Knowledge Organiser
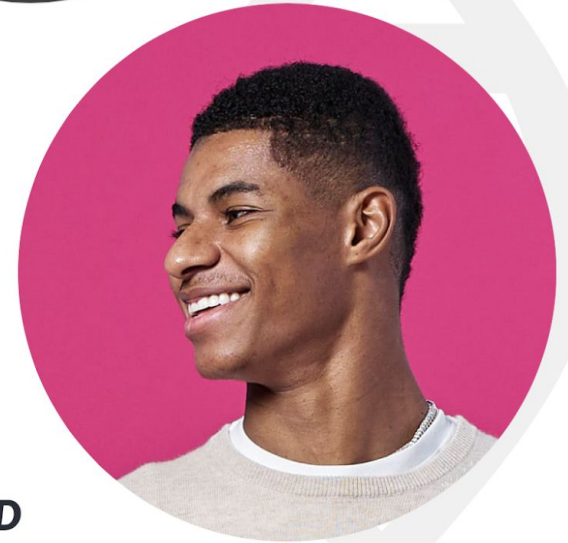
"Train hard, work harder, never give up, never give in and believe in you."

MARCUS RASHFORD

THE ENGAGED MIND STAYS SHARP.
BE ENGAGED IN THE HERE AND NOW.

Knowledge Organisers at Redmoor Academy

WHY?

Why do we have knowledge organisers?
Your knowledge organisers help you to be successful in many ways. Firstly, they make clear the key elements needed in a topic to have an excellent understanding of it. If you know these elements, your teacher will help you to understand them.

WHAT?

What are my teachers' expectations of me?
In year 7 and 8 your teachers will give you homework that means you will be spending 20 minutes a week learning information from your knowledge organiser for each subject. In year 9 this will 30-40 minutes. Teachers will test you once a week to make sure that you are completing the homework and remembering your knowledge. Your knowledge organiser exercise book is where you will complete your practising. Each time you revise and practise, you should put the subject as the title and the date. Rule off when you have completed your revising for that subject. Teachers and form tutors will be regularly checking that you are revising.

HOW?

How will my teachers use them?
Each subject will set homework once a week that will help you to learn your knowledge organiser. They will also test you once a week on certain parts to see how well you have remembered it. Research tells us that this practising is a really good way of helping you make sure that the knowledge stays in your memory. Over time you will build on this knowledge to make sure that you know everything you need to for your subject. Sometimes you may have high stakes quizzes, where teachers will set a certain score that you have to reach to be successful.

How will they help me revise?
When it comes to GCSEs, you have lots of information to remember. Your knowledge organisers will gradually build up this knowledge over 5 years to help support you in year 11 so that when you revise, you are just recalling knowledge that you have already stored. Also, you will have practised lots of revision techniques whilst revising your knowledge organisers over the past 5 years, which will help prepare you for the final exams.

How we learn at Redmoor
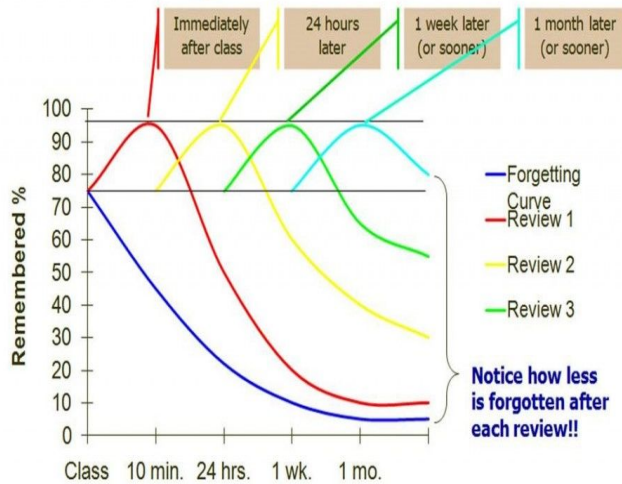
Why reviewing your learning is so important

As soon as we are told a new piece of information, most of that information is 'lost' and forgotten. Hermann Ebbinghaus found that repeating information helps us remember more of it.So we need to be be reviewing and going over what we learn in order for us to remember and be able to use the information after a period of time has passed.

This resources summarises some proven strategies that you can use to review your knowledge.

Common methods of revision that are the least effective:

- Highlighting key points
- Re-reading
- Summarising texts

Retrieval practice

Testing what you know is a powerful tool in revision; the effort to remember something really strengthens your memory. Apps such as Memrise and Quizlet allow you to use or create your own quizzes based on topics. Create them, test yourself or get someone to test you. It works!

Learn more about retrieval practice here: Link to the Learning Scientists

THINK HARD, WORK HARD, GO FAR

How we learn at Redmoor

Flash cards

Simply create questions on one side, answers on the other. Colour code the cards for specific topics. Post it notes can be useful for keywords and timelines.

Once you have created your flash cards, you need to think about how you will use them effectively. There is a link below to Leitner system of using flashcards:

YouTube: The Leitner Method
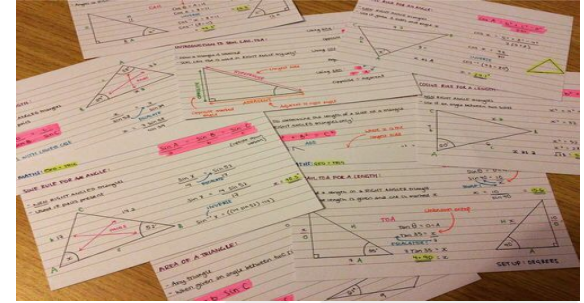
Dual coding

Dual coding is the process of combining verbal materials with visual materials.

Simply take information that they are trying to learn, and draw visuals to go with it

Learn more about dual coding here:

Link To The Learning Scientists

Try to come up with different ways to represent the information. For example: a timeline, a cartoon strip or a diagram of parts that work together.

Cornell Notes

This method can be used in your revision books as a
 great method to get you to 'think' about your revision.

Simply split your page into 3 sections as shown on the diagram below:

- Note Taking
- Key words / concepts
- Summary
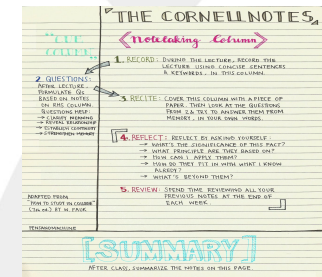
THINK HARD, WORK HARD, GO FAR

How we learn at Redmoor

Spacing and interleaving

Don't revise your all topics in one go (cramming). Instead, you should revise 'chunks' of a topic for small amounts of time (15-30 minutes) and then move onto another 'chunk' from a different Topic.
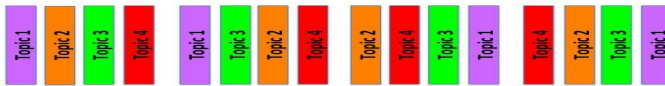
Eg. topic 1 cells, topic 2 digestive system

This will improve your memory!

Mind Maps

Mind mapping is simply a diagram used to visually represent or outline information.

It is a powerful graphic technique you can use to translate what's in your **mind** into a visual picture.
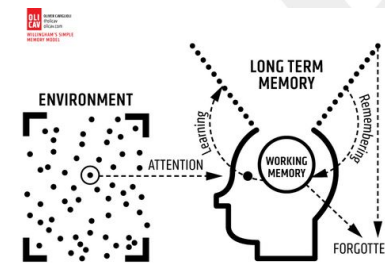
Mind maps help with memorisation of jey knowledge as it helps to organise information and begin to make links and connections to different pieces of information.

The use of visual images helps your brain to memorise the information with simple words next to them - links to dual coding!

.

Useful links:

- The learning scientists: https://www.learningscientists.org/
- Memrise: https://www.memrise.com/
- Quizlet: https://quizlet.com/en-gb
- Seneca: https://www.senecalearning.com/

THINK HARD, WORK HARD, GO FAR

Contents Page

Equipment

all students must have...

Mobile phones are not to be used in lessons without staff permission
No photos or videos to be taken without permission
No school related images or videos to be uploaded on to social media

Black or blue pen
Pencils
Ruler - 30cm
Protractor
Compass
Rubber
Pencil Sharpener
Purple pen
Scientific calculator
Coloured crayons
Student Organiser
Knowledge Organiser
Locker Key

What is Descriptive Writing?

Descriptive writing enables us to depict people, places and objects in ways that bring those things to life in the reader's imagination. In real life we perceive the world with our five senses; **smell, touch, taste, sound and sight**. In descriptive writing, we aim to convey these senses to the reader. Descriptive writing should be **observational**, **emotive** and **atmospheric**. The reader should feel like they have been fully transported into your world.

Narrative Voice

Every description has a narrator: someone who exists as the voice of the description. They are not the writer but the writer's construct. Who your narrator is and their feelings will shape their choice of language used to describe different characters and events. Always think about who your narrator is and what their connection to the scene is.

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Direct and Indirect Characterisation

Although your descriptive writing won't include characters in the same way that a story would, you may still choose to describe characters at some point in your writing. There are two forms of characterisation, **direct** and **indirect.**

Direct: this is where you explicitly tell the reader details about the character; i.e.:

> *'Mr. Ramsay – he is absorbed in himself, he is cruel, he is unjust…'*

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> *'He dragged the last smoke from his ravelling cigarette and then, with calloused thumb and forefinger, crushed out the glowing end.'*

Technique	Definition and Example
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Redmoor English Department: Year 8 Descriptive Writing

Suggested structure: Drop, Shift, Zoom, Leave

Paragraph One: Drop - drop the reader into your world. Carefully consider the first thing that draws their attention. Your opening paragraph will establish the mood and tone..

DROP: *The canteen was a zoo. Wild packs of children huddled around the tables, some sitting, some standing and some virtually hanging from the rafters.*

Paragraph Two: Shift - Consider altering the focus or mood. Try using a different sense.

SHIFT: *one boy caught my eye. All alone, with a tray of sausages and grey mash potato, he seemed to invite pity...*

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Varying your Paragraphs and Sentences

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Redmoor English Department: *Year 8 Descriptive Writing*

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Redmoor English Department: *Of Mice and Men*

An Overview

Written: 1930s and published in 1937

Genre: tragic novella (short novel)

Set: depression era Salinas, California USA

Summary: *Of Mice and Men* tells the story of George Milton and Lennie Small, two displaced migrant ranch workers, who move from place to place in California in search of new job opportunities during the Great Depression (1930s) in the United States.

DUST STORM DAMAGE, 1930-1940

COLORED WAITING ROOM

You mean a <u>woman</u> can open it?

Key Context: America in the 1930s

John Steinbeck
- Steinbeck was born in Salinas, California, an important area for farming
- Steinbeck spent his childhood seeing migrant workers around his home and this left an impression on him as he saw their difficult experiences
- When he was a teenager he spent time working on ranches near his home and he was interested in their lives

The Great Depression
- The Great Depression was a period of great poverty and unemployment across the USA
- It started in 1929 when millions of dollars were wiped out in the **Wall Street Crash** and this affected the world's economy
- It led to people losing their life savings and a third of America's population became unemployed and many suffered from poverty, hunger and disease

The Dust Bowl States
- At the same time as the Great Depression, many parts of America suffered from dust storms and drought - these places were known as the **Dust Bowl states**
- Farmers were affected as their crops failed and many were forced to move off their land because they could not repay the bank loans which had helped buy the farms
- Many farmers moved to California as they believed there would be spare land and a lot of work there
- Around 1.3 million farmers moved there but it was not easy to find work - wages were low and jobs tended to be temporary

Racism
- Racism was very common in the 1930s; the Jim Crow Laws were a series of laws that made it racial segregation legal in America. They lasted until 1968 and denied African Americans the right to vote, hold jobs and get an education or other opportunities
- African Americans were hit the hardest during the Great Depression and by 1932 nearly 50% were unemployed
- Racism had been decreasing but got worse during this time as many people believed that available jobs should go to white people
- Racial violence rose again during the Great Depression
- Crooks' character reflects the discrimination many black Americans faced

Disability
- In some states, having a low IQ (intelligence test) score meant that people were sterilised (stopped from having children)
- People with lower mental capacities were sometimes seen as unfit to have children, to employ, or even to like - they might have been seen as unfit
- The mentally disabled were often seen as a burden on society
- 'Booby hatches' were like prisons for the mentally disabled

Gender Roles
- In the 1930s married women were expected to stay at home, look after the children and give up their jobs if their husband wanted them to
- Women were seen as the property of their husbands
- Women were shamed if they worked - this was not seen as appropriate for women, especially in the 1930s when they were believed to be stealing jobs from men
- Women often had to give up on their own dreams to be housewives

BUILDING A BETTER VOCABULARY
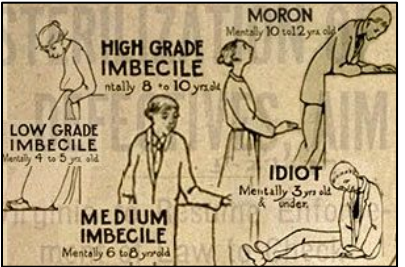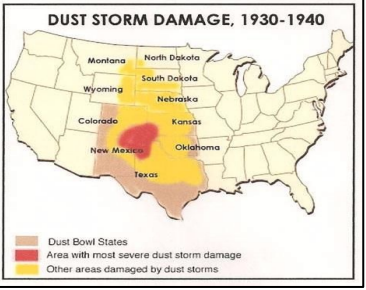
Word	Definition	The word in use
Archetype Archetypal	A typical example of something, a model from which others are copied.	Slim is an archetypal hero.
Aspiration Aspire(d)	A hope or ambition of achieving something.	Curley's wife aspired to be a movie star but her marriage to Curley ended her dream.
Hierarchy Hierarchical	A system where members are ranked according to status or authority.	John Steinbeck shows us that the hierarchy of the farm has the Boss at the top.
Isolation Isolate	The state of being alone or away from others.	The novella *Of Mice and Men* explores the effects of isolation on people.
Loneliness Lonely	Sadness because one has no friends or company.	Curley's Wife suffers from loneliness.
Migrant	A person who moves from one place to another to find work or better living conditions.	Lennie and George are migrant workers who have to travel around to find work on ranches.
Patriarchal society Patriarchy	A system where men hold the power in politics, morals, social privilege and control of property.	Steinbeck presents Curley's wife as a victim of a patriarchal society that regards her as inferior because she is a woman.
Prejudice Prejudiced	An unreasonable dislike of a particular group of people, person or thing.	John Steinbeck's novella reveals the prejudice towards black Americans.
Racism Racist Race	Discrimination directed against someone of a different race based on the belief that one's own race is superior.	American society in the 1930s was extremely racist.
Segregation Segregate	Setting someone or something apart from others and treating them differently.	Crooks is a victim of segregation on the ranch as he can't go into the bunkhouse.
Status	A position or rank in relation to others.	Lennie has a lower status on the ranch than Curley.

Redmoor English Department: Of Mice and Men

Archetypal Plot Structure

The same old story? In 2004, Charles Booker wrote a book in which he claimed that there were only seven basic story plots and that all literature, films, video games and plays use. Knowing these plots will help you think about archetypal stories (typical ones) and the way that we humans like familiar narrative structures.

1. Overcoming the Monster
The protagonist (hero) sets out to defeat an antagonist (enemy) which threatens the hero or their homeland.

2. Rags to Riches
The poor protagonist acquires power, wealth, loses it all and gains it back, growing as a person as a result.

3. The Quest
The protagonist and companions set out to acquire an important object or to get to a location. They face temptations and other obstacles along the way.

4. Voyage and Return
The protagonist goes to a strange land and, after overcoming the threats it poses or learning important lessons unique to that location, they return with experience.

5. Comedy
Light and humorous character with a happy or cheerful ending; a comedy is a dramatic work in which the central motif (recurring idea) is the triumph over adverse circumstance, resulting in a successful or happy conclusion.

6. Tragedy
The protagonist is a hero with a major character flaw or great mistake which leads to their downfall (ruin / death). Their unfortunate end leads to pity.

7. Rebirth
An event forces the main character to change their ways and often become a better individual.

Of Mice and Men Plot Summary

1	George and Lennie walk through the Californian countryside; George becomes frustrated with Lennie; George throws away Lennie's dead mouse; George alludes to Weed
'Tell about what we're gonna have in the garden and about the rabbits in the cages and about the rain in the winter and the stove'
2	George and Lennie are greeted at the bunkhouse by Candy; they are reprimanded by the boss; they meet Curley's wife and then Curley; Slim is introduced.
3	George confides in Slim about Lennie; Carlson shoots Candy's dog; Candy overhears George talking about his plans; Curley looks for this wife; Lennie breaks Curley's hand
'Lennie held on to the closed fist. Curley was white and shrunken; by now, and his struggling had become weak. He stood crying, his fist lost in Lennie's paw.'
4	Crooks sits alone; Lennie sees a light and enters; Crooks taunts him; Candy enters and they discuss the dream ranch; Curley's wife quietly enters and becomes angry.
5	Lennie sits alone; Curley's wife approaches him and asks about the dead puppy; she confides in him about her past; Lennie strokes her hair, but eventually kills her.
6	Lennie waits for George; he hallucinates; George appears and Lennie asks him to talk about their dream ranch; George shoots Lennie; Slim and George walk-off together.
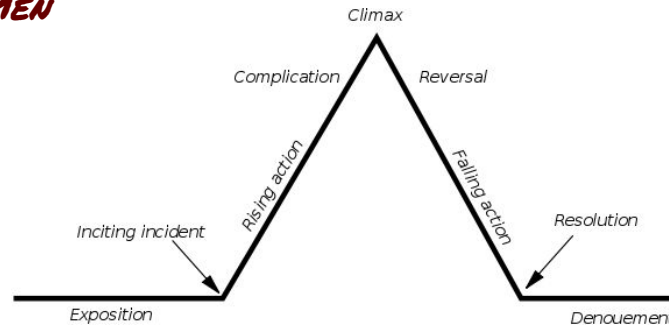
Freytag's Pyramid

This pyramid is named after Freytag, a German playwright in the 1800s, who believed that storytelling could be broken down into 7 parts.

Exposition: meet George and Lennie
Inciting incident: Curley / Curley's wife
Rising action: Curley fights Lennie
Climax: Lennie kills Curley's wife
Falling action: Lennie runs away
Resolution: the hunt for Lennie
Denouement: Lennie's death

Form / Structure	How it is used
Allegory: a story, poem, or picture that can be interpreted to reveal a hidden meaning, typically a moral or political one.	Steinbeck uses his characters and plot to demonstrate to his readers that most people dream about lives of great significance.
Tragedy: a genre of drama or literature where the hero is brought down by his/her own flaws, a defect in their character.	Lennie's weakness, his childlike nature, leads to his downfall, however there is a wider sense of tragedy because many characters' dreams are destroyed by the Great Depression.
Protagonist: the leading character of a novel, play or film.	Lennie and George are the protagonists of the novella (the main characters), whilst Curley is the **antagonist** (or society!)
Microcosm: this is where the world is represented on a smaller scale.	The little world of the ranch represents American society as a whole and each character represents a group of people.
Foreshadowing: when the writers gives a hint about what's to come later in the story.	When Lennie kills the mice it foreshadows the later deaths of the puppy and Curley's wife. In fact, the end of the book is foreshadowed right from the beginning - think about the girl in Weed!
Cyclical structure: this means circular in nature, so it usually means that the ending echoes / connects back to the start.	The novella ends back at the pool, with a reference to the water snake (which is how it starts too). The idea of the snake being eaten by the heron at the end shows how the powerless are picked off by the powerful, just as Lennie is about to be killed by George.

Language	How it is used
Animal Imagery / zoomorphism: when the writer gives animal characteristics (features) to a human or non-animal.	Lennie is often described as animal-like. He is compared to a bear, dog, horse and bull during the course of the novella. Curley is compared to a fish and frog.
Semantic field: a group of words that relate to a common topic or theme.	A semantic field of royalty is used to describe Slim:
Royalty, majesty, Prince
Symbolism: the use of a symbol or image to represent something else.	The death of Candy's dog symbolises the victory of the strong over the weak. Lennie's puppy also symbolises the weak.
Connotation: an idea or feeling which a word makes you think of or suggests.	Curley's wife wears red, a colour with connotations of danger and passion.

Why Steinbeck wrote this novella

John Steinbeck wrote his book for a purpose and he uses his story and his characters to send a message to his readers.

To encourage… Steinbeck encourages us to empathise with the plight of migrant workers during the Great Depression as he knew how hard their lives were and he wanted to share their stories.

To reveal… Steinbeck wanted to reveal how the American Dream was unattainable / impossible for ordinary hard-working people.

To celebrate… The novella celebrates friendship, both human to human and human to animal. However, it also warns us what happens to lonely people who are excluded from society.

To explore… Steinbeck explores the predatory nature of mankind, showing how the powerless were targeted by the powerful in 1930s American society.

To expose… Steinbeck wanted to expose the unjust treatment of women, black people, elderly people and the disabled in America in the 1930s.

The book is equally as relevant today as people around the world fight for equality, just like they did in the 1930s. Think about the Black Lives Matter movement against racial discrimination and how it relates to Crooks, or how the Me Too movement against sexual harassment relates to Curley's wife.

Key Themes

The weak and the strong	The ranch is a **microcosm** for 1930s America. The writers uses the ranch to show how the strong landowners, like Curley and the Boss, have power over others. The economic crisis, sexism and racism affect characters like George, Curley's wife and Crooks, making them seem 'weaker' than others. However, it is society that is unfair.
Friendship	Many characters are searching for companionship but unable to find it. The writer shows us how lonely and cruel people get when they live without friendship, therefore showing how vital friendship is. The setting of the book 'Soledad' means 'loneliness' in Spanish.
The American Dream	The 'American Dream' is the idea that it is possible for anyone to achieve success and improve their life through hard work. Dreams provide the characters with hope that their lives will improve but Steinbeck shows how dreams of working class men cannot be achieved during the Great Depression / how society is.

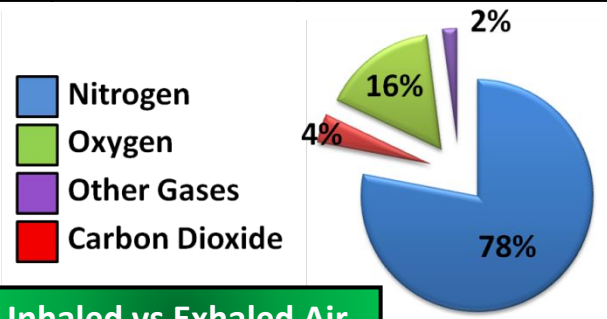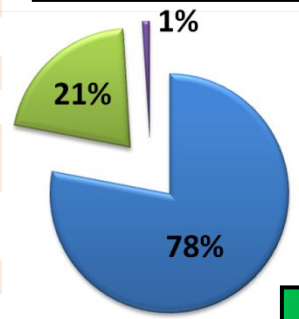| Character	Analysis	Key Quotations
George One of the story's **protagonists,** his friendship with Lennie sets him apart from other characters.	- Protective of Lennie, like a father - Can be impatient - The dream of owning a ranch binds him to Lennie	'Lennie imitated George exactly' 'His eyes were hard and tight as wood, and his eyes were hard'
Lennie The other **protagonist,** Lennie is devoted to his friend George and to their dream of owning a ranch. He is a large, strong man with a mental disability that makes him dependent on George.	- Incredible strength - Childlike understanding - His helplessness evokes sympathy from the reader - Killing of mice foreshadows deaths of puppy and Curley's wife - Doomed from the start, reflecting difficulty of life for the disabled	'Lennie covered his face with his huge paws and bleated with terror' 'Strong as a bull' 'Who hurt George? Lennie growled back to his seat'
Slim He is the most respected character on the ranch. He is calm, thoughtful and the men look up to him.	- Achieves respect from the other men without having power as the owner of the ranch - Steinbeck shows how those with power, like Curley, don't always deserve it, whilst Slim is kind, skilful and admired as a leader	'Slim don't need no high-heeled boots' 'He moved with a majesty only achieved by royalty' / 'The prince of the ranch' 'Slim's opinions were law'
Curley He is the Boss's son and is married to Curley's wife. He is an aggressive and violent character and is the **antagonist** of the novella, or the **villain.**	- Reveals that power isn't always deserved - His presence in Chapter 2 foreshadows later tragedy - His character's insecurities contrast with Slim's 'majesty' - He represents the insecurity of man	'Calculating and pugnacious' 'Curley was white… his fist lost in Lennie's paw' 'Flopped like a fish on a line' 'Shoot for his guts'
Crooks He is a stable buck (works with the horses). Crooks is the only black character in the story and he faces discrimination. He is lonely and isolated.	- His possessions (spectacles, a copy of the Civil Code) reflect his personality - A victim of racial prejudice - His character is used to reveal the suffering many African Americans faced	Crooks' accommodation is 'a long box filled with straw' 'A guy goes nuts if he ain't got nobody' 'Nobody never gets to heaven and nobody never gets no land'
Curley's Wife She is the only female character and is never named, showing she is not valued. She is lonely and desirous of attention. She is unhappily married to Curley. She is misunderstood and is the **victim** of the story.	- Bright clothes and uncertain voice reflect her two sides - Her broken dreams make her an empathetic character but she can be cruel and bitter when she uses her power as white woman against Crooks - Objectified (treated like an object) by her husband and viewed as trouble, reflecting how many women in 1930s society were treated	'Her voice had a nasal, brittle quality' 'Her nails were red' 'She's gonna make a mess' '…her body flopped like a fish.
Candy He lost his hand in an accident. Because he is old, he is not valued by the Boss.	- His age and physical disability (he has lost a hand) makes him vulnerable on the ranch and in society - The writer uses Candy's dog's death to show how there is no compassion for the weak in society	Carlson says 'I wish somebody'd shoot me if I got old an' a cripple' 'Candy looked for help from face to face'
Carlson: a minor character who features a few times.	- His ruthless and selfish attitude reflects the way that many Americans were 'out for themselves' with no care about others	'I wish somebody'd shoot me if I got old an' a cripple'

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Biology 8.3 - Breathing
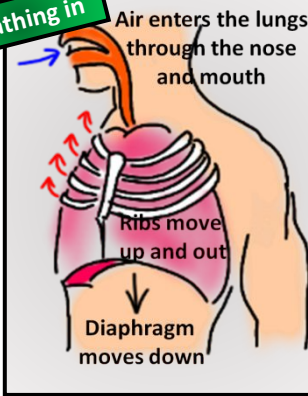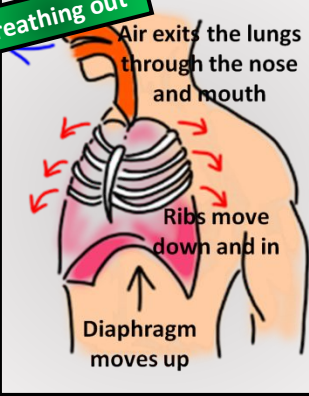
Keyword	Definition
Breathing	The movement of air into the lungs (**inhalation**) and out of the lungs (**exhalation**)
Gas Exchange	Transfer of gases between an organism and the environment
Lungs	Site of **gas exchange**
Ribs	Bones surrounding the ribcage
Respiratory System	Organ system which transports O_2 in to the red blood cells after inhalation and CO_2 in to the lungs for exhalation
Contract	To get shorter/smaller
Diaphragm	A sheet of muscle found underneath the ribs
Lung Volume	Measure of the amount of air breathed in
Asthma	Breathing condition in which the bronchi become inflamed (narrow) making it difficult to breathe
Drugs	Any substance that has an effect on the body. Can be **medicinal** (beneficial) or **recreational** (taken for pleasure)
Addiction	A need to keep taking a drug in order to feel normal
Withdrawal	Symptoms experienced when a person with a drug addiction stops taking the drugs
Nicotine	Stimulant – Addictive substance in cigarette smoke
Carbon Monoxide	Found in cigarette smoke – irreversibly binds to haemoglobin in red blood cells preventing the transport of oxygen
Tar	Found in cigarette smoke – a carcinogen that builds up in the lungs

Breathing in

Air enters the lungs through the nose and mouth

Ribs move up and out

Diaphragm moves down

Breathing out

Air exits the lungs through the nose and mouth

Ribs move down and in

Diaphragm moves up

Inhaled vs Exhaled Air

- Nitrogen
- Oxygen
- Other Gases
- Carbon Dioxide

Inhaled air: 21%, 1%, 78%

Exhaled air: 2%, 16%, 4%, 78%

Smoking

Effects on smokers	Effects on passive smokers
Addiction	Addiction (cravings)
Heart disease	Heart disease
Emphysema	Emphysema
Breathlessness	Breathlessness
Respiratory infections	Respiratory infections
Cancer	Cancer
Death	Death

Effects of alcohol on mother and baby

FAS: when babies are born addicted to alcohol and have to go through the withdrawal symptoms

Effects on mother	Effects on foetus
Slowed reactions	Foetal alcohol syndrome (FAS)
Addiction	Risk of miscarriage
Heart disease	Risk of stillbirth
Stomach ulcers	Risk of premature birth
Brain damage	Low birth weight
Liver damage	

Smoking when pregnant can result in low birth weight

Less oxygen can be delivered to the developing foetus resulting in less respiration and growth

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Keyword	Definition
Cell	The smallest living unit of an organism
Tissue	A collection of cells with a similar function
Organ	A collection of tissues with a similar function
Organ System	A collection of organs with a similar function
Organism	A collection of organ systems ▢ A living thing
Mouth	Mechanically digests food, contains saliva
Saliva	Made in the salivary gland, contains the amylase enzyme
Oesophagus	Transports food from the mouth to the stomach
Stomach	Churns and mixes food, contains hydrochloric acid to provide optimum pH for protease enzyme and destroy pathogens
Small Intestine	Absorbs nutrients – intestinal walls contain villi. Contains lipase, protease, and amylase for digestion
Large Intestine	Absorbs water - intestinal walls contain villi
Rectum	Stores faeces before excretion through the anus
Anus	Excretes faeces from the body
Liver	Produces bile
Pancreas	Produces amylase, lipase and protease for the small intestine
Gall Bladder	Stores bile
Villi	Finger like projections which increase the surface area of the intestine. Increasing the rate of diffusion
Bile	Neutralises stomach acid to provide optimum pH for lipase enzyme. Emulsifies fats
Emulsify	Breaking up into smaller droplets to increase the surface area
Enzyme	A biological catalyst used in digestion
Catalyst	Speeds up the rate of reaction without being used up
Amylase	Enzyme which breaks down carbohydrates into sugars
Lipase	Enzyme which breaks down lipids into fatty acids and sugars
Protease	Enzyme which breaks down protein into amino acids
Carbohydrate	Nutrient used for energy, made from a string of sugars
Protein	Nutrient used for growth and repair, made from a string of amino acids
Lipid (fat)	Nutrient used for energy, made from a 3 fatty acids and glycerol
Sugar	Small soluble product of amylase digestion
Amino Acids	Small soluble product of protein digestion
Fatty Acids	Small soluble product of lipid digestion
Glycerol	Small soluble product of lipid digestion
Digestion	The process of breaking down large insoluble molecules into small soluble molecules

Can you label the parts of the digestive system?

Enzymes

Active Site
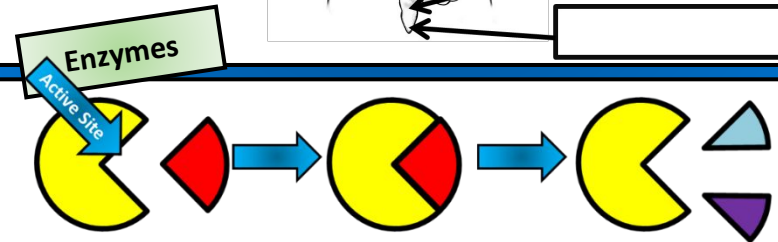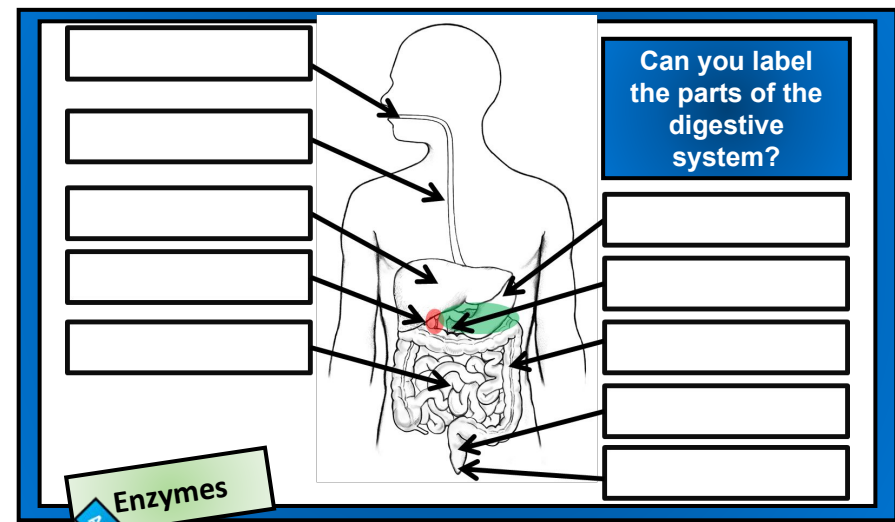
Enzyme + Substrate	Enzyme-Substrate Complex	Enzyme + Products

Enzyme	Substrate	Products	Where is it made?	Site of Digestion
Protease	Protein	Amino Acids	Stomach, Pancreas, S. Intestine	Stomach, S. Intestine
Amylase	Carbohydrate	Sugars	Salivary Gland, Pancreas, S. Intestine	Mouth, S. Intestine
Lipase	Lipids	Fatty Acids + Glycerol	Pancreas, S. Intestine	S. Intestine

Villi

How do increase the rate of diffusion?

Hints: Surface Area – Concentration Gradient

Biology 9.3 & 9.4 - Respiration and Photosynthesis

Keyword	Definition
Photosynthesis	An endothermic reaction between water carbon dioxide to form glucose and oxygen – occurs in the chloroplasts $6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$
Glucose	A sugar molecule – product of photosynthesis
Starch	A storage molecule – made of a chain of glucose molecules Unlike glucose – starch is insoluble and does not affect osmosis
Endothermic	A reaction that requires energy inputted from the surroundings (In photosynthesis this energy takes the form of sunlight)
Limiting factors	Something that can limit the rate of a reaction – in photosynthesis these are light intensity, $[CO2]$, temperature, amount of chloroplasts
Aerobic respiration	An exothermic reaction which breaks down glucose in the **presence** of oxygen order to release energy – occurs in the mitochondria $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$
Anaerobic respiration	An exothermic reaction which breaks down glucose in the **absence** of oxygen order to release energy – occurs in the cytoplasm $C_6H_{12}O_6 \rightarrow$ lactic acid
Exothermic reaction	A reaction that releases energy into the surroundings – often in the form of heat
Glycogen	How glucose is stored in the human body – Excess blood glucose is converted to glycogen
Lactic Acid	The product of anaerobic respiration
Oxygen Debt	The amount of oxygen required to break down lactic acid after anaerobic respiration
Metabolism	The sum of all the reactions taking place in the body

Why do these cells have a lot of mitochondria?

- Sperm Cell
- Muscle Cell
- Root Hair Cell

Anaerobic Respiration in Plants

Glucose $\rightarrow$ Ethanol + Carbon Dioxide

Similarities and differences of anaerobic respiration in animals and plants

Similarities	Differences
Have glucose as a reactant	Animal cells produce lactic acid (O_2 Debt)
Releases energy	Plant cells produce CO_2 and ethanol

ASSESSMENT TIP: You need to be able to **COMPARE** and **CONTRAST** anaerobic respiration in PLANTS and ANIMALS

Uses for plant anaerobic respiration

- Wine
- Biofuel
- Beer
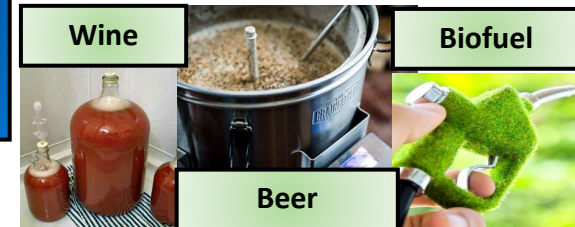
Adaptations of leaves for photosynthesis

Contains chloroplasts (the site of photosynthesis)	Thin - increases the rate of diffusion for gases	Stomata open and close to allow gases to enter/leave the leaf.
Large surface area to absorb more sunlight	Veins in leaf carry water in the xylem and transport glucose in the phloem	Air spaces allow carbon dioxide to get to the cells for photosynthesis

Photosynthesis
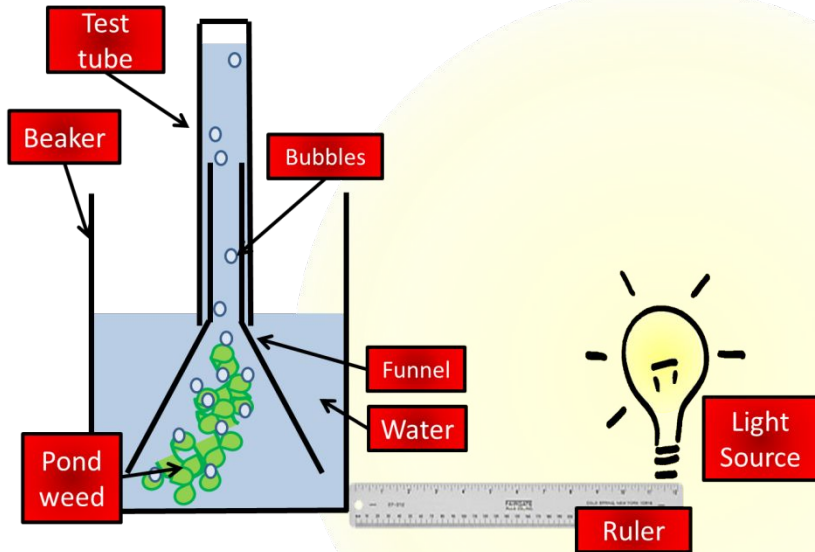
Carbon Dioxide + Water $\rightarrow$ Glucose + Oxygen

$6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$

Aerobic Respiration

Glucose + Oxygen $\rightarrow$ Water + Carbon Dioxide

$C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$

Biology 9.4 - Photosynthesis

Test tube

Beaker

Bubbles

Funnel

Water

Pond weed

Ruler

Light Source

Rate of photosynthesis vs Temperature (°C)

Rate of photosynthesis vs Light Intensity / CO_2 Conc
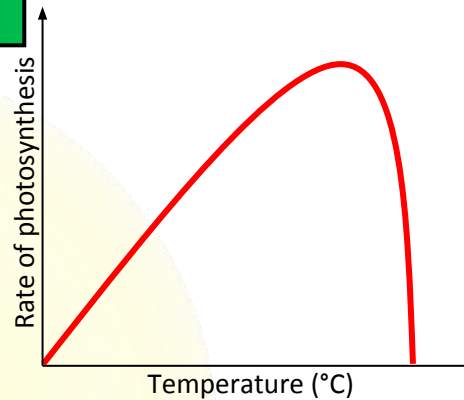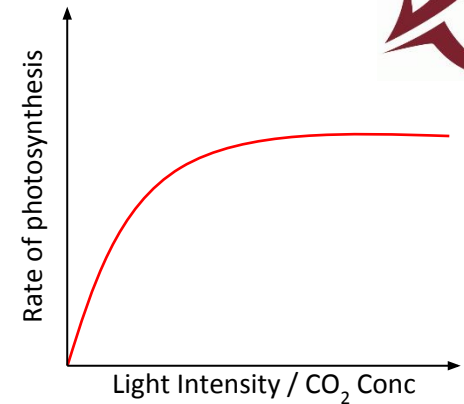
As temperature increases the rate of photosynthesis also increases before decreasing back to 0 – at his point the enzymes have denatured and photosynthesis can no longer occur

As light intensity / $[CO_2]$ increases the rate of photosynthesis also increases before plateauing – at his point the light intensity / $[CO_2]$ is no longer a limiting factor

Independent Variable:
Distance of light from pond weed (light intensity)

Dependent Variable:
Volume of O_2 collected in the test tube

Control Variables:
Temperature
$[CO_2]$
Amount of water
Same plant

Testing a Leaf for Starch

Boil the leaf in hot water – this removes the waxy cuticle and stops photosynthesis by denaturing the enzymes

Boil the leaf in ethanol – this removes the chlorophyll from the leaf so the green colour doesn't interfere with the result

Place the leaf on a white tile and add iodine – a colour change from brown to blue/black indicates the present of starch

The leaf on the right has areas which contain starch and areas which don't! CAN YOU EXPLAIN why starch is only present in the areas of the leaf which would have been green?

Biology 10.3 – Evolution

Keyword	Definition
Evolution	Theory that the animal and plant species living today descended from species that existed in the past
Fossil	The remains and traces of plants and animals that have become mineralised
Natural Selection	Process by which species change over many generations in response to environmental changes and competition for resources
Peer Review	Evaluation of scientists work by another scientist
Extinct	When no more individuals of a species are left alive anywhere in the world
Competition	When two or more living things struggle against each other for the same resource
Biodiversity	A measure of the variety of all the different species of organisms on Earth or within a particular ecosystem
Population	Group of organisms of the same species living within an ecosystem
Endangered	A species with only a small number of organisms left in the world
Conservation	Protecting a natural environment, to ensure habitats aren't lost
Captive Breeding	Breeding animals in human controlled conditions
Gene Bank	A store of genetic samples. Used for research and to prevent extinction

Evolution by natural selection

There is lots of variation within this species of bird
-beak size-
-leg size-

These birds live in Asia
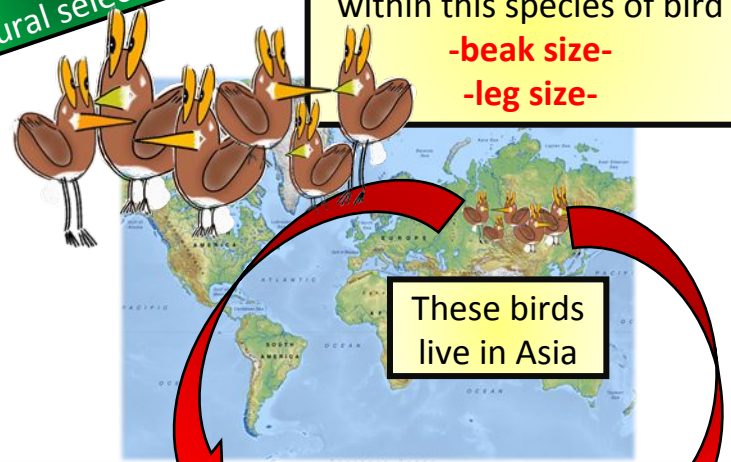
Some of the population migrate to **Europe**

Some of the population migrate to **Africa**

In Europe the water is deep!

In Africa Food is below ground

FOOD FOOD FOOD

Animals with the best characteristics for the environment (long legs/long beaks) will survive …and reproduce

Over many generations the two populations become so genetically different they will be considered to be different species

Reasons for extinction

Change in the habitat

Destruction of habitat

New predators

Disease outbreak

Increased competition for resources

Preserving Biodiversity

	Advantages	Disadvantages
Conservation		
Captive Breeding		
Gene Banks		

Research and **evaluate** the advantages and disadvantages of these three methods of preserving biodiversity

Biology 10.4 – Inheritance

Keyword	Definition
Inherited Characteristics	Features that are passed from parents to their offspring
DNA	A molecule found in the nucleus of the cell that contains genetic information
Chromosome	Thread-like structure that contains tightly coiled DNA, it contains many genes
Gene	A section of DNA that determines an inherited characteristic
Mutation	Random change to DNA that may (or may not) cause disease
Allele	Different variations of the same gene
Dominant	A dominant allele will always be expressed if inherited
Recessive	Two recessive alleles need to be inherited in order to be expressed
Punnett Square	A diagram to show the possible combinations of alleles that can be inherited from parents
Genetic Modification	A technique in which scientists insert foreign genes into organisms to change their characteristics

Inheritance

1 2 3   4 5
6 7 8 9 10 11 12
13 14 15   16 17 18
19 20   21 22 YX

23
chromosomes in each gamete

When the body produces gametes the number of chromosomes splits in half

Every **nucleus** in the human body contains **23 pairs** of chromosomes

This means we have 2 alleles of **EVERY** gene

This results in the inheritance of two alleles for every gene. one **maternal** allele and one **paternal** allele

Fertilisation

23 Chromosomes ➕ **23** Chromosomes
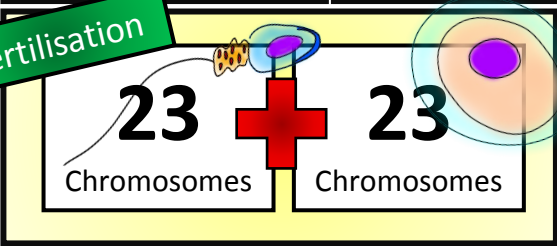
RECESSIVE

Blue eye allele ➕ Blue eye allele =

Need to inherit **2** copies of the same allele in order for the characteristic to be expressed
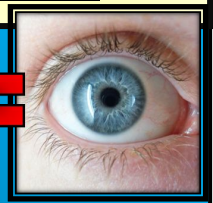
DOMINANT

Brown eye allele ➕ Blue eye allele =

Only need to inherit **1** allele in order for the characteristic to be expressed

Setting up a Punnett Square

1) Split the alleles

2) Place the alleles into the Punnett square

♀ Maternal alleles

	B	b
B		
b		

♂ Paternal alleles

Bb

B

b

♂ Paternal alleles

Bb

B

b

♀ Maternal alleles
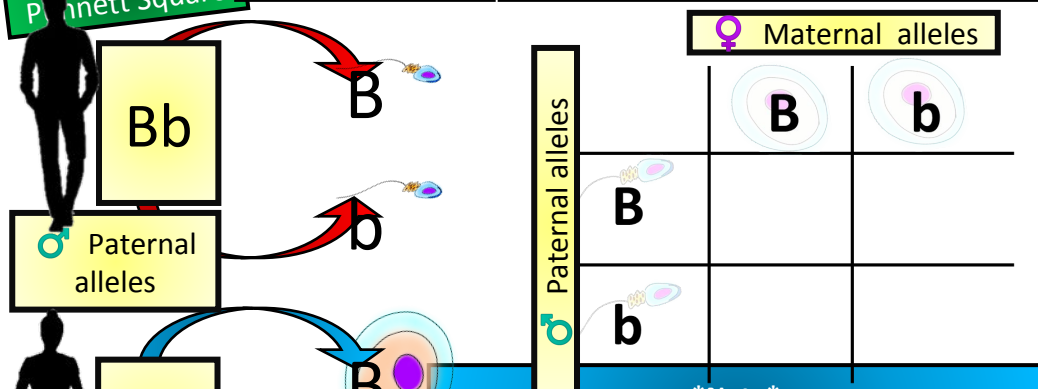
Note
Capital letters are used for dominant alleles
Lower case letters are used for recessive alleles

COMPLETE the Punnett square

Use this Punnett square to **EXPLAIN** how 2 parents with brown eyes can have a child with blue eyes

IDENTIFY which allele is the dominant allele in this example. **EXPLAIN** your answer 🙂

B: Brown eyes   b: Blue eyes

Dominant and Recessive Alleles

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Chemistry 5.1 – Matter

Changes of state

Keyword	Definition
Boiling point	The temperature that a substance boils at.
Change of state	The process where a substance changes from one state to another.
Condense (condensation)	The change of state from a gas to a liquid. It can happen at any temperature below the boiling point.
Density	The mass of a material in a certain volume.
Diffusion	The process where particles in liquids or gases spread out randomly from a place where there are many particles to a place where there are fewer.
Evaporation	When the particles at the surface of a liquid turn into a gas.
Gas pressure	The force applied on a certain area, on walls of a container. It is caused by collisions of particles with the walls.
Melting point	The temperature at which a substance melts,
Particle	A very tiny object, such as an atom or molecule, that materials are made from. They are too small to be seen with a microscope.
Particle model	A way to think about how different substances behave in terms of small, moving particles.
Atom	Smallest part of an element that can exist
Compound	Substance made up of 2 or more elements chemically bonded together.
Element	A substance that cannot be broken down into other substances. They are made up of just 1 type of atom

ADD ENERGY

Solid   Liquid   Gas
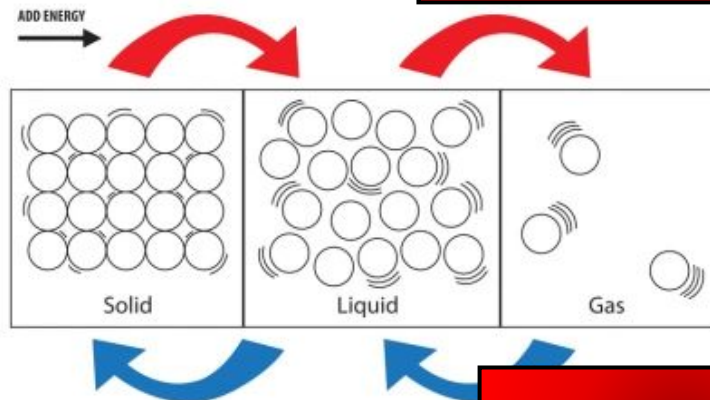
Sublimation is a change of state from a solid to a gas. The reverse is called resublimation.

Explain what happens to the particles when a liquid freezes.

Diffusion

Before diffusion   After diffusion
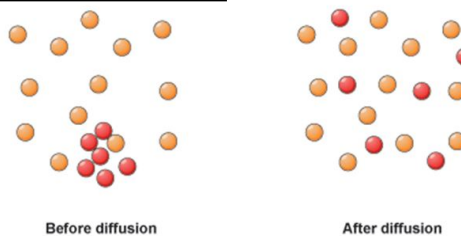
Diffusion is the movement of one type of particle into and through another. Particles move from a high concentration to a low concentration
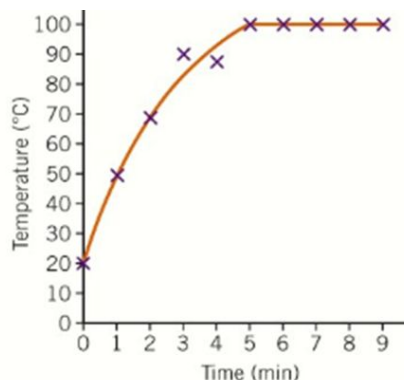
The graph shows the temperature of a liquid as it is heated. The temperature holds at the boiling point as it takes time for all of the particles to get enough energy to form a gas.

How do you know from the graph what the boiling point is?

20

Chemistry 5.1 – Matter - Separating Mixtures

Keyword	Definition
Chromatogram	An image made from chromatography.
Chromatography	A way to separate mixtures of liquids that are soluble in the same solvent.
Dissolve	When a solute and a solvent completely mix together to make a solution.
Distillation	When a solvent is separated from a solution using evaporation and condensation.
Filtrate	This is the liquid or solution that collects in the container after filtering a mixture.
Filtration	This is a way of separating pieces of solid that are mixed in a liquid by pouring it through filter paper.
Pure substance	A single material with no other substances mixed with it.
Residue	This is the solid that collects in the filter paper during filtration.
Saturated solution	A solution that can dissolve no more solute.
Solubility	This is the maximum mass of solute that will dissolve in a certain volume or mass of solvent.
Solubility curve	This is a graph that shows the change in solubility of a substance as the temperature changes.
Soluble/Insoluble	A soluble substance can dissolve in a given solvent. An insoluble substance cannot dissolve in a given solvent.
Solute	The solid of gas that is dissolved in a liquid.
Solution	A mixture of a solute dissolved in a solvent. All parts of the mixture are the same.
Solvent	A substance, normally a liquid, that dissolves another substance.
Substance	A material that is not a mixture. It has the same properties all the way through.

Separation Techniques

SOLUTE - Substance dissolving

SOLVENT - Liquid the solute dissolves in

SOLUTION - Solute dissolved in solvent
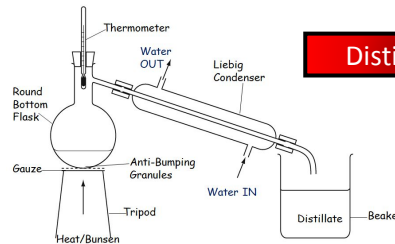
Distillation

Evaporation

Filtration
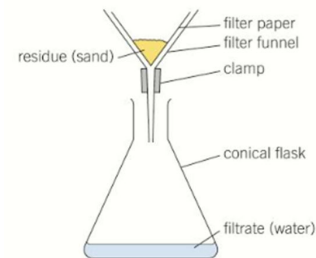
Chromatography

What types of mixtures could the different techniques be used to separate? How do they work?
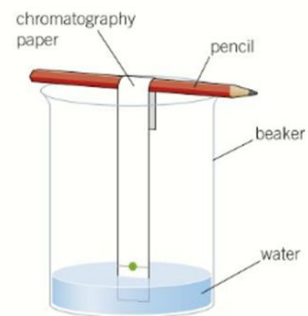
Dissolving
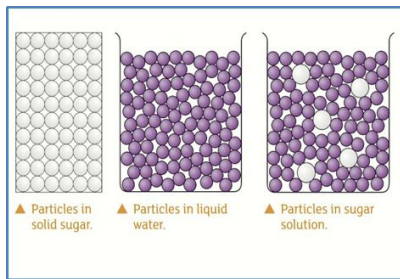
When a solute dissolves in a solvent the particles in the solute fit into the gaps in the solvent. This will happen until all of the gaps are filled up (saturated solution)

pH Scale

Keyword	Definition
Chemical Reaction	A change in which atoms are rearranged to make new substances.
Reversible	A change in which it is possible to get back to the original substances.
Physical Change	A change that is reversible in which no new substances are made.
Acid	A solution with a pH value less than 7
Alkali / base	An alkali is a soluble base. A base is a substance which neutralises an acid.
Concentration	A measure of the number of particles in a given volume.
Indicator	Substances used to identify whether something is acidic or alkaline.
pH Scale	Measure of how acidic or alkaline something is
Neutral	Neither acidic or alkaline. Have a pH of 7.
Neutralisation	In a neutralisation reaction an acid cancels out a base or a base cancels out an acid.
Physical Property	A property of a material which you can observe or measure.
Chemical Property	How a substance behaves in a chemical reaction.
Oxidation	A chemical reaction in which a substance combines with oxygen
Displacement	Reaction in which a more reactive metal takes the place of a lesser reactive metal in a compound.

Reactivity Series

The pH Scale

reactive
potassium
sodium
lithium
calcium
magnesium
aluminium
zinc
iron
lead
copper
silver
gold
unreactive

Metal Reactions

Metal	Reaction with dilute acid	Reaction on heating in air	Reaction with water
potassium	Explode. Products are metal salts and hydrogen.	Burn vigorously. Products are metal oxides.	React vigorously. Products are a metal hydroxide solution and hydrogen.
sodium			
lithium			
calcium	React, making bubbles. Products are metal salts and hydrogen.		React with steam. Products are hydrogen and a metal oxide.
magnesium			
zinc			
iron			
lead		Do not burn. Form oxide layer on surface.	Do not react.
copper	Do not react.		
silver		Do not react.	
gold			

Making Salts

1. React an acid with an excess of metal, metal oxide, hydroxide or carbonate until no more reacts.
2. Filter the mixture to get a solution of the salt with the excess solid left behind
3. Heat the solution to start evaporating the water from the solution.
4. Turn of the heat and leave until all of the water has evaporated, leaving the solid salt behind.

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FRENCH

Opinion phrase	School Subject		Connective	Quality Vocab	Reason	
Ma matière préférée est (My favourite subject is)	l'anglais (English)	le dessin (Art)	car (because)	pour moi (for me)	c'est (it is)	important (important)
Mes matières préférées sont (My favourite subjects are)	le français (French)	l'EPS (PE)		je pense que (I think that)	ce n'est pas (it isn't)	utile (useful)
J'adore (I love)	les sciences (Science)	la religion (ME)	parce que (because)	j'estime que (I reckon that)	ça peut-être (it can be)	inutile (useless)
J'aime bien (I really like)	les maths (Maths)	la cuisine (Cooking)		la plupart du temps (most of the time)		difficile (difficult)
Je préfère (I prefer)	les travaux manuels (Design Tech)	l'informatique (Computing)	puisque (as)	je suis l'opinion que (in my opinion)		facile (easy)
Je n'aime pas (I don't like)	l'espagnol (Spanish)	L'histoire (History)		je dirais que (I would say that)		barbant (boring)
Je déteste (I hate)	le théâtre (Drama)	la géo (Geography)		heureusement (fortunately)		une perte de temps (a waste of time)
Je ne supporte pas (I can't stand)				malheureusement (unfortunately)		

Reason (continued):
- J'aime le prof (I like the teacher)
- Je déteste le prof (I hate the teacher)
- j'en suis bon(ne) (I'm good at it)
- j'en suis nul(le) (I'm bad at it)
- il y a trop de devoirs (there's too much homework)
- ce n'est pas mon tasse de thé (it's not my cup of tea)
- le prof explique bien (the teacher explains well)

Time phrase	Activity (present tense)		Time Phrase	Future structure	Infinitive	
Pendant la pause-déjeuner (During lunch time)	je traine avec mes amis (I hang out with my friends)	je vais au club de .... (I go to the .... club)	Après avoir quitté le collège Redmoor After leaving Redmoor	je vais I am going	aller (to go)	au lycée (to college)
Au collège (At school)	j'écoute de la musique (I listen to music)	j'achète le déjeuner (I buy lunch)	L'année prochaine (next year)	je voudrais I would like		à l'université (to uni)
Pendant la récré (During breaktime)	je joue sur mon portable (I play on my mobile)	je mange un sandwich (I eat a sandwich)	À l'âge de dix huit ans (When I am 18)	j'ai l'intention de I intend	faire (to do)	une apprentissage (an apprenticeship)
	je joue au foot (I play football)	je retrouve mes amis (I meet up with my friends)	À l'avenir (In the future)	je veux I want		
	je vais à la cantine (I go to the cantine)			je ne vais pas I am not going to	devenir (to become)	professeur (teacher)
				je ne veux pas (I don't want to)	être (to be)	médecin (doctor) fermier (farmer)

History: Power, church & state

Key Terms:

Plantagenet - the English royal dynasty which held the throne from Henry II in 1154 until the death of Richard III in 1485.
Monastery - a place where monks lived and worked
Monarch - ruler of a country, usually holds the title King / Queen
Lollard - Someone who wanted to change how the Church was run.
Pope - head of the Roman Catholic Church
Papal Decree - a decision or judgement made by the Pope
Annulment - to end or get rid of something
Divine Right - belief that a person has been chosen by God to rule
Protestantism - form of Christianity which places the monarch as head of the Church
Catholicism - form of Christianity which places the Pope as head of the Church
Illegitimate - born of parents not lawfully married to each other
Heir - person next in line to the throne
Reformation - break up of the Catholic Church
Succession - act of inheriting title of monarch
Latin - language of Bible and church services in Catholic Church
Nobles - a person of high rank
Lady Jane Grey - Nine day Queen following Edward VI
Regent - rule a state when the monarch is too young or absent
The Oxford Martyrs - Protestants tried for heresy in 1555 and burnt at the stake
Poor Law - 1601
Enclosure - legal process of reducing the size of common land for communal use
Heretic - religious beliefs are opposite to the teachings of the Church
The New World - land being discovered and conquered in the Americas
Armada - fleet of warships
Vagabondage - homelessness, wandering without purpose

Tudor Family Tree

Major Events

Battle of Bosworth – 22nd August 1485
Last main battle in the 'War of the Roses', a civil war between the houses of Lancaster and York. The battle was won by the Lancastrians led by Henry Tudor, defeating Richard of York who became the first King of the Tudor period.

Henry VIII's Six Wives:
1st: Catherine of Aragon – Divorced (child: Mary I)
2nd: Anne Boleyn – Beheaded (child: Elizabeth I)
3rd: Jane Seymour – Died (child: Edward VI)
4th: Anne of Cleves – Divorced
5th: Catherine Howard – Beheaded
6th: Catherine Parr – Survived

Spanish Armada -1588:
Who? King Philip II sent a fleet of Spanish Ships led by the Duke of Medina Sidonia to invade England and restore Catholicism with the removal of Elizabeth I. The English were led by Lord Howard and Francis Drake.
Aim: The plan was to land in Calais and meet with the Duke of Parma and his troops who had been fighting in the Netherlands.
What happened? After limited fighting the English sent fireships into the Spanish fleet when docked in Calais forcing them to flee into the channel. Following this the Battle of Gravelines took place but several factors meant that they were to be defeated. The wind took them into the north sea and many ships failed to make it back to Spain.

The Civil War – 1642-1651
Who? Those who wanted Parliament rule (Roundheads) against those who wanted Royal rule (the Cavaliers).
When? 3 major battles. The war was ended at the Battle of Worcester on 3rd September 1651 - the Parliamentarians won.
What happened? Charles was put on trial and executed, his son Charles II driven out of England, England eventually ruled by the Protectorate: Oliver Cromwell.

Tudor and Stuart Monarchs - date of reign, biography, spouse info, and key facts.

Monarch		Biography	Spouse	Key facts
Henry VII 1485-1509		Henry VII was the first Tudor monarch, after winning the Battle of Bosworth Field. He married Elizabeth of York to end the war. He made England rich during his reign.	**Elizabeth of York** m.1486-1503	In total, Henry had 9 children with his wife, including Henry VIII.
Henry VIII 1509-1547		Henty VIII is famous for having six wives (including having two of them executed) and bringing England away from the Catholic church. He formed the Church of England.	**Henry had six wives** – see the section on the left.	As many as 72,000 people were executed through his rein.
Edward VI 1547-1553		Edward VI came to the throne at only 9 years of age. Therefore, the country was run by his protectors, firstly the Duke of Somerset and then the Duke of Northumberland.	**Did not marry**	Apparently, the rumours are not true about Edward being a sickly child!
Mary I 1553-1558		Mary I was Henry VIII's first daughter. She aggressively tried to return England to Rome and Catholicism, burning those against her on the stake and earning the name 'Bloody Mary.'	**Philip II of Spain** m.1554-1558	Mary was the first queen to rule England in her own right.
Elizabeth I 1558-1603		Henry VIII's second daughter, Elizabeth turned the country Protestant again. She had a long and successful reign, including the defeat of the Spanish Armada in 1588.	**Did not marry**	She may have owned as many as 2,000 sets of gloves!
James I 1603-1625		As Elizabeth had no children, James (already the King of Scotland) was brought to rule over England as well. He believed in the 'Divine Right' of Kings (kings were chosen by God).	**Anne of Denmark** m.1589-1619	James had become King of Scotland at just 13 months old.
Charles I 1625-1649		Charles I attempted to start wars and run the country into debt. Eventually people grew angry with him and a Civil War started. Charles lost and he was executed.	**Henrietta Maria of France** m.1625-1649	Charles I is the only English king to be executed.
Interregnum Oliver Cromwell 1649-1658		Oliver Cromwell was a 'Protectorate' – he led the country instead of a King. He was a puritan and made strict religious rules.	**Elizabeth Cromwell** m.1620-1658	It is a myth that Cromwell personally banned Christmas.
Charles II 1660-1685		Charles had to flee England earlier in his life, but was invited back to rule by Parliament in 1660 - known as the Restoration. Unlike Cromwell, he loved music and dancing.	**Catherine of Braganza** m.1662-1685	Charles reportedly used to play with a toy spaniel at meetings!
James II 1685-1688		Parliament tried to make it so James couldn't be King, because he was Catholic. When he did make it to the throne, they were executed in trials known as 'The Bloody Assizes.'	**Anne Hyde** m.1660-1671 **Mary of Modena** m.1673-1701	James II died of a brain hemorrhage in France.
William III 1688-1702 **& Mary II** 1688-1694		When James II became unpopular, William III and Mary II (daughter of James II) overthrew him and were made joint sovereigns of England - The 'Glorious Revolution.'	**William III and Mary II were joint monarchs**	William and Mary had 3 stillborn children

Yr 8 History Thematic Study: Economic History 1500-modern day
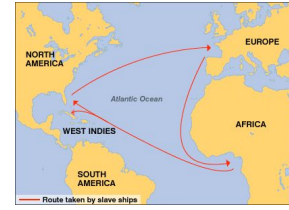
The Slave Trade

1492: Columbus lands in the Caribbean
1562: John Hawkins takes first ship of slave to West Indies
1619: Slave trade in North America begins with first ship full of Africans docking in Virginia colony (now USA)
1772: Somerset case - court ruling that no slave could be forcibly removed from Britain
1789: publication of Olaudah Equiano's autobiography
1807: The slave trade is abolished by Great Britain
1833: Slavery is abolished in all British colonies
1839: Amistad slave ship rebellion
Economic: relating to money/wealth/poverty
Exploration: travelling to find new parts of the world
Trade Triangle: the slave trade system Europe/Africa/America
Abolition: to oppose or end something
Overseer: a person who supervised slaves or factory workers
Olaudah Equiano: an ex-slave who wrote about his life
Thomas Clarkson: campaigned for abolition of slavery
Granville Sharp: used legal means to try to abolish slavery
William Wilberforce: MP who campaigned to abolish slavery

The Industrial Revolution

1600s - 1700s Enclosure Acts
1712: Newcomen develops steam powered pump
1761: Bridgewater Canal opens
1765: James Watt's steam engine
1771: Arkwright builds Cromford Mill textile factory
1790s: Canal Mania - huge investment and construction begins
1840's: Railway Mania - huge investment and construction begins
Steam power: using pressure from heating water to power machines
Iron: main metal used in manufacturing, steel is an alloy of this
Canal: method of transporting heavy good by water
Turnpike Trust: Private toll roads
Domestic System: manufacturing items in the home
Factory System: manufacturing in a specially constructed building
Industrial Revolution: change from an agrarian economy to manufacturing
James Watt: developed the first effective steam engine
Thomas Telford: architect and civil engineer, designed transport solutions
Richard Arkwright: pioneered the factory system
George Stephenson: engineer and railway pioneer
Rural: countryside areas/settlements
Urban: town or city areas/settlements

Poverty and Empire

Poverty: the state of not having enough resources for a minimum standard of living
Textiles: Cloth or clothing production by spinning and weaving
Apprentice: an child (sometimes orphans) who worked in factories in return for food and lodging
Workhouse: a place where poor people could get food and shelter in return for work
Depression: severe downturn in the economy, causes mass unemployment
Colony: a area controlled by a foreign power as part of an empire
General Strike: when several sectors go on strike at the same time
Liberal Reforms: Measures to help the poor 1906-1914
Pension: A weekly amount of money given to people over 70 (originally 5 shillings)
National insurance: A form of tax to pay for health and unemployment insurance
SS Empire Windrush: First ship to bring immigrants to the UK from the West Indies in 1948
Notting Hill Riots: Racial riots in inner city London 1958

The British Empire in the 1920's

Hydrological Cycle

River Processes

Erosion where rocks are worn away and the land changes shape.

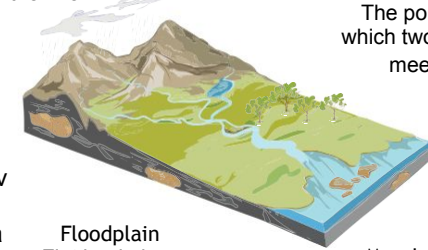**Transportation** where eroded material is carried by the river downstream.

Deposition where transported material is dropped when the river loses energy, such as when it enters the sea.

Drainage Basin

Source
The origin of the river
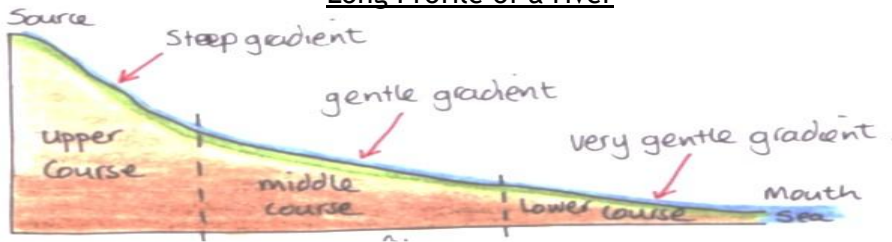
Confluence
The point at which two rivers meet.

Tributary
Smaller streams/rivers that flow into a larger one.

Floodplain
Flat land along the river that is prone to flooding.

Mouth
The end where the river meets the sea.

Long Profile of a river

The Upper Course

Features

Steep-sided V-shaped valleys, interlocking spurs, rapids, waterfalls and gorges.
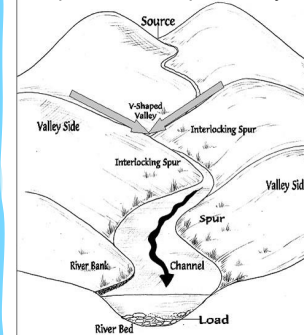
When a river is near its source, it often develops a V-shaped valley as the river erodes down (this is called **vertical erosion**).

At the same time, weathering breaks up material on the valley slopes. Weathered material from the valley sides gets deposited in the river.

1. The soft rock erodes more quickly, **undercutting** the hard rock.
2. The hard rock is left **overhanging** and and eventually collapses.
3. The fallen rocks crash into the **plunge pool**. They swirl around, causing more erosion.
4. Over time, this process is **repeated** and the waterfall moves upstream.
5. A steep-sided **gorge** is formed as the waterfall retreats.

The Middle Course

Features

Wider, shallower valleys, meanders, and oxbow lakes

Meanders
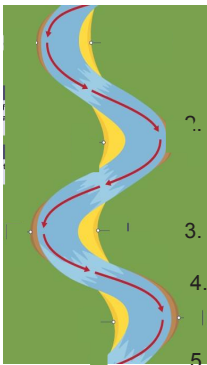
1. The formation of meanders is due to both **deposition** and erosion and meanders gradually move downstream.
2. The force of the water **erodes** and undercuts the river bank on the outside of the bend where water flow has most energy.
3. On the inside of the bend, where the river flow is slower, material is **deposited** as there is no more friction.
4. The loops become tighter, until the ends become very close together. As the river breaks through the ends join, the loop is cut-off from the main channel.
5. The cut-off loop is called an **oxbow lake**.

OxBow Lake

The Lower Course

Features

Wide flat-bottomed valleys, floodplains and deltas

A floodplain is the area around a river that is covered in times of flood. It is a very fertile area. This makes floodplains a good place for agriculture. A build-up of alluvium on the banks of a river can create levees, which raise the riverbank.

Flooding

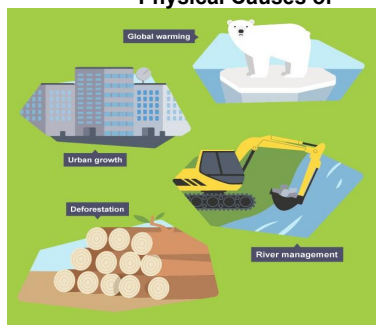A flood occurs whenever a river overflows its banks (exceeds its 'bankfull' discharge)

However, a flood becomes a problem when the water rises to a level where it threatens property and/or life. Rivers usually flood due to a range of physical factors

These physical factors can be divided into **climatic factors** and **drainage basin** characteristics. **Human intervention** can also make flooding worse

Human Causes of Flooding

Physical Causes of Flooding

Keywords

Cause	Source	Deposition	Watershed
Effect	Mouth	Confluence	Meander	V=Shaped Valley
Response	Long Profile	Waterfall	Oxbow Lake	
Drainage	Floodplain	Erosion	Delta	Hydrological Cycle
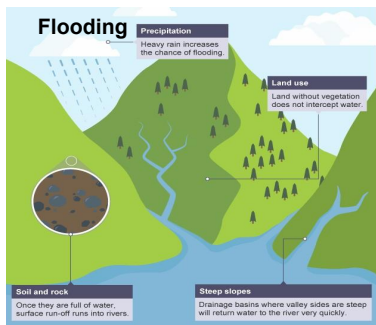
Boscastle

Causes
There was a spell of heavy localised rainfall - 89 mm of rain fell in an hour on saturated ground from previous rainfall. Topography of the land. The landscape upstream of Boscastle, a steep-sided valley, acted as a funnel directing vast volumes of water into the village.

What has been done?
• £4.5 million has been spent on a flood defence scheme.
• The scheme incorporates drainage, sewerage systems and land re-grading.
• Boscastle car park has been raised in height, which will stop the river from bursting its banks so easily.
• New drains allow water to run into the lower section of the river quickly.
• The river channel has been made deeper and wider so that it can accommodate more water.

Bangladesh

Causes
ftuch of Bangladesh lies on a floodplain. Over half of the country lies 6m below sea level. There are 3 major rivers: The Ganges, Brahmaputra and fteghna. fteltwater from the Himalayas.

Responses – Short term
• Food aid from the Government and other countries.
• Water purification tablets.
• People repaired embankments and helped to rescue people.
• Free seed given to farmers

Responses – Long term
• Introducing flood warning systems.
• Emergency planning.
• Dams planned.
• Reducing deforestation.
• Building embankments.
• Building raised flood shelters.

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Year 8 Geography: Coastal processes and Landforms

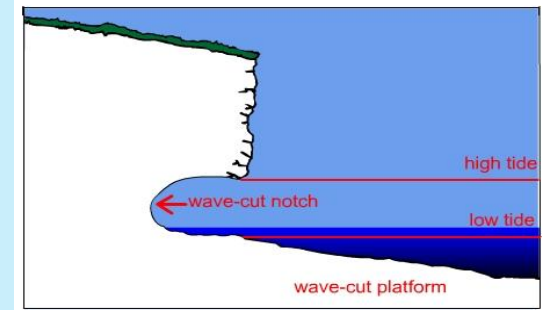Key ideas: *"The coast is a narrow zone where the land meets the sea or ocean."*

processes such as **weathering** and **mass movement** occur on the cliff face.

Coastal processes of erosion include **hydraulic action, attrition, corrosion and solution.**

Landforms created by erosion include headlands and bays, caves, arches, stacks and stumps.

Erosion and Weathering KO Homework Task: Learn all of these key terms

Wave cut platform:

· As erosion continues, the **notch** becomes deeper and eventually the overhang collapses, causing the cliff line to **retreat**. The base of the cliff is left behind as an increasingly longer platform.

Can you name the coastal landforms? And the processes that created them?
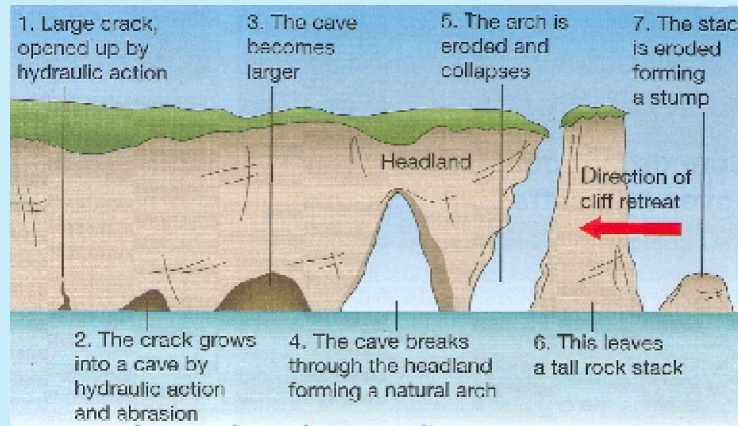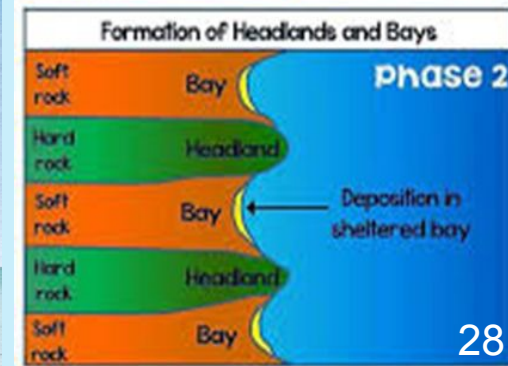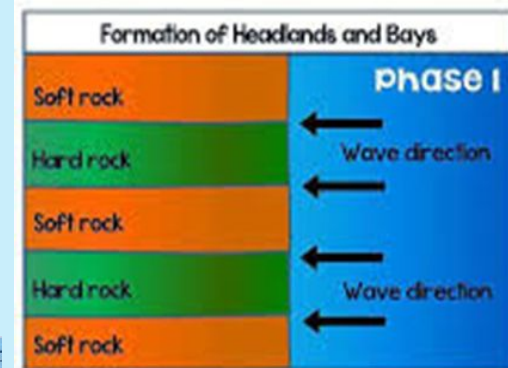
Caves arches stacks and stumps diagram

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How do waves form?

Waves are the result of the wind blowing over the sea. They break as they approach land. Swash and backwash describe the movement of a wave on the beach. Fetch is the distance that the wind has travelled.

CONSTRUCTIVE WAVES
Long wavelength
Low height
Elliptical orbit
Shallow gradient

DESTRUCTIVE WAVES
Short wavelength
High height
Circular orbit
Steep gradient

Wave length
Crest
Wave height
Trough
Seabed
Swash
Backwash

Land
Shoreline
Surf Zone
Sea
SWASH
BACKWASH
Direction of longshore drift
updrift
downdrift
Direction of prevailing wind

Transportation: **Longshore drift** occurs when waves move up to the beach (this is known as swash) in one direction, but the waves draining back down the beach (known as backwash) take a different route (under the effect of gravity).

Depositional Landforms

Hurst Castle Spit

Suspension
Solution
Traction
Saltation

Slapton Ley

Chesil Beach Tombolo

Bar – a ridge that blocks off a bay or river mouth, e.g. Slapton Ley, Devon

Proximal end (the end of the spit attached to the land)
Spit
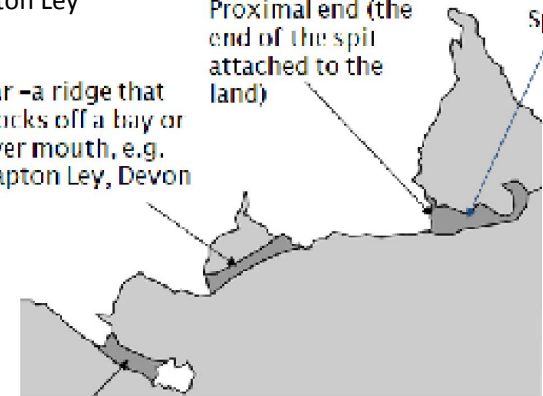
Tombolo – a bar that links the mainland to an island e.g. Llandudno and Chesil Beach

Transportation processes

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Coastal Management

Key ideas: Cliff recession is caused by **wave action** and **sub-aerial processes**.

Cliff recession can have major **economic** and **social** effects.

Hard engineering solutions include sea walls, groynes, revetments, rip rap and gabions.

Soft engineering solutions include cliff drainage, beach nourishment and managed retreat.

All sea defence schemes have **advantages** and **disadvantages**.

Shoreline Management Plans (SMPs):

These have been designed for all parts of the UK.
SMPs have drawn up ideas for how best to manage each particular stretch of coastline.
The Shoreline Management Plans acknowledge that what happens in one place may have an impact elsewhere. We will look at these in another lesson.

The four options are:
1. Do nothing.
2. Allow the retreat of the coast in selected areas.
3. Maintain existing levels of defence.
4. Improve the coastal defences.

a Flamborough c Hornsea
b Mappleton d Spurn

Coastal management case study: Holderness coastline
The Holderness coastline is located on the east coast of England. It is the fastest eroding coastline in Europe.

Reasons for management
The coastline is rapidly eroding at an average of 1.8 metres a year. There are several reasons why the coast at Holderness is eroding so quickly:
Rock type - the cliffs are made from less-resistant boulder clay (made from sands and clays) which slumps when wet.
Naturally narrow beaches - these beaches give less protection to the coast as it doesn't reduce the power of the waves.
Man-made structures - **groynes** have been installed to stop long-shore drift. This narrows unprotected beaches elsewhere even more.
Powerful waves - waves at Holderness travel long distances over the North Sea (so have a long **fetch**) which means they will increase in energy.

Management strategies
Bridlington is protected by a 4.7 km long sea wall.
Hornsea is protected by a sea wall, groynes and rock armour.
Coastal management at Withersea has tried to make the beach wider by using groynes, and also uses a seawall to protect the coast.
**Mappleton** is protected by rock groynes.
Spurn Head is protected with groynes and rock armour.
Conflicts:
There has been an increase in erosion at Great Cowden because of the groynes used in Mappleton. This has led to farms being destroyed by the erosion and the loss of 100 chalets at the Golden Sands Holiday Park.
Some people disagree with where the sea defences are located, especially if it means the land in their community is not protected. Some sea defences negatively impact tourism and reduce the amount of money coming in to the area.
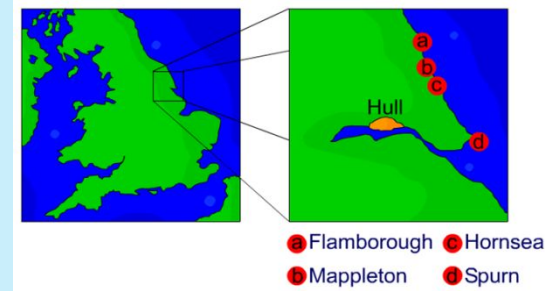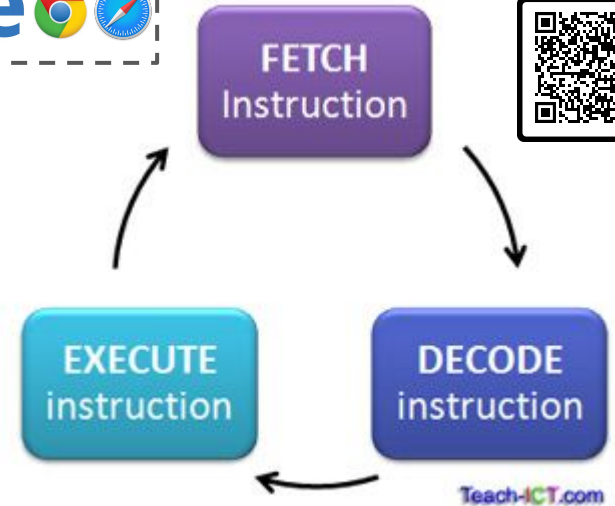

Hornsea

Spurn Head Spit

Year 8 ICT & Computer Science

Computer Hardware

SCAN ME

Internal Parts of a Computer (Inside the box)	
Motherboard	The main circuit board of a computer that holds most of the components of the computer together.
Processor/CPU	This processes all the instructions in the computer needed to perform a task. It follows the fetch-decode-execute cycle picture on the right.
Random Access Memory (RAM)	A temporary storage for the computer. It stores unsaved works and open programs.
Hard Drive	A storage device that holds data permanently for when the computer is switched off.
Graphics Card	Processes all of the instructions to do with graphics on the screen. Takes the load off the CPU.
Power Supply Unit	The part of the computer that gives power and electricity to all of the other parts.

FETCH Instruction → DECODE instruction → EXECUTE instruction

Teach-ICT.com

Different Types of Storage	
Optical	A type of storage that uses a laser to make marks on a disk to store data permanently. These marks can be read by a laser to put data back into a computer.
Magnetic	A type of storage that uses magnetism to magnetise parts of a disk to store data.
Solid State	A type of storage that has no moving parts. It uses electricity and switches to store data.

Types of Software	
Applications	The programs on the computer that do something useful for you as a human being.
Utilities	The programs on your computer that are responsible for how the computer runs and is maintained.
Operating System	The software that manages and runs all of the hardware on your computer.

Year 8 ICT & Computer Science

Python Programming

SCAN ME
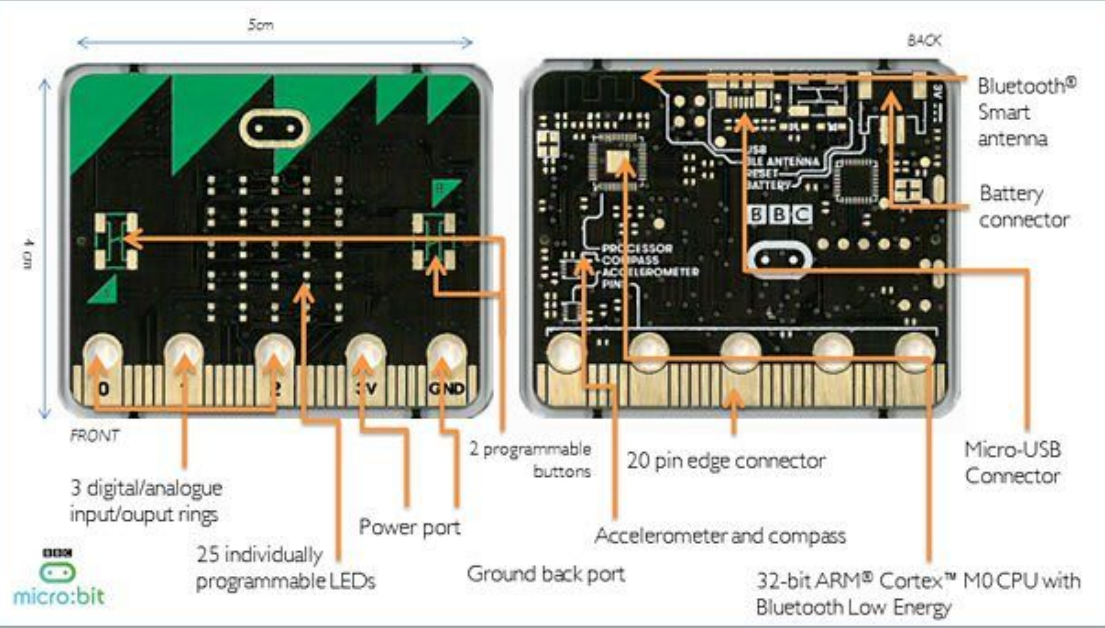
BBC Microbit	
Sensor	An input device for a computer that can measure part of the outside world. We can use these in programming to trigger part of our code to work when something in the outside world happens.
Accelerometer	A type of sensor that can measure if the device has moved or not and how far it has moved and in what direction.
Thermometer	A type of sensor that can measure the temperature.

Key Terminology	
Python	A text based programming language that is very close to written English.
Algorithm	A set of steps or instructions to complete a task.
Variable	A place to store a single piece of data.
Input	Where data is entered into a computer by a user/human.
Output	Where data is displayed by the computer. Examples include: text, images, sound, or video displayed on a monitor or through speakers.
Assignment	When one variable is set equal to another e.g. x = y
Sequence	When code is run in a specific order, usually from top to bottom.

Selection
IF
ELIF
ELSE
	Also called a decision, when a program takes a course of action based on an answer.
	`if answer == 0:`
	    `print("Even")`
	`else:`
	    `print("Odd")`

Loops
While
For
	When one or more lines of code are repeated.
	`for i in range(11):`
	    `print ("The count is: " + str(i))`

Year 8 tackling a design brief

Karim Rashid

- Karim Rashid is an Egyptian-born and Canadian-raised industrial designer.
- His designs include luxury goods, furniture, lighting, surface design, brand identity and packaging.
- Time magazine has described him as the "most famous industrial designer in all the Americas" and the "Prince of Plastic".
- He is based in New York City, as well as Belgrade, Miami and Mexico.
- He has over 3000 designs in production and has won over 300 awards.

Theme for the Project - scamper

S Substitute - Replace a part of your product/idea with another

C Combine
Combine ideas, processes or products into one more efficient idea

A Adapt
Adapt an existing idea to solve a problem you had before

M Modify
Modify an aspect of your situation or problem, try magnifying or minimising them

P Put to another use
Put current processes or products that were intended for a specific purpose to another use

E Eliminate
Eliminate or simplify an idea to improve it, but also to identify it's most important aspect

R Reverse
Reverse the orientation, direction of a process or product, do things the other way around.

Design Movement/Art Style

What is Memphis?

- In the early 80s, Italian designer and architect Ettore Sottsass founded Memphis, a group of artists and designers who became known for their bright and bold furniture design
- Although many people ridiculed their work, the Memphis group were groundbreaking. Their use of clashing colours, haphazard arrangements and brightly coloured plastic laminate was previously unseen. At the time, objects were usually designed to be functional, not decorative. Memphis changed this with a more creative approach to design, where they poked fun at every day objects by designing them in a way that was unusual.
- One of the members of the Memphis group, Nathalie Du Pasquier, collaborated with Danish company HAY to create Memphis-esque patterned bags in 2013. A year later, she designed a collection for the fashion company American Apparel. Elsewhere in fashion, Memphis' work has served as the inspiration for fashion collections by designers such as Dior and Missoni.
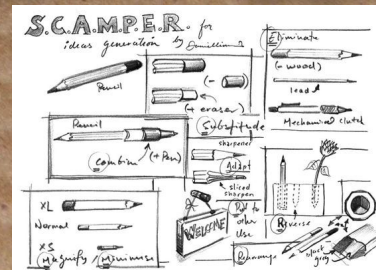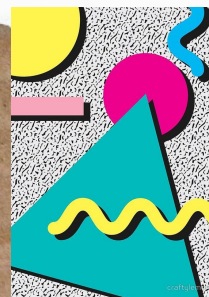
Drawing Style/Skill/Technique

A **mind map** is a diagram which shows ideas. Normally, a word is placed in the middle, which is your main theme. From this, words are generated and placed around the outside which are linked to the middle word. Eg Colour - bright - vibrant - primary.

1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000	2010	2020

Year 8 Art

Alecks Cruz

5 facts about the designer

1. Born in Chicago in 1984, Alecks is a self-taught visual artist and graphic designer
2. 2011 when Alecks began gaining local recognition by winning design competitions.
3. He explores the composition of individual letters and the unique beauty that each character has to offer.
4. Alecks took his love for graffiti art and constructs cardboard graffiti pieces that quickly became his trademark.
5. His work shows arrows, barcodes and colours that pop out amid hard angles, straight sides and swooping edges.

Design Movement/Art Style

What is Graffiti?

- Graffiti art as a term refers to images or text painted usually onto buildings, typically using spray paint. Graffiti is marks, scratchings or drawings made on a surface in a public place.
- Graffiti art has its origins in 1970s New York, when young people began to use spray paint and other materials to create images on buildings and on the sides of subway trains. Such graffiti can range from bright graphic images (wildstyle) to the stylised monogram (tag).
- Today, many graffiti are very complicated mixtures of writing and pictures.When done without a property owner's permission it is considered vandalism. Sometimes it is just a person's name or a rude word. Sometimes it is as a public political protest.

Drawing Style/Skill/Technique

A **stencil** is device for applying a pattern, design, words, etc., to a surface, consisting of a thin sheet of cardboard, metal, or other material from which figures or letters have been cut out, a coloring substance, ink, etc., being rubbed, brushed, or pressed over the sheet, passing through the perforations and onto a surface.

Theme for the Project - Urban Art

Definition:

Tonal pencil drawing
Whether drawing realistic or abstract subjects, an understanding of tone, the variations of light and shade, is important.

A variety of pencils are required to create a tonal study. The B range is soft and dark and more suitable than H pencils for shading and tonal drawings.
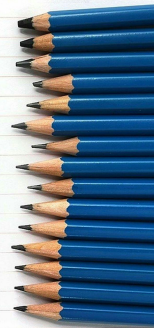
Study the different shades of light and dark in your subject. These tones are dependent on where the light source is. Work on your confidence when applying your tones. It is a common mistake to have little difference between the darkest and lightest areas of a drawing. This can make your results seem flat.

Objects are three dimensional, so the tone will change over the surface. Think about the direction and distance between your marks when shading. Diagonal shading or shading against the grain can flatten the appearance of a form.If shading using cross-hatching, think about the closeness of the crossing lines - the closer the lines, the darker the shading.

Year 8 natural form

Andy Goldsworthy

5 facts about the Artist

- Andy Goldsworthy (born 26 July 1956) is a British sculptor, photographer and environmentalist who produces site-specific sculptures and land art situated in natural and urban settings. He lives and works in Scotland.
- Land art is art that is made directly in the landscape, sculpting the land itself or making structures in the landscape using natural materials such as rocks or twigs.
- He documents extensively through photography
- Most of his work is created outside in remote locations that have been specifically chosen for their personal significance.
- Andy Goldsworthy's sandstone arch is one of his largest sculptures of this type.

Design Movement/Art Style

What is the Arts and Crafts Movement?

- Arts and Crafts was a design movement initiated by William Morris in 1861 which aimed to improve the quality of design and make it available to the widest possible audience
- Morris emphasised simple functional design without the excess ornament and imitation of past typical of Victorian styles. Wallpapers or fabrics were based on natural motifs, particularly plant forms treated as flat pattern.

Drawing Style/Skill/Technique

Botanical illustration is the art of depicting the form, colour, and details of plant species, frequently in watercolor paintings. They must be scientifically accurate but often also have an artistic component and may be printed with a botanical description in books, magazines, and other media or sold as a work of art

Theme for the Project - Mono Printing

The monoprint is a form of printmaking where the image can only be made once, unlike most printmaking which allows for multiple originals.

An impression is printed from a reprintable block, such as an etched plate or woodblock, but in such a way that only one of its kind exists, for example by incorporating unique hand-colouring or collage.

The term can also refer to etchings which are inked and wiped in an expressive, not precisely repeatable manner; to prints made from a variety of printing elements that change from one impression to the next; or to prints that are painted or otherwise reworked by hand either before or after printing.

The beauty of monoprinting lies in its spontaneity and its allowance for combinations of printmaking, painting and drawing media.

1800s	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000	2010	2020

Year 7 Cultural Understanding

British Values

- The British are the creation of invaders and migrants, including Celts, Romans, Anglo-Saxons, Vikings, and Normans.
- Today we live in a society that should show mutual respect for and tolerance of those with different faiths and beliefs, and for those without faith.
- Sports and literature are among the UK's cultural claims to fame. Soccer, rugby, cricket, boxing, and golf were all invented in Britain.
- Kings once ruled with advice from a council of religious leaders and nobles. Today, the monarch (which can be a king or queen) has no real power.

Artwork information

From blacksmithing to basketry, from weaving to woodturning, we have an incredible range of heritage craft skills in the UK and some of the best craftspeople in the world.

African;

- There are 54 countries in Africa - and 9 territories -with a total of more than 1.1 billion people living on the continent, which is 15% of the world's total population.
- Most of the African people are Christians and Muslims. In North Africa and many West African countries, most people follow the Islam.
- There are also almost 10% of Africans that follow traditional religious rituals which means they have traditional healing rituals such as bone-throwing, 'magic' and herbal medicine and celebrating the spirit of the ancestors.
- In Africa, you will find some of the largest mammals on this planet.

Artwork information

There are 5 elements of African art that are used to describe the aesthetics of African art. These are:
1. Resemblance to a human figure.
2. Shiny and unflawed skin.
3. Youthfulness representing vitality and fertility.
4. Reserved demeanor representing a person in control.
5. Balance and proportion through material choices.

Native American;

- Native Americans lived in the United States for a very long time before Christopher Columbus discovered America.
- The first people to live in a land are called indigenous peoples.
- The Native Americans were grouped into tribes or nations usually based on the area they lived in and their culture such as their religion, customs, and language.
- The Native Americans did not write down or record their history, so we have to find out about their history in other ways.

Artwork information

Evolving from simple cave drawings and carvings traditional American Indian art grew to include intricate art in such forms as jewelry, beadwork, weaving, pottery, paintings, carvings, masks, quillwork (embroidery), and totem poles. Throughout their history their art has reflected their culture, lifestyle, and environment.

Aboriginal;

- Aboriginal Australians is a western term for the people who are from the Australian mainland and many of its islands
- Aborigines have lived in Australia for over 40,000 years, and it is believed that they came from areas of Asia. These original Australians were hunter-gatherers.
- The didgeridoo is one of the world's oldest musical instruments and is made from limbs and tree trunks hollowed out by termites.
- Dream time refers to the Indigenous understanding of the world's creation.
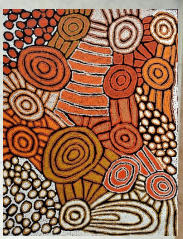
Artwork information

The earliest Indigenous art was paintings or engravings on the walls of rock shelters and caves which is called rock art. People believe that dots were used in artwork to hide information from white men when the Aboriginal people became afraid that they would be able to see and understand their sacred, private knowledge.

Drama Keywords	
Thought Tracking	Thoughts of a character are heard out loud, usually in a tableau. 'Tracking their thoughts' in the moment.
Dialogue	The words said in a play - conversations between characters.
Monologue	A section of the script spoken by a single actor alone on stage.
Hot seating	'Hot seated'- The actor answers questions about their feelings, thoughts- as the character. Like an interview.
Projection	For your voice to be used loudly and clearly.
Tone of voice	The emotion HEARD in your voice of this character.
Physicality	The mannerisms & body language of a person, especially when over-the-top or exaggerated.
Spotlight	A 'Spot'/Circle of Light in a small area- to focus on less actors & smaller space.
Backlight	Light coming from upstage, behind the scenery or actors, to separate them from the background.

Drama techniques, skills and lighting.

Context:

Creating Character:
- **'Stereotype Characters'-** We will be exploring 'everyday characters' in our society & how we can show them in Drama performance through voice (how you will speak), gesture (how you will move your arms, hands), expression (how you will use your face) & body language (how you will sit, your posture, as this character.)
- **To create your new character-** You will be using your knowledge of character skills & techniques from Year 7; for example 'Shipwrecked' Script work & 'Encountering An Alien'. Remembering your use of voice, gesture, interaction with other characters & your use of written dialogue (words spoken of the character.)
- You will be writing, setting & giving ideas for blocking (Performing) this monologue as your character, including your feelings, emotions & thoughts as this character.
- This term, we will need to lots of discussions of our performance ideas, with drawings of our set designs (what will be on stage), costume designs (what the actors will wear), prop design (what they will use on stage) & lighting design (the lights that fill the stage, to create different locations & atmosphere.)

Use of Practitioners, Performance Spaces:

Performance Space: *Proscenium Arch* - An arch/frame is created & the Audience have one view point.

Proscenium Theatre

The life of a character should be an unbroken line of events and emotions, but a play only gives us a few moments on that line - we must create the rest to portray a convincing life.
— Constantin Stanislavski —
AZQUOTES
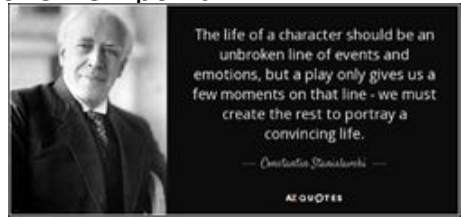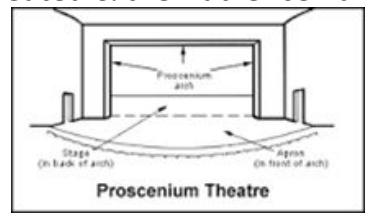
Practitioner: *Stanislavski* - He wanted people to experiment to create a character. He believed that you should use everyday language to create a natural/ realistic play, using real settings and 'ordinary' people.

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Drama Keywords

Mime	Communicating emotion, meaning or idea without words, using only gesture, expression and movement.
Physical Theatre	Performances which incorporate dance elements into a dramatic theatre performance.
Stage Combat	Choreographed fight scenes to give the illusion of physical combat without harming any of the actors.
Split staging/ Cross-cutting	Two or more pieces of action on stage at one time. Action freezes on one scene before the next continues.
Soundscape	Using sounds to create the aural environment of a scene. This can be done by the actor vocally by making noise(s) or by repeating words/phrases.
Aside	Lines spoken by an actor to the audience and not supposed to be overheard by other characters on stage.
Pace	The speed the dialogue is delivered to the audience.
Intonation	The rise and fall of a voice when speaking.
Wash	Covers the whole stage in light allowing the audience to see everything.

Context:

Shakespeare:
- You will be exploring three Shakespearean plays- 'Romeo & Juliet' (gang rivalry, romance & tragedy), 'Hamlet' (revenge, murder, tragedy) & 'Macbeth' (Witch craft, creed, tragedy).
- We will each exploring these plays through script work (looking at the words written, with meanings & interpretation- how we show this in performance) & also looking at blocking/direction- if you were setting this scene, what would this look like? Where would the characters stand? Would they have any props?
- You will apply the main performance skills to these scripts- the voice/accent (how will they speak to each other?), expression (how will they look at each other & react?), body language (their posture, stance) & gestures (how they communicate through their arms/hands) including mime & use of Physical Theatre.
- Remember; We will be discussing our ideas in pairs/with the class, & showing our ideas through designs in staging, costume, lighting, props.

Performance Spaces:

Performance Space:

Traverse - Form of staging where the audience is on either side of the acting area.
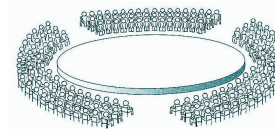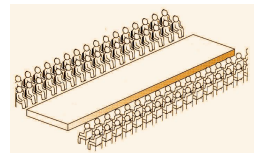
In the round - The acting area is surrounded by the audience.

Thrust - The stage projects into the auditorium so that the audience is seated on at least two sides of the extended piece.

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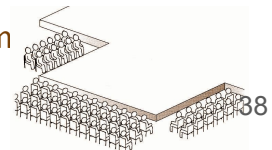
Morals and Ethics - Pursuit of Happiness

Dhamma	The **teachings of the Buddha** and the **Universal Law**. Important to Buddhists because by following it they will reduce their own suffering and the suffering of others, which is the ultimate aim of Buddhism
Three Marks of Existence	1. **Anicca** (impermanence): Everything changes and **nothing lasts forever**. Failure to recognise this leads to clinging and suffering, whereas awareness of it results in letting go of attachment and suffering.
	2. **Anatta** (no fixed self): **There is no 'you'** that is permanent or eternal. Awareness of this can help you become less angry when someone harms 'you'.
	3. D**ukkha** (unsatisfactoriness of life, suffering): **Suffering is an inevitable part of life** and can only be overcome by becoming enlightened.
The early life of the Buddha	**Siddhartha Gautama** was born an Indian prince around 2500 years ago. He grew up surrounded by **luxury** and never experienced hardship or suffering.
The Four Sights	Siddhartha came across **a sick man, old man, dead man and holy man**. These inspired him to give up his life of luxury and leave his wife and child.
The Buddha's Enlightenment	Siddhartha **meditated** under a tree and was tempted by the demon **Mara**. Over **three watches** of the night he became enlightened and from then on known as the Buddha.
Nibbana	Literally means '**blown out.**' **Freedom from suffering and rebirth.**
Four Noble Truths	1.**The truth of suffering** (dukkha): Life is full of suffering.
	2. **The truth of the causes of suffering**: Suffering is caused by **craving (tanha)** and also by the **Three Poisons** of **ignorance, greed and hatred.**
	3. **The truth of the end of suffering**: Suffering can be ended by ending craving and the three poisons. When a person ends suffering they become enlightened and achieve **nibbana.**
	4. **The truth of the path to end suffering**: The path end suffering is the **Middle Way** and consists of eight practices (the **Eightfold Path**) that are sometimes grouped into three sections (the **Threefold Way**).
The Threefold Way and Eightfold Path	<table><tr><th>Aspect of Eightfold Path</th><th>Explanation</th></tr><tr><td>Right Speech</td><td>Speak truthfully and kindly.</td></tr><tr><td>Right Action</td><td>Practice the five moral precepts.</td></tr><tr><td>Right Livelihood</td><td>Have a job that does not cause suffering.</td></tr><tr><td>Right effort</td><td>Work hard to become enlightened.</td></tr><tr><td>Right mindfulness</td><td>Become aware of yourself and the world</td></tr><tr><td>Right concentration</td><td>Develop focus and concentration.</td></tr><tr><td>Right understanding</td><td>Understand the dhamma.</td></tr><tr><td>Right intention</td><td>Follow the path with the right intention.</td></tr></table>
Key quote	*"But if any one goes for refuge to the Buddha, the Dhamma and the Sangha he perceives with proper knowledge the four noble truths: suffering; the cause of suffering, the end of suffering and the noble eightfold path leading to the end of suffering."* The Buddha in the Dhammapada verses 190-191
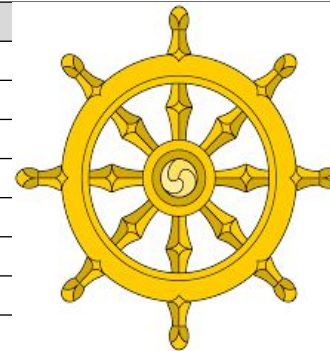
'Money can buy happiness.'

'We do not need suffering in our lives.'

'The most important thing in life is happiness.'

'We should be thankful for what we have got.'
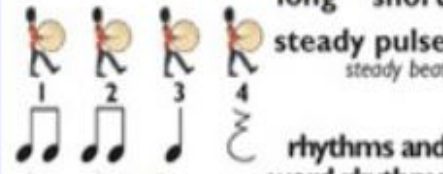
'You should make the most of the life you have got.'

'We always want what we cannot have.'

'Social media is damaging your mind.'

P	Point	First and foremost... additionally...	What final judgements can we make? Do you agree with the questions? Why? Why not? IS there a definitive answer? Why? Why not?
E	Example / Evidence	As is shown by Quote...	What are the causes / consequences? Are any positives / negatives? What are the criticisms? What are the differences within Christianity / Islam? What are the differences between Christianity / Islam?
E	Explanation	This means...	Are there any similarities between the teachings / religions / your arguments? What are the main differences / contrasts?
D	Development	Furthermore... Quote... Which highlights / shows / exemplifies...	Link all paragraphs to the questions. How does your evidence answer the question?
Must include		Optional	Use the key teachings and quotes
Specify religious believers as Christians and / or other religion Religious beliefs and quotes / teachings in PEED Different viewpoints from within or between religions		Non religious beliefs in PEED Your general opinion on the question Include views that differ both within and between religions	Use keywords Use key content

MUSICAL ELEMENTS
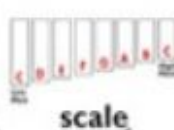
DURATION — Lengths of sounds/silences
- long   short
- steady pulse — steady beat
  1 2 3 4
- rhythms and word rhythms
  spi-der spi-der bee shh!

PITCH — How high or low a note sounds
- high   low
- ascending — getting higher
- descending — getting lower
- scale — a set of tuned notes
- pentatonic — a 5-note scale

DYNAMICS — Volume of sounds
- loud   quiet
- crescendo — getting louder
- diminuendo — getting quieter

SILENCE — No sound
- shh!

TEMPO — Different speeds
- fast   slow
- accelerando — getting faster
- rallentando — getting slower

TIMBRE — Different types of sounds — tone colour
- vocal
- body percussion
- tuned   untuned
- instrumental
- environmental
- electric

TEXTURE — Combination of sounds
- solo
- accompaniment — vocal / instrumental
- ensemble
- polyphonic — combinations of melodies (tunes)
- polyrhythmic — combinations of rhythms
- chords — groups of notes sounding together
  A Minor   G Major

STRUCTURE — Organisation of sounds — form
- verse/chorus
- round 'London's Burning'
- 12 bar blues
- question & answer
- call & response
- ostinato — repeating pattern
- beginning/middle/end
- ABA — ternary form — same at the beginning and end
- ABACA — rondo form — first section keeps coming back

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MUSIC - PART 1
KEYWORDS - ITALIAN TERMS

TEMPO - SPEED MARKINGS

Largo - very slow
Adagio - slow
Maestoso - Majestically
Andante - at a walking pace
Alla Marcia - like a March
Allegretto - quite fast
Allegro - fast
Vivace - very fast
Presto - super fast
A Tempo - in time

DYNAMICS - VOLUME MARKINGS

pp - pianissimo - very quiet
p - piano - quiet
mp - mezzo piano - quite quiet
mf - mezzo forte - quite loud
ff - fortissimo - very loud
cresc. - crescendo < gradually getting louder
dim. - diminuendo > gradually getting quieter

Note Values, Rhythms and Rests

1 semibreve
4 beats each

2 minims
2 beats each

4 crotchets
1 beat each

8 quavers
½ beat each

16 semiquavers
¼ beat each

Key signature

Treble Clef

Music Stave

Bass Clef

Time signature

Reading Music

Treble Clef Notes

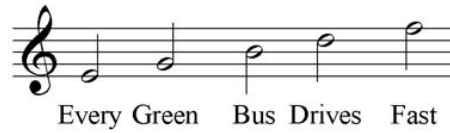Treble Clef

E F G A B C D E F

Line Notes

E G B D F

Space Notes

F A C E

Notes altogether

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

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

Bass Clef Notes

G B D F A   A C E G
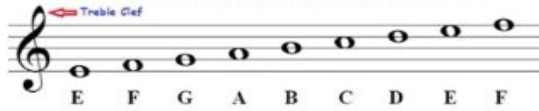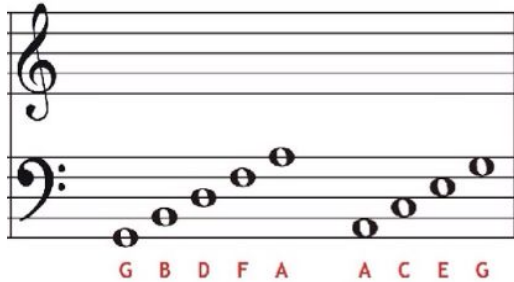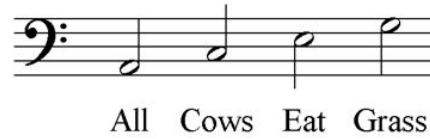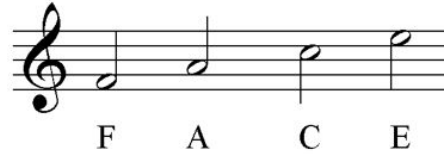
Finger Numbers - Hands on - How to play the keyboard.

C   C 4 3 2 1   C 2 3 4 5   C

Left Hand   Right Hand

Mnemonics:

Every Green   Bus Drives   Fast

F   A   C   E

Green Buses Drive   Fast Always

All   Cows   Eat   Grass
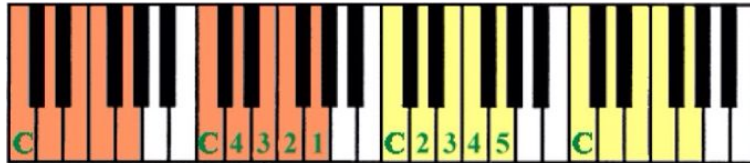
TEXTURE - LAYERS OF SOUND

Polyphonic - 2 or more simultaneous independent melody lines
Monophonic - 1 single melodic line.
Homophonic - a melody part and subsidiary accompanying parts.

ARTICULATION - How to play the notes

| Word	Common Abbreviations	English Definition and Description	Symbol
Accent		Marked. Note to be played more forcefully than those before or after it	
Fermata		To stop/ pause. The note should be longer than its originally intended value.	
Forza	fz	With force. Strongly accented	
Glissando	Gliss.	Glide. A rapid glide or slide up or down between two notes, playing all of the notes in between.	
Legato		Tied together. Notes are played with no breaks in between , grouped by a slur marking	
Marcato	Marc.	Marked. Note or passage to be played more forcefully than those before or after it	
Portato/ Mezzo-staccato		To carry. Notes are played only slightly detached. A gentle pulse-like touch on each note	
Rinforzando	rfz	Reinforcing. A more gradual emphasis than sforzando.	
Sforzando	Sfz.	Using sudden force.	
Staccatissimo		Very detached. Notes are played as an exaggerated staccato.	
Staccato	Stacc.	Detached. Notes are played short and separated from one another	
Tenuto		Sustained. Hold the note for its full length	

STRING FAMILY

violin
viola
cello
double bass
harp

BRASS FAMILY

trumpet
French horn
tuba
trombone

WOODWIND FAMILY

piccolo
flute
bass clarinet
saxophone
clarinet
oboe
English horn
bassoon
contra-bassoon

PERCUSSION FAMILY

triangle
woodblock
guiro
maracas
tambourine
claves
cymbals
snare drum
bass drum
temple blocks
xylophone
orchestra bells
timpani

44

Music

Key Words

Sharp #	Raises a note by 1 semitone e.g C to C#
Flat ♭	Lowers a note by one semitone e.g D*b* to C
Tone	A tone is a neighbouring note made up of 2 semitones e.g C-D is a tone.
Semitone	The smallest difference between two different notes eg C- C#
Enharmonic	Notes that are of the same pitch but have different names e.g F# and Gb
Key signature	An arrangement of sharps or flats, placed at the start of a piece of music to indicate which notes need to be played as black notes.
Ostinato	A continually repeated phrase or rhythm.

C major scale
C minor scale
Chromatic scale
Pentatonic scale
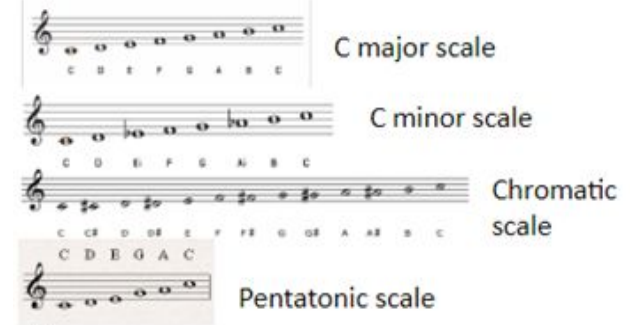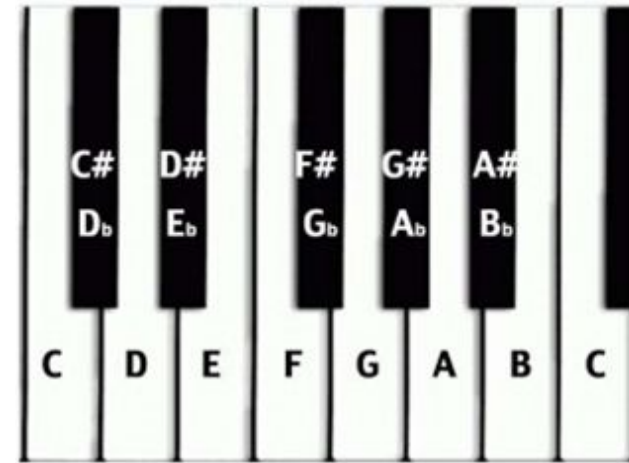
Scales	A series of notes which follow after one another.
Major scale	Has 8 notes. Semitones appear between the 3rd and 4th and the 7th and 8th notes. C major is the only major scale played completely on white notes
Minor scale	Has 8 notes. The arrangement of tones and semitones make it sound Egyptian. It sounds sad.
Chromatic scale	Has 13 notes altogether. Every note has a semitone in- between. The player weaves between black and white notes. Chromatic means colourful.
Pentatonic scale	Has only 5 notes. Sounds Asian. Can be played on black notes only.

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Music - African Drumming

Master Drummer- the leader who performs the calls during call and response

Call & Response-1 person plays/sings, responded to by a group, like a musical conversation

Rhythm- notes of different lengths that create a pattern, fitting to a regular beat/ pulse

Cyclic rhythm- a rhythm which is repeated over and over again (looped)

Polyrhythm - several rhythms performed at the same time. Creates a 'polyphonic' texture.

Syncopation - some notes cross the main beat and sound 'early' emphasising the weak 'off beats'

Improvisation - music which is created 'on the spot' - not previously prepare

Bass sound - striking an African drum in the middle producing a 'hollow ' sound
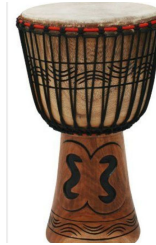
Tone sound - striking a drum between the middle and the edge. Sounds 'shallower'/ higher pitch

Talking Drum

Djembe

Dundun

Tone sound   Bass sound

Analyse- Examine, listen in detail in order to explain, **interpret the** music.

Appraise - Assess the quality of work according to criteria

Dynamics - volume

Tempo - speed

Texture - the layers of sounds

Structure - the overall management and creation of the different sections in a piece of music

Binary Form - a piece of music in 2 different sections (A B)

Ternary Form - a piece of music in 3 sections (A B A)

Rondo Form - a piece of music in 5 sections (A B A C A)

Links - the music played in between 2 main sections of music for the purpose of joining them together

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COMPONENTS OF FITNESS

Cardiovascular Fitness – being able to exercise the whole body for long periods of time

Agility – Change direction quickly with control

Speed – the rate in which you perform a movement

Strength – the amount of force a muscle can generate

Power – performing a forceful movement as quickly as possible

Coordination – moving two or more body parts together

Muscular Endurance - repeatedly using the same muscles without them getting tired.

Balance - maintaining your body stable when static or moving.

Flexibility - the range of movement at a joint.

Body Composition - percentage of bone, muscle and fat.

Reaction time - ability of your body to reaction to a stimulus.

- 12 Minute Cooper Run
- Standing Stork Test
- Bleep Test
- Sit and Reach Test
- 1 Minute Press Up Test
- BMI
- 1 Minute Sit Up Test
- 30 Meter Sprint
- Illinois Agility Test
- Vertical Jump
- Ruler Drop Test
- Hand Grip Test
- Standing Broad Jump
- Alternate Hand Wall Throw Test

METHODS OF TRAINING

Continuous – working with no rest over a long period of time

Interval– periods of high intensity work and rest

Resistance – uses free weights or machine to improve strength and power

Circuit – a series of stations to improve specific components of fitness

Fartlek – 'speed play'. Continuous running of a variety of intensities and terrains.

Plyometric – explosive movements to improve power

Track Events

Sprint 100m, 200m, 300m, 400m

Middle Distance 800m, 1500m, 3000m

Hurdles 80m (G), 100m (B), 300m (G), 400m (B)

KEY TERMS

Skills / technique

Start

Posture

Pacing

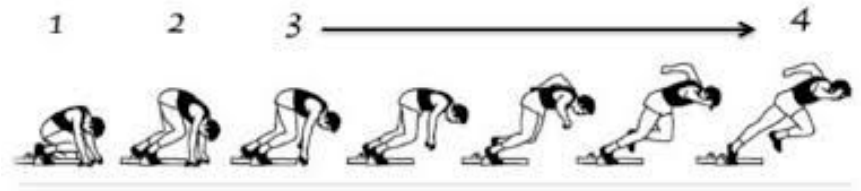Leg and arm action

Coordination of legs

and arms

Stride pattern

Running Track

Tasks

1. Identify the start positions for each event.
2. Label the finish line.
3. Complete all events up to 1500m and record your time.
4. Look at the key terms and identify something you could work on to improve your time.

48

Year PE 8 - Athletics

The sport of competing in track and field events, including running races and various competitions in jumping and throwing.
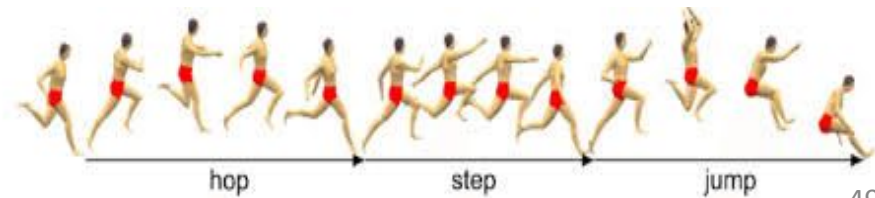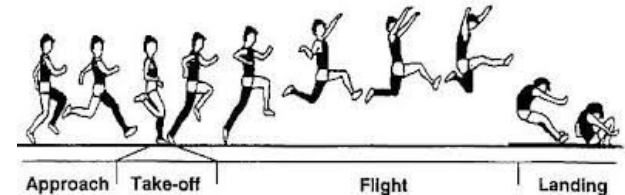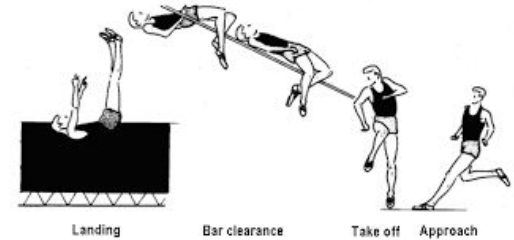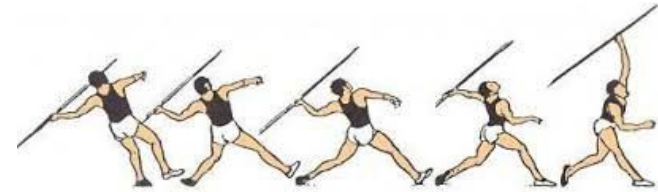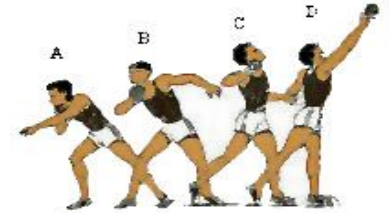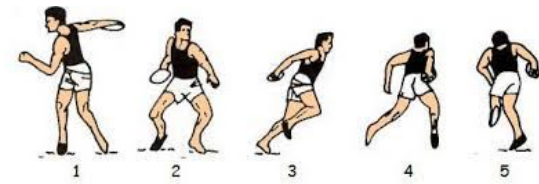
Field Events

Shot Put

Discus

Javelin

Long Jump

Triple Jump

High Jump

You can find out more about British athletics by visiting this website: www.britishathletics.org.uk/athletes

Key terms

Jump

Run up

Take off

Flight

Landing

Throw

Initial stance

Grip

Preparation

Movement

Release

Recovery

BRITISH ATHLETICS ATHLETES

1 2 3 4 5

A B C D

Landing   Bar clearance   Take off   Approach

Approach   Take-off   Flight   Landing

hop   step   jump

Reading Skills and Literacy

Key Vocabulary 1

Non-fiction	An informative book that is true and based on real events and facts.
Fiction	Books that are written from the imagination and not based on facts.
Prologue	A section at the start of the book. Usually establishes the setting, and gives background details to the main story.
Epilogue	A section at the end of a book that serves as a conclusion to what has happened in the book.
Blurb	A short description of a book, usually found on the back cover.
Preface	An introduction to a book written by the author, but it is not part of the story.
Author	A writer of a book, article, or document.

Key Vocabulary 2

Narrator	A character who recounts the events of a novel.
1st person narration	A type of narrative in which the main character relates their story from their own perspective, for example, the text would read 'I went to school.'
2nd person narration	A type of narrative where the story is told in the voice of the onlooker, which is you, the reader. For example, the text would read 'You went t--o school'.
3rd person narration	A type of narrative where the story is told using a third-person pronoun such as 'he' or 'she'. For example, the text would read 'She went to school.'
Narrative	A spoken or written account of connected events; a story.
Genre	Means the style or type literature. Literature has four main genres: poetry, drama, fiction, and non-fiction.
Subgenre	This is then the style or type of literature within one of the above genres. For example, Horror Fiction is a subgenre of fiction intended to scare the reader.

Key Vocabulary 3

Setting	The time and place of the story.
Context	The background and environment within which the author lived and worked.
Plot	The sequence of events that make up a story.
Protagonist	The main character, or one of the major characters in a novel.
Antagonist	The character in a story who is presented as the main opponent of the protagonist.
Past Tense	Used to describe things that have already happened. 'He walked to school.'
Present Tense	Used to describe things that are happening right now. ' He walks to school.'
Future Tense	Describes things that have yet to happen. 'He will be walking to school.'

Reading Skills and Literacy

| Premise	The main idea behind a story - it supports the plot.
Plot Twist	An unexpected turn of events in a story.
Hook	The opening of a story that grabs the reader's attention and 'hooks' them in.
Cliffhanger	When a story or plot line ends suddenly or a large plot twist occurs and is left unresolved.
Dialogue	A conversation between two or more people as a feature of a book, play, or film.
Quote	To repeat or copy the words from a text or speech by another person.
Paraphrase	To take what someone else has written or said and put it into your own words.

Key Vocabulary 6

Empathise	To put yourself in the shoes of a character and understand how they feel.
Verbalise	Express your ideas or feeling in words, especially by speaking out loud.
Predict	Based on what has already happened, making assumptions about what will happen next.
Critic	A person who makes or gives a judgment of the value, worth, or quality of a book or text.
Recommend	To suggest that a book would be good or suitable for a particular person.
Deduce	What you can understand based on the evidence in the text.
Scan	To look at the text to find the key words.
Skim	To read over the text quickly to get the main idea of what is going on.

"BOOKS GIVE A SOUL TO THE UNIVERSE, WINGS TO THE MIND, FLIGHT TO THE IMAGINATION, AND LIFE TO EVERYTHING."

Plato

Acceleration through depth...
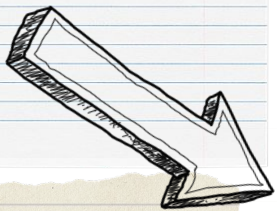
English

- ➔ Research the writer's context and explain the links between this and the writer's purpose.
- ➔ Can you make links between this text and another text you have studied?
- ➔ Can you change any words in your writing today using your knowledge organiser?
- ➔ Turn the text, or its key ideas, into another form (poem, article, letter, speech, short story, etc)

Science:

- ➔ **Content:** Using the topics you have studied so far in science, can you make any links? What understanding from other topics do you need to have for the topic you are studying now? Can you do this across biology, chemistry and physics?

- ➔ **Context:** Looking at what you have been covering during the topic you have been covering, can you put the science into a real life context? When would what you understand be important to someone's life? Can you link it to any careers and jobs?

- ➔ **Practical skills;** Look at a set of data you have collected in a recent practical. Describe and explain the trend in your data in as much detail as you can. How could you make your data more repeatable and reproducible? Can you find any errors, systematic or random? How could you reduce the error? Is your data accurate and valid? How could you make the data more accurate and improve the validity.
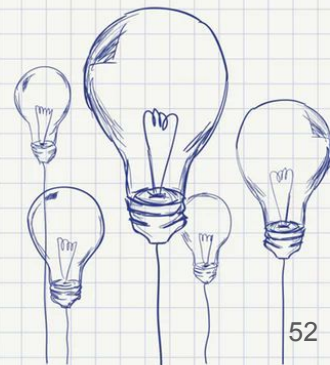
PE:

- ➔ What components of fitness apply to your sport and what fitness tests would you do to test them?

Maths:

- ➔ Please go to the NRICH postcards and select a problem to solve.

Geography

- ➔ The answer is Geography. What are 5 possible questions?
- ➔ How do you think Geography in school will change over the next 10 years with the development of new technology?
- ➔ List words associated with geography (A-Z)

MFL:

Research how to form the present tense in French either by using the link https://youtu.be/p1RfmaoYZFI or asking your teacher for a grammar sheet.

- ➔ Create a help sheet for other students to explain the rules with step by step instructions.
- ➔ Design a worksheet with an answer sheet which can be used in other French classes.

52

History:

➜ Strengthen your evidence; read through your work, can you swap any words for key terms.

➜ What parallels are there between this topic and what you have previously studied?

➜ Outline an idea of how could you teach this topic in a different way to either younger, peers or older students?

➜ Identify how this topic links to any British Values:

Democracy.
Individual liberty
Mutual respect
Tolerance of those of different faiths & beliefs.

Art/Design

➜ Explore the work of an artist or designer linked to the Art or Design movement on your KO page by producing a mini artist study. (Visit **the Tate** website)

➜ Investigate 3 different art, modelling or textile techniques. How could you apply these to an end piece?

➜ Create your own project for a class to study using the current theme of your work.

➜ Visit **the Tate** website and complete one of the activities they've created.

ME:

➜ Include two quotations from scripture in your answer.

➜ Create 5 questions that your teacher might ask you about what you have learnt about today.

➜ Transform today's learning outcomes into questions.

➜ Select 5 key terms that you have used in your work today.

➜ Create a sentence using all of these terms.

➜ Based on what you have learnt today, what do you think that you should study next lesson and why?

➜ Produce a summary of what you have learnt today. When done, reduce it to either a single sentence of three bullet points

Music:

➜ Demonstrate and improve your depth of knowledge and understanding by reading through your written work and swapping normal words for more technical 'musical' words and Italian terms.

➜ In ' listening library' tasks - extra to the written criteria requested - try and direct your listening to as many of the other different elements of music as well, and include comments and information about them also. Again use Italian terms where possible.

ICT:

➜ Learning programming is about trial and error, experimenting and trying different projects of your own. Try a project of your own or use one of the websites below to give you some inspiration. Attempt to put into practice the techniques learnt in your Computer Science lesson and extend what you can do by using online resources, there are loads available if you carry out a quick Google search.
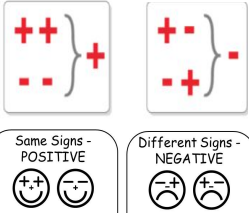
MicroPy https://bit.ly/2ychHCi

DRAMA:

➜ Discuss and Write the Changes that you would have made to your performance piece, if you could create and perform this again. (Write about the Drama Skills and Techniques used in performance)

➜ Discuss and Write the audience response and effect to your performance piece. How did they feel? What feedback did they give? Did your story, characters, intention for your piece come through to them?

➜ After performing your piece and if you could chose a different Performance Space, what would it be? Describe the performance space, what viewpoints would your audience have? How would a relationship between the actor and audience be created?
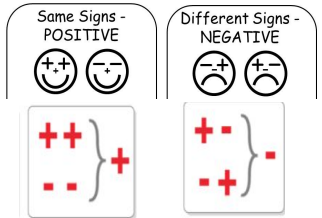
Y8 Block 1-Number Sense

Addition and Subtraction Integer Rules

The rule gives the sign of the operation when 2 signs are next to each other
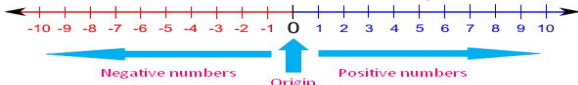

Same Signs - POSITIVE
Different Signs - NEGATIVE

6 + -3
6 - 3 = 3
-10 - +2
-10-2= -12
5- -4
5+4=9

Multiplying and Dividing Integers Rules

Same Signs - POSITIVE
Different Signs - NEGATIVE

$7 \times -4 = -28$
$-6 \times -4 = 24$
$-35 \div 5 = -7$
$-40 \div -8 = 5$

Use a number line to help you!

-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10

Negative numbers | Origin | Positive numbers

Venn Diagrams

The **intersection** is where two sets overlap.
$A \cap B$
This means **A and B**.
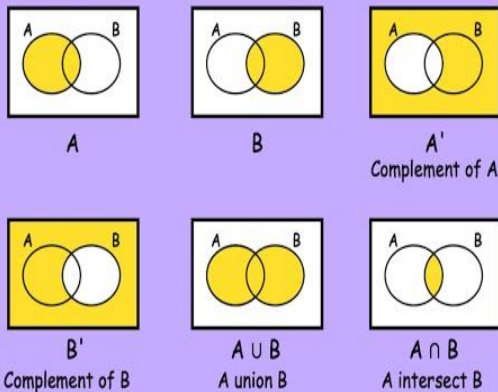AND rule

If you put two sets together, you get the **union**.
$A \cup B$
This means **A or B**.
OR rule

The **complement** of A is the region that is not A.
A'
This means **not A**.

A | B | A' Complement of A
B' Complement of B | A ∪ B A union B | A ∩ B A intersect B

Positive Integers
are whole numbers greater than zero
2   21   2002

Negative Integers
are whole numbers less than zero
-2   -21   -2002

Numerator = 1
Denominator = 4

Nice Dog

Rounding Numbers

Rounding Rules!
Find the number.
Look right next door.
5 or more?
Raise the score!
4 or less?
Let it rest!

Ordering or Comparing Fractions (smallest to largest)

Try finding a common denominator
(multiply each fraction by the denominator of the other)
OR
Convert all fractions into decimals by dividing numerator by denominator
Then put into order of size

$\frac{2}{5}$? $\frac{4}{7}$

X 7 $\frac{2}{5}$? $\frac{4}{7}$ X 5
X 7   X 5

$\frac{14}{35}$ $\frac{20}{35}$

2÷5 = **0.4**
5÷7=**0.57**

Rounding to nearest 10 etc.
1) Identify the tens digit.
32|6   The tens digit is 2, or 20.
2) Work out the next ten up.
32|6 is between 320 and 330
3) Decide if it stays or rounds up.
32|6   Use the units digit to decide. "5 or more rounds up", so 6 will round up to the next 10.
326 → 330

Rounding to decimal places:
3.2|48   3.2|48 → 3.2
1st dp 3.2
Look at the next digit. 4 stays down - stay at 3.2.

Significant figures

If something is **significant**, it is big or important. The **most significant** thing is the biggest or most important thing.

3268

3 is worth the most in this number (3 **thousand**) It is the **first** significant figure.

2 is worth 2 **hundred**, and is the **second** significant figure.

6 is worth 6 **tens**, and is the **third** significant figure.

8 is worth 8 **units**, and is the **fourth** and least significant figure.

3268 rounded to 1 sig. fig.
3268   3|268 → 3000
1 sf 3000
Look at the next digit. 2 is less than 5 - stay at 3000

3268 rounded to 2 sig. fig.
3268   32|68 → 3300
2 sf 3200
Look at the next digit. 6 rounds up – go to 3300

All other digits become a zero as they are not significant!

() **B** Brackets
² √ **I** Indices
÷ **D** Division
X **M** Multiplication
+ **A** Addition
- **S** Subtraction

Prime Factorisation

40
4 × 10
2 2   2 5

Write the number
Write any pair of factors
Continue until all the factors are prime
Write the factors from smallest to largest

$40 = 2 \times 2 \times 2 \times 5$

= $2^3 \times 5$ in **index** form

A **prime number** is a whole number that has only **two factors**: itself and 1.

For example, 7 is a prime number because it has only **two factors**: 7 and 1.

$7 \div 7 = 1$ and $7 \div 1 = 7$

1 2 3 4 5 6 7 8 9 10
11 12 13 14 15 16 17 18 19 20
21 22 23 24 25 26 27 28 29 30
31 32 33 34 35 36 37 38 39 40
41 42 43 44 45 46 47 48 49 50
51 52 53 54 55 56 57 58 59 60
61 62 63 64 65 66 67 68 69 70
71 72 73 74 75 76 77 78 79 80
81 82 83 84 85 86 87 88 89 90
91 92 93 94 95 96 97 98 99 100

Prime Numbers

Y8 Block 2 - Ratio & Proportion

Ratio

Ratio compares the size /value of **one part** to **another part**.
A ratio can be written like:
7 Hamburgers to 5 Pizzas
7:5
7 to 5
as a fraction $\frac{7}{5}$

Unitary Method

Find the **value of a single unit** by <u>dividing</u> and then <u>multiply</u> to find amount you need

3 cakes uses 450g of sugar. How much sugar is needed to make 5 cakes?
3 cakes = 450g
÷ 3
1 cake = 150g
x5
5 cakes = 750 g

Sharing in a Given Ratio

Divide 40 in the Ratio 2:3

Step 1: Find the total number of parts
For the ratio 2:3, the total parts are 2+3 = 5

Step 2: Find what one part is worth
Amount for One Part = $\frac{\text{Total Amount Shared}}{\text{Total Parts}}$
One Part = 40 ÷5 = 8

Step 3:
Multiply each part of ratio by what one part is worth
2 x 8 = 16   3 x 8 = 24
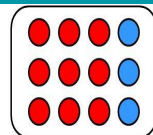Answer = 16: 24

Simplifying a Ratio

Divide all parts of the ratio by a **common factor**

red : blue
= 9 : 3
÷3   ÷3
= 3 : 1

For every three red counters there is one blue counter.

Ratio 1:n

Write the ratio 4:10 in the form 1:n
Divide each number in the ratio by **4**
This then makes the first number 1 the other number may be a deicimal
4÷4 = 1   10÷4 = 2.5
1 : 2.5

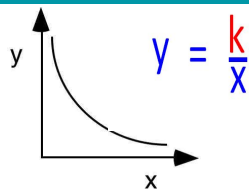## Inverse Proportion Formula & Graph

e.g.
y =speed
k= distance
x = time

$y = \frac{k}{x}$

Inverse Proportion

When one part increases the other part decreases by the same rate

e.g.
the faster a car travels, the less time it takes to reach its destination
To travel 120 miles:
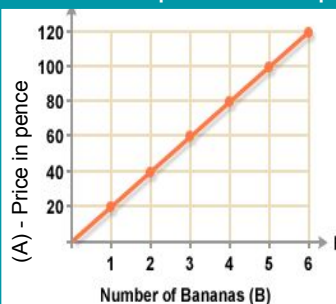60mph => 2 hours
30mph => 4 hours

Proportion

Proportion is when two ratios are equivalent.
1 out of 3 is equal to **2 out of 6**
1:3   =   2:6
The ratios can be simplified to be the same, so they are in proportion.

Direct Proportion Graph

A graph in direct proportion will always be a diagonal line passing through (0,0)

(A) - Price in pence
Number of Bananas (B)

Direct Proportion Formula

Price of apples = cost per apple x no.of apples

$y = kx$

k = constant - this number will not change
x and y = variables -these numbers will change

Symbol for Direct Proportion

∝

ny ∝
x
y = kx

Direct Proportion

Two quantities are in **direct proportion** when they increase or decrease by the same ratio.
For example if you double number of pencils you double the cost.
If you halve the number of pencils you halve the cost
12 pencils = 60p
24 pencils = £1.20
6 pencils = 30p

Definition Scale Drawing

A scale drawing is used to represent an object that is too large or too small to be actually drawn on paper.

The object is either **enlarged or reduced** in size by a certain amount.

The **scale factor** is how much the object has been enlarged or reduced by.

The first number is how long in the drawing and the second is the real length - separated by :

Scale
1cm:10cm

Scale 1:10

15cm high	x10	150cm high
20cm long	x10	200cm long

Different Types of Scale on Maps

Word/Stated Scale
1 cm = 250km
Ratio Scale
1:25 000 000   1/25 000 000
Linear Scale

kilometers

IMPORTANT NOTE

If **no** unit of measure is given, then you can choose the scale
1:200
But make it clear!!

Scale Factor of 3
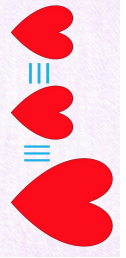All sides 3 x bigger
Scale Factor of ⅓
All sides 3 x smaller

Congruent Shapes
Identical shape size & angles
Similar Shapes
Same shape but size of sides increased/decreased by same scale factor
ANGLES STAY the SAME

Congruent Triangles When two **triangles** are **congruent** they will have exactly the same three sides and exactly the same three angles but may be turned or flipped.

SSS (Side – Side – Side)
3 sides are respectively equal

SAS (Side – Angle – Side)
2 sides and the included angle are respectively equal

ASA (Angle – Side – Angle)
2 angles and the included side are respectively equal

RHS (Right angle – Hypotenuse – Side)
Hypotenuse and one side are respectively equal

Converting Units

×1000   ×100   ×10
km   m   cm   mm
÷1000   ÷100   ÷10

= right-angle
I = same length
II = same length