Knowledge Organisers
Year 7
Summer 2022

Knowledge Organisers

Contents

*Some subjects have Knowledge Organisers which last two terms or a year, therefore it will be the same as in past booklets.

An Introduction to Knowledge Organisers

What is a Knowledge Organiser?

A knowledge organiser is a document, usually one side of A4, occasionally two, that contains key facts and information that children need to have a basic knowledge and understanding of a topic, or in some cases a series of topics.

Students are expected to bring their Knowledge Organiser Booklet to school every day. Students will be issued with a new booklet to bring each term. However, it is import they keep the old booklets to help with revision for end of year exams.

What are the benefits of knowledge organisers?

The main benefit of knowledge organisers is that they give students and parents the 'bigger picture' of a topic or subject area. Some topics can be complicated, so having the essential knowledge, clear diagrams, explanations and key terms on one document can be really helpful.

Research shows that our brains remember things more efficiently when we know the 'bigger picture' and can see the way that nuggets of knowledge within that subject area link together. Making links, essentially, helps information move into our long-term memory.

How can the students use them?

As mentioned earlier, students are expected to bring their Knowledge Organiser Booklet to school everyday. In lessons they can be used in a number of ways, for example, to look up the meaning of key words, spell words correctly and do some additional work if they have finished classwork.

At home knowledge organisers can be used to support homework, independent work and revise for tests and exams. Two quick and easy ways to do this are:

1. Look, cover write, check – look at part of the knowledge organiser, cover it, write as much as you can remember and then check it
2. Word up – Pick out any words you don't understand. Use a dictionary or thesaurus to find the meaning. If they don't help as your teacher.

The more often you do this the better. YouTube has some clips on them; search 'Mr Garner look, cover, write, and check 'and 'Mr Garner word up'

How can parents use them?

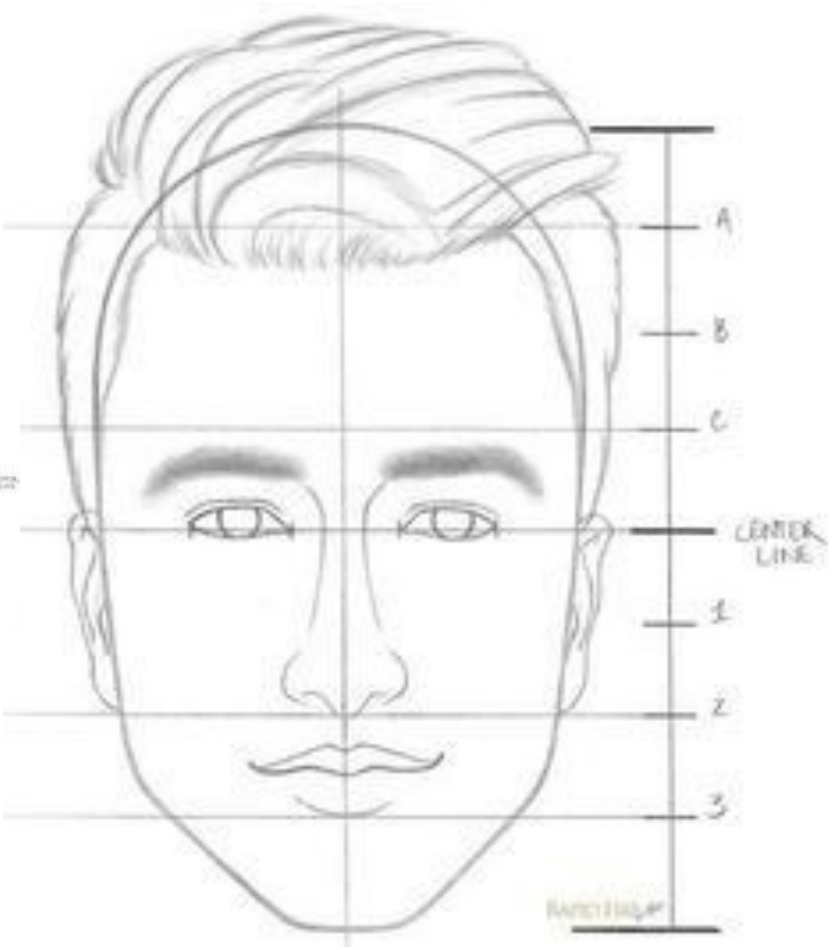
- Read through the organiser with your son/daughter – if you don't understand the content then ask them to explain it to you – 'teaching' you helps them to reinforce their learning.
- Test them regularly on the spellings of key words until they are perfect. Get them to make a glossary (list) of key words with definitions or a list of formulae.
- Read sections out to them, missing out key words or phrases that they have to fill in. Miss out more and more until they are word perfect.

How the booklet is organised

The knowledge organisers are in alphabetical order by subject.

YEAR 7 ART PORTRAITS

Knowledge Organiser - Term 2 & 3

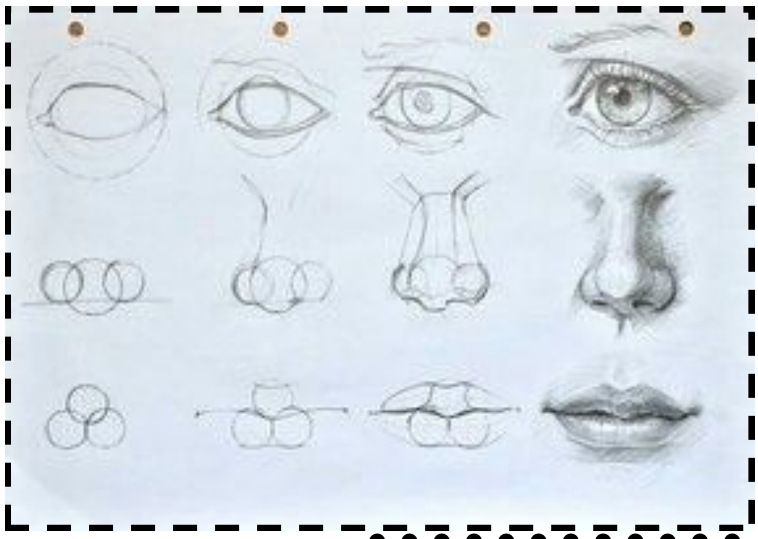


KEY WORDS

- Proportion
- Guide lines
- Tone
- Shape
- Portrait
- Texture
- Composition
- Symmetry
- Mark Making
- Highlight
- Technique
- Style
- Expression
- Skin tone

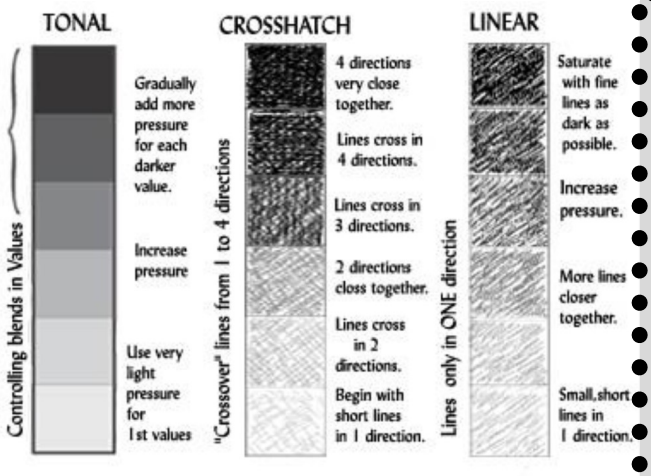
WHERE TO PLACE THE FEATURES PROPORTION RULES

- The eye line – typically half way between the top of the head and the chin
- The width of the distance between the eyes – the width of one eye
- Eye level to the end of the nose – most variable measurement and must be taken from the model. I assume that means that this measurement is important in getting a good likeness.
- The centre line of the mouth – typically about a third between the nose (end or base?) of the chin
- The inside corner of the eyes line up vertically with the edge of the nostrils
- The centre of the pupils line up vertically with the corners of the mouth



Well Known Portrait Artists

- Pablo Picasso
- Van Gogh
- Andy Warhol
- David Hockney
- Lucian Freud
- Frida Kahlo



Skills

Planning/proportion
Tone for 3D & surface qualities
Artist understanding/ application
Painting techniques
Measurements/Grid planning
Developing intentions and ideas
Colour mixing/ Presentation skills

```
from turtle import *

down()
fd(50)
rt(90)
fd(50)
rt(90)
fd(50)
rt(90)
fd(50)
rt(90)
up()
```

This program draws a square. The **sequence** of instructions is important. If they are in a different order, the outcome of the program will be different.

down() and up() tell the turtle to start and stop drawing.

fd(50) moves the turtle forward 50 steps.

rt(90) rotates the turtle 90 degrees to the right (clockwise)

```
from turtle import *

down()
for i in range(4):
    fd(50)
    rt(90)
up()
```

This program does exactly the same thing. However, it uses a loop to repeat instructions, making it shorter and therefore easier to edit if necessary. This is known as **iteration**.

`for i in range(4):`

means to repeat the instructions that are indented 4 times.

```
from turtle import *

sides = 4
steps = 50

down()
for i in range(sides):
    fd(steps)
    rt(360/sides)
up()
```

The program has been improved further here. It uses two **variables**, *sides* and *steps*.

This makes the program more flexible, by being able to draw shapes of different number of sides.

The number of degrees to rotate has been calculated by an **arithmetic operation**: 360 ÷ sides. We use '/' as the division operator (instead of ÷) in computing.

Computing: Programming with Python

```
from turtle import *

sides = input("How many sides?")
sides = int(sides)
steps = 50

down()
for i in range(sides):
    fd(steps)
    rt(360/sides)
up()

print("I've drawn a shape with",sides,"sides")
```

This time the program asks the user how many sides the shape should be. This is known as **user input** and the answer is stored in the variable *sides*.

Once the shape has been drawn, the program **outputs** text to the screen.

```
from turtle import *

print("Type r for a red shape, or b for blue")
col = input("")
if col == "r":
    color("red")
else:
    color("blue")
```

Finally, the user is given a choice of colours.

The user enters a colour which is stored as variable 'col'

This part of the program uses a **Boolean expression** to compare col variable with 'r'.

If this is *true* (the users types 'r'), the pen colour is red.

If this is *false* (the user doesn't type 'r'), the pen will be blue. *If... else* statements are known as **selection**.

Drama Knowledge Organiser: Year 7

Charlie and the Chocolate Factory

- Students to perform in 'stereotype' linking to the main characters in the book – Charlie Bucket, Mike TV, Augustus Gloop, Violet Beauregarde and Veruca Salt.
- Using strong physicalisation to represent characters.
- Using and understanding scripts to perform in an effective way to fully embody the characters.
- Using role on the wall to fully create and develop a character.
- Developing the skill of Tableaux.

Roald Dahl

- Students will different Roald Dahl stories, The BFG, The Twits, Georges Marvellous Medicines, Matilda and James and the Giant Peach.
- Using the skills of Physical Theatre, Hot Seating, Conscience Alley, Choral Speaking, Tableaux and Script.
- Understanding the themes and messages within the different stories.

Harry Potter

- Students to use physical theatre (performing using your body with gesture and movement).
- Looking at key characters from the book – Harry Potter, Ron Weasley, Hermione Granger, The Dursleys, Snape.
- Understanding different types of genre within theatre.
- Looking at stereotypical characters.
- Marking the moment – showing a significant moment within performance.
- Using exaggerated movement and gestures to show characters personalities and feelings.

Pantomime

- Inspired by Commedia Del Arte and clowning.
- Originated in Italy.
- Commedia means "the comedy"
- Very popular in Shakespearian time.
- Actors using no script – Improvisation – making up performance on the spot.
- Started by being performed on the street.
- Comedic in style – characters are very physical and over the top.
- Main Characters – Prince, Princess, Dame, Evil
- Choral elements are vital to this performance style – talking in unison.
- Singing, dancing and acting are involved.

Spy School

- Introduction to practitioner Konstantin Stanislavski and his 'System.'
- Stanislavski – Father of Modern Theatre born in 1863 from Russia – created Method Acting.
- Teacher in Role – teacher performing in character to create sense of realism.
- Naturalism – performance that is like real life.
- Physical Apparatus – actors voice and body.
- Hot Seating – questioning actors in role.
- Magic If – how the actor would feel IF they were in the characters situation.
- Emotion Memory – Using a past memory to influence your acting.

Key words

- Tableaux
- Characterisation
- Body Language
- Slap stick
- Marking the moment
- Stereotypes
- Physical Theatre
- Comedy
- Chorus/Ensemble
- Naturalism
- Magic If
- Emotion Memory
- Teacher in role
- Cross-cutting
- Over exaggeration
- Setting
- Script/Plot

<u>Important practitioners:</u>

- Stanislavski
- Commedia Del Arte

Employability:

Team work, Collaboration, Listening skills, Creative thinking, Leadership, Focus, Concentration, Positivity, Confidence, Self-belief, Self-discipline

Year 7 Cooking & Nutrition Knowledge Organiser – Developing Preparation Skills

Practical Skills

Skill Group	Techniques
Knife skills	Fruit and Vegetables—bridge hold, claw grip, peel, slice, dice and cut into even pieces.
Weigh and measure	Be able to demonstrate accurate measurement of liquids and solids.
Use of equipment	Use a blender, grater, vegetable peeler and potato masher.
Using the hob	• boiling and simmering • stir frying
Using the oven	• baking
Make sauces	Make a reduction sauce (pasta sauce)
Test for readiness	Use a knife/skewer, finger or poke test, bite or visual colour check to establish whether a recipe or ingredient is ready.
Judge and manipulate sensory properties	Demonstrate: • how to taste and season during cooking • presentation and food styling—use garnishes & decorative techniques.

Nutrition – The Eatwell Guide

Key Messages:

- Eat at least 5 portions of fruit and vegetables per day.
- Base meals on potatoes, bread, rice, pasta or other starchy carbohydrates.
- Have some dairy or dairy alternatives.
- Eat some beans, eggs, fish, meat and other proteins.
- Choose unsaturated oils and spreads and eat in small amounts.
- Drink 6-8 cups/glasses of fluid per day.

Equipment


Masher


Kitchen Scales


Measuring Jug

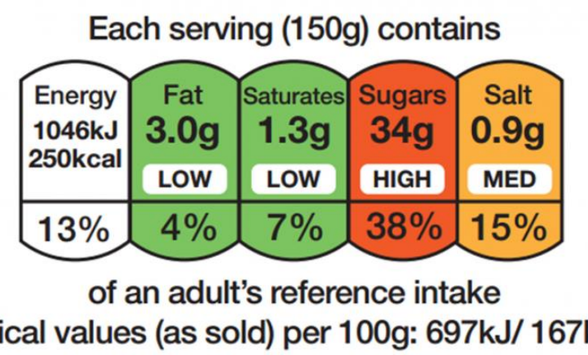

Fish Slice


Vegetable knife

Hygiene & Safety Rules
Tie up long hair
Wear an apron
Tuck tie in
Wash hands
No running
Use oven gloves when necessary
Clean practical equipment thoroughly

Key abbreviations: Weights and Measurements		
L	Litres	
g	Grams	
ml	millilitres	1000ml =1 litre
Kg	kilograms	1000g
Tbsp	tablespoons	15ml
Tsp	teaspoon	5ml
1pt	1 pint	568ml

Food Labelling



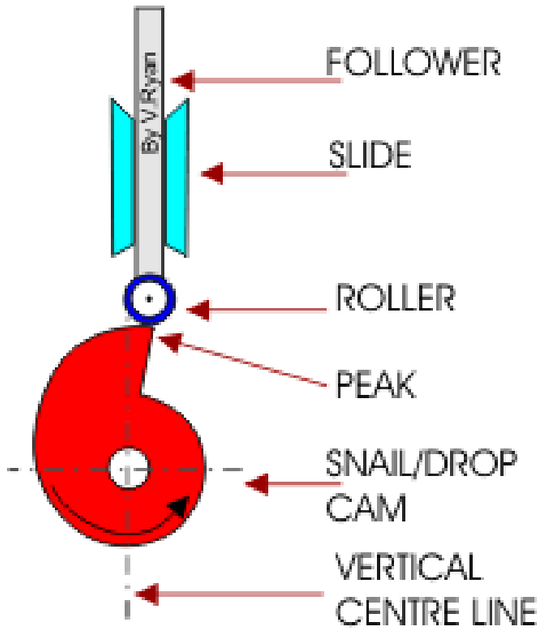
Year 7 Graphic Products Knowledge Organiser

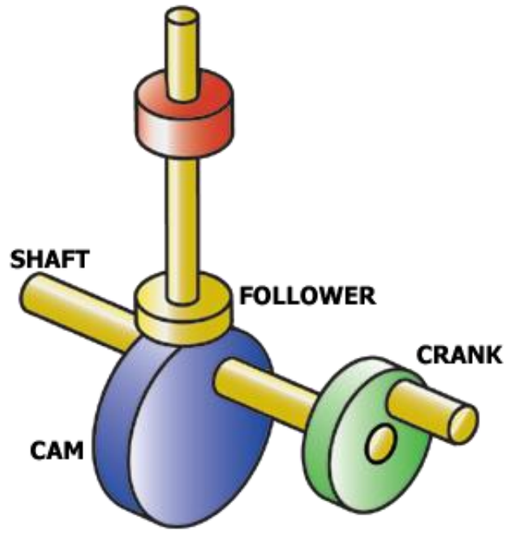
Automata Project

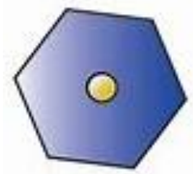
Key Skills

- Responding to a Design Brief
- Analysing & researching information
- Creating a suitable idea for a target audience
- Isometric drawing techniques
- Developing CAD drawing skills using:

  Serif Draw / Techsoft Design
- Rendering techniques
- Presentation skills
- Developing & testing
- Manufacturing with modelling materials (card & paper)
- Evaluating the design & making process





Cams	
 ROUND	 EGG-SHAPED
 ELLIPSE	 ECCENTRIC
 HEXAGON	 SNAIL

Key vocabulary	
Design Brief	An written outline which explains the aims and objectives and milestones of a design project.
Target Audience	The person or people most likely to be interested in your design or product.
Function	What a product does, how it works and what it will be used for?
Mechanism	A system of parts working together in a machine.
Motion	Something moving or being moved.
Cam	A rotating or sliding piece used to transfer rotary motion into linear motion or vice versa.
Modelling	To present ideas to the user (target audience) or client.
Evaluating	To judge or calculate the quality, importance, amount, or value of something
Linear Motion	Motion moving along a straight line.
Rotary Motion	Motion moving clockwise or anti-clockwise.

Year 7 Product Design Knowledge Organiser

design technology

Catamaran Boat Design

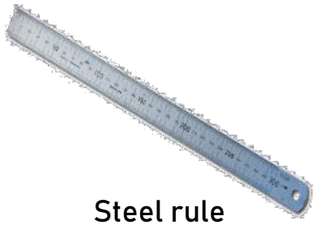
Key Skills

- Responding to a Design Brief
- Identifying a target audience and product function
- Applying Health & Safety procedures and PPE in the workshop environment
- Developing practical skills to create housing & dowel joints to join materials
- Identifying specific workshop tools and equipment
- Manufacturing a prototype model
- Finishing materials
- Presentation skills
- Evaluating the manufacturing process

Tools for working with Timber

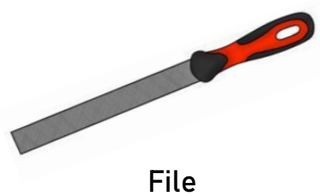

Try square


Bench vice


Steel rule


Marking gauge


Tenon saw


File


Belt & Disc Sander


Coping Saw


Bench hook


Pillar drill

Timber is a natural material with imperfections, knots and grain. Remember always sand with the grain	
Softwood 	From coniferous trees that are evergreen, which are faster to grow and are less expensive than hardwoods. Softwoods are a sustainable material as the resource can be regrown and not depleted. Softwoods are strong and easy to work with.

Health & safety in the workshop

Tie long hair back
Wear an apron
Wear safety goggles must be worn when using machinery
Move slowly around the workshop
Be aware of where the emergency stop buttons
Ensure the ventilation is switch on prior to using a machine
Only one person operating a machine at one time
Report any injuries or breakages to the teacher immediately

Key vocabulary

Design Brief	An written outline which explains the aims and objectives and milestones of a design project.
Function	What a product does, how it works and what it will be used for?
Target Audience	The person or people most likely to be interested in your design or product.
Materials	What something is made from.
Finishing	The process of applying a finish to preserve or protect a material & improve aesthetics.
Wood grain	Wood grain is the pattern made by the wood fibres in trees when it grows.
Modelling	To present ideas in 2D & 3D to the user (target audience) or client.
Prototype	A prototype is a model that is built to test to see if it is successful or whether it needs further modification or improvements.
PPE	Personal protective equipment are items such as goggles and aprons.

Year 7 Textiles Knowledge Organiser

Animal Cushion Design

Key Skills

- Responding to a Design Brief
- Analysing existing products
- Identifying a target audience
- Designing & annotating to include a range of decorative and construction techniques
- Demonstrating ability to complete a range of decorative by techniques by hand:
  - Embroidery stitches (running stitch, back stitch & blanket stitch)
  - Appliqué
  - Adding components e.g. buttons or googly eyes
- Using a sewing machine to complete construction techniques to make seams

Product features	
Creative design that is personalised	A theme that is identifiable and original
Hand embroidery	Consideration of a specified target market
Hand appliqué	Components used as decoration
Components used as decoration	Machine sewing

Health & safety
Follow teacher instructions
Move slowly around the room do not run
Tie long hair back
Hold scissors or shears correctly when walking around the room.
Report any injuries or breakages to the teacher immediately

Key vocabulary	
Decorative	Being aesthetically pleasing to the eye.
Materials	What something is made from?
Components	The parts/materials/threads needed to make a product.
Function	What a product does, how it works and what it will be used for?
Aesthetics	How a product or design looks .
Target Audience	The person or people most likely to be interested in your design or product.
Embroidery	Even stitch widths and lengths completed by hand sewn stitches.
Appliqué	A decorative technique whereby one material is sewn on top of another by hand.
Design Brief	An written outline which explains the aims and objectives and milestones of a design project.

ENGLISH KNOWLEDGE ORGANISER: OUR HEROES AND PERSUASIVE VIEWPOINT WRITING YEAR: 7 UNIT: 4

IMPRESSIVE PERSUASIVE TECHNIQUES

Rhetorical questions	Questions that don't require an answer. They prompt thinking about an issue.
alliteration	Repetition of consonant sounds
Facts **opinions**	Correct and provable information A view formed about something that can't necessarily be proved
rhetoric	Formal word for persuasion
emotive language	Language that stirs the emotions
superlatives	Word that end in '-est' or use 'most – ' to emphasise that something is stronger comparatively
tripling	Using three words or three phrases to emphasise and idea
***irony**	Suggesting the opposite is true
***hyperbole**	A formal word for exaggeration or being 'over the top'!
***anaphora**	Using a phrase to begin more than one clause of sentence, such as 'I Have a dream…' in Martin Luther King's famous speech

PUNCTUATION REMINDERS

***semi-colon**	**Used to replace 'and' in a compound sentence:** *Like an angel, the sun shone; there wasn't a cloud to be seen.*
***colon**	**Means 'Here's my evidence' and follows a simple statement:** *Majestically, the princess created a stir: she was beautiful!*
***dash**	**Single: Used to emphasise a description at the end of a sentence:** *Happily, the sun shone – its rays reached across the whole land.* **Double: Used to emphasise a description with further emphasis:** *The sun's rays – its burning, radiant rays – shone across the kingdom.*

SENTENCE STARTERS

connective	Begin with a linking word to add, develop, change or emphasise ideas
fronted adverbial	Begin a sentence with an – ly word or other adverb (word that describes a verb)
2 x adjective starter	Begin with two adjectives; use a conjunction between them like 'and'
preposition starter	State where the subject is to begin the sentence
***litotes**	Begin with the negative: use 'Nothing…' or 'Never…' for example
***simile starter**	Begin with 'Like….' to begin with a simile

ORGANISING YOUR WRITING TO PERSUADE

Begin with a catchy introduction, offer some background, state your main ideas in detail and then finish with a powerful conclusion.

KEY SPELLINGS FOR THIS SCHEME OF WORK

rhetoric	alliteration	repetition	personification
persuasion	tripling	hyperbole	exclamation
irony	statistics	metaphor	interrogative (sentences)
anecdote	anaphora	simile	imperatives

ENGLISH KNOWLEDGE ORGANISER: SHAKESPEAREAN COMEDY YEAR: 7 UNIT: 3

SHAKESPEAREAN COMEDY

- In this unit, you will study a play by William Shakespeare and focus on the genre of the Shakespearean Comedy.
- You will learn about the different features of a Shakespearean comedy and understand why audiences enjoyed the genre when they were first written and performed – and also why they're still enjoyed in the 21st century.
- You will focus your analysis on key characters from the play you study and understand how comedy is created by Shakespeare, exploring the impact of language, characterisation and other dramatic devices.
- We hope you will enjoy and be amused by the play that you study!

'A MIDSUMMER NIGHT'S DREAM'

- First performed in 1595
- One of Shakespeare's comedies
- It is typical of Shakespeare's comedies because it involves romance, a happy denouement, confusion, a mix-up and some slapstick/farcical elements such as Bottom gaining an ass' head!
- The play was often performed at courtly marriages because of its light-hearted nature and three marriages.

'THE TEMPEST' BY WILLIAM SHAKESPEARE

- First performed in 1595 – his final play
- One of Shakespeare's comedies
- It is typical of Shakespeare's comedies because it involves romance, a happy denouement, confusion, a mix-up and some slapstick/farcical elements such as Stephano and Trinculo's scenes
- The exploration of power and legacy perhaps reflects Shakespeare's own reflections as he approached the end of his life – Prospero states. 'We are such stuff as dreams are made on'

KEY SPELLINGS FOR THIS SCHEME OF WORK

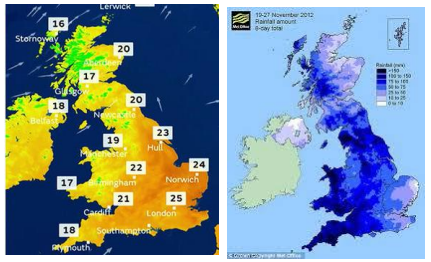
protagonist	Elizabethan	context	dialogue	climax
antagonist	comedy/comedic	archaic	soliloquy	medieval
dramatic	romance	myth	exposition	vernacular
Shakespeare(an)	humour	dramatic irony	denouement	farce

Year 7 Geography
Unit 4: Weather

Recording and observing the weather.
Wind direction – a wind vane is used. These show the direction from which the wind blows.
Anemometer – this is used to measure the wind speed. It is measured in metres per second.
Cloud cover – This is the amount of sky covered by cloud. It is measured in eighths.
Visibility – This is the distance that can be seen. It is measured in metres.
General weather – this describes the weather in words, e.g. rain, snow, showers, fog, mist, thunder, cloudy, fair or sunny.
Rain gauge – this is used to measure the amount of precipitation over a set period of time. It is measured in millimetres.

What is Britain's weather like?
1. North is colder than the south
2. West is wetter than the east

This is because:
- The North Atlantic Drift raises the temperatures in the west.
- Mountains lower temperatures by 1 degrees Celsius every 100m
- In the summer the sun warms the south more than the north.



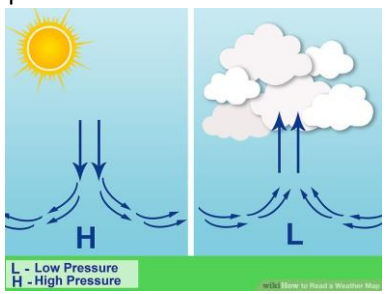
Microclimate – This is when the climate in a small area is different to the general surroundings.
- The wind can be reduced by buildings/walls which create shelter.
- The temperature can be increased by buildings releasing heat.
- Dark surfaces retain heat for longer warming the surrounding air.

What is rain? Clouds are made up of tiny drops of moisture called cloud droplets. They are only visible because there are billions of them crowded together. A cloud gives rain after these tiny cloud droplets grow into larger raindrops which fall to the ground.
1. Air rises
2. Air cools
3. Condensation occurs (vapour – liquid)
4. Precipitation occurs

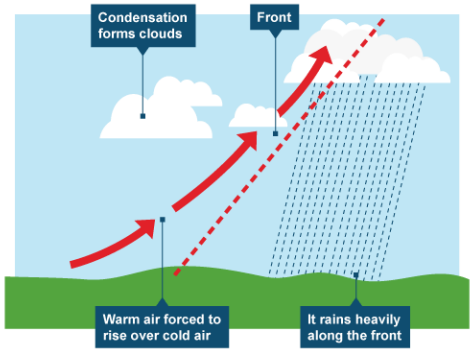
Low pressure system – depressions
Low pressure is where air rises, cools, condenses and forms cloud. When low pressure moves over the UK, we experience cloud and rain.

High pressure system – anticyclone
High pressure is where the weight of the air pressing down on us increases. This means air has cooled and is sinking. When high pressure moves over the UK, we experience cloudless skies.

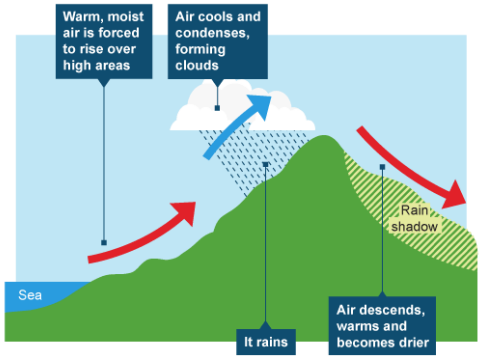
Wind is the movement of air from areas of high to low pressure.



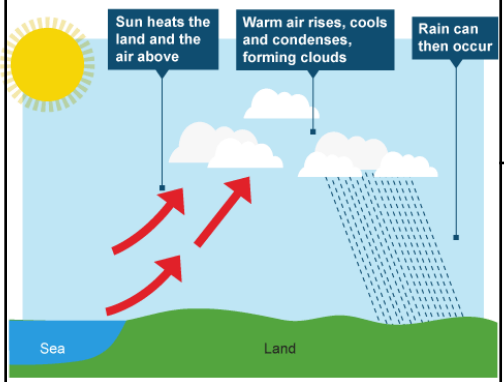
Frontal Rainfall



Relief Rainfall



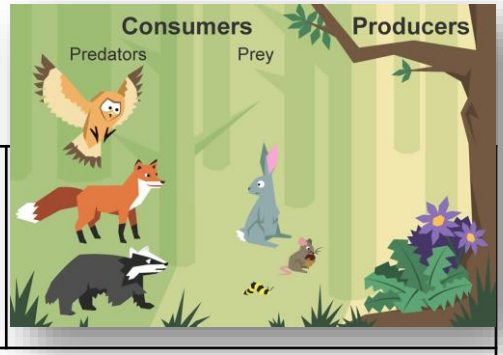
Convectional Rainfall



KEYWORDS

	Definition
Weather	Weather is the condition of the atmosphere over a short period of time. It relates to wind speed and direction, cloud cover, temperature, visibility and humidity.
Climate	Climate is the average weather for a place. It is calculated by collecting data over a 30 year period.
Meteorology	The study of weather.
Precipitation	This is the form of moisture in the sky. It can fall as rain, snow, hail or sleet.
Air pressure	The weight of the air pressing down on the earth's surface. It is measured in millibars.

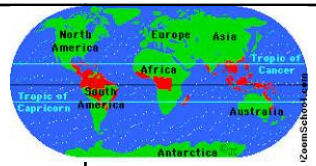
Year 7 Geography
Unit 3: Ecosystems



Plants get their energy from the Sun. They are called **producers** because they make their own food.
Animals are called **consumers** because they eat plants and other animals. They do not make their own food.
Animals that eat other animals are called **predators**. The animals they eat are called **prey**.

Tropical Rainforests

This biome is located on three continents:
- South America
- Africa
- South east Asia



The temperature ranges from 21 to 30 degrees Celsius. Rainfall remains high all year round.

The tropical rainforests are being cut down for the following reasons:
1. To sell the wood
2. To build on the land
3. To find minerals in the ground
4. To use the land for agriculture (cattle farming)

This means that:
1. Indigenous people lose their homes
2. Animals lose their habitat
3. Unique plants are lost forever
4. Less carbon dioxide is removed from the atmosphere. This will make the world a warmer place to live.

Deserts

Deserts are found along the Tropic of Capricorn and the Tropic of Cancer. The **largest** desert is the **Sahara**.
There is very little biodiversity in hot deserts because of the harsh climate.

In the day, temperatures can exceed 40 degrees Celsius but drop below 0 degrees Celsius at night.

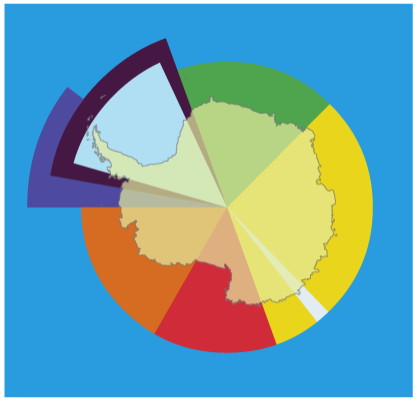
Plant adaptations - Plants have developed special adaptations to survive the harsh climate.

Spines -lose less water than leaves so are very efficient in a hot climate. They also stop animals from eating the plant.

Waxy skin - some leaves have a thick, waxy skin on their surface. This reduces water loss by transpiration.

Polar

Polar biomes, such as Antarctica, are cold and dry all year round. 99 per cent of it is covered by ice.
Antarctica is the 5th largest **continent**, 25 per cent larger than Europe.
During the winter, much of the water surrounding Antarctica freezes.
Countries have claimed ownership of parts of Antarctica.
The **Antarctic Treaty** was agreed in 1961 to help control human activity in the location and also to resolve disagreements over territory.
The biodiversity is low. **Emperor penguins** live in Antarctica. **Polar bears do not!**

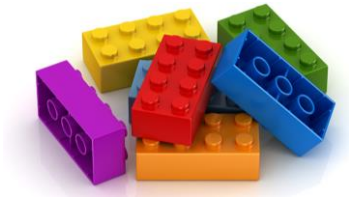


	Definition
Food Chain	A series of organisms each dependent on the next as a source of food.
Biome	A large naturally occurring ecosystem such as tropical rainforest.
Deforestation	The removal of trees.
Adaptation	The process of change by which an organism becomes better suited to its environment.
Sustainable	The process of maintaining a balanced environment. It is where we act in a way to provide for the needs of today without compromising the needs of the future generations.

Wellington History
Year 7 HT 5 Knowledge Organiser

How significant was Mansa Musa?

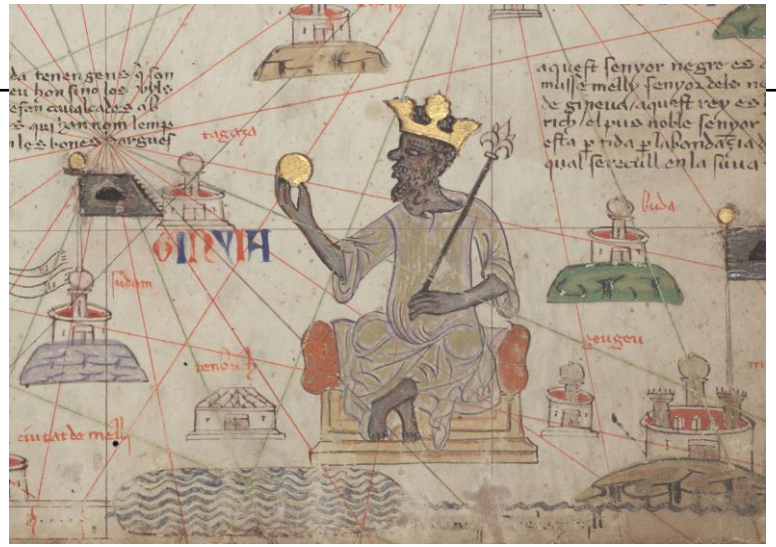
Who are the British (Prehistory to Modern Day)?



- ✓ **What and why?** You will learn about how different life was in Medieval Africa and what it means to be British.
- ✓ **Stop, think and link:** How different to Medieval Europe was Medieval Africa? How had Medieval immigration changed England?

❖ **Want to explore further?**

Podcast: BBC Homeschool History Mansa Musa
https://www.bbc.co.uk/sounds/play/m000jvqr
Website:
https://www.nationalgeographic.org/encyclopedia/mansa-musa-musa-i-mali/
Book: Mansa Musa: The Richest Man In History by Mike McCraw



Key Questions

- Why should we learn about Medieval Mali?
- What was life like in Medieval Mali?
- How was Medieval Africa similar to Medieval Europe?
- Why was Mansa Musa significant?
- How is the history of Britain so closely link to migration?
- Why are there two Irelands?
- Who are the British?

Key events and Key People

Mansa Musa – 14th Century Emperor of Mali
Sundiata – Musa's great uncle and the founder of the Malian Empire
Mansa Abu Bakr – Mansa Musa's uncle, the Emperor before Mansa Musa
1312 A.D. – Mansa Musa became Emperor
1324 A.D. – Mansa Musa's pilgrimage to Mecca
1337 A.D. – Mansa Musa dies
43 A.D – Roman invasion of Britain
1066 – Norman invasion of Britain
1921 – Partition of Ireland

Keywords

Mansa
King or ruler
Emperor
Ruler of an Empire
Empire
When a country rules land outside of its borders
Trade
The exchange of goods and services
Pilgrimage
A religious journey
Architect
A person who designs buildings
Wealth
An abundance of valuable possessions or money
Immigration
the action of coming to live permanently in a foreign country
Emigration
the act of leaving one's own country to settle permanently in another; moving abroad.
Invasion
an instance of invading a country or region with an armed force.
Partition
the action or state of dividing or being divided into parts.
Multi-culturalism
the presence of, or support for the presence of, several distinct cultural or ethnic groups within a society.

Key Stage 3 Topic 9: Equations and Inequalities

Topic/Skill	Definition/Tips	Example	Non-example
1. Solving linear equations	An inverse operation is the mathematical 'opposite' operation.	The inverse of addition is subtraction. The inverse of multiplication is division.	The inverse of adding 4 is not dividing by 4. The inverse of multiplying by 2 is not dividing by -2.
	When solving equations, we use the inverse operation. We solve them in the reverse order. We use fractional form for divisions which don't divide exactly.	$4x - 3 = 8$ $+3 \quad +3$ $4x = 11$ $\div 4 \quad \div 4$ $x = \frac{11}{4}$	$\frac{x+5}{3} = 9$ $-5 \quad -5$ (Wrong order) $\frac{x+5}{3} = 9$ $\div 3 \quad \div 3$ (Not inverse)
2. Solving linear equations involving expanding brackets	This follows the exact same procedure as above. You can either divide first (to avoid multiplying out the brackets) or Expand the brackets first and then proceed as normal. Dividing first sometimes simplifies the problem, sometimes it makes it more challenging.	$5(x+4) = 23$ $5x + 20 = 23$ $-20 \quad -20$ $5x = 3$ $\div 5 \quad \div 5$ $x = \frac{3}{5}$ $7(x-3) = 56$ $\div 7 \quad \div 7$ $x - 3 = 8$ $+3 \quad +3$ $x = 11$	$4(x+2) = 14$ $-2 \quad -2$ (Need to either expand the brackets or divide by 4 first)

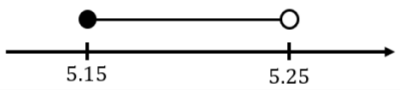
3. Solving linear equations with unknowns on both sides	This follows the same techniques as above, however first we must get all the unknowns on one side. It doesn't matter which side – look to add values where possible.	$7x - 8 = 10 - 2x$ $+2x \qquad +2x$ $9x - 8 = 10$ $+8 \quad +8$ $9x = 18$ $\div 9 \quad \div 9$ $x = 2$ $7x + 5 = 13x - 2$ $-7x \qquad -7x$ $5 = 6x - 2$ $+2 \qquad +2$ $7 = 6x$ $\div 6 \quad \div 6$ $x = \frac{7}{6}$	$10x - 1 = x + 7$ $\div x \qquad \div x$ (Dividing by x will not remove it from both sides)
4. Solving linear inequalities	This follows the same procedure as solving equations, except we write the inequality symbol instead of an equals sign. *Note: there is another difference but we will not cover this yet*	$8 - 3x \geq 4 + 2x$ $+3x \qquad +3x$ $8 \geq 4 + 5x$ $-4 \quad -4$ $4 \geq 5x$ $\div 5 \quad \div 5$ $\frac{4}{5} \geq x$	$6x + 25 < 14x - 23$ $-6x \qquad -6x$ $25 < 8x - 23$ $+23 \qquad +23$ $48 < 8x$ $\div 8 \quad \div 8$ $x < 6$ (Be careful with the final step).

Key Stage 3 Topic 6: Order of Operations

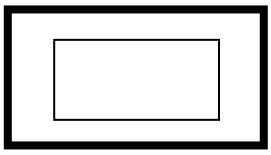
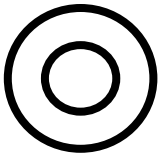
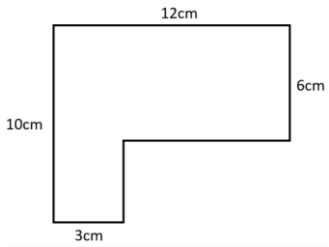
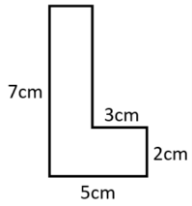
Topic/Skill	Definition/Tips	Example	Non-example
1. Powers	Addition can be thought of as repeated counting. Multiplication can be thought of as repeated addition. Powers/indices can be thought of as repeated multiplication.	$4+4+4+4+4=4\times5$ $4\times4\times4\times4\times4=4^5$	$2+7\neq2\times7$ $2\times7\neq2^7$
2. Order of Operations	A sum is a calculation which can be written as addition of two or more values. Subtraction can be written as the sum of a negative.	$10+7$ $11-8=11+-8$	12×9
	A product is a calculation which can be written as addition of two or more values. Division can be written as the product of the reciprocal.	10×7 $11\div8=11\times\frac{1}{8}$	$12+9$
	When working out a long calculation, we follow the idea of BIPS. **B**rackets **I**ndices **P**roducts **S**ums	$12\div4+3^2\times(5-1)$ $12\times\frac{1}{4}+3^2\times(5+-1)$ $12\times\frac{1}{4}+3^2\times4$ $12\times\frac{1}{4}+9\times4$ $3+36$ 39	$5-3\times5^2$ 2×5^2 10^2 100

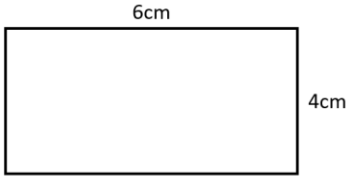
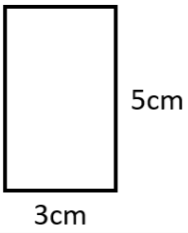
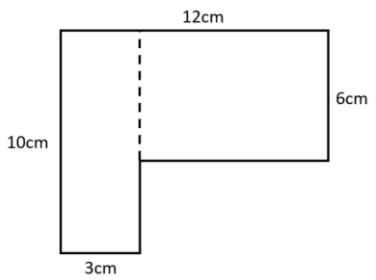
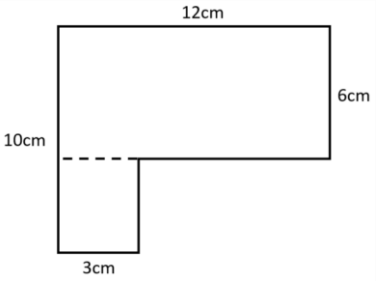
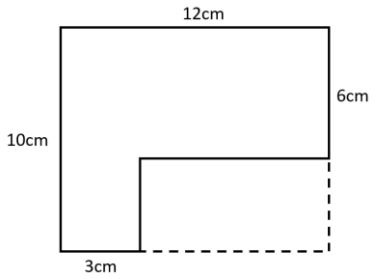
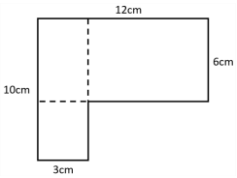
Key Stage 3 Topic 7: Rounding and Estimation

Topic/Skill	Definition/Tips	Example	Non-example
1. Rounding to 'place value'	When rounding to 'place value', we can round numbers to the nearest 10, 100, 1 000 etc. as well as 1, 2, 3, … decimal places. When the following digit is 0-4, we round down. When the following digit is 5-9, we round up.	$48\,754$ (nearest thousand) $49\,000$ $541\,387$ (nearest thousand) $541\,000$ 0.8564 (2 d.p.) 0.86 72.7601 (3 d.p.) 72.760	$48\,754$ (nearest ten) $48\,800$ 0.054 (2 d.p.) 0.06
2. Rounding to significant figures	The first significant figure of a number is the first non-zero number.	5 is the first significant figure of these numbers: $56\,234$ 0.00517	5 is not the first significant figure of these numbers: $45\,034$ 2.563
	We then round as normal, including all zeros that indicate the size of the number.	$45\,678\,345 = 45\,700\,000\ (3\text{s.f.})$ $0.071\,85712 = 0.072\ (2\text{s.f.})$	$23\,785$ $\neq 24\ (2\text{s.f.})$ 0.0351244 $\neq 0.0350000$ (2s.f.)

3. Bounds	A rounded number can take certain values on a number line. The greatest value is called the upper bound. The least value is called the lower bound. A filled circle means that value is allowed. A hollow circle means that value is not allowed.	A number rounded to 2 s.f. is 5.2. Represent the upper and lower bounds on a number line.  This can also be written as: $5.15 \leq n < 5.25$	

Key Stage 3 Topic 8: Perimeter and Area

Topic/Skill	Definition/Tips	Example	Non-example
1. Converting simple units	Metric units are what we commonly use to measure things. The follow the decimal system.	1 metre = 100 centimetres 1 kilometre = 1000 metres 1 cm = 10 millimetres	1m = 1000 km 1000m = 1mm
	To convert from a smaller unit to a larger unit, we divide. To convert from a larger unit to a smaller unit, we multiply.	4500 cm in metres: 4500 ÷ 100 = 45 m 2.75 cm in millimetres: 2.75 x 10 = 27.5	7 m to km: 7 x 1000 = 7000 12m to cm: 12 ÷ 100 = 0.12
2. Perimeters of compound shapes	The perimeter of a shape is the total distance around the outside edge of a shape. It is usually calculated by adding up the lengths of each side.	The thicker lines form the perimeter of this shape. 	Both black edges are not the perimeter. 
	To calculate the perimeter of compound shapes, we often need to find missing sides.	 Perimeter = 12 + 10 + 3 + 4 + 9 + 6	 P = 7 + 5 + 3 + 2
3. Estimating Basic Quantities	Learn and remember basic lengths that can support estimation.	The height of a door frame is roughly 2m tall. The width of one of your fingers is around 1cm. Your handspan is about … cm. Your arm length is about … cm.	

4. Areas of compound shapes	Area is the amount of space inside a shape. The area of a rectangle is the base x height. Area is measured in square units.	 Area = 6 x 4 = 24 cm^2	 Area ≠ 3 + 5 + 3 + 5
	Area of compound shapes can be made by calculating separate areas and adding them together or Calculating a larger area and subtracting 'missing' parts.	  	 Area ≠ 10 x 3 + 12 x 6

Key verb
Avoir = to have

J'ai	I have
Tu as	you have
Il a	he has
Elle a	she has
Nous avons	we have
Vous avez	you have
Ils/ elles ont	they have

Key verb
Être = to be

Je suis	I am
Tu es	you are
Il est	he is
Elle est	she is
Nous sommes	we are
Vous êtes	you are
Ils/ elles sont	they are

Key verbs (in the 1st person 'I')

Je m'appelle	I am called
J'ai	I have
Je suis	I am
Je fais	I do
Je joue	I play
Je vais	I go
Je nage	I swim
J'écoute	I listen
Je regarde	I watch
Je lis	I read
Je danse	I danse
J'étudie	I study
Je télécharge	I download
J'envoie	I send
Je parle	I talk
Je tchatte	I chat
Je surfe	I surf
Je retrouve	I meet

Intensifiers

Un peu	a (little) bit
assez	quite
très	very
trop	too

Connectives

et	and
aussi	also
mais	but
cependant	however
car	because

What do you like doing?

J'aime…	I like…
…retrouver mes amis	…meeting my friends
…regarder la télé	…watching TV
…jouer sur ma PS4	…playing on my PS4
…écouter de la musique	…listening to music
…faire les magasins	…going shopping
…faire du sport	…doing sport
…jouer au football	…playing football
…traîner avec mes amis	…hanging out with my mates
…téléphoner à mes copines	…phoning my mates.

Sequencing

D'abord	Firstly
puis,	then
ensuite,	then
finalement	finally

le matin	morning
l'après-midi	afternoon
le soir	evening

Question words

Qu'est-ce que…?	What…?
Qui… ?	Who…?
Quel/Quelle/Quels/Quelles.. ?	Which ?
Où… ?	Where…?
Quand… ?	When… ?
Pourquoi… ?	Why… ?
Comment… ?	How… ?

lundi, mardi, mercredi, jeudi, vendredi, samedi, dimanche.
janvier, février, mars, avril, mai, juin, juillet, août, septembre, octobre, novembre, décembre

Opinions

Je préfère	I prefer
J'adore	I love
J'aime	I like
Je n'aime pas	I don't like
Je déteste	I hate
Tu aimes…?	Do you like…?
Il aime	He likes
Elle aime	She likes
Oui, j'aime ça	Yes, I like that
Non, je n'aime pas ça	No, I don't like that
Je suis d'accord	I agree
Je ne suis pas d'accord	I don't agree
Ce n'est pas bien	It is not good
Je pense que…	I think that…
À mon avis…	In my opinion
C'est	It is
génial	great
cool	cool
bien	good
essentiel	essential
nul	rubbish
ennuyeux	boring
important	important
Ça m'amuse	It amuses me
Ça m'ennuie	It bores me
Ça m'énerve	It annoys me

School subjects

le français	French
le théâtre	drama
la géographie/la géo	geography
la musique	music
la technologie	technology
l'anglais (m)	English
l'EPS (f)	PE
l'histoire (f)	history
l'informatique (f)	ICT
les arts plastiques (m)	art
le dessin	art
les sciences (f)	science
les mathématiques/maths (f)	maths
éducation religieuse/la religion	RE

Places in town

Qu'est-ce qu'il y a… ?	What is there… ?
Il y a …	There is…
Il n'y a pas de…	there isn't
un centre commercial	a shopping centre
un centre de loisirs	a leisure centre
un château	a castle
une église	a church
un hôtel	a hotel
un marché	a market
une patinoire	an ice rink
une piscine	a swimming pool
des magasins	shops
des musées	museums

Frequency words

toujours
always
de temps en temps
from time to time
quelquefois
sometimes
d'habitude
usually
normalement
normally
tous les weekends
every weekend

Computers and mobile phones

Que fais tu… ?	What do you do/are you doing?
…avec ton ordinateur ?	…on your computer ?
…avec ton portable ?	…on your mobie phone ?
Je joue….	I play…/ I am playing…
Je surfe sur internet.	I surf/I'm surfing the net.
Je tchatte sur MSN.	I chat/I'm chatting on MSN.
Je regarde des clips vidéo.	I watch/I am watching video clips.
Je télécharge de la musique.	I download/I'm downloading music.
J'envoie des SMS.	I text/I'm texting.
Je parle avec mes ami(e)s.	I talk/I'm talking to my friends.

Là où j'habite

Qu'est-ce qu'il y a… ?	What is there… ?
Il y a …	There is…
un café	a café
un centre commercial	a shopping centre
un centre de loisirs	a leisure centre
un château	a castle
un cinéma	a cinema
une église	a church
un hôtel	a hotel
un marché	a market
un parc	a park
un restaurant	a restaurant
un stade	a stadium
une patinoire	an ice rink
une piscine	a swimming pool
des magasins	shops
des musées	museums
Il n'y a pas de…	there isn't

Les directions

Pardon…	Excuse me…
Où est…?	Where is… ?
Où sont…?	Where are… ?
C'est	It's… ?
à gauche	left
à droite	right
tout droit	straight on
au carrefour	at the crossroads
entre	between
derrière	behind
devant	in front of

Expressions of frequency

d'habitude	usually
normalement	normally
quelquefois	sometimes
de temps en temps	from time to time
tous les weekends	every weekend

High-frequency words

assez	quite
mais	but
ou	or
puis	then
très	very

Intensifiers

Un peu	a (little) bit
assez	quite
très	very
trop	too

Key questions

- Parle-moi de ta ville / ton village

- Qu'est-ce qu'il y a/ il n'y a pas / dans la ville/ le village ?

- Tu aimes ta ville/ ton village ?

- Pourquoi ?

- Tu vas où le weekend ?

- Tu veux aller … ?

- Qu'est-ce qu'on peut faire à ?

- Quelle ville préfères-tu ?

Sequencing

D'abord, puis, ensuite, finalement…

Tu veux aller+place ?

Tu veux aller **au** cinéma ?
Tu veux aller **à l'**église ?
Tu veux aller **à la** patinoire ?
Tu veux aller **aux** magasins ?

Opinions

Tu aimes ta ville/ton village ?
Do you like your town/village?

Je pense que…	I think that…
À mon avis…	In my view/opinion…
C'est	It is…
bien	good
super	super
joli	pretty
intéressant	interesting
ennuyeux	boring
vraiment nul	really rubbish
trop petit	too small
J'aime ça	I like it
J'adore ça	I love it
Je déteste ça	I hate it

Tu es d'accord ? Do you agree?
Oui, je suis d'accord Yes, I agree
Non, je ne suis pas d'accord No, I don't agree/I disagree

Coucou! Hi there!

Je veux	I want
Tu veux	You want
Il/elle veut	He/She wants
On veut	We want
Nous voulons	We want
Vous voulez	You (pl/formal) want
Ils/Elles veulent	They want

Bonne idée !	Good idea
Super !	Fabulous !
Génial !	Great !
D'accord	Ok
Oui, c'est super top.	Yes, that's really great
Oui, je veux bien.	Yes, I want to.
Non, je n'ai pas envie.	No, I don't want to
Si tu veux.	If you want to.
Non merci.	No, thanks

Qu'est-ce que on peut faire à… ?
What can you do at/in… ?

Je peux	I can
Tu peux	You can
Il/Elle/On peut	He/She/We can
Nous pouvons	We can
Vous pouvez	You (plural/formal) can
Ils/Elles peuvent	They can

aller au concert	go to a concert
faire du bowling	do bowling
faire du roller	do roller-skating
faire du skate	go skateboarding
faire du vélo	go cycling
jouer au babyfoot	play table tennis
manger au restaurant	eat at a restaurant

visiter les jardins/les monuments/les musées
visit gardens/monuments/museums

Year 7 German Knowledge Organiser: HT 5

Was machst du in deiner Freizeit? ***What do you do in your free time?***

basteln	*to do crafts*
einkaufen gehen	*to go shopping*
faulenzen	*to lounge/laze about*
fernsehen	*to watch television*
ins Kino gehen	*to go to the cinema*
lesen	*to read*
malen	*to paint*
mit Freunden chatten	*to chat/text with friends*
Musik hören	*to listen to music*
Musik machen	*to play/make music*
Rad fahren	*to ride a bike, to cycle*
Skateboard fahren	*to go skateboarding*
Ski fahren	*to ski*
Snowboard fahren	*to snowboard*
tanzen	*to dance*
Videospiele spielen	*to play video games*

Was für Musik hörst du gern?

die Musikart	*type of music*
die elektronische Musik	*electronic dance music*
die klassische Musik	*classical music*
der Schlager	*German pop*
der/die Komponist/Komponistin	*composer*
das Lieblingsstück	*favourite piece (of music)*
das Lied	*song*
Liedtexte (pl)	*song lyrics*
die Melodie	*melody*
der/die Sänger/Sängerin	*singer*
singen	*to sing*
die Stimme	*voice*
aggressiv	*aggressive*
hart	*harsh*
inspirierend	*inspiring*
schön	*beautiful*
Spielst du ein Instrument?	*Do you play an instrument?*
Ich bin nicht musikalisch.	*I am not musical.*

Key verb

SEIN = to be

Ich bin	I am
Du bist	you are
Er ist	he is
Sie ist	she is
Wir sind	We are

Key verb

HABEN = to have

Ich habe	I have
Du hast	you have
Er hat	he has
Sie hat	she has
Wir haben	We have

Pronunciation Tips

Letters	Sound
ei	eye
ie	ee
v	f
w	v

Was machst du oft/nie? *What do you often/never do?*

ausruhen/chillen	*to relax*
die Familienzeit	*family time*
die Schularbeit	*school work*
zocken	*to game/play video games*
zuhause bleiben	*to stay at home*

Ich spiele	***I play…***
die Geige	*violin*
die Gitarre	*guitar*
das Klavier	*piano*
das Musikinstrument	*musical instrument*
das Schlagzeug	*drums*
die Trompete	*trumpet*

Year 7 German Knowledge Organiser: HT 6

Key verb form

HABEN = to have

Ich habe	I have
Du hast	you have
Er hat	he has
Sie hat	she has
Wir haben	We have

Key verb form

SEIN = to be

Ich bin	I am
Du bist	you are
Er ist	he is
Sie ist	she is
Wir sind	We are

Adverbs

ab und zu	*now and then*
am Wochenende	*at the weekend*
einmal/zweimal pro Woche	*once/twice a week*
jeden Abend	*every evening*
jeden Tag	*every day*
manchmal	*sometimes*
nie	*never*
nur	*only*
oft	*often*
selten	*rarely*
denn	*because*

Opinions

Ich mag	*I like*
Ich mag (gar) nicht	*I don't like (at all)*
Ich liebe	*I love*
Ich hasse	*I hate*
aber	*but*
und	*and*
oder	*or*
denn	*because*
Es ist…	*It is…*
anstrengend	*tiring*
entspannend	*relaxing*
schwierig	*difficult*
Es macht Spaß.	*It is fun.*
Es gefällt mir nicht.	*I don't like it.*
Ich finde es…	*I find it…*

Ich (+verb) gern	**I like (+ verb)**
Ich (+verb) lieber	**I prefer (+ verb)**
Ich (+verb) am liebsten	**I like (+ verb) the most**

KEY VERBS

Ich heiße	I'm called/My name is
Ich wohne	I live
Ich habe	I have
Ich bin	I am
Ich mag	I like
Ich mag …nicht	I dislike/don't like
Ich spiele	I play
Ich mache	I do/make
Ich gehe	I go

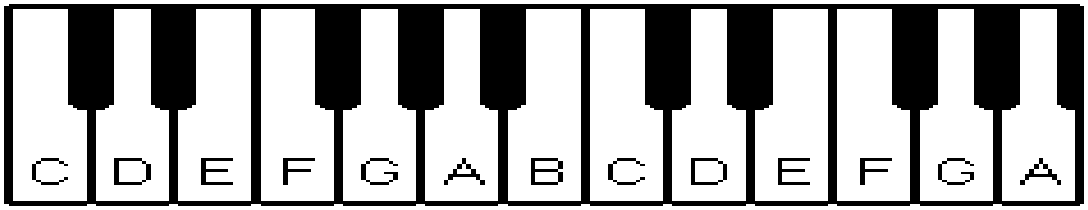
Connectives and qualifiers

oder	*or*
und	*and*
aber	*but*
ein bisschen	*a bit*
nicht so	*not very, not so*
vielleicht	*perhaps*
sehr	very
ziemlich	quite

How do I learn my German words ?

- **'Look Cover Write Check'**
- **Recording myself on my phone**
- **Have someone test me**
- **Making flashcards**
- **Practising 'little and often'**

Music Year 7 Knowledge Organiser: Popular Traditions (Summer Term)



Triad: A type of chord that has only 3 notes. You can work out the notes in a triad by playing the chord note, miss a note, play a note, miss a note and play a note.

C triad

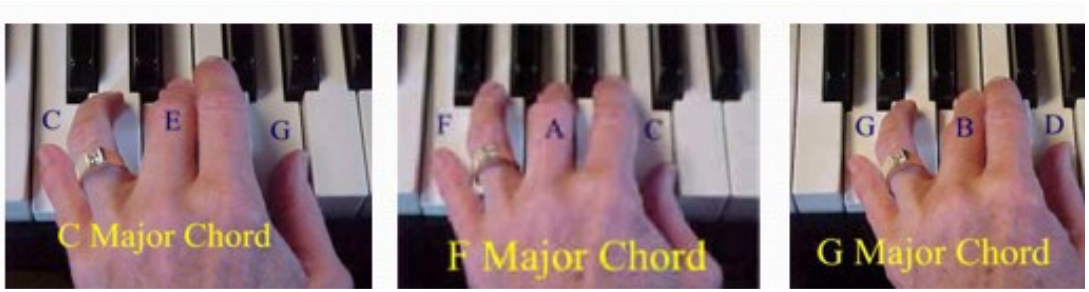
C - E - G

F triad

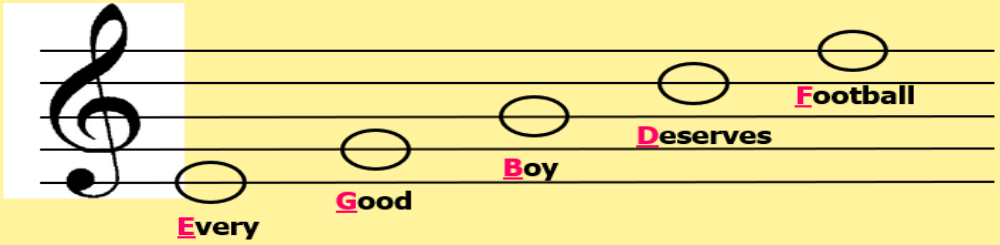
F - A - C

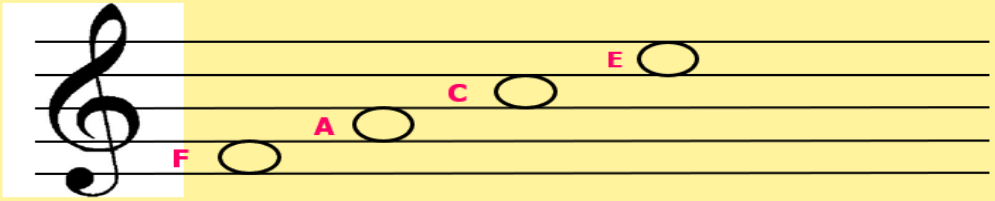
G triad

G - B - D



TREBLE CLEF NOTATION





LOOKS LIKE	SOUNDS LIKE	DURATION	NAME
	LI-I-I-ME 	4	SEMIBREVE
	GRA-PE 	2	MINIM
	PEAR 	1	CROTCHET
	APP-LE 	1/2 EACH	QUAVER (USUALLY GROUPED IN 2S)

Unit 5: Sex Education
Year 7

Skills

Develop skills of enquiry and advocacy via research and group work

Engage with and reflect on different ideas, opinions and beliefs to help develop personal opinion.

Can express and explain opinions through discussion and written assessments.

Develop empathy with the situations others may find themselves in

Knowledge

Discuss and review the life changes we have already experienced and hope to experience in the future.

Develop knowledge and understanding about the physical and psychological changes teenagers go through

Develop knowledge and understanding about puberty.

Understand what it means to be healthy: what contributes to a healthy diet.

Understand what eating disorders are and the dangers of extreme diets

pshe

Personal Social Health Education

Y7: REP

68% of the worlds population have stated that they have some belief in God or would claim to have some element of religious faith. Religion remains an important feature of our world and has been part of our lives for thousands of years. However, are we now at a crossroads where religions are often misunderstood, are misused and some would argue in decline. You are going to consider a variety of different religious, ethical and philosophical ideas to consider why religion is still important and the role it continues to play in the world today in shaping our views.

Knowledge Organiser

Religion

Lesson 1

What has religion ever done for us?

Can you give 2 examples why religion might be seen to be a positive thing & explain why?

Can you give 2 examples why religion might be seen to be a negative thing & explain why?

Lesson 4

The six main world religions: how much do you know?

What are the 6 main world religions and can you give facts and beliefs about each of them?

Lesson 7

Project: which religion will you study?

Can you give me facts & information about your religions beliefs about life after death, God(s), rules & laws?

Lesson 10

What makes you, you?

Can you explain and discuss different beliefs about what makes us, who we are? This Include religious views on the soul and self.

Ethics

Lesson 2

The Ten Commandments: Do we need laws and rules?

Can you explain why these rules may be seen to be important or unimportant in society today?

Lesson 5

Stereotyping and Prejudice: Are there enough good Samaritans?

Can you define the terms prejudice & discrimination and identify examples of this and what we can do to prevent them from happening? Can you link this to and describe the story of the Good Samaritan?

Lesson 8

Should we care about the world?

Can you give examples of how we are harming our planet and what religious groups believe we should do about this?

Lesson 11

The Trolley Problem: Can we make correct moral decisions?

What does it mean to be moral and make ethical decision? Can you make good ethical decisions?

Philosophy

Lesson 3

Does God exist?

Can you define the terms atheist, agnostic & theist?

Can you give arguments to suggest God does exist and arguments to suggest that God does not exist? Evidence is key here.

Lesson 6

How was the world made?

Can you give arguments to suggest that God is responsible for creating the world?

Can you give arguments to suggest that creation has nothing to do with God or a divine being?

Lesson 9

Life after Death – unrealistic?

Can you give the views of different religions on what might happen when we die?

Do you think there is any real proof of life after death?

Lesson 12

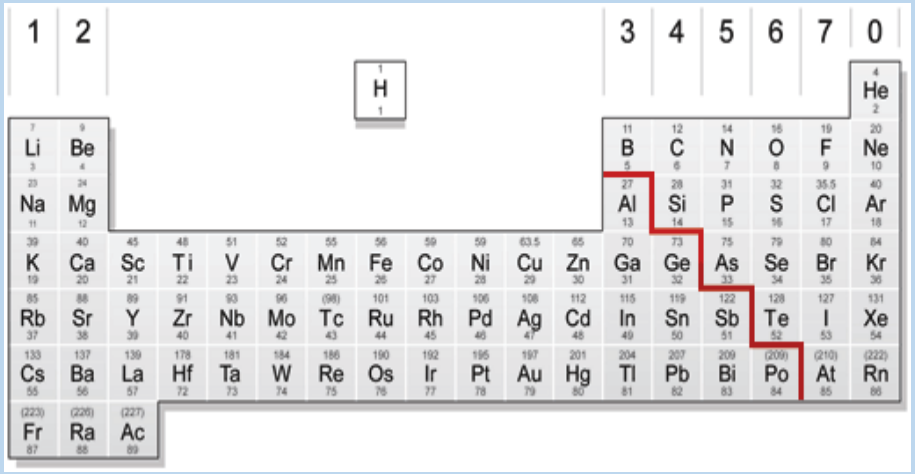
Do Atheists have a point?

Can you understand why some may choose to be a theist and an atheist?

Are atheists views too strong?

**Pupils will be assessed in lessons and complete an extended project on a religion of their choice. They will complete a formal examination at the end of the year.*

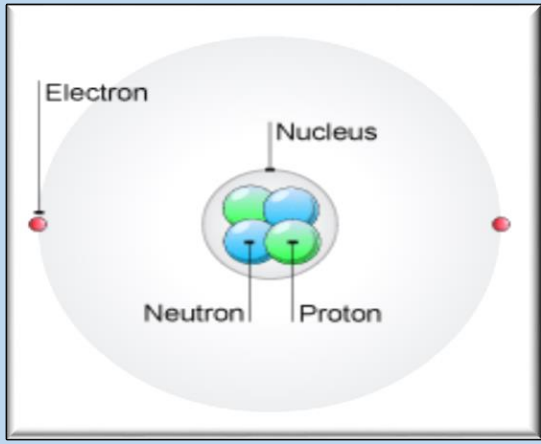
7C3
Knowledge Organiser The Periodic Table



The layout of the periodic table

Groups	Vertical columns are called groups. Each group has a number. Elements in a group have similar properties.
Periods	These are horizontal rows on the periodic table
Patterns and trends	These are relationships between elements in a group and how they can change e.g. melting point

The structure of the atom



Group 1- The Alkali metals

Elements	Lithium (Li) Sodium (Na) Potassium (K) Rubidium (Rb) Caesium (Cs) Francium (Fr)
Trends	Melting and boiling points **decrease** down the group. Reactivity **increases** down the group.
Reactions with water	React with water to produce a metal hydroxide and hydrogen. Reaction makes universal indicator turn alkaline solutions purple.

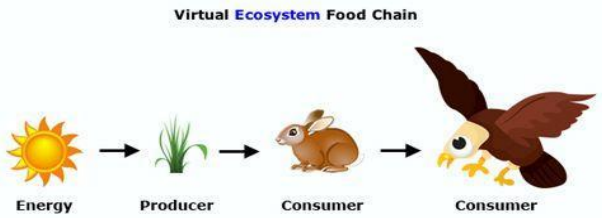
Group 7- The Halogens

Elements	Fluorine (F) Chlorine (Cl) Bromine (Br) Iodine (I) Astatine (At)
Trends	Melting and boiling points **increase** down the group. Reactivity decreases down the group. Elements become darker in appearance going down the group.

Group 0 -The Noble gases

- Colourless gases at room temperature.
- Unreactive.
- Helium used to fill balloons as its lighter than air.

Year 7 Knowledge Organiser : B3 - Ecology



Food chains show the flow of energy within an ecosystem & how organisms are dependent on each other.

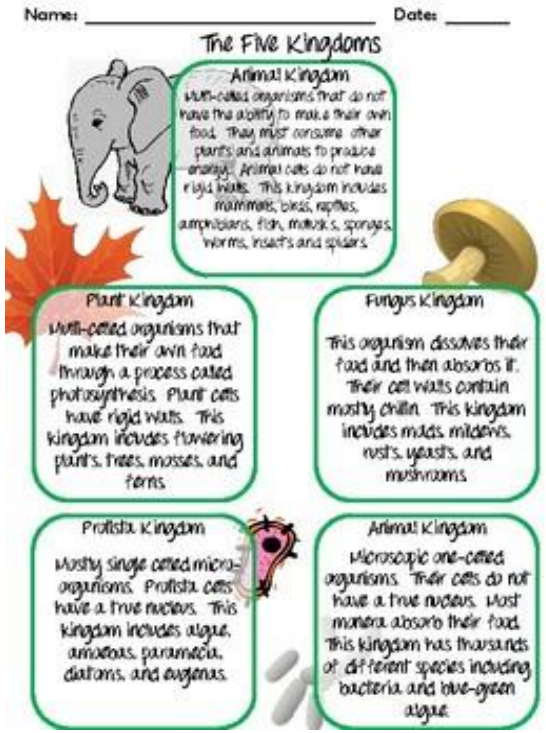
Abiotic Factors are non-living factors which affect the survival and distribution of organisms within an ecosystem, e.g. light intensity, volume of rainfall, pH of the soil.

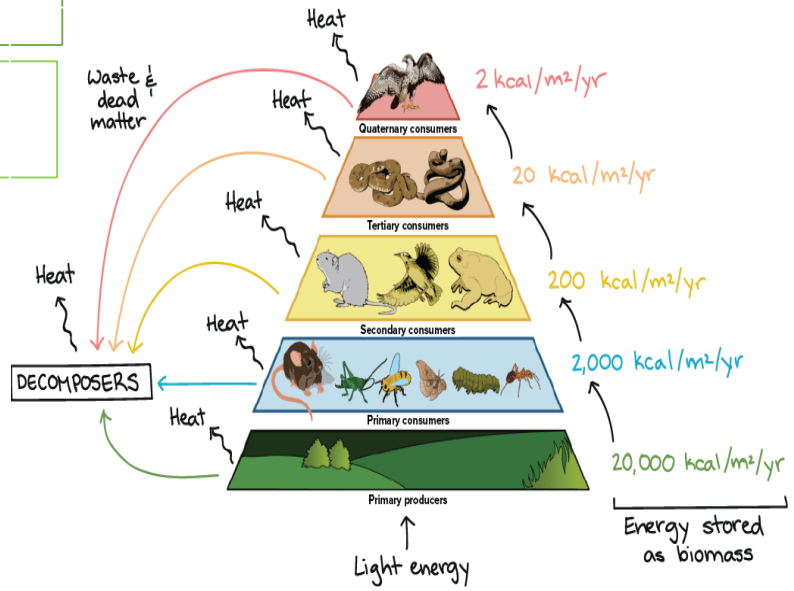
Biotic Factors are living factors which affect it – e.g predators and competition for resources with other organisms.

Sampling: This is a process in Biology where a 'sample' of a population is taken to achieve an overview of the whole population.

Type of Variable	Job
Independent	The one you change
Dependent	The one that you measure
Control	The ones that you keep the same so that you can compare results

Classification is the sorting of organisms into different groups.
The five kingdoms are shown below





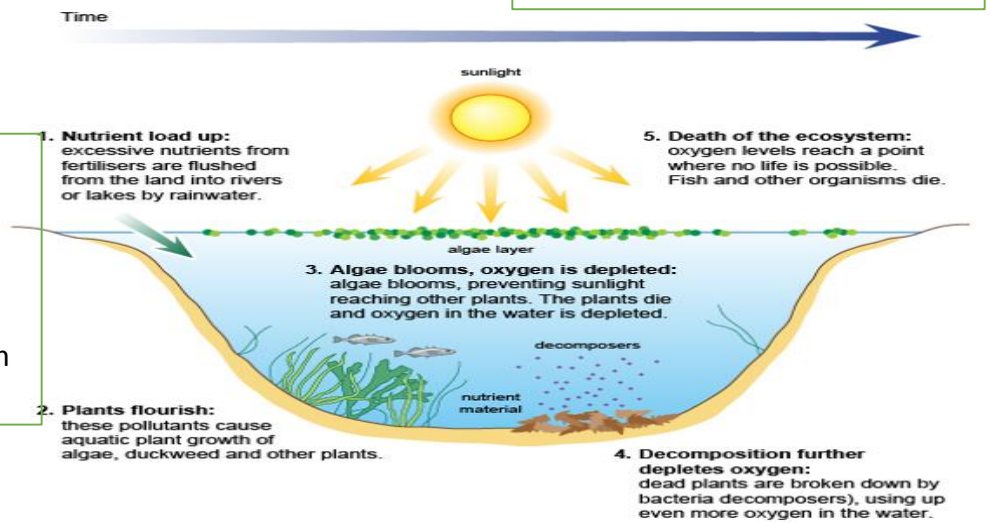
This pyramid of biomass shows how much 'living material' makes up each trophic level. It also shows how much energy Is passes onto the next level as it is lost with each organism.

Quadrat – normally a $1m^2$ grid which is used to sample the number of plants in an area. It is placed randomly and the number of each plant in the quadrat is taken. A MEAN average is then taken of the number of plant.

The area of the quadrat is scaled up to the whole area of the field and the number of plants in the whole field is estimated.

Eutrophication is a process where humans use fertilisers which leach into lakes and they cause death within the ecosystem.

This is due to the development of an algal bloom.

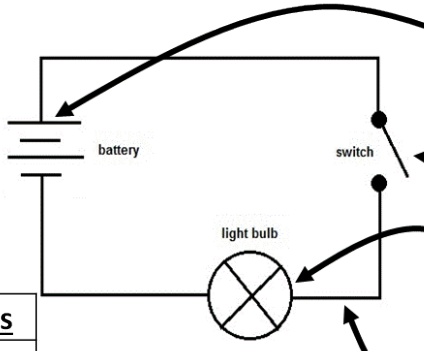


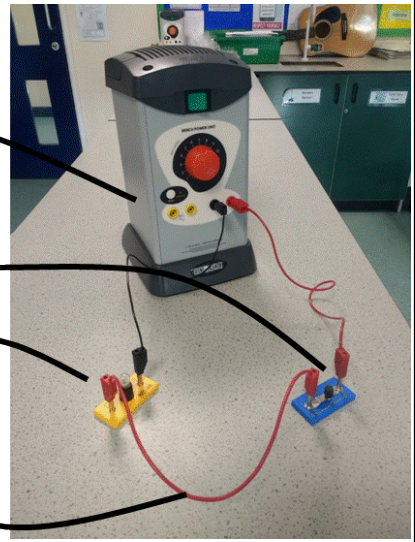
Year 7 Knowledge Organiser : Electric Current

Electricity is the transfer of energy, normally down a wire. This energy is carried by particles we call electrons (as in electr-icity).

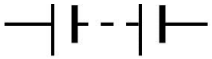
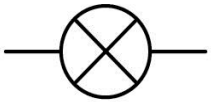
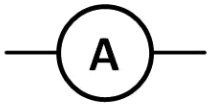
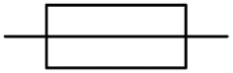
Electrical circuits take energy stored in cells or in a power supply and transfer it into something useful such as heat or light

We use special symbols to represent different parts of an electrical circuit. These are shown below.





Circuit symbols

- Cell 
- Battery 
- Switch 
- Bulb/lamp 
- Ammeter 
- Voltmeter 
- Resistor 
- Fuse 

Measurement	Unit	Unit suffix	In equations
Potential Difference	volts	V	V
Current	amps	A	I
Resistance	ohms	Ω	R

- For current to flow in a circuit, the circuit must have a power supply (a cell or a power pack) and a complete loop with no breaks.
- Different parts of a circuit – such as a bulb or a switch – are called components.
- Charge – groups of electrons, measured in coulombs – move round the circuit. Current is how much charge/how many coulombs flow per second through the circuit.
- Potential difference is how much energy each packet gains or loses as it goes through a component.
- If a circuit only has one loop it is called a series circuit. If it has more than one loop it is called a parallel circuit.
- We use an ammeter to measure current. It goes *in series* with the component so everything that goes through the component also goes through the ammeter.
- We use a volt meter to measure potential difference across a component. This goes *in* parallel with the component so it can measure the difference in energy being carried by the charge on each side of the component
- Resistance is how much a component prevents electricity flowing through it.
- Ohm's law: the potential difference across a component equals the product of the current through the component and the component's resistance – or V = IxR
- Electricity is dangerous so various safety systems are in place to put a "break" in the circuit, stopping dangerous current flowing. Each safety device protects against a sudden high current which could damage expensive electrical items like TVs etc – or anyone touching them. The most common safety device is the fuse, found in all UK plugs.

Common barriers to learning:

- Circuits are **already** full of electrons, they don't come from a switch or from a plug or from the power station.
- Electrons can't just be created or disappear.
- Electrons are each so small and have so little energy that we think of them in groups, called coulombs.
- Electrons leave a power source (e.g. a cell) with full energy and return to the power source with no energy.
- Resistance is not created by friction.