

Y8 Art: Repeat Pattern

Key Figures



Damien Hirst is an English artist, entrepreneur, and art collector. He is one of the Young British Artists in the UK during the 1990s. He is reportedly the UK's richest living artist.

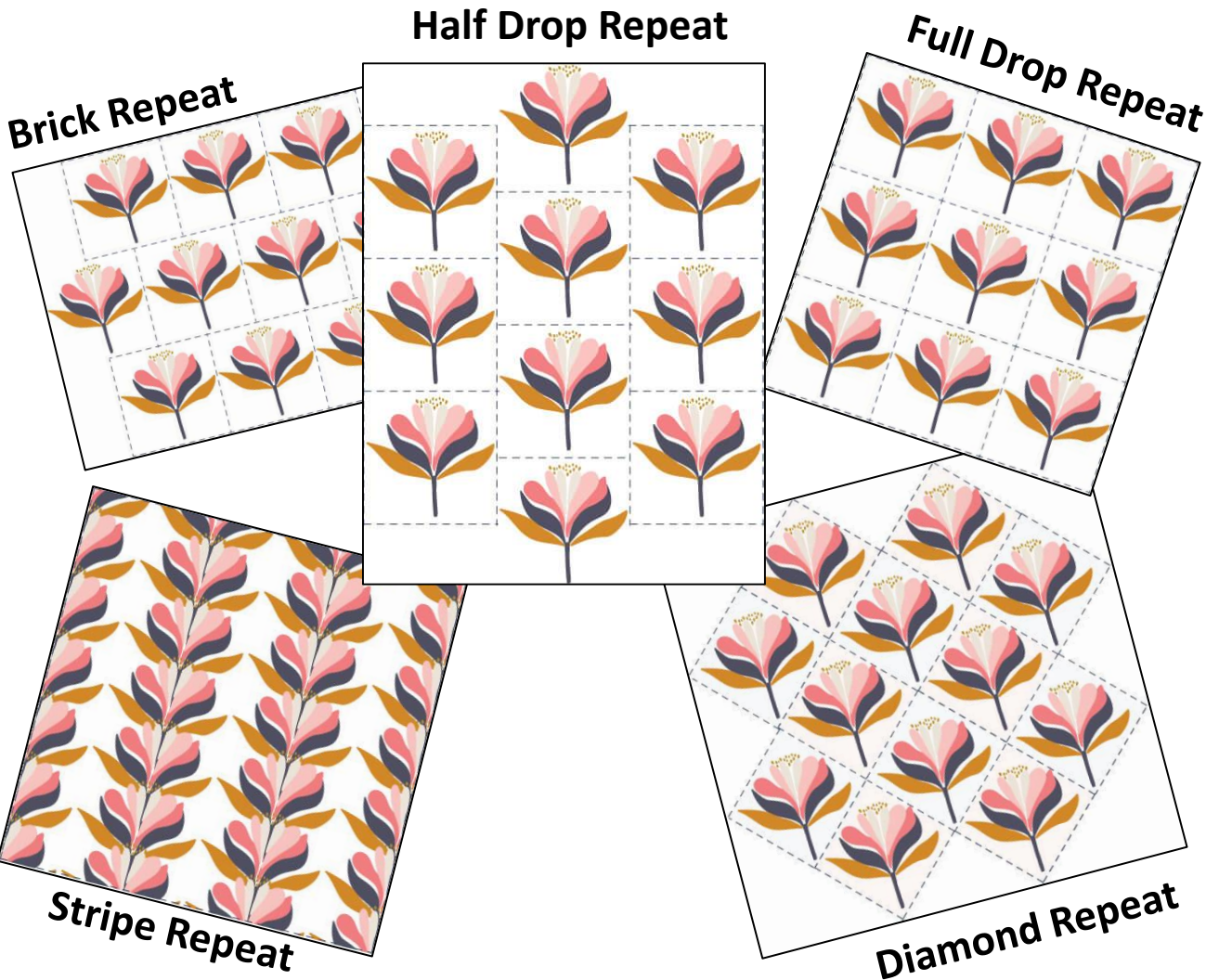


A Repeat Pattern is the **repetition of lines, shapes, tones, colours, textures and forms.**

Key Terms

Colour	Colour is what we see when light enters our eyes! Primary, colours can be mixed together to create secondary and tertiary colours.
Composition	Composition is the placement or arrangement of visual elements in a work of art.
Contrast	Contrast is the scale of difference between dark and light areas in images.
Form	A form is a three-dimensional geometrical shape
Line	Lines can be horizontal, vertical, or diagonal, straight or curved, thick or thin.
Mixed Media	A composition that includes multiple types of art materials – often layered together.
Shape	An area enclosed by a line. It can be empty and just be an outline or shaded in
Texture	Texture is the perceived surface quality of a work of art.
Tone	This could be a shade or how dark or light a colour appears
Pattern	Texture is the perceived surface quality of a work of art.

Examples



Year 8 Computing Web Development Serif WebPlus

Key Words	
Template	A pre-designed webpage that anyone can use.
Browser	A software program that allows you to browse, search, and receive various types of information on the Web .
The Internet	A network of computers across the world connected together, the internet is also the largest Wide Area Network (WAN) in the world.
World Wide Web	The collection of web pages hosted on the internet .
Search Engine	A database on the WWW that helps us to find the web pages we want.

Key Quick Build Drag And Drop Features

Text Frame Tool



Insert Picture



Navigation Bar



Button



Rollover



Social Media Links



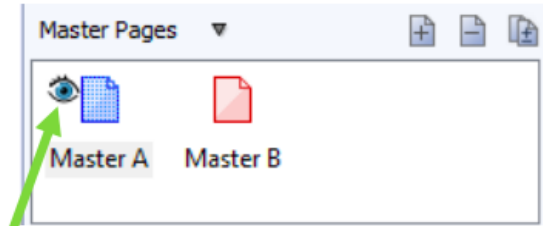
Photo Gallery



Google Maps

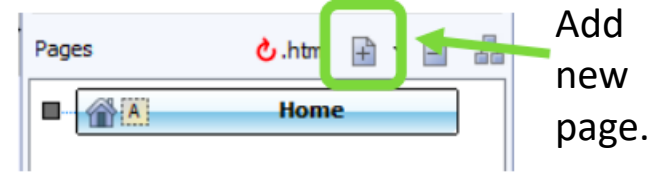


Master Page



Remember the Eye Icon means you are on that page design.

Master pages allow you to create a consistent website design. A master page provides a template for other pages, with shared layout and functionality.



Naming

Page name:

Specify page title:

File name:

Page name must also be repeated for **File name**, but with .html after it.

Fit to Dance

Context

Key Vocabulary

Strength
Training
Diet
Agility
Cardio
Fitness
Body
Mind
Wellbeing
Stamina
Flexibility

-Fitness is the our ability to exercise (to be physically active).

-General fitness is about being fit in order to lead a healthy and happy life.

-General fitness may include keeping our heart, lungs, muscles and bones strong.

-Specific fitness is about being fit in a particular area, perhaps for a sport or an occupation.

-We can improve our fitness by regularly exercising and eating a healthy diet.








Lifestyle

A healthy active lifestyle is essential for physical and mental health and wellbeing. **You should be physically active for at least 60 minutes a day. 30m in school, 30m at home #active60**

Your diet is also important. A healthy diet involves eating from the 5 food groups: Carbohydrates, Protein, Fruit and Veg, Dairy (if applicable) and Fats



Physical

Skill	Definition	How do I do this?
 Stamina	Stamina is our ability to keep doing something for a long time.	-Do not start activities too quickly, or you will tire before long. Maintain a steady and comfortable pace throughout, and speed up towards the end if you feel that you are able to.
 Speed	Speed is our ability to do things quickly.	-You can improve the speed at which you can do something by regularly practicing it. We should also make sure that we learn the correct technique for activities (e.g. sprinting technique).
 Agility	Agility is how well we can change our body's position.	-Running around things, jumping over things and balancing on things all use our agility. Agility can be improved by practicing being flexible (e.g. yoga) and well-balanced (e.g. gymnastics).
 Strength	Strength is about being strong; having power over something.	- Strength helps us to lift heavy things, strike things harder and repeat movements without making muscles tired. We can make our muscles strong by doing exercises that contract them.
 Flexibility	Flexibility is our ability to bend and stretch.	-Yoga, Pilates and stretching are all ways that we can improve our flexibility. Stay active – being inactive can make our joints stiffen up!

Year 8, Term 2

Developing From Page to Stage

Approaching a piece of script

Who is the character? - What type of person are they? What happens to them in the production and does this change them in any way?

Vocal skills – How am I going to become the character vocally?

Physicality – How am I going to become the character physically in the way I sit/stand/move?

Relationships – What is my character’s relationships to other people in the production and how am I going to show this?

Vocal Skills

Tone, pitch, pace, projection, volume, pause, accent, emphasis, articulation, inflection, phrasing, emotional range.

Main Characters

Mrs Johnston – A single mum, Mrs Johnston has a lot of children and looks older than she is. She works as a cleaning lady to provide for her family but often struggles to make ends meet. She is warm and caring and often regrets her decision to give away Edward.

Mrs Lyons – A wealthy, middle class woman who cannot have children of her own but longs to be a mother. She is a lonely woman as her husband works away on business. She hatches a plan to get the child she longs for and persuades Mrs Johnston to give her Edward. She becomes paranoid that the truth will come out and increasingly jealous of Mrs Johnston.

Mickey Johnston – One of Mrs Johnston’s twins, who is raised with his biological family, his life is often chaotic. He is suspended from school, gets his girlfriend Linda pregnant, becomes addicted to anti-depressants and accidentally kills his twin brother Edward.

Edward (Eddie) Lyons – The twin brother that Mrs Johnston gives away and is raised the Lyons’ in a privileged lifestyle. He gets a good job and eventually wins over Linda.

Historical Context

“Blood Brothers” was written by Willy Russell one of Liverpool’s most famous writers. The play is set in his hometown of Liverpool over the period of time in which he grew up. The time period is never specified but based on the events of the play it is believed to be between 1950’s and 80’s.

Key Themes in

“Blood Brothers”

- Growing up
- Friendship and loyalty
- Nature vs nurture
 - Violence
 - Class
- Fate/superstition.

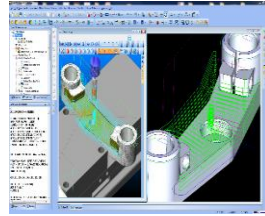
Keywords

Still Image	This is a frozen picture which communicates meaning. It’s sometimes called a freeze frame or tableau. It can provide insight into character relationships with a clear focus upon use of space/proxemics, levels, body language and facial expression.
Narration	This is an explorative strategy when spoken commentary is added to assist the audience in their understanding about the action onstage. A narrator is like a storyteller informing the audience about the plot. It also makes the drama stylised. This means that it becomes non-naturalistic because the audience are aware throughout that a story is being told and the fourth wall is broken.
Theme	This is a central idea or concept which runs through a piece of literature. It is usually essential to the plot and recurs in different ways throughout the action.

Student Knowledge Organiser

CAD – Computer Aided Design

Computer programmes are used to make complex models in 2D or 3D and these can be run through simulators or spun about 360deg to see what the design looks like.



The advantages of using CAD/CAM include:

- Fast and accurate process,
- Manufactures identical and repeatable products – compared to making it by hand
- CAD can be used to test ideas before making prototypes. This saves time and money.
- Changes and modifications can be made very quickly

Symbols for 3 examples of CAD packages are shown below:



Adobe
Photoshop



2D Design



Google SketchUp

What are the social and moral issues surrounding 3D printing?

Negatives:

- **Dangerous products** such as weapons can be printed and will be undetectable when metal detectors are used
- **Copyright issues** – people can print CAD models at home without permission. This causes manufactures to lose money and employees to lose their jobs
- Traditional manufacturing **jobs will be threatened** with advances in 3d printing
- Domestic 3d printers enable users to print unnecessary products which **wastes energy and materials resources**

Positives:

- Users will eventually be able to **customize products** with greater ease leading to more bespoke and unique products
- Advances in 3d printing will enable manufactures to **use less materials and create less waste** compared to more traditional manufacturing methods

Possible hazards on the 3D Printer can include:

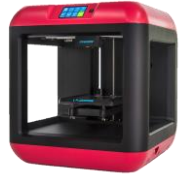
- The nozzle/head **overheating** during 3D printing
- The **bed of the 3D printer** can over heat
- **Moving parts** during the 3D printing process

You can minimise the risk of hazards during 3D printing by:

- Making sure the **enclosure/guard** is closed or in place
- **Do not touch** the heated nozzle or bed at any time
- Keep your **fingers away** from all moving parts

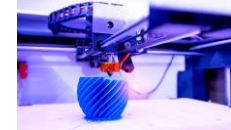
CAM – Computer Aided Manufacture

Machines such as laser cutters and 3D printers follow instructions from a 3D model drawn in CAD and make the item. A 3D printer prints with softened plastic, building up layers. A laser cutter cuts material such as boards of plywood.



The disadvantages of using CAD/CAM include:

- Machinery can break down and the manufacturing of products has to stop
- Expensive set up costs for machinery
- Training is required to use machinery correctly
- Jobs can be lost by machinery completing manufacturing tasks



3D Printing

How does a 3D Printer work?

The **CAD drawing is firstly converted** within the 3d printing software into multiple layers before the manufacturing stage.

- The 3D Printer then prints the CAD drawing **one layer at a time**
- The plastic filament is softened and forced through a heated extruder which builds up the 3D model one layer at a time.
- The printing software then determines how the **3D printer head moves and deposits** (leaves) the softened plastic.
- **The 3D printing process can take hours depending on complexity of the CAD design**

Two common materials which are used for the 3D Printing manufacturing are:



PLA



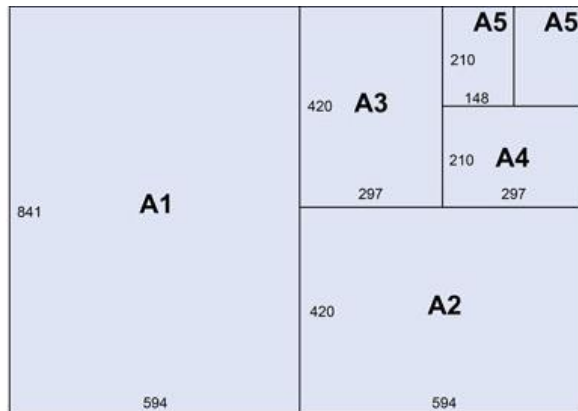
ABS

Student Knowledge Organiser

Papers and Boards

Papers and Boards are commonly made from cellulose fibres found in wood pulp and produced in a Paper Mill. Other varieties of Papers and Boards come from sources such as cotton, which produces extremely high-quality paper which lasts hundreds of years. Paper is weighed in grams per square meter (GSM). Anything over 200 GSM is generally considered to be a board.

Paper sizes are shown below:



The majority of paper is made from wood pulp. However, paper can also be made from the following materials:

- Bamboo
- Cotton,
- Hemp,
- Jute, and a wide range of other plant materials



Papers

Paper is something we use on a daily basis. It is a particularly useful medium for designers as it can be drawn on, written on and can be folded to make small scale models. Paper is made in a Paper Mill from cellulose fibres most commonly from wood pulp. Paper can be made from both deciduous and coniferous trees however, the latter is preferred as it is fast growing and more sustainable. Spruce and Fir trees are the most common source of the wood pulp used for papers.

Tissue Paper

Properties: Lightweight, Soft, Absorbent, 10-35 GSM.
Common Uses: Packaging for gifts, arts and crafts and toilet/kitchen roll.



Newspaper

Properties: Off white colour, lightweight, low cost, unfinished, mainly made from recycled paper, 45-55 GSM.
Common Uses: Newspapers and low cost leaflets.



Boards

Any paper based material weighing over 200 GSM is considered to be a board. Board is also measured by its thickness. The measurement used is microns. 1 micron = 1/1000th of a millimetre. A board that is 500 microns thick measures 0.5mm. Board is generally more rigid and durable than paper and is more suitable for items such as packaging, food containers and presentations.

Carton Board

Properties: Thick, can be coated/foil lined for food, easy to print on, 200-500 GSM.
Common Uses: Food and drink, POS, packaging



Card

Properties: Stiff, easily cut and creased, 200-500 GSM
Common Uses: Greetings cards, packaging, advertising.



You need to learn the following definitions:

Biodegradable: Materials rot down by bacteria and decompose. Nutrients then return to the soil.

Durable: Hard wearing, able to withstand wear, pressure or damage.

Non-Finite: Unlimited and the material or energy resource will not run out. The material/energy resource can be replaced and renewed.

Sustainable: Materials or energy resources are replaced at the same rate or more as they are being used and therefore will not run out.

Student Knowledge Organiser

Polymers (Plastics)

What is the difference between a thermoforming plastics and a thermosetting plastics?

Thermoforming polymers can be *reheated and remoulded* due to their molecular structure.

Thermosetting polymers can only *be moulded once* and therefore can't be recycled. They are therefore less environmentally friendly.

The source for most synthetic polymers (most plastics) is **Crude oil**.

The Sustainability of Plastic Products

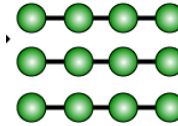
Most plastics are made from Crude Oil (see above). Crude Oil is a Non-renewable/Finite resource which means that we will eventually run out of it. End of life considerations are also important for plastic products as most plastics take so long to decompose. Many responsible companies produce a Product Life Cycle Assessment which informs them of the environmental impact their products will have. The information they gather helps them decide how best to source, manufacture and dispose of their products to limit their environmental impact. Extracting Crude Oil uses extremely high levels of energy which is created by burning fossil fuels. These fossil fuels release high amounts of CO₂ into the earth's atmosphere which contributes to Global Warming.

The situation is similar when manufacturing plastic products. The polymers need to be heated to high temperatures in order to mould them. This is again achieved by burning fossil fuels, which releases more CO₂ and contributes to Global Warming. At the end of a plastic product's life there are several options to consider. Firstly, plastic products can be reused as they're typically easy to repair and maintain which means they can survive longer than wooden or metal based products.

Most plastics are also recyclable, this means the material can be melted down and then put back into production to become a new product. This saves the material from ending up in landfill and also prevents us from sourcing more plastics from crude oil. The final option is to throw the product into landfill. This causes significant environmental issues as plastics take hundreds of years to decompose and since the material hasn't been recycled, we must then create new plastic products using more crude oil, putting even more strain on the planet's non-renewable resources.



Thermoforming plastics



Thermoplastics are the most common types of plastics we see on a daily basis. They are generally the most flexible, especially when heated. This is due to their physical structure. Their polymer chains (see below) are loose which means they can slide past each other when heated. This allows them to be reformed multiple times. Thermoplastics are usually very easy to recycle due to the fact they can be remoulded multiple times.

Examples of Thermoplastics

HIPS

High Impact Polystyrene
Properties: Flexible, Impact resistant, Lightweight, Food safe.
Common Uses: Food containers, Household Electronic casings.



HDPE

High Density Polyethylene
Properties: Lightweight, Rip and Chemical resistant.
Common Uses: Milk bottles, Pipes, Buckets, Bins, Household Bottles.

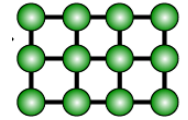


ACRYLIC/PERSPEX

Properties: Tough but Brittle.
Common Uses: Commonly used in Schools, Display Stands, Car Lights and Modern baths.



Thermosetting plastics



Thermosets are more rigid and once they have been formed and set once, they are stuck in that shape forever. The polymer chains in thermosets have more 'cross links' between them which stops the plastic moving when heated. As a result, thermosets are more brittle and harder than thermoplastics. Thermosets have good resistance to heat and make good electrical insulators. They are however difficult to recycle as they burn rather than melt.

Examples of Thermosetting plastics

Urea Formaldehyde

Properties: Heat resistant, Good electrical insulator, Hard, Brittle.
Common Uses: Electrical fittings, casings, buttons and handles.



Polyester Resin

Properties: Strong, Heat resistant, Good electrical Insulator.
Common Uses: Waterproof coatings, Flooring, Fibreglass lamination



Melamine Formaldehyde

Properties: Lightweight, Hard, Brittle, Food Safe.
Common Uses: Kitchenware, Heat Resistant surfaces, Furniture.



YEAR 8 - ROMEO AND JULIET – ENGLISH KO

CHARACTERS		KEY WORDS		CONTEXT	
Romeo The son and heir of Lord and Lady Montague. Romeo is handsome and intelligent, yet he is also impulsive and extremely sensitive. Romeo is a peaceful character and is not interested in the violence that goes on around him, choosing instead to focus his energies on love.	Context	The conditions in which something exists.		Shakespeare's Time Shakespeare wrote his plays at the time of two monarchs: <u>Queen Elizabeth I</u> and <u>James I</u> . <i>Romeo and Juliet</i> was written relatively early in Shakespeare's career (the bulk of his tragedies were written in the 17 th century) yet was extremely popular in his lifetime, as it is now. Shakespeare borrowed heavily from two texts: <i>The Tragical History of Romeo and Juliet</i> (1562) and <i>Palace of Pleasure</i> (1567)	
	Society	A group of people living together with shared norms and values.			
	Prologue	A separate introductory section of a literary, dramatic, or musical work.			
	Oxymoron	A figure of speech in which apparently contradictory terms appear in conjunction (e.g. <i>faith unfaithful kept him falsely true</i>).			
	Juliet The daughter of Capulet and Lady Capulet. Juliet is a <u>beautiful</u> young girl (13 years old at the start of the play). Juliet is <u>caring</u> , <u>compassionate</u> , and at times demonstrates <u>courage</u> .	Patriarchy	The male head of a family or tribe /relating to or denoting a system of society or government controlled by men.		
		Pilgrim	A person who travels to a religious or sacred place for religious reasons.		
	Prince Escalus The most <u>powerful</u> character in the play, with the authority to govern the other characters and administer sentences. He is also a kinsman to Mercutio and Paris. As the <u>seat of Verona</u> , his main concern throughout most of his appearances are in relation to ensuring that the peace is kept.	Profane	To treat something sacred with irreverence or disrespect.		
		Analyse	A detailed explanation of key elements in order to further understand something.		
		Bigamy	The offence of marrying someone whilst also being married to someone else.		
	Mercutio A kinsman to the prince and one of Romeo's closest friends. Mercutio is an extraordinary character; much of Mercutio's speeches deal in puns and word-play. His hot-headedness is eventually his downfall.	Archetype	A typical example of something.		Elizabethan England in Italy Shakespeare frequently engaged with Italy in his plays, leading many to believe that he travelled there between the late 1580s and early 1590s. Italy was a place that Shakespeare's contemporaries would have had a keen interest in; it was already an <u>advanced</u> and <u>beautiful</u> place for travel. Shakespeare's depictions of many areas of Italian life at the time are deemed largely accurate.
DRAMATIC DEVICES					
Lord Montague and Lord Capulet The <u>patriarchs</u> of the Montague and Capulet families, who have held a long and <u>violent feud</u> with one another from some time before the play begins. Both seem to deeply love their respective child, yet do not always seem appropriately aware of their emotional wellbeing.	Foreshadowing	Foreshadowing is a warning or indication of a future event or possibility in a text.			
	Soliloquy	A speech in which a character speaks their thoughts aloud. This can be addressed to the audience or to themselves.			
	Asides	An aside is a line or speech in which the character does not speak to other people on stage but instead speaks to themselves and/or the audience.			
	Dramatic Irony	Dramatic irony occurs when the audience knows something that the character does not. It can also apply if not all the characters have the same knowledge.			
Friar Laurence and The Nurse Both Friar Laurence and the Nurse act as <u>guidance counsel</u> for Romeo and Juliet. They appear to be the two people that Romeo and Juliet <u>trust</u> more than any others in the world, as they are the two that they <u>confide</u> in.	FEATURES OF A TRAGEDY				
	Tragic Hero	A main character cursed by fate and possessed of a tragic flaw (Romeo, and to an extent Juliet).		Religion The heavy religious presence is evident across several parts of <i>Romeo and Juliet</i> . This is reflective of a society across Europe that was <u>deeply religious</u> (predominantly catholic or protestant). Several characters demonstrate their <u>commitment to the church</u> , such as Romeo and Juliet who choose to marry rather than fornicate, and the Capulets, who are quick to contemplate that Juliet is in a better place (heaven) after she is found 'dead.'	
Hamartia	The fatal character flaw of the tragic hero (his passion and impulsiveness).				
Catharsis	The release of the audience's emotions through empathy with the characters.				
Fatal Flaw	The struggle the hero engages in with his/her fatal flaw.				
THEMES		Patriarchal Society	Society throughout the Middle Age and at Shakespeare's time was <u>patriarchal</u> – women were considered inferior to men. This was also the case in much of Europe, including Italy. Women belonged to their fathers (or brothers if their fathers had died) and then their husbands, so Juliet would be expected to obey her father. Women were not permitted to own land or enter most professions. They were instead expected to bear children, be gentle and womanly.		
LOVE	FATE	Astrology and the Supernatural	At the time of Shakespeare, the belief in both astronomy and the supernatural was far more preeminent than in society today. The reference to ' <u>star-cross'd lovers</u> ' demonstrates the large role of horoscopes and planet positions in being used to <u>predict fate</u> . Also, Romeo and Juliet make reference to the fact that they feel they are being <u>guided by a supernatural force</u> (e.g. 'fortune's fool').		
INDIVIDUAL VS SOCIETY	DEATH	Healthcare and Medicine	Healthcare and medicine were not as advanced in Shakespeare's age as they are today – there were numerous ailments and diseases that were not yet understood. This makes it much more believable for both the Capulets and Romeo that Juliet could have died so suddenly and so young. The high death count in the play would seem slightly more common in those days!		
VIOLENCE	FAMILY				

Language Subject Terminology	
1. Word Classes	
Noun	Identifies a person (girl), thing (wall), idea (luckiness) or state (anger).
Verb	Describes an action (jump), event (happen), situation (be) or change (evolve).
Adjective	Describes a noun (happy girl, grey wall).
Adverb	Gives information about a verb (jump quickly), adjective (very pretty) or adverb (very quickly).
Preposition	Describes the location of something, e.g. the pen was found under the table.
2. Sentence Structures	
Simple	A sentence with one independent clause. <i>"She went to the shop."</i>
Compound	A sentence with multiple independent clauses. <i>"She went to the shop and bought a banana"</i>
Complex	A sentence with one independent clause and at least one dependent clause. <i>"Sometimes, when she goes to the shop, she likes to buy a banana."</i>
3. Language Techniques	
Simile	Something is presented as like something else.
Metaphor	Something is presented as something else.
Imagery	When the writer provides mental "pictures".
Personification	Giving human traits to something non-human.
Alliteration	The occurrence of the same sound/letter at the beginning of words
Repetition	Repeating something to emphasises or reinforce.
Emotive Language	Words/phrases which appeal to the emotions.
Three Rule	Three words/phrases grouped together for effect.
Oxymoron	a figure of speech in which apparently contradictory terms appear in conjunction .
Juxtaposition	the fact of two things being seen or placed close together with contrasting effect.
Pathetic Fallacy	Giving human feelings and responses to inanimate things or animals.

4. Tier 2 Vocab	
Juncture	A place where two or more things come together
Recumbent	Lying down; in a position of comfort or rest
Lumber	Move heavily or clumsily
Brusquely	In a blunt direct manner
Fraternal	Relating to brothers, or being friendly like brothers
Elaborate	Intricate or rich in detail
Pugnacious	Ready and able to resort to force or violence.
Gingerly	In a careful or cautious manner;
Apprehensive	Uneasy and worried
Disengage	Uneasy and worried
Profound	Release from something that holds fast or entangles.
Complacently	Showing intellectual penetration or emotional depth.
Poised	Marked by balance or equilibrium.
Cower	To crouch or curl up.
Marginalisation	The act of treating someone or something as if they are not important.
Aloof	Emotionally distant.
Meagre	Deficient in amount or quality.
Crestfallen	Brought low in spirit.
Console	Give moral or emotional strength to.
5. The Author— John Steinbeck	
<ul style="list-style-type: none"> • He wrote the book ' Of Mice and Men' in 1936 • He came from Salinas, California • Like 'Of Mice and Men' many of his books deal with the lives and problems of working people. • Many of his characters in his books are immigrants • who went to California looking for work or a better life. 	

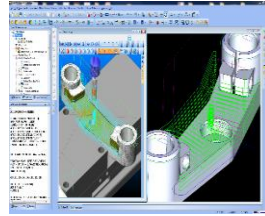
Of Mice and Men	
6. Characters	
George	Small and quick, dark of face, with restless eyes and sharp, strong features"
Lennie	"A huge man, shapeless of face, with large pale eyes, with wide sloping shoulders"
Candy	His right hand is simply a stump because he lost his hand in a ranch accident.'
Curley	"He hates big guys. He's all time picking scraps with big guys"
Curley's Wife	She had full, rouged lips and wide-spaced eyes, heavily made up. Her fingernails were red.
Slim	"Slim's as good a skinner as I ever seen"
Carlson	A powerful, big-stomached man came into the bunk house.'
Crooks	"Crooks, the negro stable buck, had his bunk in the harness room"
7. Historical Information	
The Roaring 20s	
1930s Great Depression	
Immigrant Workers	
Black Rights Movement	
The Wall Street Crash	
The American Dream	
The Dustbowl	
8. Themes	
Racism	
Prejudice	
Hope and Dreams	
Loneliness and Companionship	
Brutality and Dignity	
Class	
Gender	

English Year 8 Of Mice and Men

Student Knowledge Organiser

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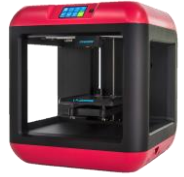
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- **Do not touch** the heated nozzle or bed at any time
- Keep your **fingers away** from all moving parts

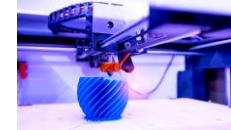
CAM – Computer Aided Manufacture

Machines such as laser cutters and 3D printers follow instructions from a 3D model drawn in CAD and make the item. A 3D printer prints with softened plastic, building up layers. A laser cutter cuts material such as boards of plywood.



The disadvantages of using CAD/CAM include:

- Machinery can break down and the manufacturing of products has to stop
- Expensive set up costs for machinery
- Training is required to use machinery correctly
- Jobs can be lost by machinery completing manufacturing tasks



3D Printing

How does a 3D Printer work?

The **CAD drawing is firstly converted** within the 3d printing software into multiple layers before the manufacturing stage.

- The 3D Printer then prints the CAD drawing **one layer at a time**
- The plastic filament is softened and forced through a heated extruder which builds up the 3D model one layer at a time.
- The printing software then determines how the **3D printer head moves and deposits** (leaves) the softened plastic.
- **The 3D printing process can take hours depending on complexity of the CAD design**

Two common materials which are used for the 3D Printing manufacturing are:



PLA



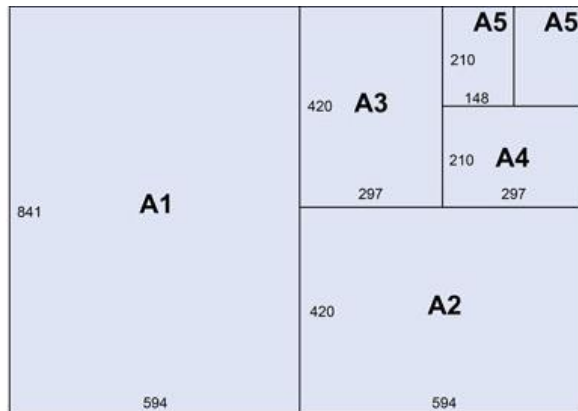
ABS

Student Knowledge Organiser

Papers and Boards

Papers and Boards are commonly made from cellulose fibres found in wood pulp and produced in a Paper Mill. Other varieties of Papers and Boards come from sources such as cotton, which produces extremely high-quality paper which lasts hundreds of years. Paper is weighed in grams per square meter (GSM). Anything over 200 GSM is generally considered to be a board.

Paper sizes are shown below:



The majority of paper is made from wood pulp. However, paper can also be made from the following materials:

- Bamboo
- Cotton,
- Hemp,
- Jute, and a wide range of other plant materials



Papers

Paper is something we use on a daily basis. It is a particularly useful medium for designers as it can be drawn on, written on and can be folded to make small scale models. Paper is made in a Paper Mill from cellulose fibres most commonly from wood pulp. Paper can be made from both deciduous and coniferous trees however, the latter is preferred as it is fast growing and more sustainable. Spruce and Fir trees are the most common source of the wood pulp used for papers.

Tissue Paper

Properties: Lightweight, Soft, Absorbent, 10-35 GSM.
Common Uses: Packaging for gifts, arts and crafts and toilet/kitchen roll.



Newspaper

Properties: Off white colour, lightweight, low cost, unfinished, mainly made from recycled paper, 45-55 GSM.
Common Uses: Newspapers and low cost leaflets.



Boards

Any paper based material weighing over 200 GSM is considered to be a board. Board is also measured by its thickness. The measurement used is microns. 1 micron = 1/1000th of a millimetre. A board that is 500 microns thick measures 0.5mm. Board is generally more rigid and durable than paper and is more suitable for items such as packaging, food containers and presentations.

Carton Board

Properties: Thick, can be coated/foil lined for food, easy to print on, 200-500 GSM.
Common Uses: Food and drink, POS, packaging



Card

Properties: Stiff, easily cut and creased, 200-500 GSM
Common Uses: Greetings cards, packaging, advertising.



You need to learn the following definitions:

Biodegradable: Materials rot down by bacteria and decompose. Nutrients then return to the soil.

Durable: Hard wearing, able to withstand wear, pressure or damage.

Non-Finite: Unlimited and the material or energy resource will not run out. The material/energy resource can be replaced and renewed.

Sustainable: Materials or energy resources are replaced at the same rate or more as they are being used and therefore will not run out.

Student Knowledge Organiser

Polymers (Plastics)

What is the difference between a thermoforming plastics and a thermosetting plastics?

Thermoforming polymers can be *reheated and remoulded* due to their molecular structure.

Thermosetting polymers can only *be moulded once* and therefore can't be recycled. They are therefore less environmentally friendly.

The source for most synthetic polymers (most plastics) is **Crude oil**.

The Sustainability of Plastic Products

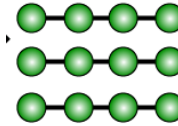
Most plastics are made from Crude Oil (see above). Crude Oil is a Non-renewable/Finite resource which means that we will eventually run out of it. End of life considerations are also important for plastic products as most plastics take so long to decompose. Many responsible companies produce a Product Life Cycle Assessment which informs them of the environmental impact their products will have. The information they gather helps them decide how best to source, manufacture and dispose of their products to limit their environmental impact. Extracting Crude Oil uses extremely high levels of energy which is created by burning fossil fuels. These fossil fuels release high amounts of CO₂ into the earth's atmosphere which contributes to Global Warming.

The situation is similar when manufacturing plastic products. The polymers need to be heated to high temperatures in order to mould them. This is again achieved by burning fossil fuels, which releases more CO₂ and contributes to Global Warming. At the end of a plastic product's life there are several options to consider. Firstly, plastic products can be reused as they're typically easy to repair and maintain which means they can survive longer than wooden or metal based products.

Most plastics are also recyclable, this means the material can be melted down and then put back into production to become a new product. This saves the material from ending up in landfill and also prevents us from sourcing more plastics from crude oil. The final option is to throw the product into landfill. This causes significant environmental issues as plastics take hundreds of years to decompose and since the material hasn't been recycled, we must then create new plastic products using more crude oil, putting even more strain on the planet's non-renewable resources.



Thermoforming plastics



Thermoplastics are the most common types of plastics we see on a daily basis. They are generally the most flexible, especially when heated. This is due to their physical structure. Their polymer chains (see below) are loose which means they can slide past each other when heated. This allows them to be reformed multiple times. Thermoplastics are usually very easy to recycle due to the fact they can be remoulded multiple times.

Examples of Thermoplastics

HIPS

High Impact Polystyrene
Properties: Flexible, Impact resistant, Lightweight, Food safe.
Common Uses: Food containers, Household Electronic casings.



HDPE

High Density Polyethylene
Properties: Lightweight, Rip and Chemical resistant.
Common Uses: Milk bottles, Pipes, Buckets, Bins, Household Bottles.

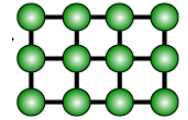


ACRYLIC/PERSPEX

Properties: Tough but Brittle.
Common Uses: Commonly used in Schools, Display Stands, Car Lights and Modern baths.



Thermosetting plastics



Thermosets are more rigid and once they have been formed and set once, they are stuck in that shape forever. The polymer chains in thermosets have more 'cross links' between them which stops the plastic moving when heated. As a result, thermosets are more brittle and harder than thermoplastics. Thermosets have good resistance to heat and make good electrical insulators. They are however difficult to recycle as they burn rather than melt.

Examples of Thermosetting plastics

Urea Formaldehyde

Properties: Heat resistant, Good electrical insulator, Hard, Brittle.
Common Uses: Electrical fittings, casings, buttons and handles.



Polyester Resin

Properties: Strong, Heat resistant, Good electrical Insulator.
Common Uses: Waterproof coatings, Flooring, Fibreglass lamination

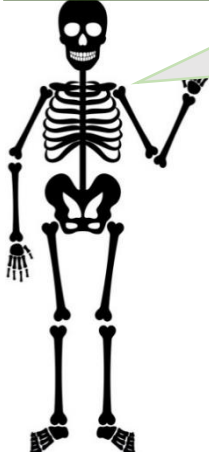


Melamine Formaldehyde

Properties: Lightweight, Hard, Brittle, Food Safe.
Common Uses: Kitchenware, Heat Resistant surfaces, Furniture.



Year 8 Glaciation



Make sure you know the 'bare bones' of this unit.



Keywords and Glacial Processes

Freeze Thaw Weathering – water gets into cracks in the rock and freeze. The ice expands and forces the rock to crack apart

Erosion – the glacier ice will wear away the land

- Plucking** - the glacier freezes around rocks at the side and bottom of the mountain. The glacier starts to move so pulls ('plucks') the rock away.
- Abrasion** – rocks carried in the glacier rub and grind off the bottom and sides of the mountain

Transportation – the glacier will carry the rocks inside the ice as it moves down the mountain

Deposition – When the glacier starts to melt it will drop (deposit) the material it has been carrying

The Ice Age

- Global temperatures fluctuated greatly (went up and down) We had periods of Glacials (cold periods) and interglacials (warmer periods).
- During the ice age we were in a glacial period meaning that global temperatures decreased.
- Ice covered 30 per cent of the world's land 18,000 years ago. The formation of glaciers and the process by which they shape the landscape around them is called glaciation.



What is a glacier?

Glaciers are rivers of ice – this means they are made up of ice but move and flow like a river would.

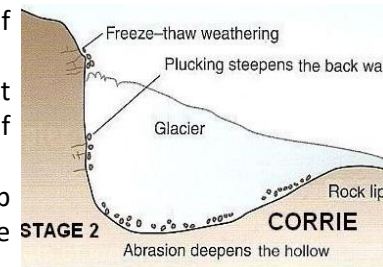
Glaciers are made of snow that, over hundreds of years, has been pushed down or compressed into large, thickened ice masses.

As well as snow, glaciers also contain rock and sediment. If a glacier is melting near the surface, it also contains running water



Corries - the starting point of a glacier. They are a deep hollow on a mountainside with a steep back wall.

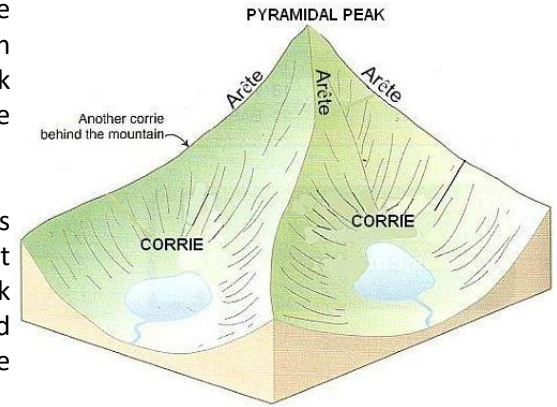
- Snow accumulates (builds up) in the hollow and over time compresses into ice
- The back wall is made steep and jagged by freeze thaw weathering
- Plucking happens in the bottom of the glacier to make the hollow bigger
- There is less erosion at the front which causes a lip (raised piece of rock).
- When the ice melts there is a steep back wall with a tarn (a lake) in the corrie bottom.



Aretes and Pyramidal Peaks

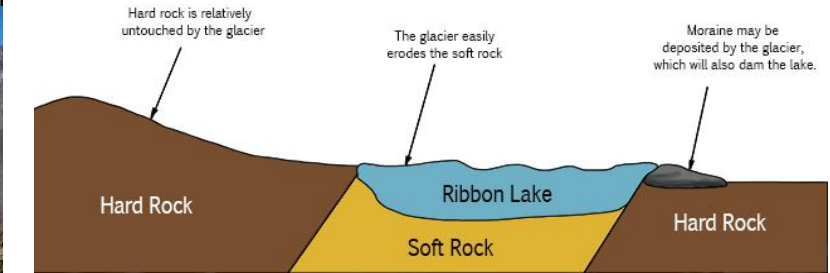
When 2 corries erode back-to-back it can form an arete (a thin and jagged knife-like ridge).

When 3 or more corries erode back-to-back it forms a pyramidal peak (a sharp pointed summit /top of the mountain).



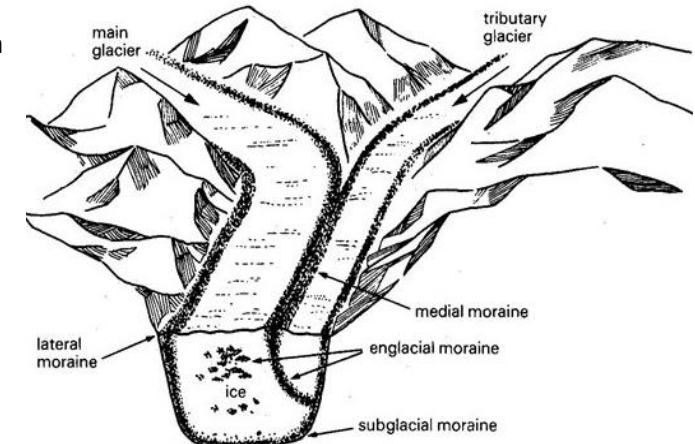
Ribbon Lakes - long and narrow lake in the bottom of a valley.

As a glacier flows over the land, it flows over hard rock and softer rock. Softer rock is not as strong so a glacier will erode a hollow. When the glacier has retreated, (melted) water will collect in the deeper area and create a long, thin lake called a **ribbon lake**.



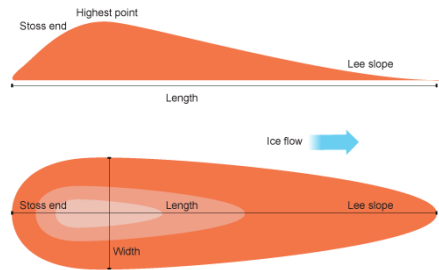
Moraine

Moraine is a deposition landform. It is a general term given to the angular material transported and deposited by the ice.



Drumlins- elongated (stretched out) hills of glacial deposits.

1. A glacier carries moraine down mountainside.
2. The glacier will meet a large rock and will move over the top of the rock and deposit the moraine over the top
3. The glacier moves over the rock and spreads the moraine in the direction it is moving.
4. The steep end is called the “stoss” and the stretched out end is called the “lee” this helps show the direction the ice has moved in.



Human Uses of Glacial areas

1. Tourism –skiing in glaciated areas (e.g. The Alps) or to see the landforms left behind after a glacier (e.g. The Lake District)
2. Hydro Electric Power – the steep mountainous slopes make it ideal for directing water into dams and generating energy through HEP
3. Farming – the steep slopes can be used for sheep farming and the fertile soil on the valley floor is good for crop growth and dairy farming
4. Forestry – the steep slopes can have forested areas which can be logged and sold for a profit and creating jobs



Tourism in Glacial Landscapes – Lake District

Advantages

Creates 35,000 jobs

Creates £2.2 billion for the UK economy each year



Disadvantages

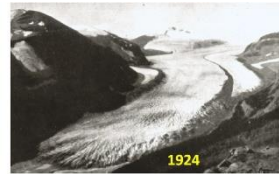
Footpath erosion – tourists stray from the paths and wear away the grass
 Congestion – 89% of people visit bar car causing traffic jams on the narrow roads
 Higher house prices – 15% of homes are holiday homes which forces the prices up making them too expensive for locals

Threats to Glaciers

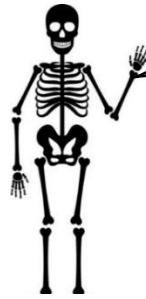
Due to increasing climate change and global temperatures, glaciers are melting. When this happens, they retreat as they shrink.

Impacts

- Los of income from tourism as fewer people visit
- Rising sea levels as the melting ice water goes into the oceans
- Less drinking water – e.g. countries in the Himalayas rely on the natural melting of the glacier in the summer for water - in the future there will be less



Year 8 Changing UK Economy



Make sure you know the 'bare bones' of this unit.



Keywords

Primary industry – industry such as mining and agriculture. It involves accessing natural resources

Secondary industry – taking primary products and making them into something through the process of manufacturing e.g. car manufacturing

Tertiary industry – jobs providing a service e.g. teachers, doctors, retail assistants, bus drivers, accountants

Quaternary industry – jobs linked to knowledge and the development of high tech products e.g. software development and developing new medicines

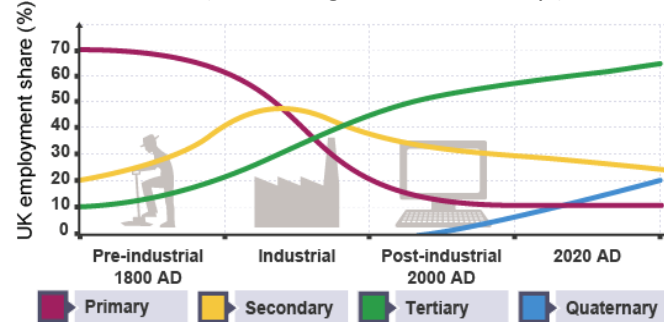
Deindustrialisation – traditional industries in the primary and secondary industry being closed down

Globalisation - the world is becoming interconnected for trade

Transnational Corporations - are companies that operate in more than one country, their headquarters are usually in HICs.

Changes in the UK economy

The UK has changed from primary and secondary industries to tertiary (services) and quaternary (high tech). This change is known as de-industrialisation (the closing down of industry.)



Globalisation - The biggest companies are no longer only based in one country; instead, that are **Trans National Corporations** with parts of their business located in different countries around the world.

They have their headquarters (main office) in HICs where the jobs are well paid. They have their factories in LICs where the jobs are lower paid.



This is possible because of:

- **Improvements in transportation** - larger cargo ships mean that the products can be transported around the world
- **Improvements of communications** - the internet and mobile technology have allowed greater communication between people in different countries making it easier to do business.

Reasons for Changes in the UK Economy

Deindustrialisation is the decrease of primary and secondary jobs in the UK.

This is because of:

Globalisation – We are now more connected to the world meaning it is easier to trade and buy products from other countries where it is cheaper.

Improvements in Technology – We now have large cargo ships and planes to buy products from other countries and bring them to the UK.



TNCs in the UK – Nissan

- Nissan is a Japanese car factory that has a large factory near Sunderland.
- It is close to the A19 giving good trade links to the Port of Tyne to sell their cars.
- It is close to other factories which make parts for the cars.
- It has created 6,000 jobs
- It makes £3 billion for the UK economy each year



Post Industrial Economy

This is the economy after the industries have been shut down. We now focus on tertiary and quaternary jobs which use more knowledge and research. We have **Science and Business Parks**.

- Footloose - can locate wherever they want; found at edge of cities
- Close to transport links so people can easily travel there from further away
- Close to universities to attract skilled workers. Science parks work with universities to collect research to make new products

e.g. Net Park Sedgefield (Science Park)
e.g. Cobalt Business Park



North South Divide

As many businesses choose to set up in the south of England, this creates a wealth divide.

- There is a gap in:
- Income / Wages
 - Employment
 - Life expectancy
 - Economic growth



Year 8 - Black and British

Key Vocab	Definitions
Empire	A group of countries under a single authority; for example the Queen.
Triangular Trade	A trading system which operated from the late 16 th to early 19 th centuries, operating in a triangle. (see image)
The Middle Passage	The Middle Passage was the part of the trade where Africans, were packed onto ships and transported across the Atlantic to the West Indies.
Slave Auction	This was an event where Slave families often were separated and sold to slaveholders in distant states.
Plantation	An estate where crops are grown on a large scale, usually where slaves work.
Underground Rail Road	A network of people and safe houses which slaves used to escape to the north of the United States; it was not run by anyone person or group; it relied on the generosity and support of many people.
Emancipation	When a slave is legally freed from his/her owner.
Abolition	When a government law is passed to officially stop or end something; slavery.
Civil Rights	The rights that people have in a society to equal treatment and equal opportunities, whatever their race, sex, or religion
Discrimination	The unjust or prejudicial treatment of different categories of people, especially on the grounds of ethnicity, age, sex, or disability.

Harriett Tubman

Harriett was a Black, American slave who escaped slavery. She then helped free many others using the Underground Railroad and worked to abolish slavery. She was known as a 'conductor'. During a ten-year span she made 19 trips into the South and escorted over 300 slaves to freedom. And, as she once proudly pointed out in all of her journeys she "never lost a single passenger."



Granville Sharp

Granville Sharp was born on 10 November 1735 in Durham.



His interest in slavery began in 1765 after he befriended Jonathan Strong, a slave who had been badly beaten by his master. When Strong's former owner attempted to sell him back into slavery in the Caribbean, Sharp took a successful case to the lord mayor and Strong was freed. Sharp then devoted his time to forcing a definitive legal ruling on the question of whether a slave could be compelled to leave Britain. He was involved in securing the famous 1772 ruling by Lord Chief Justice William Mansfield, which reluctantly concluded that slave owners could not legally force slaves to return to the colonies once they were in Britain. This was regarded by many as effectively abolishing slavery within Britain.

Key Questions

How did the Slave Trade benefit Britain?

Traders grew rich, as did ports such as Bristol, Liverpool, Glasgow and London. The raw cotton from the Americas helped to feed the growing number of cotton mills (as part of Britain's Industrial Revolution) British landowners also owned plantations in the West Indies which benefitted from cheap supply of Labour. The profits from the slave trade were invested in Britain's industries.

What were conditions like on the Middle Passage?

Slaves were chained together in the ships hold. Diseases quickly spread; if a slave died, the body would remain still chained to their other slaves for hours. The slaves were often unable to digest the food given to them. Sick slaves would be denied food and left to die. Slaves developed sores where their chains rubbed against their skin. Many slaves tried to kill themselves by refusing to eat or by jumping overboard. Once a day slaves were taken up from the hold to dance on the deck to keep them fit.



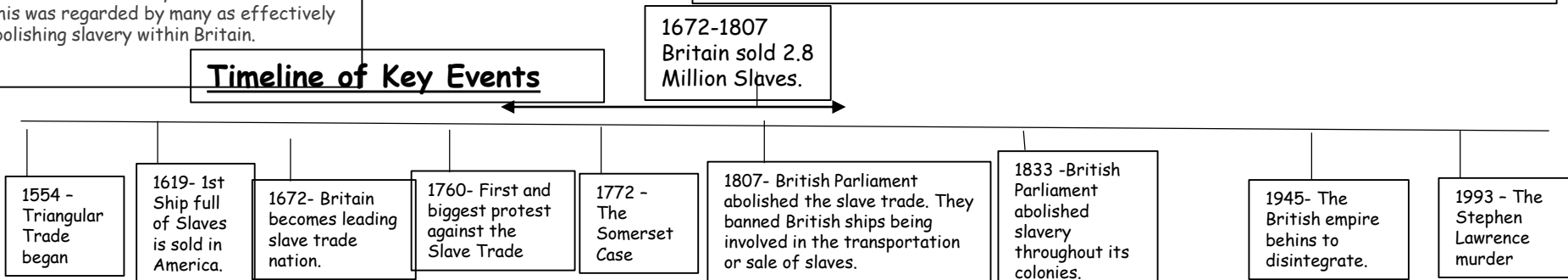
How was abolition achieved?

Abolition did not just occur over night but was a long process that came from the plantations itself. Through resistance, slave rebellions sent shockwaves through Britain and made people aware of the horrors trade. Incidents, such as the Jonathan Strong, the Somerset Case and the Zong Massacre further enlightened the people of Britain to the wrongdoings of slavery and public opinion started to change. With public opinion changing, politicians, such as William Wilberforce, and reformers, like Thomas Clarkson, campaigned hard for abolition. In turn, the British Parliament abolished the trade, including the banning of British being involved in the transportation of slaves. Furthermore, in 1833 slavery was abolished throughout the colonies. The British fleet would then be used to shut down the trading of slaves throughout the Atlantic.

What was the Civil Rights movement like in Britain?

Racism did not end following abolition and many black Britons faced discrimination in their own country. Following WW1, many black soldiers were treated poorly by the government and the public which turned into riots in 1919. Following WW2, Britain needed a workforce and the Windrush arrived with many immigrants from the West Indies. With the influx of more black Britons, tensions would increase leading to incidents like the Notting Hill race riots. In 1993, a black teen, called Stephen Lawrence, was murdered in a racist attack. These events led to a changing view in Britain, and each would have an impact on laws preventing discrimination and prejudice.

Timeline of Key Events



Year 8 Topic 6 Equations Student Knowledge Organiser

Key words and definitions

Equation – a statement linking two expressions as equal

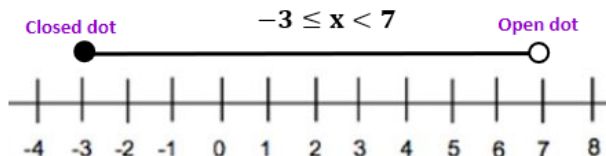
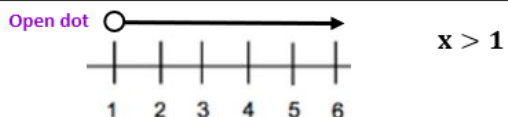
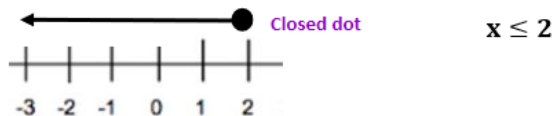
Variable – a symbol that may take any value

Constant – a value that does not change

Coefficient – a constant attached to the front of a variable

Formula – a statement, often written as an equation, that shows the exact relationship between different variables e.g. $y=mx+c$.

Inequalities on number lines



$$3 \leq x < 7$$

This is asking what values would represent x . They are 3, 4, 5, and 6. This is because \leq includes the 3 but $<$ does not include the 7

Simple equations

$$y + 7 = 10$$

$$y = 3$$

$$10 - 7 = 3$$

$$2y - 3 = 9$$

$$2y = 12$$

$$y = 6$$

To solve the question, we use the inverse operation to get the variable (letter) on its own

Equations with brackets

$$2(4p + 1) = 18$$

{Use Distributive Law}

$$8p + 2 = 18$$

{Subtract 2 from both sides}

$$8p + 2 - 2 = 18 - 2$$

$$8p = 16$$

{Divide both sides by 8}

$$\frac{8p}{8} = \frac{16}{8}$$

$$p = 2$$

Rearranging formulae

Rearrange the formula to make a the subject

This means we want to rearrange the formula so it says $a =$

$$b = 5a + 21$$

$$b - 21 = 5a$$

$$b - 21 = 5a$$

$$\frac{b - 21}{5} = a$$

$$\frac{b - 21}{5} = a$$

$$\frac{b - 21}{5} = a$$

$$\frac{b - 21}{5} = a$$

Our answer should say ... $a = \frac{b - 21}{5}$

Unknown on both sides

$$5y - 8 = 2y + 7$$

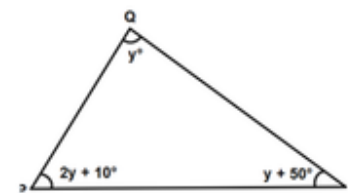
$$3y - 8 = 7$$

$$3y = 15$$

$$y = 5$$

Forming and solving equations

PQR is a triangle. Form and solve an equation to find the value of y .



What do the angles in a triangle add up to?

180

How can we write an equation for this?

$$2y + 10 + y + y + 50 = 180$$

Can we collect like terms?

$$4y + 60 = 180$$

$$4y = 120$$

$$y = 30$$

Hegarty Maths Links

Inequalities – 265, 266, 267, 268, 269

Solving – 178, 179, 180, 181, 182, 183, 184, 185, 186, 187

Forming and solving – 176, 188

Rearranging formulae- 280, 281, 282, 283, 284, 285

Year 8 Topic 7 Shapes and Angles Student Knowledge Organiser

Key words and definitions

Polygon - A **polygon** is any 2-dimensional shape formed with straight lines. The name tells you how many sides the shape has. For example, a triangle has three sides, and a quadrilateral has four sides.

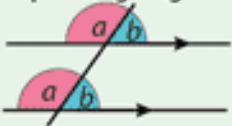
Parallel lines – lines which never meet, they stay the same distance apart

Plan view – looking down on an object from above

Elevation – view from the front or side of an object

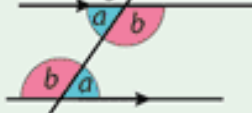
Angles in parallel lines

Corresponding Angles



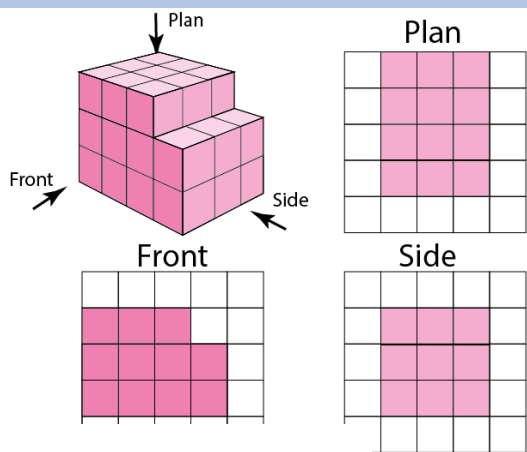
Corresponding angles are equal. They can be found in F shapes.

Alternate Angles



Alternate angles are equal. They can be found in Z shapes.

Plans and elevations

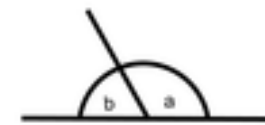


Types of special quadrilaterals

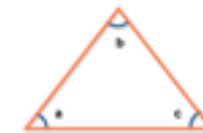
Quadrilateral	Properties	
Rectangle	4 right angles and opposite sides equal	
Square	4 right angles and 4 equal sides	
Parallelogram	Two pairs of parallel sides and opposite sides equal	
Rhombus	Parallelogram with 4 equal sides	
Trapezium	Two sides are parallel	
Kite	Two pairs of adjacent sides of the same length	

Angle facts

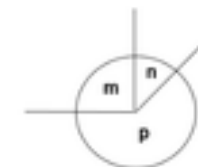
The angles on a straight line add up to 180° .
 $a + b = 180^\circ$



The angles in a triangle add up to 180° .
 $a + b + c = 180^\circ$



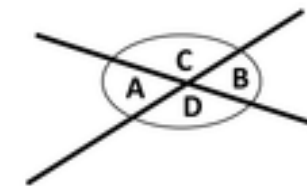
The angles at a point add up to 360° .
 $m + n + p = 360^\circ$



The angles in a quadrilateral add up to 360° .
 $w + x + y + z = 360^\circ$



Vertically opposite angles are equal.
 $A = B$
 $D = C$



Angles in polygons

Angle Sum

$(n - 2) \times 180^\circ$
number of triangles

3 triangle 4 quadrilateral
5 pentagon 6 hexagon
7 - heptagon
8 octagon
9 - nonagon
10 - decagon

$4 \times 180^\circ = 540^\circ$

Polygons

interior angle

angle sum
number of sides

OR

$180^\circ -$ exterior angle

exterior angle

360°
number of sides

OR

$180^\circ -$ interior angle

Hegarty Maths Links

Properties of quadrilaterals and triangles – 823, 824, 825, 826

Basic angle facts – 477, 478, 479, 585, 486, 487

Angles in parallel lines – 481, 483

Angles in polygons – 561, 562, 563, 564

Plans and elevations – 837, 838, 839, 840, 841, 842, 843, 844

Year 8 Topic 8 Ratio Student Knowledge Organiser

Key words and definitions

Ratio – A **ratio** shows the relative sizes of two or more values.

Direct proportion – There is a **direct proportion** between two values when one is a multiple of the other.

Inverse Proportion – a relation between two quantities such that one increases in proportion as the other decreases.

Simplify – To **simplify** a **ratio** means to reduce it to its simplest form. In order to do this you need to find the highest common factor for both terms in the **ratio**.

Highest common factor – the highest number that can be divided exactly into each of two or more numbers.

"6 is the highest common factor of 12 and 18"

Simplify ratio

Ratios can be fully **simplified** just like fractions.

Simplify: 6 : 12

To simplify a ratio, divide all of the numbers in the ratio by the same number (**highest common factor**) until they cannot be divided any more.

Divide both by 6

1 : 2

Write in the form 1:n

When asked to write a ratio in the format 1 : n, you need to **divide BOTH sides** by **the ratio where the 1 is**.

Write 7 : 21 in the ratio 1 : n

7 : 21 divide both sides by 7

1 : 3

Share in a given ratio

Monty and Mosaurus get A TOTAL of £72 pocket money.

They share it in the **ratio 5 : 3**
How much do they each get?

- **Add the ratios: 3 + 5 = 8**
- **Divide 72 by 8 (72 ÷ 8 = 9)**
Each ONE portion is worth £9

Monty has 5 portions

$$5 \times 9 = \text{£}45$$

Mosaurus has 3 portions

$$3 \times 9 = \text{£}27$$

In a school the ratio of boys to girls is 9 : 4.

There are 270 boys in the school.
How many students are there in the school altogether?

Divide the total number of boys by the boy's ratio

$$270 \div 9 = 30$$

This gives the number for 1 'portion'

Girls

$$4 \times 30 = 120$$

$$\text{Total} = 270 + 120 = 390$$

Recipes

A recipe for 6 people uses 900g of mince. How much mince is needed for

a 12 people

P : M

$$\times 2 \left(\begin{array}{l} 6 : 900\text{g} \\ 12 : 1800\text{g} \end{array} \right) \times 2$$

b 3 people

P : M

$$\div 2 \left(\begin{array}{l} 6 : 900\text{g} \\ 3 : 450\text{g} \end{array} \right) \div 2$$

c 9 people?

6 people + 3 people = 9 people

$$900 + 450 = 1350\text{g}$$

Exchange rates

The exchange rate is:

£1 buys \$2.12

Find how many dollars (\$) can be bought for £1500

$$\begin{array}{l} \times 1500 \quad \text{£}1 = \$2.12 \quad \times 1500 \\ \text{£}1500 = \end{array} \quad \$ \dots\dots\dots (1)$$

Maps and scales

6. Each diagram is part of a map. Find the actual distance between the two places for each map. Give your answers in metres.

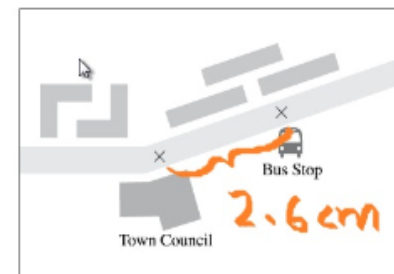
(a) Scale 1 : 12 500

$$\begin{array}{l} 1 \text{ cm} : 12\,500 \text{ cm} \\ 2.6 \text{ cm} : 32\,500 \text{ cm} \end{array} \times 2.6$$

if 100 cm is 1m

$$32\,500 \text{ cm is } \frac{325}{100} \text{ m}$$

$$32500$$



Inverse proportion

Best seen with an example usually builders!

If it takes 2 builders 10 days to dig a hole, how long will it take 1 builder?

$$\begin{array}{l} B \quad D \\ 2 : 10 \\ \div 2 \left(\begin{array}{l} 2 : 10 \\ 1 : 20 \end{array} \right) \times 2 \end{array}$$

Hegarty Maths Links

Simplify ratio - 329

Write in the form 1:n - 331

Share in a given ratio – 332, 333, 334

Recipes – 739, 740, 741, 742

Exchange rates – 707, 708

Maps and scales – 864, 865, 866, 867, 868

Inverse proportion - 342

Year 8 French Sentence Builder 5

Healthy living and modal verbs

Afin de
[in order to]

rester en forme
[stay in shape]

être plus sain
[be healthier]

il faut
[it is necessary to]

on doit
[you must]

jouer au sport plus souvent [play sport more often]

faire de l'exercice [do exercise]

manger plus de légumes [eat more vegetables]

boire plus d'eau [drink more water]

manger moins de bonbons
[less sweets]

on ne doit pas
[you must not]

on ne doit jamais
[you must never]

manger trop de gras [eat too much fat]

manger trop de sucre [eat too much sugar]

boire trop de boissons sucrées
[drink too many sugary drinks]

fumer [smoke]

Sentence Builder 5
Healthy living advice

Year 8

Phonics

eau/au/o



oi



in/ain



Vocabulary

Healthy living
advice

Grammar and
complexity

Using modal
verbs *il faut*
and *on doit*

Negatives

Year 8 French Sentence Builder 6

Healthy living and resolutions in the near future

À l'avenir [In the future]	je vais [I am going]	jouer au sport plus souvent [play sport more often]	car c'est [because it is]	assez [quite]	bon pour la santé [good for your health]
	il va [he is going]	faire de l'exercice [do exercise]			
	elle va [she is going]	manger plus de légumes [eat more vegetables]			
	nous allons [we are going]	boire plus d'eau [drink more water]			
Cette année [This year]		faire plus de promenades [do more walks]	parce que c'est [because it is]	très [very]	sain [healthy]
			parce que ce n'est pas [because it isn't]	vraiment [really]	plus sain [more healthy / healthier]
Dans le futur [In the future]			car ce n'est pas [because it isn't]	extrêmement [extremely]	mauvais pour la santé [bad for your health]
	je ne vais pas [I am not going]	manger trop de gras [eat too much fat]	parce que ce n'est pas [because it isn't]	trop [too]	mauvais pour moi [bad for me]
	il ne va pas [he is not going]	manger trop de sucre [eat too much sugar]		un peu [a bit]	malsain [unhealthy]
	elle ne va pas [she is not going]	boire trop de boissons sucrées [drink too many sugary drinks]			moins sain [less healthy]
	nous n'allons pas [we are not going]	rester dans mon lit [stay in bed]			dangereux [dangerous]
		fumer [smoke]			

Sentence Builder 6

Healthy living – resolutions

Year 8

Phonics

eau/au/o



é / et / -er / -ez



ch



Vocabulary

Ideas for
resolutions and
reasons

Grammar and complexity

Near future tense
with *aller*

Negatives

Year 8 Sentence Builder 7
 Film and TV with complex opinions

<p>J'adore [I love]</p> <p>J'aime [I like]</p> <p>Je préfère [I prefer]</p> <p>Je n'aime pas [I don't like]</p> <p>Je déteste [I hate]</p>	<p>regarder [to watch /watching]</p>	<p>les dessins animés [cartoons]</p> <p>les documentaires [documentaries]</p> <p>les jeux-télévisés [game shows]</p> <p>les films d'action [action films]</p> <p>les films comiques [funny films]</p> <p>les films d'horreur [horror films]</p>	<p>car [because]</p> <p>parce que [because]</p> <p>puisque [since]</p> <p>comme [as]</p>	<p>ça me rend [it makes me]</p>	<p>heureux / heureuse [happy]</p> <p>content [happy]</p> <p>triste [sad]</p>
		<p>les émissions de sport [sports programmes]</p> <p>les émissions de télé-réalité [reality TV shows]</p> <p>les séries en streaming [series on streaming]</p> <p>les actualités [the news]</p>		<p>ça me fait [it makes me]</p>	<p>rire [laugh]</p> <p>sourer [smile]</p> <p>peur [frightened / scared]</p>

Sentence Builder 7

Film and TV

Year 8

Phonics

eu



en / an / em



qu



Vocabulary

Genres of film
and TV

Opinions and
reasons

Grammar and complexity

Opinion +
infinitive

Sophisticated
opinions and
reasons with *ça*

**The Baroque Period
(1600-1750)**

Baroque sounds ORNATE, DECORATED and EXTRAVAGANT

- ORNAMENTS – decorations added to the melodies
- POLYPHONIC TEXTURE – dense overlapping with lots of interweaving melodies IMITATION- copying of the melody
- TERRACED DYNAMICS – either loud or soft
- TIMBRE & SONORITY – mainly strings, simple woodwind (recorders) and trumpets and timpani for dramatic moments.
- HARPSICHORD ('tinkling' sound) plays the (BASSO) CONTINUO (or ORGAN) with cello/double bass to provide an accompaniment and support harmonies

**The Romantic Period
(1810-1910)**

Romantic music sounds LYRICAL, EMOTIONAL, DRAMATIC and DESCRIPTIVE

- THEMES – much music based on an emotion, place, dreams, the supernatural or stories
- LEITMOTIFS – short melodies linked to a character or emotions
- EXTRAVAGANT DYNAMICS – extremes used to portray intense emotion
- CHROMATICISM – use of notes outside the key to create DISSONANCE
- RICHER HARMONIES – extended chords and unusual keys to help show emotion
- NATIONAL INFLUENCES – music influenced by folk music and national pride
- TIMBRE & SONORITY – huge increase in size and range of orchestral instruments. Harps, Tuba, Piccolo, Bass Clarinet, Cor Anglais and Double Bassoon added with large range of percussion . Piano popular – solo piano pieces

Year 8 Term 2

Music Through Time

**The Classical Period
(1750-1810)**

Classical music sounds BALANCED, ELEGANT, ORDERED and SYMMETRICAL

- BALANCED REGULAR PHRASES (4 and 8 bars)
- HOMOPHONIC TEXTURE – clear melody with an accompaniment
- ALBERTI BASS – Pattern of Root, 5 th, 3rd, 5th as an accompaniment
- FUNCTIONAL HARMONY – clear keys, cadences and modulations
- VARIETY IN DYNAMICS – wider range and use of CRESCENDO and DIMINUENDO
- TIMBRE & SONORITY – orchestra enlarged – clarinets added, piano invented (replaced harpsichord)

**The 20th Century
1900-**

20th Century music has more VARETY and UNUSAL COMBINATIONS of moods, styles, textures, keys and harmonies.

- MINIMALISM – music which uses a lot of repetition, a limited range of musical ideas,
- DYNAMICS- may be extreme or subtle but often very detailed.
- TEXTURES – various, sometimes simple, sometimes complex
- MELODY may be clear or may be just fragments. TONALITY may be tonal or atonal (no key, weird).
- HARMONY – there may be clashing chords (dissonance) or notes which sound a bit "odd " to start with
- TEMPO may vary a lot or stay same
- TIMBRE & SONORITY – huge increase in size and extreme range of orchestral instruments.

Key words

Melody

Pitch
Conjunct
Disjunct
Ornamentation
Virtuoso
Leitmotif
Theme

Timbre/sonority

Brass
Woodwind
Strings
Percussion
Orchestra
Piano
Harpsichord
Basso continuo

Dynamics

Pianissimo
Piano
Mezzo-piano
Mezzo-forte
Forte
Fortissimo
Diminuendo
Crescendo
Terrace dynamics

Tonality

Major
Minor
Atonal

Rhythm

Long duration
Short duration
Quaver
Crotchet
Minim
Semibreve

Tempo

Accelerando
Ritardando
Rubato
Fast
Slow

Structure

Binary
Ternary
Rondo

Texture

Unison
Monophonic
Homophonic
Polyphonic

Structures

Binary- **A B**
Ternary - **A B A1**
Rondo - **A B A C A**

Methods to Create

Contrast

Tempo/ Rhythm/
Melody/
Tonality/ Dynamics/
Articulation/ Texture/
Modulation

Risky Behaviours	Balanced Lifestyle	Body Image	Sleep	Mental Wellbeing
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Risky behaviour is anything that puts you or others in danger. There are many pressures to get involved in risky behaviour, especially when you are out with friends. Be mindful of the consequences of your actions and consider how the behaviour impacts the community, your friends and family. Drugs and alcohol increase the likelihood of engagement in risky behaviour.

Consequences:

- *Physical* – disease, illness, and poor appearance.
- *Mental* – anxiety, paranoia and depression
- *Social* - debt, damaged relationships, accidents violence, false confidence
- *Legal* – criminal record, fines and in some cases time in prison

Peer pressure is the pressure from others, or the pressure we put on ourselves to fit in with the crowd.

Strategies to manage it:

- Choose friends carefully
- Leave the situation
- Make an excuse

A balanced lifestyle is one which follows government guidelines for healthy eating and exercise. The NHS says to aim for 60 mins of brisk exercise a day and eat a balanced diet containing all food groups.

Our food choices impact our mood, so follow these tips to feel good:

- Eat regularly to avoid over-eating.
- Get enough protein
- Stay hydrated and choose water over fizzy drinks
- Avoid too foods that are high in sugar
- Choose whole grains for steady energy release.

Benefits include:

- Increased/steady energy
- Improved confidence and positive body image
- Improved mood and concentration
- Lowered risk of disease

Energy drinks carry risks like insomnia, anxiety, low mood, and addiction.

KEYWORDS:

Body image is how you see you see yourself when you look in the mirror. Having a positive body image is important. Puberty can be a difficult time for young people but maintaining a healthy weight through diet and exercise is key.

Low body image can cause:

- Mental health problems
- Eating disorders
- Reduced social participation
- Self-harm
- Substance abuse
- Poor academic performance

If you are struggling with your body image you need to talk to a trusted friend or adult at school or home.

Strategies to help:

- Health-focused goals
- Don't compare yourself
- Positive self-talk
- Focus on skills & qualities
- Understand media is edited and unrealistic.
- Surround yourself with positive people who make you feel good.

Sleep is essential for our mental and physical health. All teenagers should sleep for 8-10 hours per night.

Benefits of sleep:

- Clear skin
- Increased energy
- Better memory
- Improved mood
- Healthier choices
- General health

Strategies to help:

- Create a routine
- Reduce screen time
- Eat a healthy snack
- Darken your room
- Exercise during day
- No weekend lie-ins
- Avoid caffeine

Mental wellbeing, like physical wellbeing is important to our overall health. It is our thoughts, feelings, and emotions. Most people will need mental health support in their lives so there's no need to hide it. Common mental conditions include **anxiety** (constant worry/fear) and **depression** (overwhelming and constant sadness) – both are treatable.

Strategies to help:

- Connecting with others
- Regular activity
- Learn a new skill
- Be kind to others.
- Practice being mindful and staying present.

Where can I get support?

If you're struggling with any of the issues explored in lessons, you can seek support from a trusted adult at home or school. You could also use one of the following external support services.

Helplines for young people

Services for young people talk to someone anonymously without judgement via chat, or via phone, on whatever issue they would like.

childline 0800 11 11 – A service for under 18s

THE MIX 0808 808 4994 – A service for 13-25s

Beat 0808 801 0711 – Youth hotline to support anyone worried about, or affected by, eating disorders



Websites for advice and support

YPFACEIT Online support for young people with visible difference – conditions or injuries affecting their appearance
www.ypfacetit.co.uk

YOUNGMINDS A youth charity focused on mental health and wellbeing which offers information, advice and guidance for young people on anything which may impact on your wellbeing
www.youngminds.org.uk



Risky behaviour	Sexting	Food groups	Self-harm	Insomnia
Substance use	Teen pregnancy	Caffeine	Trolling	Mental wellbeing
Alcohol	STIs	NHS	Social media	Depression
Drugs	Physical wellbeing	Body Image	Cyber bullying	Anxiety
Peer pressure	Nutrition	Anorexia	Gaming	Stress

Y8 ISLAM – P4L

6 Articles of Faith

Belief in Allah as the one and only God

Belief in angels

Belief in the holy books

Belief in the Prophets

Belief in the Day of Judgement

Belief in Predestination (Qadr)

Why are the 6 Articles important?

- It underpins religious life for Muslims, influences all aspects of life.
- If Muslims believe in the absolute power of Allah then they will live their lives according to His will.
- The angels are always writing down deeds so Muslims have to think about how they approach life and the people around them. They will have to justify their actions.
- Life here is a test for the afterlife.
- Place in paradise has to be earned.
- Muslims have teachings of the prophets and the Quran to help guide them

Allah

Allah is the creator of life. He is beyond any human limitations like age or death. He has no partners or children. He is unique.

Muslims believe that Allah helps and guides them in their daily lives. By following His guidance and obeying Him, they believe that they will become better people and will develop qualities and good characteristics. Muslims strive to have qualities such as patience, humility, generosity, truthfulness, justice, sincerity, mercy, kindness, forgiveness and trust.

The 5 pillars of Islam

- Shahadah - Sincerely reciting the declaration of faith "There is no God but Allah and Muhammad is his Prophet".
- Salah - Performing set prayers five times a day at specific times.
- Zakah - Giving 2.5% of one's income to help the poor.
- Sawm - Fasting during the month of Ramadan.
- Hajj - The annual pilgrimage to Mecca.

Why are the 5 pillars important?

SHAHADAH - reminds Muslims that Allah is central to Islam

HAJJ - all are equal before God and reminds Muslims of their key belief in the equality of all humankind before Allah, because each person takes part on exactly the same basis.

ZAKAT - this creates a bond between the rich and poor and helps Muslims to purify their wealth and keep away from greed.

SALAT – purpose is to worship Allah and brings you closer to God.

SAWM – allows Muslims to gather control over their human needs. Without these distractions, Muslims can instead nurture good conduct and their connection to Allah

Quran and Muhammad

- Muslim holy book written in Arabic
- God has sent many messengers to guide Muslims how to follow the one true God – Allah. Muhammad was the final Prophet.
- He was a spiritual man who lived in Mecca.
- One night he was meditating in a cave when he was visited by the angel Jibril who revealed messages from Allah
- THE Quran was revealed to Muhammad. The words were remembered and recorded in the Quran. These are the words of God
- Muslims learn lessons from the Quran and implement them in their lives
- You must be clean to handle the Quran and out of respect never leave it on the floor

Akhirah

It is Allah who decides when a person dies and most Muslims believe that when they die, they will stay in their graves until Yawm al-din, the Day of Judgement. On that day, they will be raised from their graves and brought before Allah and judged on how they lived their earthly lives. This belief is known as the resurrection of the body.

Those who have performed more good deeds than bad will enter **Jannah**, or Paradise.

Those who have performed more bad deeds than good will enter **Jahannam** or Hell

Muslims believe that Allah is forgiving, merciful and compassionate, so not all bad actions will be punished. Allah will forgive those who have repented for their sins and those who have done some good in their lives.

Muslims can be targeted because of their beliefs, and because of terrorist attacks that people blame them for. Islam is a religion of peace, it is not the face of terrorism.

Muslims are targeted for being sexist. However the Quran states women and men are equal.

Muslims are targeted for their dress. This can be seen as discriminatory.

Akhirah – the belief in everlasting life after death

Allah – Muslim God

Five pillars - the obligations that Muslims must satisfy to live a good and responsible life and to bring them closer to God

Islam – submission to the will of God

Islamophobia - Muslims are the victims of attacks just because of their religion

Mosque – place of prayer for Muslims

Muslim – followers of Islam

Tawhid – oneness of God

Quran – Muslim holy book

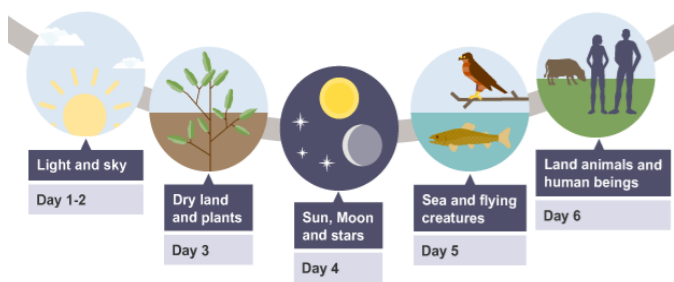
3 main sects of Judaism

Orthodox Jews are those who maintain the most traditional beliefs and practices of the religion. They strictly observe the dietary laws (kosher) and the practices of the sabbath. As adults they wear black suits and hats, and sometimes allow their hair in front of their ears to grow into long curls. Women sometimes wear head coverings, and dress modestly. Males and females sit separately in the Synagogue.

Reform Jews moved the Sabbath from Saturday to Sundays, don't often read scriptures in Hebrew, set aside the kosher dietary laws and the distinctive ways of dress. In order for the religion to be relevant and authentic, it must be reformed from time to time.

Conservative Judaism is a sort of middle position between Orthodox and Reform groups - many traditions and practices are retained, but some reforms are instituted as well.

Genesis



Concepts of God

There is only one G_d
 G_d is neither female nor male
 G_d is everywhere, all the time
 G_d is omnipotent
 G_d is omniscient
 G_d rewards the good and punishes the bad
 G_d is forgiving

Judaism

Y8 P4L

Kosher food

Kosher foods are those fit for consumption that conform to the Jewish dietary regulations.

What can be eaten?

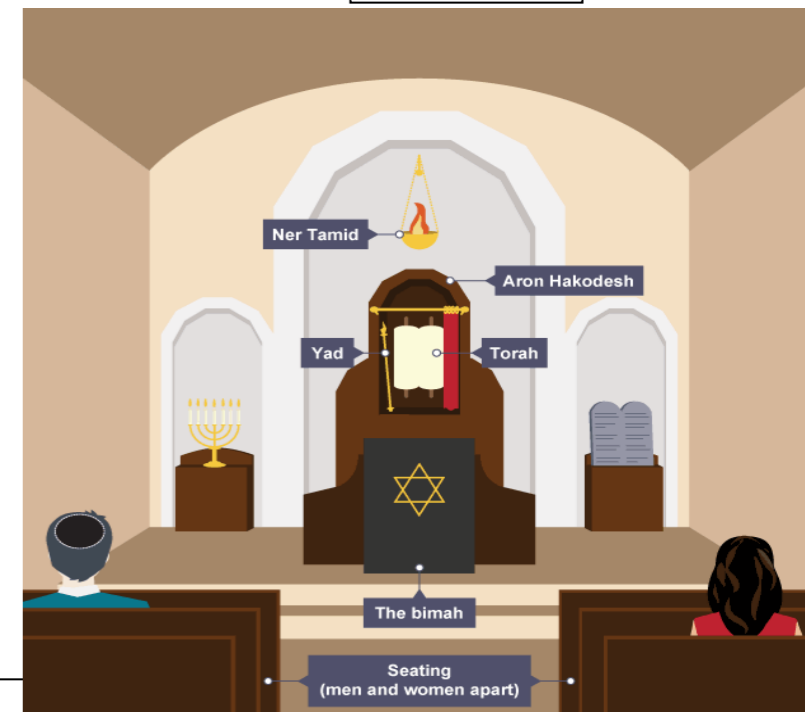
Fruits, vegetables and grains (insect free)
 Cows (beef), sheep (lamb), deer and goats (must have cloven hooves and chew the cud)
 Fish (must have fins and scales)

What cannot be eaten?

Pigs (pork)
 Birds of prey
 Shellfish
 Lobster, eel, octopus, squid, crab

More rules

Meat and dairy cannot be cooked together. There should be a waiting period between consuming meat and dairy as they should not mix together in the stomach!
 To be kosher all animals must be killed as painlessly as possible. It is against Jewish law to cause pain to living things. All blood must be drained from the animal.
 A Rabbi must inspect animals before they are killed, watch while it is killed, and inspect the animal after its death. This is to make sure that everything is done correctly and the animal remains kosher.



Why Is Shabbat Celebrated?

Shabbat is seen as a celebration of creation, celebrating God's creation of the world in six days, and resting on the seventh.

Orthodox Jews hold strict traditional views, often saying that no work at all should be done during Shabbat. This would include, no turning on lights (many use timers), no use of technology including phones, TVs and game consoles, no manual work, no housework, no cooking, no spending money. Therefore before Shabbat, meals need to be prepared. All housework will also have to be completed. Technology is often removed from sight or covered up, the TV will be unplugged.

When the sun goes down on Friday night, the woman of the home will light two candles. This is said to mark the start of the Sabbath. The family will sit down to their special Friday night meal. The meal begins with a blessing (usually said by the father of the house) over two braided loaves, called Challah. During Shabbat Jews drink from the Kiddush cup. 'Kiddush' means 'making holy'. The kiddush prayer/blessing is said over the kiddush cup, which is filled with wine at the beginning of the Shabbat meal. On the Saturday morning the whole family often will go to the synagogue for the Shabbat service. The family have walk, as using a car is forbidden. The rest of the day is often enjoyed with family, appreciating the week and relaxing. The lighting of the havdallah candle symbolises the end of Shabbat.

Bar and Bat Mitzvah

Is a ceremony celebrating becoming an adult according to Jewish law, meaning that one is now responsible for their actions.

Bar Mitzvah

- A minimum of 10 men must be in the synagogue.
- the boy will read out of the Torah which is the Jewish holy book.
- The boy asks for God's help that he might follow in the footsteps of his ancestors and obey God's holy commandments.
- The boy is given 2 sacred objects to show that he is now accepted. One is the tefillin and the other is a tallit.

Bat Mitzvah

- Is only practised by Reform and liberal Jewish communities.
- The ceremony follows a similar pattern to the Bar Mitzvah.
- A girl may read from the Torah or she may instead read a prayer from the siddur.

Abraham

Many years ago in Canaan lived a loyal man, called Abraham.

God promised Abraham more children in his family than there were stars in the sky. Abraham was shocked by this as he and his wife Sarah were unable to have children BUT he chose to trust God anyway. In return Abraham would have to promise to give something back. A covenant (agreement) was made. God delivered on his promise and Abraham and Sarah had a son called Isaac.

It was common for people to sacrifice animals to show trust in God. However, for the ultimate test, Abraham was asked by God to sacrifice his son. Abraham was promised that he would be the 'Father of many nations' if he did.

Abraham was very sad but prepared the stone altar to kill Isaac. Just before he killed his only son, a loud voice came from Heaven telling Abraham to Stop. Abraham froze and the voice told him that God did not want Isaac to die. He knew he loved and trusted in him as he was willing to sacrifice him.

He thanked God for his goodness and realised now he could trust God more than ever and with everything!

Moses

Over 3,000 years ago the Jewish people were slaves in Egypt The Pharaoh, the powerful ruler of Egypt, issued a command that Jewish boys should be killed so that they could not grow up to form an army against Egypt

One mother decided to save her son by hiding him in a basket. The baby was found by the Pharaoh's daughter who brought him up as her own son

As a young man, Moses saw an old Jewish man being mistreated by an Egyptian soldier. He ran out to help the man and in a rage killed the soldier

Overcome with guilt Moses fled to the desert where he stayed for several years

In the desert Moses worked as a shepherd and it was while looking after his sheep that he noticed a small burning bush and heard the voice of God

God told Moses that he was to be the leader of the Jewish people and that he should go to the Pharaoh and tell him to free the Jewish people

Moses returned to Egypt and asked the Pharaoh to free the Jewish people. The Pharaoh refused and Moses warned the Pharaoh that Egypt would suffer terrible plagues if the Jewish people were not freed

After the death of his own son the Pharaoh said the Jewish people could leave Egypt

While they were escaping the Pharaoh changed his mind again and sent his army to bring the Jewish people back but the Jewish people managed to escape when God parted the water in the Red Sea to allow them to escape

God gave Moses the Ten Commandments on Mount Sinai. These Commandments are rules for everyone to obey.

Festivals

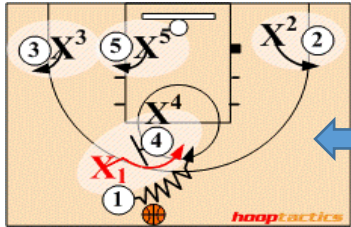
Passover- (Pesach) is celebration for the freedom of Israelites
 Rosh Hashanah - Jewish New Year
 Yom Kippur – Jews ask for forgiveness
 Sukkot - commemorates the years that the Jews spent in the desert on their way to the Promised Land
 Hanukkah - the Jewish Festival of Lights

Synagogue

Aron Hakodesh (Ark)	Wooden cupboard where the Torah scroll is kept
Bimah	Raised platform where services are delivered
Covenant	Promise or agreement
Kosher	Food that is 'clean' and 'fit' and that meets the requirements of the Jewish dietary laws
Ner Tamid	Eternal light
Omnipotent	G_d is all powerful
Omnipresent	G_d is everywhere
Rabbis	Jewish teacher
Shabbat	The Jewish holy day celebrated weekly, which begins at sunset on Friday and continues to nightfall on Saturday
Synagogue	The Jewish place of worship.
Torah	The Jewish holy book
Yad	A pointer, which is used to minimise the touching of the Torah

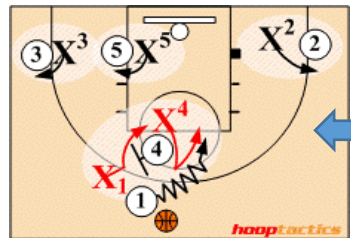
Basketball

Key Vocabulary: Defence, offense, motion, spread, sagging, switching, movement, communication, screening, penetration, dribbling, drive

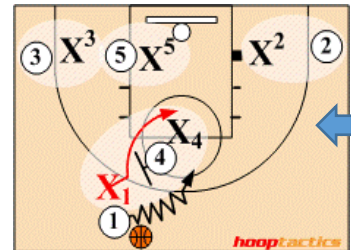


Defence Tactics

Straight Person-to-person - Straight person-to-person is an aggressive defence which causes severe problems to good spot up shooters and poor ball handlers. In this type of defence, defenders will fight over screens. However, it can be susceptible to dribble penetration and on ball screens.



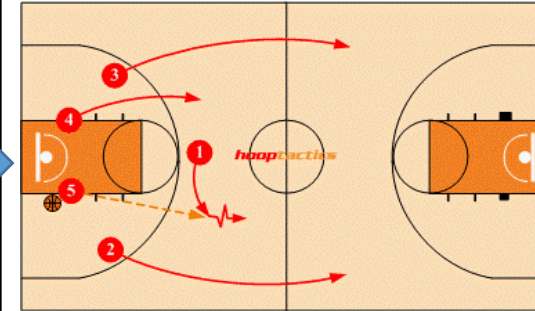
Switching Person-to-person - The ability to attack passing lanes make switching person-to-person defences an ideal defence to use against motion type offenses. In this type of defence, defenders will aggressively switch on all contact screens. The disadvantage to switching is that, in some cases, it can cause severe mismatches.



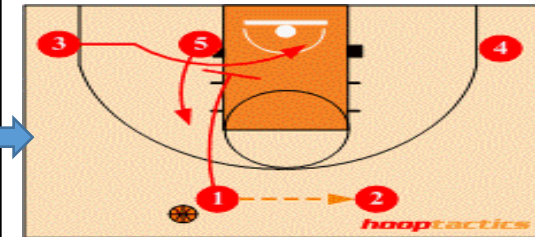
Sagging Person-to-person - Sagging person-to-person defence can be very successful against poor outside shooting teams and against dribble penetration. In this type of defence, the defenders will go behind or switch most screens. However, it is susceptible to good outside shooting teams.

Offensive Tactics

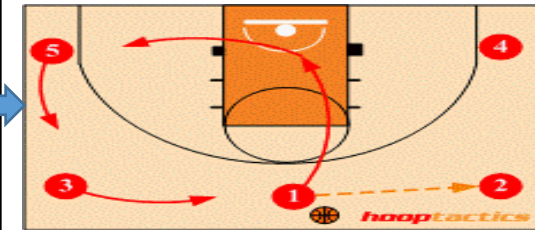
Early Offense (fast break) - Most early offenses depend on quick, wide lane releases, inbound passes, and pass advances to reach the offensive operating areas before all of the defenders can retreat into the front court area. By advancing the ball into the offensive operating area within 2 to 3 seconds, the defenders are most often spread out, creating an opportunity for a high percentage of field goal attempts. Getting into offense before the defence can establish proper player match-ups also creates severe mismatches.



Motion Offense - Through constant player movement, teams of average size and abilities can overcome and defeat teams of superior talent and size. However, this requires players to play together as a single unit. More importantly, it requires players to possess an unselfish attitude to create open shot opportunities for their teammates. This constant player movement must have purpose and patience in attacking the defence.



Spread Offense - Spread offenses are normally deployed at the end of game to protect a hard earned lead, or when a team is totally mismatched. By spreading the court, it not only takes time off the clock, but also increases the area the defence must defend. However, in spreading the court, teams must make sure to continue to make basket cuts and attack the basket.



Lesson Overview

1. Dribbling, fast break and leading
2. Dribbling, faking and leading.
3. Securing, breaking and leading
4. Evaluating strengths and weaknesses in defence.
5. Evaluating strengths and weaknesses in offence.
6. Coaching (Defence)
7. Coaching (Offence)
8. Full 5v5 competitive game play.

Defensive Fundamentals

- Guarding the ball handler** - The On-Ball defender must maintain a low, bent knee "Nose on Chest" stance with active hands and feet influencing the ball handler towards a side-line or corner trap zone.
- Guarding a dribbler** - Containing a dribbler by pushing them toward a sideline or corner trap zone.
- First Pass Denial** - Attacking the passing lane on ball side by assuming and maintaining a low bent knee "Ear on Chest," position between opponent and the ball extending the near arm straight out into passing lane with the palm to the passer. Maintain a position between the passer and receiver.

Defensive Fundamentals

Defensive rebounding - requires a total team effort relying mainly on positioning and strength. In defensive rebounding, to be successful, every offensive player's path to the basket and ball must be blocked. Therefore, boxing out an opponent is just as important as obtaining the rebound.

Key Vocabulary
 Passing
 Receiving
 Footwork
 Defending
 Attacking
 Marking
 Shoot
 Transition
 Interception
 Throw in
 Lob
 Drive
 Tactic
 Wing

Body Feints

Body feints are performed mainly by using the trunk and legs. While feinting, a player may or may not have the ball, thus they are divided into:

Body feints with a ball:

Body feints with a ball are used to:

- pass by the opponent, attracting another defender, then to pass the ball to a player who as a result of that action is better placed to make a shot
- free the throwing hand from the opponent

Body feints without a ball

The said feints are used to free the player from the opponent and to get a better position for receiving or passing the ball. The feints are performed by attack players who are facing or have their backs to the defenders.

Ball Feints

An offence player distracts the defender by performing a body feint in combination with either feinting a shot a pass. Regarding these actions we divide ball feints into:

Feinting a shot

Feinting a shot is to provoke a defender to react in such a way as to enable the attack player to implement one of the following actions:

- passing by the opponent and performing a shot
- feinting a shot - initial movement by indicating a shot and then performing the shot in another way

Feinting a pass

Feinting a pass is used to deceive an opponent so that one of the actions below can be carried out:

- passing by the opponent and performing a shot
- passing by the opponent and passing the ball to a fellow player
- passing the ball to a fellow player

The first action can be used in group tactical attack, the other two actions during fast attack.

SHOOTING

Shots are one of the most important elements of handball. They are vital elements that decide the scores. While shooting the muscles of the lower and upper limbs, pelvic region and trunk are extremely engaged.

DRIBBLING

After receiving the ball and before dribbling a player holds the ball with both hands.

The ball is being dribbled sideways at hip level. Bouncing on the ground is performed by the combined action of the elbow and wrist joints. The angle of the bounced ball depends on the speed that the player is moving at. The faster the run the more the angle becomes obtuse. If an opponent comes closer, a player must lower his position as well as the dribbling, protecting the ball from being taken by the opponent.

Lesson Overview

- | | |
|--------------------------|-------------------------------|
| 1. Individual Attacking. | 2. Advanced Shooting. |
| 3. Crossing. | 4. Feinting. |
| 5. Breakthrough. | 6. Defending. |
| 7. Goalkeeping. | 8. Full 7V7 Competitive Game. |

Y8 Handball

Individual Defence Technical Elements

- posture
- drawing step
- jump-in, jump-off
- run-up
- running backwards
- stopping and changing the direction of running
- reaction to feints
- interception of the ball
- blocking the ball
- stealing the ball

Defensive Systems

Man-to-man Defensive Systems

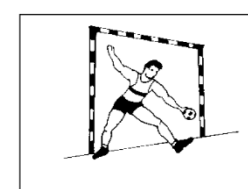
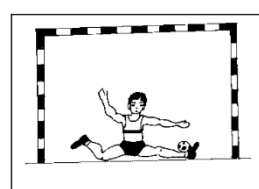
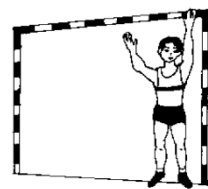
Man-to-man defence can be played throughout the field, in the own defensive half of the field or only in front of the own goal area.

Man-to-man defence throughout the field demands that each player guards the closest opponent immediately after the loss of the ball. Disturbing an opponent's attack from the very beginning is an advantage. The disadvantage is the possibility that weaker defenders must cover stronger attackers and vice versa. If this occurs it is necessary to make a "redistribution of attackers" during the next break in the game.

Man-to-man defence is advantageous in the match against a weaker opponent or in that part of the match, when we want to surprise the opponent or to reverse an unfavourable development of the match.

THE GOALKEEPER

A goalkeeper greatly influences the game and the final result. Playing as a goalkeeper requires a lot of physical and mental efforts. A goalkeeper must be very fit, bold and self-controlled. His actions are not only limited to defending the goal. The goalkeeper also takes part in a game, when he sparks the fast attacks, co-operates with defence and prevents the opposing team's fast attacks.



Key Vocabulary

Passing- sending the ball

Receiving- catching the ball

Footwork- how you land when in control of the ball (see footwork rule)

Dodging- a way to change direction quickly

Defending- preventing the other team from gaining possession of the ball and scoring

Attacking- making an attempt to score

Marking- a way to prevent your opponent from receiving or passing the ball or shooting

Shoot- attempt to score a goal

Offside- Moving into an area where you're not permitted (see offside rule)

Interception- preventing a pass between players

Throw in- a free pass taken off court

Centre Pass- taken to start or restart the game

Free Pass- awarded when there is an infringement of the rules by a player

Penalty Pass- as above, when two players are involved

Goal Third & Centre Third- areas of the court

Y8 Netball

Rules of the game

Starting the game- centre pass. A centre pass alternates between the teams, regardless of which team has scored. Before the whistle, all players must start in the goal thirds except the two Centres (see diagram). The Centre stands in the centre circle with the ball. After the whistle the Centre pass must be caught or touched by a player standing in or landing within the Centre third.

Offside- A player cannot move into an area of the court that is not designated for their position. This will result in a free pass being awarded to the opposing team.

Footwork- A player can receive the ball: With both feet on the ground or jump to catch the ball and land on two feet simultaneously. You may then take a step in any direction with one foot (but not both) and pivot on the spot with the other foot. Once one foot is moved, the other is considered to be the landing foot. Hopping or dragging the landing foot is not allowed. This will result in a free pass being awarded to the opposing team.

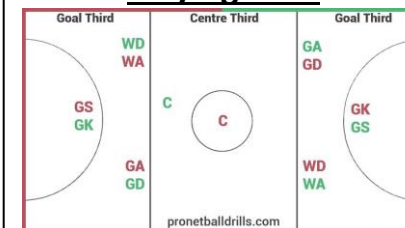
Obstruction- A player attempting to intercept or defend the ball must be at least 3ft (0.9m) away from the player with the ball. A penalty pass will be awarded if you obstruct.

Contact- You must not come into contact with another player whether they have the ball or not. A penalty pass or shot will be awarded if you contact an opponent. If two opposing players contact simultaneously a toss-up is taken between the two players concerned.

Held ball- you can only hold onto the ball for a maximum of 3 seconds.

Over a third- The ball cannot be thrown over a complete third of the court without being touched or caught by a player (i.e. it cannot cross two transverse lines).

Playing Area



Team Information

There are 7 players on a team each with a different role;

Goal Shooter (GS)- To score goals and to work in and around the circle with the GA.

Goal Attack (GA)- To feed and work with GS and to score goals.

Wing Attack (WA)- To feed the circle players giving them shooting opportunities.

Centre (C) - To take the centre pass and to link the defence and the attack.

Wing Defence (WD)- To look for interceptions and prevent the WA from feeding the ball to the GS and GA.

Goal Defence (GD)- To win the ball and stop the GA from scoring.

Goal Keeper (GK)- To work with the GD and to prevent the GA/GS from scoring.

Lesson Overview

1. Passing and receiving (on the move and under pressure)
2. Footwork and movement (running pass)
3. Attacking skills (dodge/reverse pivot/sprint).
4. Attacking Tactics (ball side, creating space, positioning)
5. Defending (stage 2 & 3, marking the ball and blocking).
6. Defending tactics (ball side, denying space, positioning)
7. Shooting and rebounding (positional work)
8. Full 7v7 competitive game play.

Lesson Overview

1. Ruck
2. Maul
3. Speed in attack
4. Supporting the attack
5. Creating Space
6. Drift Defence
7. Side Tackle
8. Full 13v13 competitive game.

Y8 Knowledge Grid

Key Vocabulary: Backs, forwards, maul, drift, ruck, switching, movement, communication, binding, carrier, drive, overlap, feint

Rugby Union



The Ruck

A ruck is a phase of play where one or more players from each team, who are on their feet, in physical contact, close around the ball on the ground. Open play has ended. Players are rucking when they are in a ruck and using their feet to try to win or keep possession of the ball, without being guilty of foul play.

Where can a ruck take place? A ruck can take place only in the field of play.

How can a ruck form? Players are on their feet. At least one player must be in physical contact with an opponent. The ball must be on the ground. If the ball is off the ground for any reason, the ruck is not formed.

All players forming, joining or taking part in a ruck must have their heads and shoulders no lower than their hips.

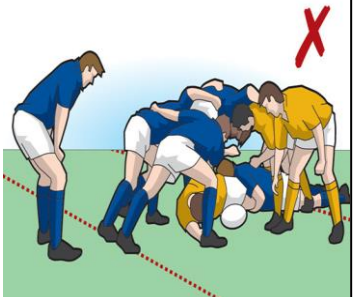
Sanction: Free Kick

- A player joining a ruck must bind on a team-mate or an opponent, using the whole arm. The bind must either precede, or be simultaneous with, contact with any other part of the body of the player joining the ruck.
- Placing a hand on another player in the ruck does not constitute binding.
- All players forming, joining or taking part in a ruck must be on their feet.

Sanction: Penalty kick

The offside line. There are two offside lines parallel to the goal lines, one for each team. Each offside line runs through the hindmost foot of the hindmost player in the ruck. If the hindmost foot of the hindmost player is on or behind the goal line, the offside line for the defending team is the goal line. Players must either join a ruck, or retire behind the offside line immediately. If a player loiters at the side of a ruck, the player is offside.

Sanction: Penalty kick



The Maul

A maul begins when a player carrying the ball is held by one or more opponents, and one or more of the ball carrier's team mates bind on the ball carrier. A maul therefore consists, when it begins, of at least three players, all on their feet; the ball carrier and one player from each team. All the players involved must be caught in or bound to the maul and must be on their feet and moving towards a goal line. Open play has ended.

Players joining a maul must have their heads and shoulders no lower than their hips.

Sanction: Free Kick

- A player must be caught in or bound to the maul and not just alongside it.
- Placing a hand on another player in the maul does not constitute binding.

Sanction: Penalty kick

- **Keeping players on their feet.** Players in a maul must endeavour to stay on their feet. The ball carrier in a maul may go to ground providing the ball is available immediately and play continues.
- A player must not intentionally collapse a maul. This is dangerous play.

A player must not jump on top of a maul.

Sanction: Penalty kick

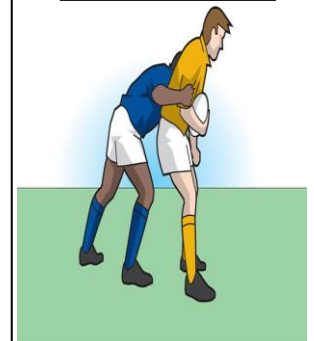
Maul Formed



Maul Not Formed



Maul Not Formed



Y8 Table Tennis

Key Vocabulary

Block: A quick, off the bounce return of an aggressive drive done by just holding the racket in the ball's path.

Chop: A chop is a heavy underspin shot. It is usually executed away from the table and below the tabletop. A chop forces the ball to drop downwards when it hits an opponent's paddle.

Counter-drive: A drive made against a drive.

Drop shot: Short placement - very close to the net. A key point in making a drop shot is to not allow the ball to fall off the table after the first bounce.

Flick or flip: A topspin shot generated over the table close to the net, usually with the power generated only from the upper arm or the wrist. Used to start offense on a short ball.

Hitter: A style of play where hitting is the primary shot.

Lob: Usually used when the player is in the backcourt in a defensive situation. The player hits the ball as high as he can - usually with a combination of topspin and sidespin. The deeper the ball lands on the table, the more difficult it will be for his opponent to smash.

Loop: A shot that curves in the air with a lot of spin which makes it difficult to return. A loop will also counter heavy spin (topspin or underspin) from an opponent. It can be executed above or below the tabletop, close or far away from the table.

Penholder: A type of grip giving the best possible forehand but the most awkward backhand of the conventional grips.

Rating: A number that is assigned to players after their first tournament. The better the player the higher the rating should be.

Sidespin: Spin placed on a ball to allow it to curve left or right in the air. Usually utilized in combination with the topspin of a loop.

Umpire or Referee: An official who keeps score and enforces rules during a match.

Scoring of the Game

Points are awarded to the opponent for any of several errors in play:

- Allowing the ball to bounce on one's own side more than once.
- Double hitting the ball is an error.
- Allowing the ball to strike anything other than the bat.
- Causing the ball not to bounce on the opponent's half (i.e., not making a "good" return)
- Placing one's free hand on the playing surface or moving the playing surface
- Offering and failing to make a good serve (i.e., making a service toss and failing to strike the ball fairly into play)
- Making an illegal serve: (e.g., one preceded by a player's hiding the ball or his failing to toss the ball at least 16 centimetres.
- Hitting the net with bat or any body part.
- By volleying the ball (not allowing the ball to bounce on your side)

Singles Play - Alternation of service: Service alternates between opponents every two points until a player reaches 11 points. To win a game a player must have at least a two-point lead. If both players reach 10 points, then service alternates after each point, until one player gains a two-point advantage.

Doubles Play - Alternation of service: Two players on each side of the net. Serving team's player on right serves the ball and after two serves change places with partner. Serve then transfers to opponents who do the same. Players on the same team must hit the ball alternately within a rally or lose the point.

Series of games: The first player/team to score 11 points by two clear points wins a game.

After each game, players switch sides of the table.

First player/team to win 5 games is the winner.

In the fifth game players switch sides when the first player/team scores 5 points.

Lesson Overview

1. Bat Technique
2. Service and Return.
3. Backhand Chop.
4. Basic Backhand Loop.

5. Forehand Chop.
6. Basic Forehand Loop.
7. Singles Tournament Play.
8. Single Tournament Play.

Year 8 Knowledge Grid

Key Vocabulary

Passing- sending the ball

Receiving- controlling the ball

Dribbling- running with the ball whilst avoiding opposition tackles

Tackling- act of dispossessing a player with the ball

Defending- preventing the other team from gaining possession of the ball and scoring

Attacking- making an attempt to score

Marking- a way to prevent your opponent from receiving or passing the ball

Shoot- attempt to score a goal

Offside- Moving into an area of the pitch which isn't allowed determined by opposition players (see offside rule)

Interception- preventing a pass between players

Throw in- a throw taken to restart game after the ball has gone out the side line.

Goal Kick- taken to restart the game after the ball has gone out the goal line by an attacker but not in the goal.

Centre Kick- kick taken to start the game or restart after a goal has been scored.

Penalty Kick- free shot at goal when a foul has been committed in the penalty box.

Retaken if keeper off line, ball not on spot or if other players enter box before ball is kicked.

Corner kick- taken to restart the game after the ball has gone out the goal line by a defensive player but not in the goal. Goal can be scored straight from a corner.

Direct Free kick- Ball can go straight into goal.

Indirect free kick- Ball must go off another player

Football

Strategies

This includes the overall game plan and plans for player-to-player marking a particular opponent. If necessary, as well as the specific responsibilities that might be placed on individuals within the team.

Tactics

There are a great number of tactics used in association football. They include;

- Making use of the 'offside trap'.
- Defensive tactics aimed at scoring on the break.
- Attacking tactics to put pressure on opposing defence.
- Set play moves from free kicks, corners and throw-in situations.
- Taking advantage of environmental factors such as high shots at goalkeepers who are facing bright sunlight, or kicking downhill in the second half.
- Tactical substitutions depending on the state of the game.
- Positional changes and switches between players during the game to unsettle the opposition.



Lesson Overview

1. Receiving (on the move and under pressure)
2. Passing range (chip/driven/lofted)
3. Cover and support.
4. Turning (step over/cruyff).
5. Tackling (block/slide)
6. Shooting (positional work)
- 7 & 8. Full 11v11 competitive game play

Key Vocabulary

Apparatus: Specific equipment used in gymnastics.

Arabesque: Standing on one leg with the other leg raised about 45 degrees.

Balance: Skill of not falling over highlighted by static hold positions that demonstrate strength, agility and flexibility.

Base: In acrobatic gymnastics, the role in pair and group competition that requires strength and balance. The base is usually an older, larger athlete.

Cartwheel: The manoeuvre where one moves sideways, from hands to feet, in a straight line (in the motion that the wheel of a cart would follow), while keeping the back, arms, and legs straight, and the feet pointed.

Competition: Performance in front of a judge which the judge will then score.

Dismount: The act of getting off an apparatus and the skill used to do it.

Dynamic: One of the three routines in acrobatic gymnastics, combining choreography with tumbling sequences and flight elements like throws.

Floor exercise: The event performed on the floor apparatus. Men and women perform choreographed routines that include tumbling and acrobatic skills.

Handstand: To stand straight up with a tight body and hands on floor.

Mount: The act of getting onto an apparatus and the skill used to do it.

Out of bounds: Situation on floor exercise or Vault when a gymnast crosses the line indicating the border of the mat, resulting in a score deduction.

Pike: a position where the body is bent only in the hips.

Round off: A type of cartwheel where the gymnast pushes off the ground and lands on two feet.

Roll: A rotation over an axis in the body over a surface.

Springboard: Gymnastics equipment required on vault, and used as an optional aid for mounts on parallel bars, balance beam and uneven bars.

Straddle: A sitting position with the legs wide. It can also be performed at height.

Tumbling: The acrobatic skills performed on the floor

Tuck: A jump with knees to chest.

Vault: A gymnastics apparatus used by men and women in artistic gymnastics, or the skills performed upon it.

Y8 Knowledge Grid

Gymnastics

Unison

Unison is when the dancers perform the same movement phrase at the same time.

When using unison the dancers could be:

- Using different facings.
- Travelling in different directions.
- Standing in different sized groups.
- Using different sections of the stage.

Canon

A canon is a section of movement that consists of one phrase that is performed at different times in either an overlapping or sequential relationship.

Group Balances



Lesson Overview

1. Travelling
2. Balances.
3. Group Balances.
4. Rolls and rotation.
5. Flight
6. Linking movements/Presentation.
7. Routine composition.
8. Routine performance/Analysis

Badminton

Officials in Badminton

An official's decision is final.

Role of the Referee

- The Referee shall be in overall charge of the tournament.
- They shall ensure that the tournament is conducted in accordance with the Laws of Badminton.
- They should ensure that the players are given facilities and playing conditions of an adequate standard and safety, approval of the programme of play and practice schedule and overall control of and ensure that there is an adequate panel of technical officials.

Role of the Umpire

- The Umpire - is in charge of the match, the court and its immediate surrounds. They have the final say in all decisions.
- The Umpire ensures safe and fair play plus keep track of the score and determine the winner.
- They determine faults and lets.
- Play shall be called by the umpire to indicate when a game or match is about to start or resume after a break.
- "Fault", an umpire shall call "fault" when a fault occurs during the game followed by the score, always saying the servers score first.
- When a leading side reaches 20 points the umpire will call game point if it is to win the game or match point if they are to win the match.
- At the end of the game "Game" must always be called by the umpire.



1. Undue delay of serve



5. Racket handle should face up



2. Feet on the service line or off the ground



6. The shuttlecock lands out the line



3. Server fails to hit the bottom of the shuttlecock



7. The shuttlecock lands inside the line



4. Service too high



8. If the line judge does not see

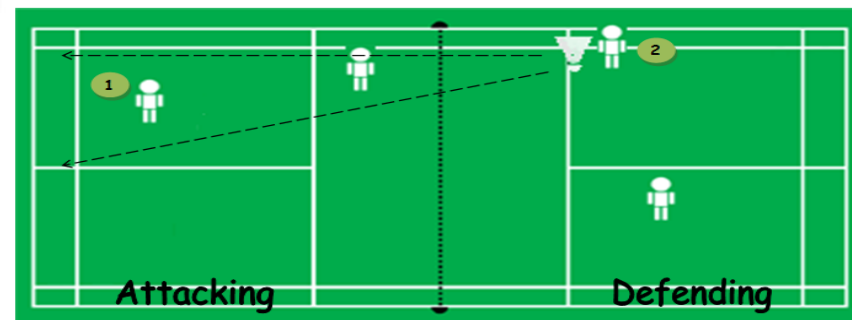
Tactics/Strategy

Singles Badminton Strategies

1. One simple badminton strategy often used in singles is to **serve long and high to your opponent's back court**. This will force your opponent to move back to the baseline and open up his forecourt.
2. **Throw in some disguised low serve** occasionally and you might just catch your opponent off guard and win a point outright.
3. If you opponent is stronger in the rear court then play more shots to the forecourt.

Doubles Badminton Strategies

1. When playing doubles, it is very important that you **DO NOT** produce a high lift or clear unless you really have to.
2. In order to commence your attack, you'll first have to force your opponent to produce a **high lift**. This allows you or your partner to smash.
3. In doubles, **returning a badminton serve is extremely important** because it determines who gets the high lift first.
 - If the shuttlecock is lifted high in your side so one of you can smash, then you should be in the **attacking formation**. One player will cover the front of the court, the other the back of the court.
 - If the shuttlecock is lifted high into your opponents' side so they can smash, then you should be in the **defensive formation**. You will cover the mid-court, one side each.



Lesson Overview

- | | | |
|----------------------------|-----------------|-------------------------|
| 1. Full Court Singles Play | 2. Doubles Play | 3. Singles Play Tactics |
| 4. Doubles Play Tactics | 5. Umpiring | 6. Faking Forecourt |
| 8. Slice & Double Movement | 9. Assessment. | 7. Faking Rearcourt |

Equilibrium: State of an object when opposing forces are balanced.

Deformation: Changing shape due to a force.

Linear relationship: When two variables are graphed and show a straight line which goes through the origin, and they can be called directly proportional.

Newton: Unit for measuring forces (N).

Resultant force: Single force which can replace all the forces acting on an object and have the same effect.

Friction: Force opposing motion which is caused by the interaction of surfaces moving over one another. It is called 'drag' if one is a fluid.

Tension: Force extending or pulling apart.

Compression: Force squashing or pushing together.

Contact force: One that acts by direct contact

Fluid: A substance with no fixed shape, a gas or a liquid.

Pressure: The ratio of force to surface area, in N/m^2 , and how it causes stresses in solids.

Upthrust: The upward force that a liquid or gas exerts on a body floating in it.

Atmospheric pressure: The pressure caused by the weight of the air above a surface.

1. Key Words!

Contact forces are forces that act between two objects that are physically touching each other. Examples of contact forces include: reaction forces, tension, friction and air resistance.

Non-contact forces are forces that act between two objects that are not physically touching each other. Examples of non-contact forces include: magnetic, electrostatic and gravitational forces.

When two or more forces act on an object, the resultant force can be found by adding up the individual forces in opposite direction.

In the example below there is 60N left and 100N right. We calculate the resultant force by $100 - 60 = 40$ to the right.

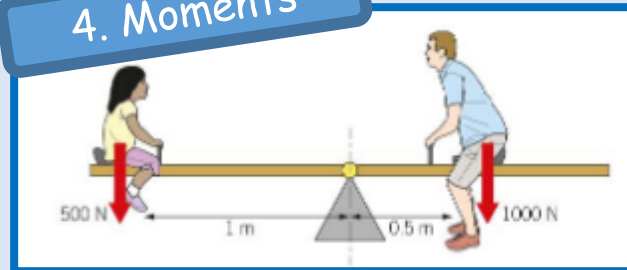


Friction is a **contact force** and it can be useful or unhelpful. For example friction between tyres and the ground stops us skidding but if you do not lubricate your bike regularly with oil, the friction in the chain and axles increases. Your bike will be noisy and difficult to pedal. Friction always works to slow something down. It can also be known as drag, water resistance (when in water) or air resistance (when in air).

3. Friction



4. Moments



The turning effect of a force is called a **moment**
 Force x distance on the right ($1000N \times 0.5m = 500Nm$)
 Force x distance on the left ($500N \times 1m = 500Nm$)
 The forces are equal, so the see-saw is balanced

5. Pressure and stress on a surface

$$\text{Fluid pressure (N/m}^2\text{)} = \frac{\text{Force (N)}}{\text{Area (m}^2\text{)}}$$

Example: A force of 20 N acts over an area of $4 m^2$. Calculate the pressure. $20 N \div 4 m^2 = 5 N/m^2$
 Notice that the unit of pressure here is N/m^2 (newtons per square metre). Sometimes you will see another unit being used. This is called the **pascal** and it has the symbol Pa.

If you walk through snow, you usually sink into it. This is because your shoes have a small surface area. Your weight is only spread out over a small area, so the pressure on the snow is high. However, you will not sink so far into the snow if you are on skis. This is because your weight is spread out over a greater surface area, so the pressure on the snow is low.

6. Pressure in liquids and gases



A fluid is a substance with no fixed shape - a gas or a liquid.
 Liquid pressure acts in **all directions** - liquids are **incompressible**.
Upthrust acts on objects that are floating or submerged. If the force hitting the bottom of an object in water is more than the air above the object, then it will float due to the resultant force.

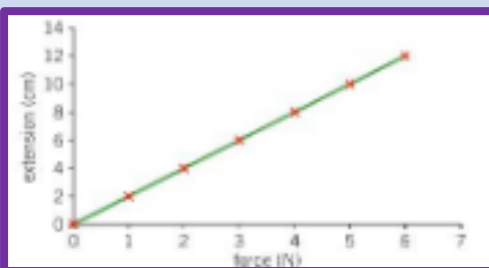
You increase the pressure of a gas by **reducing the area** it is in, therefore squashing the particles closer together. **Heating** a gas will also increase the pressure.

Atmospheric pressure is pushing down on you all the time, but your body is pushing gases and liquids out which balances it and therefore you don't feel it.

Atmospheric pressure decreases with height, and liquid pressure increases with depth.

The amount an object stretches is called **extension**. A bungee cord will stretch when the person falls and bring them back up when it has reached its **limit**.

An object obeys **Hooke's law** when the force and extension are **directly proportional** - this means when one **doubles** the other **doubles**



7. Hooke's law



Further Reading



Friction	https://www.youtube.com/watch?v=n2gQs1mcZHA
Moments	https://www.youtube.com/watch?v=22VGQM1jCn8
Pressure, Liquids and Gases	https://www.youtube.com/watch?v=yP9usmMpQeQ
Hooke's Law	https://www.youtube.com/watch?v=zJs27xNdKOM

Knowledge Organiser - Year 8 - Science - Photosynthesis

1. Key Words

Fertilisers: Chemicals containing minerals that plants need to build new tissues.

Photosynthesis: A process where plants and algae turn carbon dioxide and water into glucose and release oxygen.

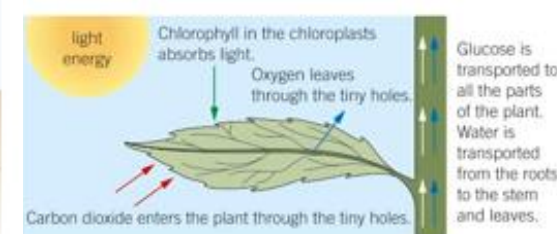
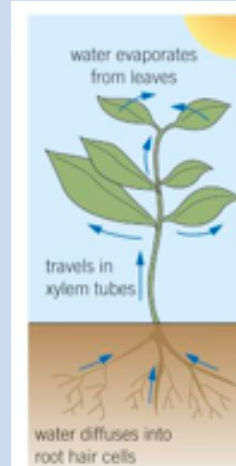
Chlorophyll: Green pigment in plants and algae which absorbs light energy.

Stomata: Pores in the bottom of a leaf which open and close to let gases in and out.

Iodine: A chemical used to test for the presence of starch

2. Photosynthesis

Plants make food using photosynthesis. This needs light, carbon dioxide and water. It produces glucose, and oxygen as a by-product. Leaves are adapted to carry out photosynthesis. The glucose produced can be used for: plant energy storage, building new plant material or producing other types of food e.g. proteins or fats.



3. Leaves

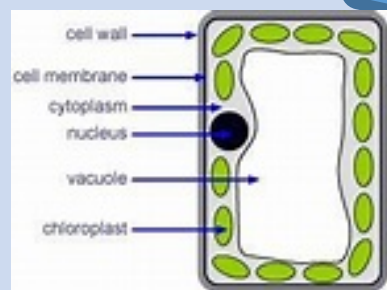
Structure of a leaf

Green (chlorophyll to absorb sunlight)

Thin (allow gases to diffuse in and out easily)

Large surface area (absorb as much sunlight as possible)

Veins (phloem and xylem)

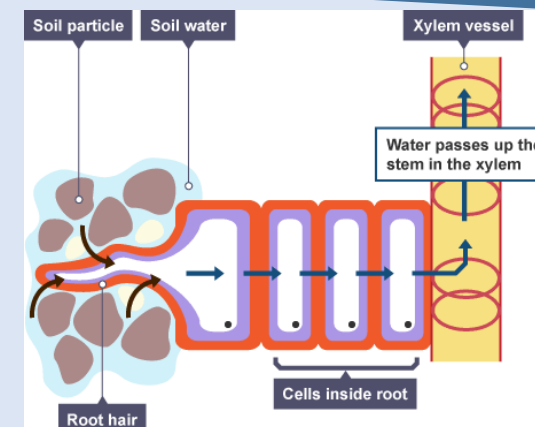


A plant's roots sit below the soil and the stem grows above it.

The roots of a plant take up water and nutrients from the soil. They also anchor the plant to the ground and keep it steady. The structure of the root helps with this.

The root hairs are where most water absorption happens. They are long and thin so they can penetrate between soil particles and they have a large surface area for absorption of water.

4. Plant roots and minerals



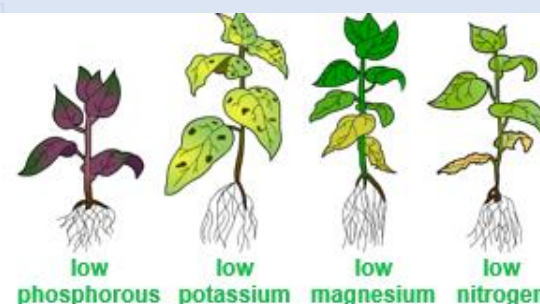
Magnesium ions and nitrate ions are needed by plants. A plant will not grow well if it cannot get enough of these ions, and it will show symptoms of **mineral deficiency**.

5. Testing for starch and oxygen



You can collect the gas produced by a plant and test it with a glowing splint. If the splint relights, the gas is oxygen.

1. Heat a plant leaf in boiling water for 30 seconds (this stops its chemical reactions)
2. Heat it in boiling **ethanol** for a few minutes (this removes most of its colour)
3. Wash with water and spread onto a white tile
4. Add iodine solution from a dropping pipette
5. If starch is present, **iodine** turns a **blue black** colour



- Nitrates** (contain nitrogen) - for healthy growth
- Phosphates** (contain phosphorus) - for healthy roots
- Potassium** - for healthy leaves and flowers
- Magnesium** - for making chlorophyll

Further Reading

Photosynthesis	https://www.bbc.co.uk/bitesize/articles/zn4sv9q
Structure of a leaf	https://www.bbc.co.uk/bitesize/articles/z6btng8
Investigating photosynthesis	https://www.bbc.co.uk/bitesize/articles/z6btng8

1. Key Words!

Knowledge Organiser - Year 8 - Science - Energy and Reactions

2. Thermal Decomposition



The thermal decomposition of copper(II) carbonate is easily demonstrated

Some chemical reactions need energy to start them off. This energy can be in the form of heat, light or electricity. When you use energy to split up compounds they are **decomposed**. Some compounds break down when heated, forming two or more products from one reactant. This type of reaction is called **thermal decomposition**. For example, copper carbonate breaks down easily when it is heated:
copper carbonate → **copper oxide + carbon dioxide**
 $CuCO_3 \rightarrow CuO + CO_2$

Complete Combustion:

Hydrocarbon fuels are made from the elements carbon and hydrogen. When hydrocarbons burn they use oxygen and form carbon dioxide and water, and release heat energy. We can show the reaction using a word equation.



If there is plenty of air, **complete combustion** happens: the hydrogen atoms combine with oxygen to make water vapour, H₂O the carbon atoms combine with oxygen to make carbon dioxide, CO₂ the maximum amount of energy is released

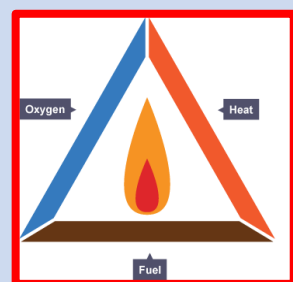
Incomplete Combustion:

If there is not enough oxygen available, carbon monoxide or even soot is produced during **incomplete combustion**.

4. Combustion

3. Fire Triangle

If one of the sides of the fire triangle is removed, a fire will not start, and a fire that is already burning will go out. Fire-fighting relies on this principle. The fire will go out when the fuel runs out, but it is often unsafe to leave a fire that long



Heat: A source of heat is required in order for ignition to occur, and different materials have different 'flash points'

Fuels: A fire cannot begin if there is no material to burn. Homes and businesses are full of flammable materials, such as paper, oil, wood and fabrics.

To sustain the combustion reaction, oxygen is needed, as it reacts with the burning fuel to release heat and CO₂. Earth's atmosphere consists of 21% oxygen, so there is plenty available to trigger a fire if the other two components are present.

5. Endothermic Reactions

Endothermic reactions take in energy from the surroundings.

The energy is usually transferred as heat energy, causing the reaction mixture and its surroundings to get colder. The temperature decrease can also be detected using a thermometer. Some examples of endothermic reactions are:

Thermal decomposition
Cooking an egg

FUN FACT!
Endothermic reactions can be used for everyday purposes. For example, certain sports injury cold packs use endothermic

6. Exothermic Reactions



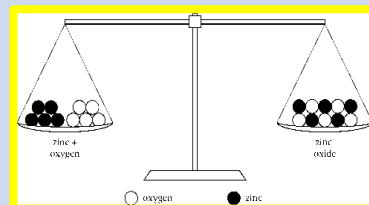
Exothermic reactions **transfer energy to the surroundings**. The energy is usually transferred as heat energy, causing the reaction mixture and its surroundings to become hotter. The energy level decreases in an exothermic reaction. This is because energy is given out to the surroundings.

Some examples of exothermic reactions are:

Making an ice cube. Rusting of iron.
Snow forming in clouds. Burning of sugar.
Burning of a candle.

7. Law of Conservation of Mass

In a chemical reaction, the mass of the reactants is always the same as the mass of the products. This is because atoms are not created or destroyed in chemical reactions; they are just rearranged into different compounds.



8. Further Reading



Fire Triangle	https://www.youtube.com/watch?v=URlYms6XGGk
Physical and Chemical Changes	https://www.youtube.com/watch?v=x49BtB5dOwg
Combustion	https://www.youtube.com/watch?v=cRnpKjHpFyg
Decomposition	https://www.youtube.com/watch?v=o9ArhzjrQNY
Endothermic and Exothermic Reactions	https://www.youtube.com/watch?v=eJXL0lrbtqE

1. Key Words!

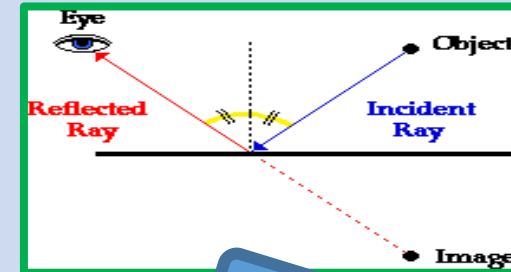
Year 8 - Knowledge Organiser - Science - Light Waves

- Incident ray:** The incoming ray.
- Reflected ray:** The outgoing ray.
- Normal line:** From which angles are measured, at right angles to the surface.
- Angle of reflection:** Between the normal and reflected ray.
- Angle of incidence:** Between the normal and incident ray.
- Refraction:** Change in the direction of light going from one material into another.
- Absorption:** When energy is transferred from light to a material.
- Scattering:** When light bounces off an object in all directions.
- Transparent:** A material that allows all light to pass through it.
- Translucent:** A material that allows some light to pass through it.
- Opaque:** A material that allows no light to pass through it.
- Retina:** Layer at the back of the eye with light detecting cells and where an image is formed.

Light travels as transverse waves and faster than sound. It can be reflected, refracted and dispersed. Ray diagrams show what happens to light in mirrors and lenses. Eyes and cameras detect light. *When drawing ray diagrams, light travels in **STRAIGHT LINES** so should always be drawn with a **SHARP PENCIL** and a **RULER!!!***

The LAW of REFLECTION!

Angle of incidence = Angle of Reflection



2. Reflection

Good reflectors are...
Light colours
flat
plane
shiny

4. Colours

A red filter absorbs all colours...



White light consists of seven colours (ROYGBIV)
We see colour as 6/7 are absorbed and one is reflected.

Filters only allow certain wavelength (colours) through. The others are absorbed.
Two different filters in front of each other = Black as all light absorbed

6. Vision Problems

Times people may suffer from damage to their eyes and/or sight. Sometimes people are born with these problems and sometimes these problems can develop. Some common eye related problems are: blurred vision (which can be corrected using glasses with lenses, contact lenses or laser eye surgery), age related sight loss, cataracts, colour blindness. Lots of these conditions are treatable, but it is important to remember to protect your eyes where possible for example, not looking directly at bright lights and wearing sunglasses.



8. Further Reading

Colour Spectrum

<https://www.youtube.com/watch?v=Gf33ueRXMzQ>

Reflection and Refraction

<https://www.youtube.com/watch?v=BL2MtP7j-xk>

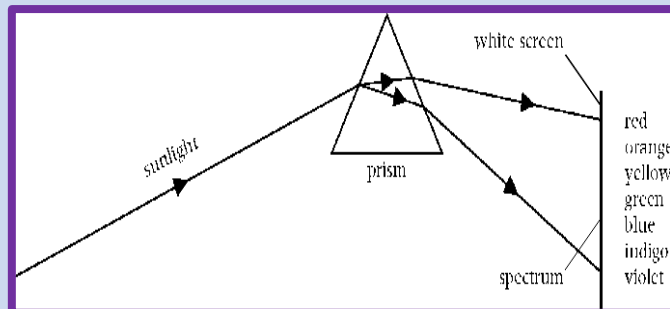
The Eye

<https://www.youtube.com/watch?v=syaQgmxb5i0>

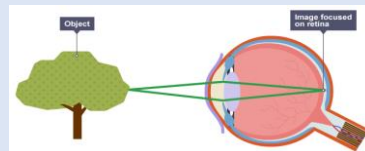
Light waves change speed when they pass across the boundary between two substances with a different **density**, such as air and glass. This causes them to change direction, an effect called **refraction**.

As light enters a more dense medium it slows down and bends **TOWARDS** the normal. As light leaves a more dense medium it speeds up and bends **AWAY** from the normal.

3. Refraction



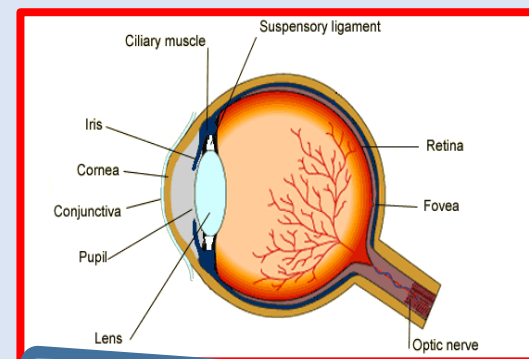
The organ we use for seeing!



We see objects because light reflects from an object **INTO** the pupil.
Coloured part = **IRIS**
PUPIL = black middle bit
LENS focusses light onto the **RETINA**.
Retina consists of **RODS (Shades)** and **CONES (Colours)**

Cameras are devices that focus light from an object onto a **photo-sensitive material** using a lens. In an old-fashioned camera, the photo-sensitive material was camera film. When the film absorbed light, a chemical change produced an image in the film, called the 'negative'. This was used to produce a photograph on photo-sensitive paper.

In a modern camera or the camera in a mobile phone, the photo-sensitive material produces electrical impulses, which are used to produce an image file. This can be viewed on the screen, or its information sent to a printer.



5. The Eye

7. The camera

