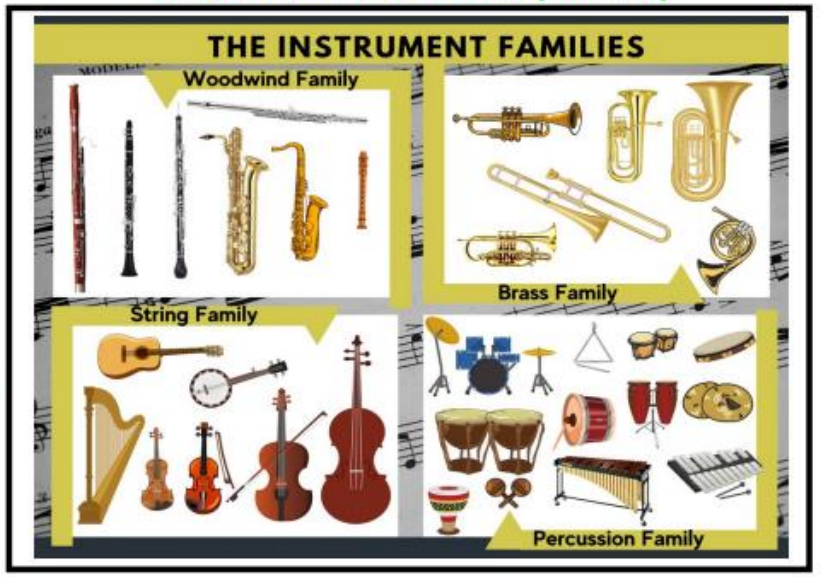
How Music is Organised (Structure)

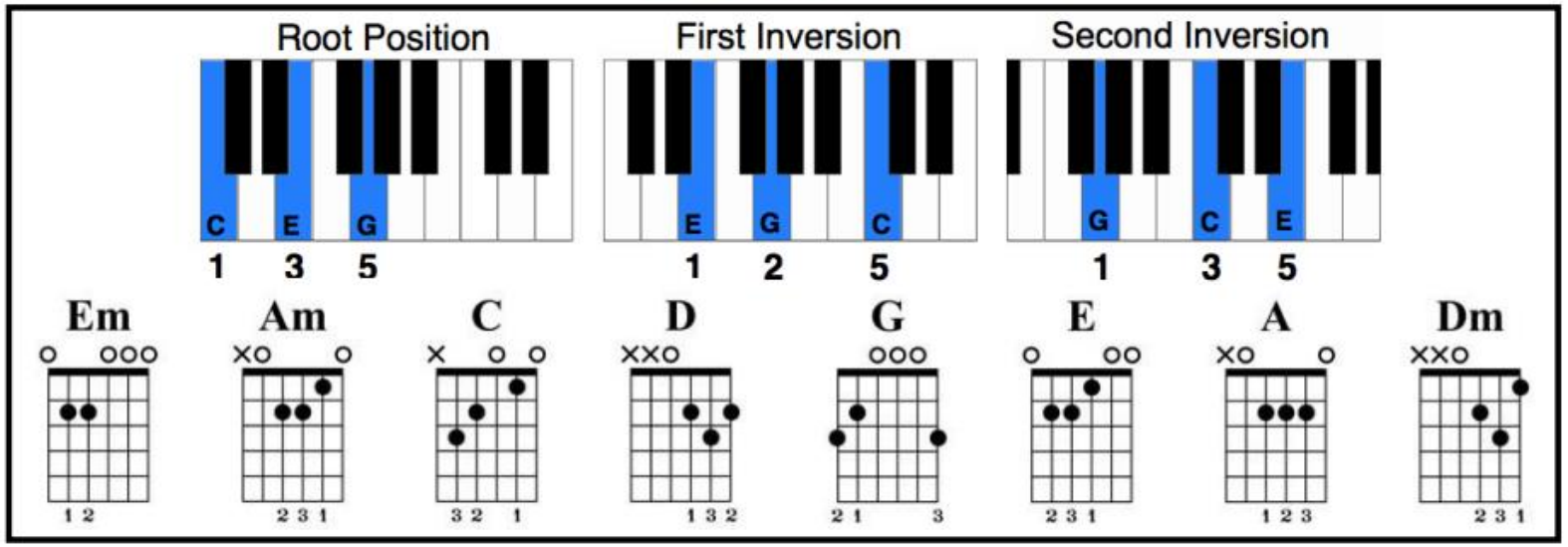


	Introduction	Try to avoid putting words here, however the intro. Can be a point for ad-lib.
A_1	Verse 1	Recognized as 1 Verse with 2 parts. Generally a repeated melody on two stanzas.
	Verse 2	
	Build up	*A full or half round of progression (optional)*
B	Chorus	Try to keep it simple, easy to remember and in apposing 'wordiness' to the verses, also it is generally kept them the same throughout the song.
A_2	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.
B_2	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)



Chords (Harmony)

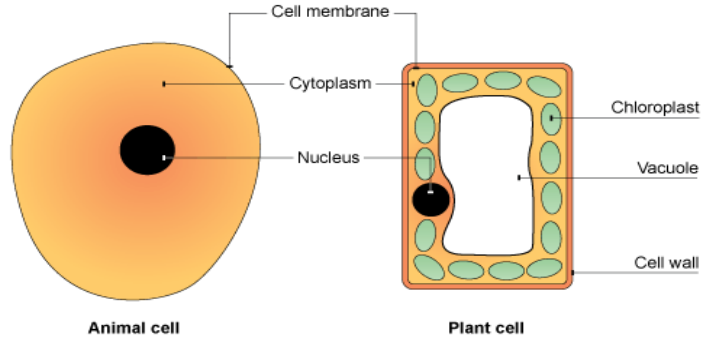


Science

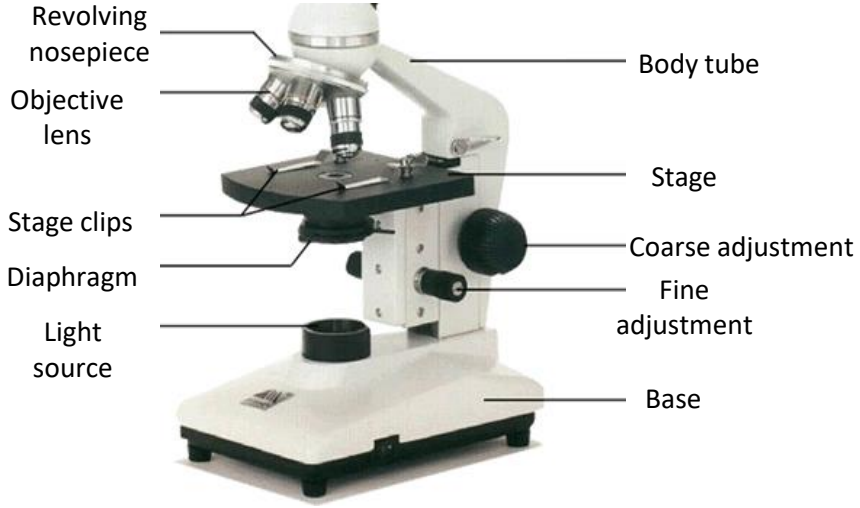
KNOWLEDGE ORGANISER
BIOLOGY: CELLS

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



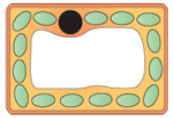
Microscopes

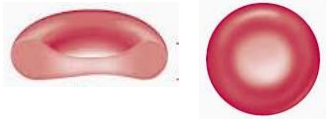
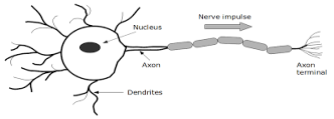
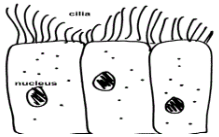


Total magnification =
magnification of eye piece lens x magnification of objective lens

Science

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

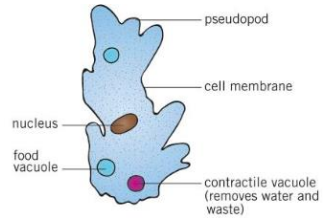
Substances move from an area where they are in high concentration to an area where they are in low concentration. This process is called **diffusion**.

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

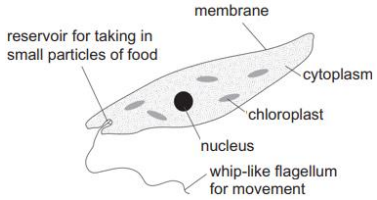
Amoebas and Euglenas are examples of unicellular organisms. This means that they are only made up of one cell.



Amoeba

Both organisms reproduce by binary fission.

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



Euglena

Science

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BIOLOGY : Movement

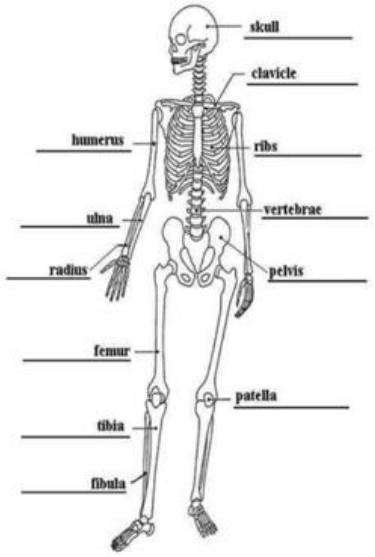
1. Organisation

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

2. Skeleton

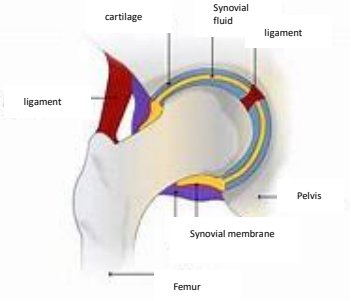
The skeleton is made up of bones. The skeleton has four important functions –

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



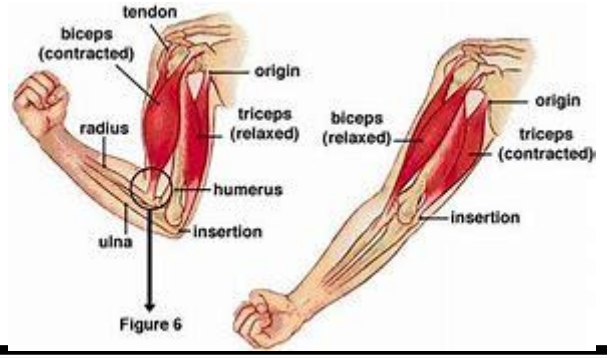
3. Movement of joints

Joints occurs 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).



Science

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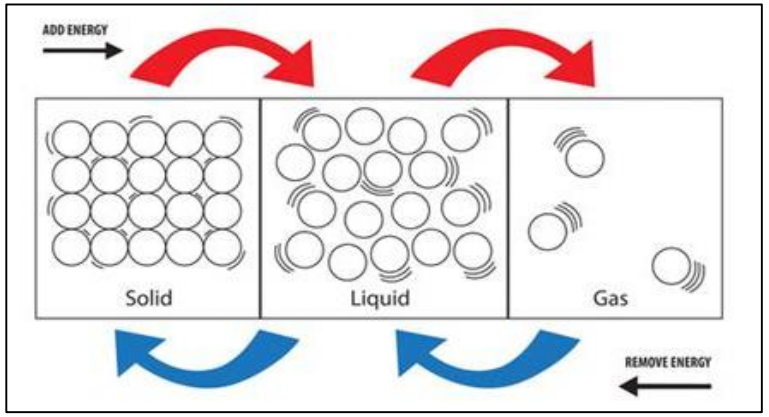
CHEMISTRY: Matter

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

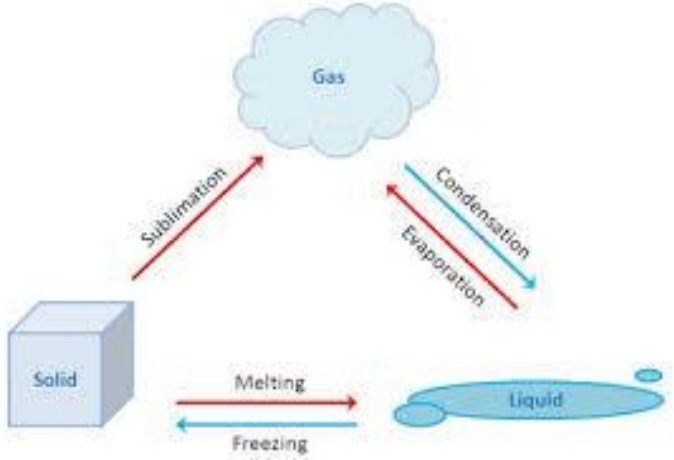
States of Matter



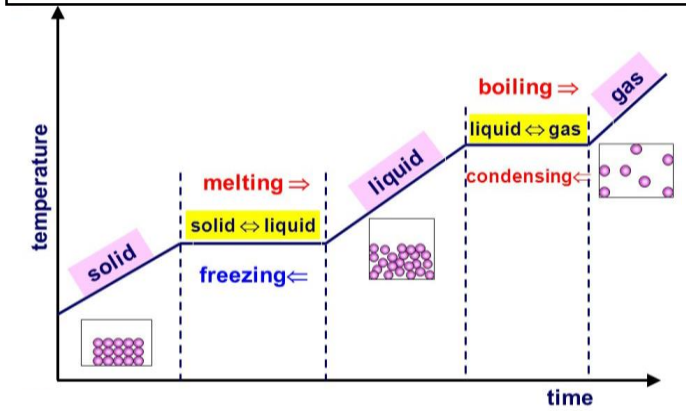
Changes in the States of Matter

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

Science

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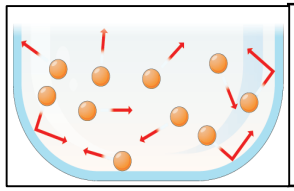
CHEMISTRY: Matter



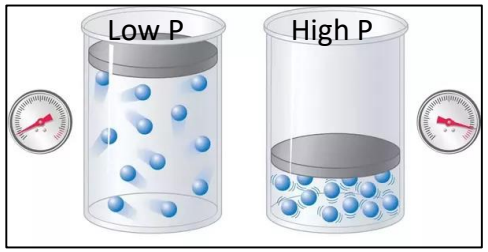
Gas Pressure

Gas ONLY

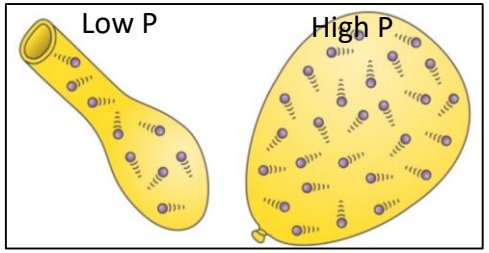
The pressure created by gas particles colliding with the side of a container.

Factors that affect pressure include:

1. Number of particles

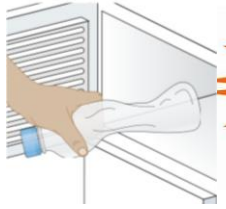


- **Smaller volume**
- More crowded particles
- More collisions with surface
- Higher Gas Pressure (P)



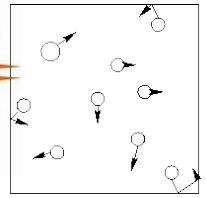
- **More particles**
- More crowded particles
- More collisions with surface
- Higher Gas Pressure (P)

2. Temperature

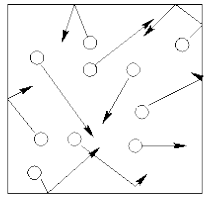


Cooling Down

Heating Up



Cool gas, fewer and less energetic collisions



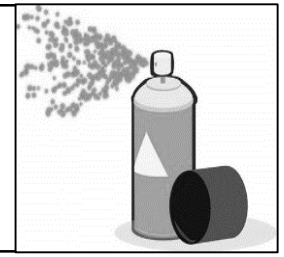
Hot gas, more and more energetic collision

Gas and Liquid

Diffusion

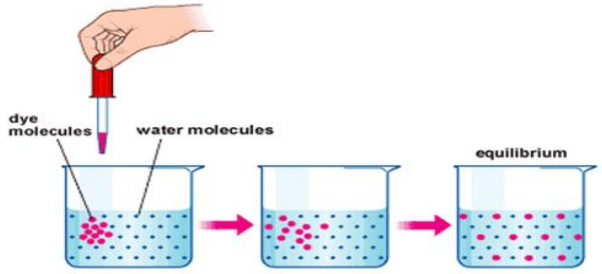
The random moving and mixing of particles from a high to low concentration.

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.

Science

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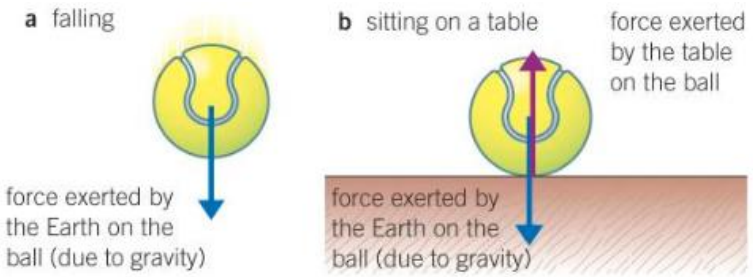
PHYSICS: FORCES Speed and gravity

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.

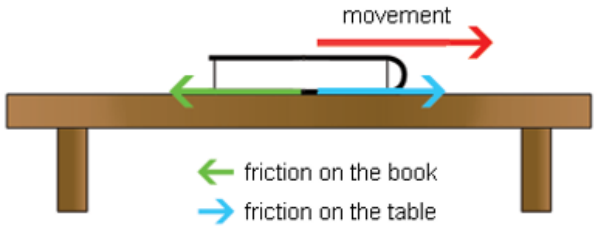
Introduction to forces

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.

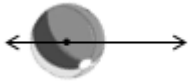
Contact forces	Are forces that act when you are touching something. friction, and air resistance are contact forces. Support forces like upthrust are also contact forces.
Non-contact forces	The force of gravity acts on a tennis ball when travels through the air. The Earth pulls the ball down even though 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. 

Science

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	Unbalanced forces
An object can either: • Stop • Move at a steady (constant) speed 	An object can either: • Speed up • Slow down • Change direction • Change shape 
Resultant forces  20N 40N Resultant = 20N →	• Single force that can replace all the forces acting on an object and have the same effect

Gravity

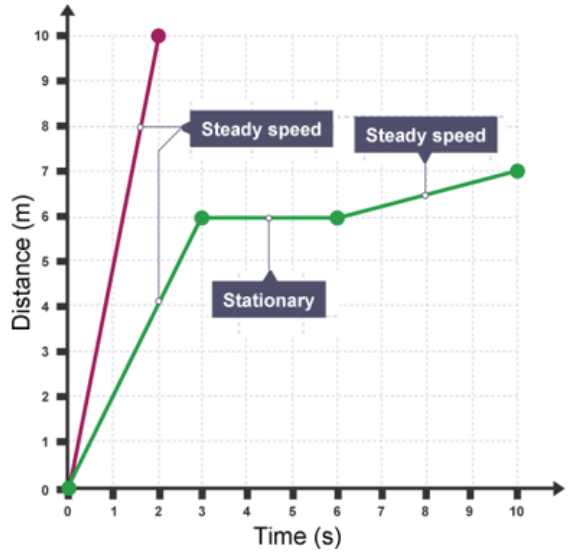
Gravity (or gravitational force) is a **non-contact force** which acts between two masses. It depends on the mass of each object and how far they are apart.
On Earth the Gravitational field strength on Earth is 10 N/kg. Gravitational filed strength is different on other planets.
Gravity keeps things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

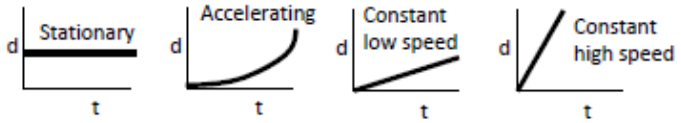
Difference between weight and mass

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 x t	Distance – metres (m) Speed – meters per second (m/s) Time – seconds (s)
Weight (**N**) = mass (**kg**) × gravitational field strength (N/kg)	

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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 FRS FRSL is a British evolutionary biologist and author
Darwin	Charles Robert Darwin FRS 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 on-injury to living things; the rule of non-violence
Diety	a god or goddess (in a polytheistic religion).
Hinduism	*Hinduism* 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	*Buddha* is the title given to Gautama Siddhartha, the religious teacher and founder of *Buddhism*
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 *guru* 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"

Religious Studies

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 unskilful 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.

French

Spelling Champs Lists

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	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: Norman Conquest

Contenders for the throne

At the start of 1066 Edward the Confessor (king of England) died but there was no clear to heir to the throne. There were four rivals who all wanted to be the next king:

1. **Edgar Aetheling** – the king's great nephew so had a strong claim to the throne, but he was only a young teenager with no experience of ruling
2. **Harold Godwinson** – powerful Anglo-Saxon earl and warrior, he had experience of ruling and was related to Edward by marriage
3. **William, Duke of Normandy** – dominant French duke, he had experience of ruling and fighting battles, he claimed he had been promised the throne by Edward and Harold Godwinson had also promised to support him
4. **Harald Hardraada, King of Norway** – fearsome Viking warrior who was already a king, he had experience of ruling and felt he was claiming the English throne back for the Vikings, he knew how to invade and conquer

Battle of Fulford

January 1066 – Harold Godwinson crowned himself king of England but he now faced attack from the other rivals

Early September 1066 – Harald Hardraada landed in the north of England ready to seize the throne

Battle of Fulford (20/9/1066) – Edwin and Morcar two Saxon earls attacked Hardraada near York but they were easily defeated by the Vikings.

Battle of Stamford Bridge

Harold Godwinson quickly marched his forces from the south of England, where he had been waiting for William's invasion, to the north

Godwinson caught the Vikings by surprise and attacked them at **Stamford Bridge** on 25/9/1066

The Vikings were defeated after several hours of fighting and **Harald Hardraada was killed** but Godwinson was now told that William, Duke of Normandy, had landed on the south coast

Battle of Hastings

Harold Godwinson quickly marched south to meet William and the two armies fought the Battle of Hastings on 14th October 1066

Why did William win the battle of Hastings?

Preparation – Harold's forces were exhausted after the long march south whereas William's forces were rested and he had archers, foot soldiers and knights ready to attack

Leadership – William used clever tactics such as the 'fake retreat' during the battle which tricked the Saxons into breaking their shield wall

Luck – at a critical moment in the battle Harold Godwinson was killed

History

Knowledge Organiser: Medieval England

Religion and the Church

What did people believe?

- Almost everyone in England were Christians and believed in God, heaven and hell
- People were scared of going to Hell and huge Doom paintings showed the horrors that awaited sinners
- The Pope was the head of the Catholic church and seen as God's representative on earth
- Most people would attend church regularly to take part in mass or confess their sins to the priest

Key People

Priests – head of the local church in villages and towns. Performed important ceremonies such as baptisms, marriages and funerals. Collected charity. Helped organise community events.

Monks and Nuns – Lived separately from society and dedicated their lives to God. They lived simple lives. Monks were able to read and write and speak Latin. Both monks and nuns provided charity to those in need.

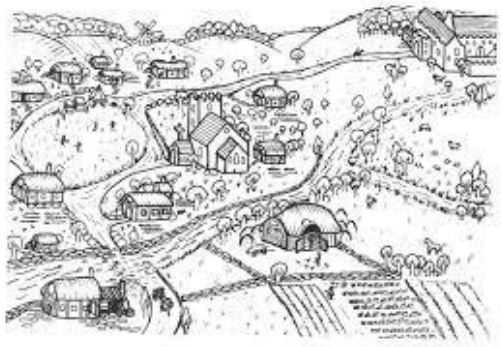
Importance of religion

- Religion dominated medieval peoples' lives and many people attended mass every day
- Before Science developed religion helped to explain matters people did not understand
- The Church had its own courts where people could be fined for non-attendance
- People gave one-tenth of their crops or earnings to the church as a tithe (tax)

Life in villages and towns

Medieval villages

- Most people in medieval England were poor peasant farmers (villeins) who lived in villages
- The lord of the manor was the most powerful man in the village and owned most of the land
- Villeins would have to work on their local lord's land for three days per week
- Villages usually included a manor house, church, mill and workshops for a blacksmith and carpenter
- Villeins were not allowed to leave the village as they were owned by their lord



Life in medieval towns

- By the late 14th century there were about 20 towns in England with a population over 3,000
- London was the largest town with about 40,000 people
- A wall surrounds the town with a gatehouse at its entrance
- Towns were busy places with plenty of shops and merchants, knights and noblemen

Women in Medieval England

- Women were usually under the control of men, young women were controlled by their fathers and once married their husbands took over
- Girls married at a young age and could be trapped in a violent marriage if they were unlucky
- Many women had 5-6 children by their mid-20s and teenage pregnancies were encouraged
- Many women died during childbirth and many children did not survive into adulthood

Advantages for women

- Women would not have to fight for the king in times of war
- High-ranking women could inherit their husband's land and title
- Women who beat their husband were rarely taken to court as it was too humiliating
- When husbands and wives commit a crime together she can escape punishment by claiming she was just obeying her husband

Geography

Year 7 Unit 1 What is the UK like?

Knowledge Organiser

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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.

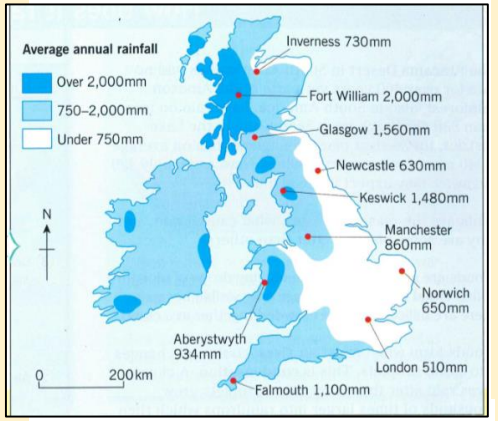
Rainfall in the UK

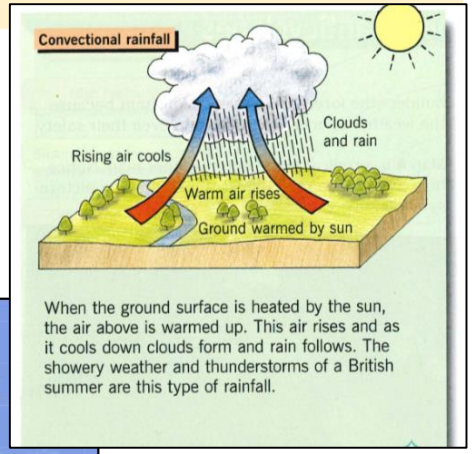
Precipitation means rain, snow , sleet or hail that falls to or condenses on the ground.

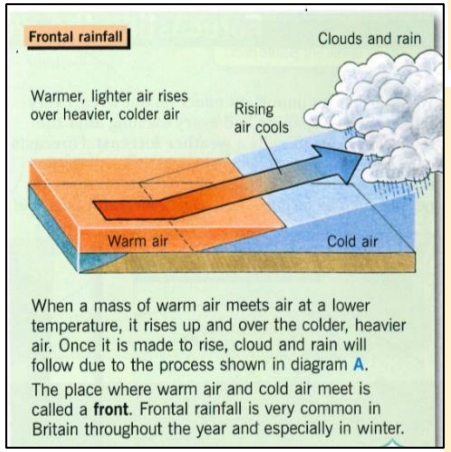
Wales and the north west (upland areas) of the UK see larger amounts of rainfall compared to the further south and east you go.

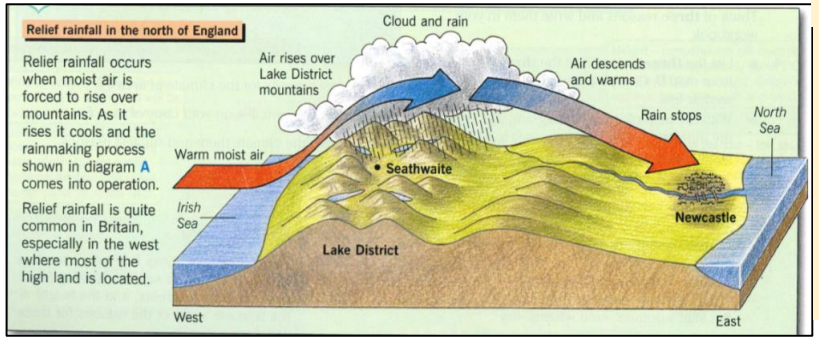
There are 3 types of rainfall:

- **Convectional** rainfall
- **Relief** rainfall
- **Frontal** rainfall



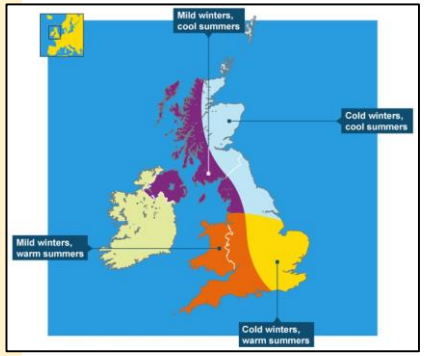






The British climate

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.

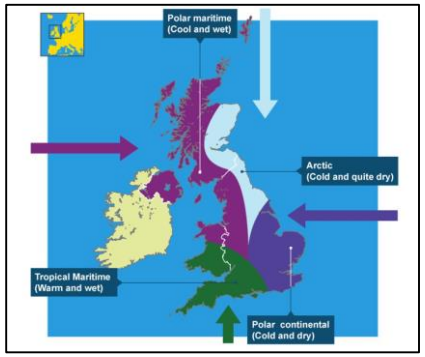


Prevailing wind: the dominant direction from where the wind blows

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

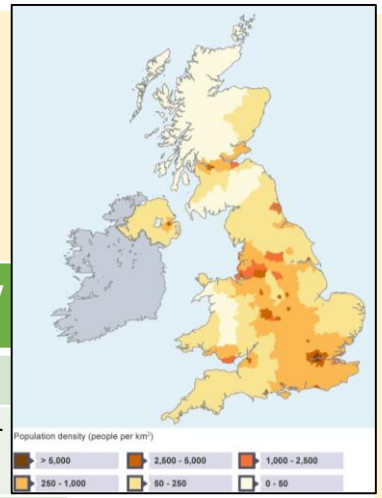


- **Altitude** - Temperatures decrease with altitude. There is a 1°C drop for every 100 m in height as the air is less dense.
- **Distance from the sea** - The sea takes longer to heat up and cool down than land. So in the winter the sea keeps coastal areas warm and in summer, it cools them down.
- **Ocean 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.

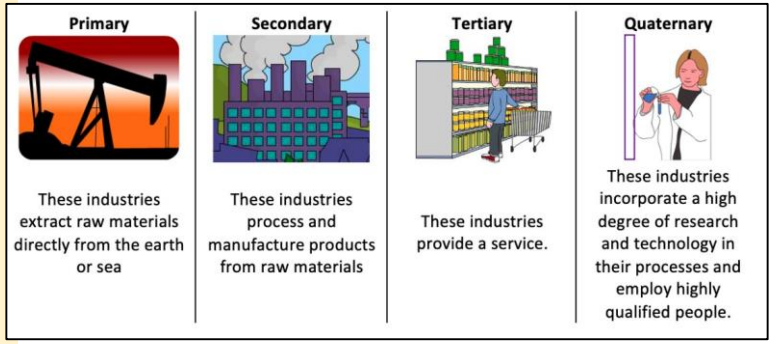
Factors leading to densely populated areas	Factors leading to sparsely populated areas
Flat or gently sloping land	Steep slopes
Mild climate	Harsh climate – very hot or very cold
Good (fertile) soils	Dense forests
Lots of job opportunities	Few job opportunities
Lots of resources e.g. coal and oil	Lack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

UK employment structure



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

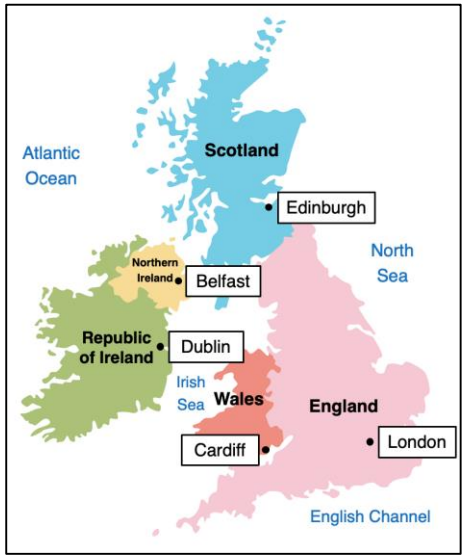
Push factors	Pull factors
Lack of services	Better services
Low employment	Higher employment
Lack of safety	Safe society
High crime	Less crime
Crop failure	Fertile land
Drought	Lower risk of natural hazards
Flooding	Good climate
Poverty	More wealth
War	Political stability

Leicester

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

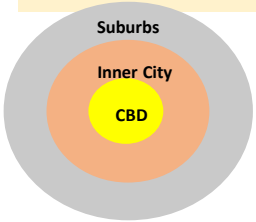
Leicester's population is very diverse.
Population in 2016: 348,343

- 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



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**.

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 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.

Geography

How does weather and climate affect our lives?

Knowledge Organiser

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?

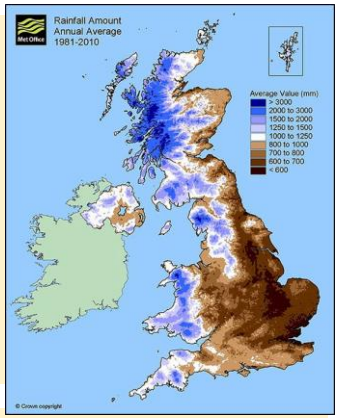
- Farmers study the weather so they know whether rain is forecast for their crops.
- Extremes of weather can lead to flooding which can damage homes and cost money.
- Changes to weather can disrupt transport e.g. roads can become icy which can be dangerous.

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 ideas 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?

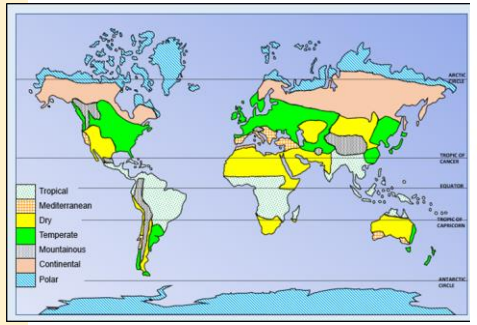
Polar: Very low temperatures and low rainfall. Animals are adapted e.g. polar bears have thick fur. Few plants grow here due to cold, e.g. Arctic.

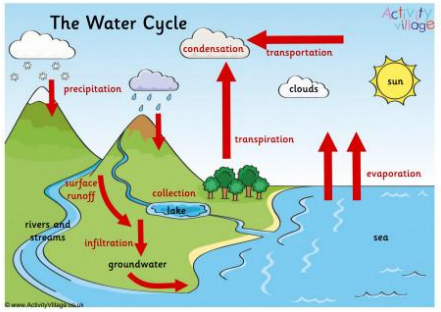
Temperate: Moderate temperature and rainfall, range of animals and plants found here, good conditions for plant growth, e.g. UK.

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.

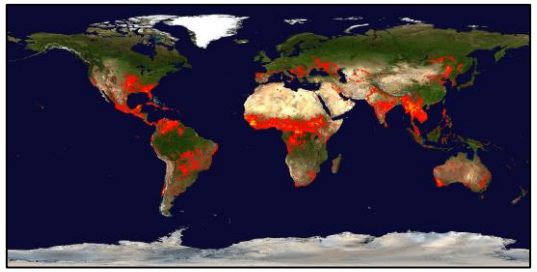
Geography

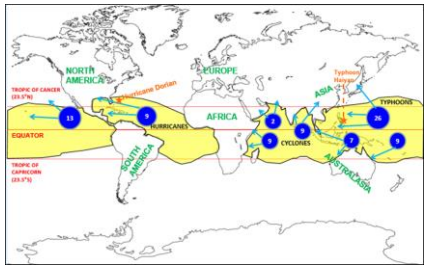
How does weather and climate affect our lives?

Knowledge Organiser

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 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.

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.

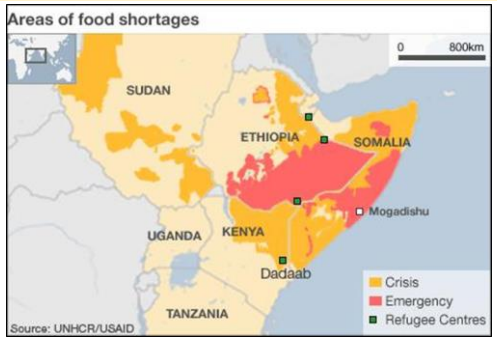
Drought in the Horn of Africa

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.

How do urban areas influence climate?

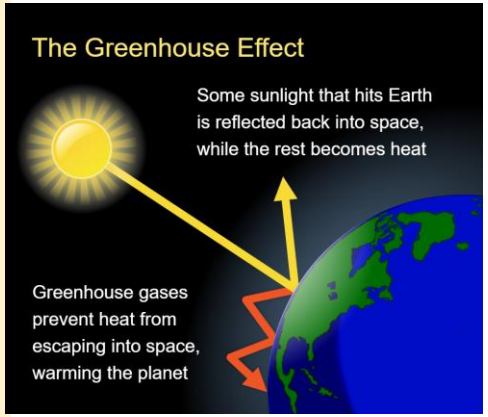
Urban areas: these are towns and cities with lots of buildings and higher population densities.

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.

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.



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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