



SPWT Year 9 Knowledge Organisers: Spring

Name:

Form:

“Knowledge is power. Information is liberating. Education is the premise of progress, in every society, in every family”
Kofi Annan

Knowledge organisers are brought to school every day, in their plastic folder.

What is a knowledge organiser?

A knowledge organiser specifies, in meticulous detail, the exact facts, dates, events, characters, concepts and precise definitions that you are expected to master in your long-term memory.

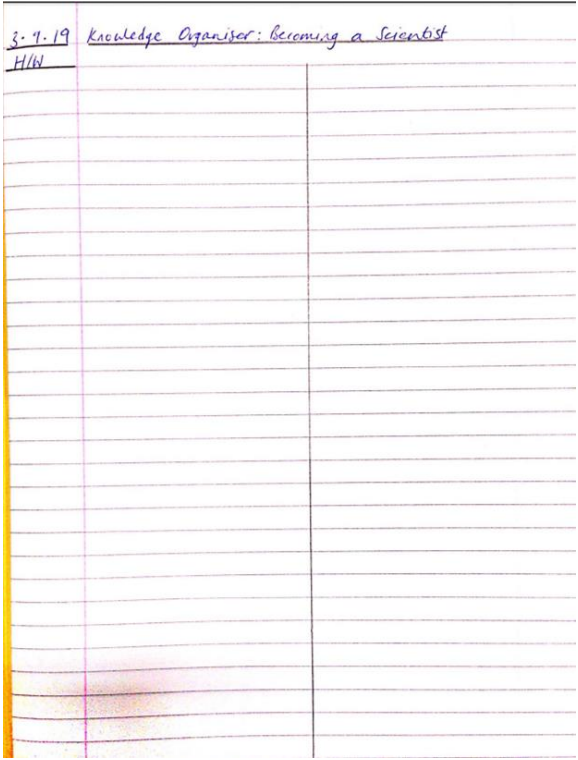
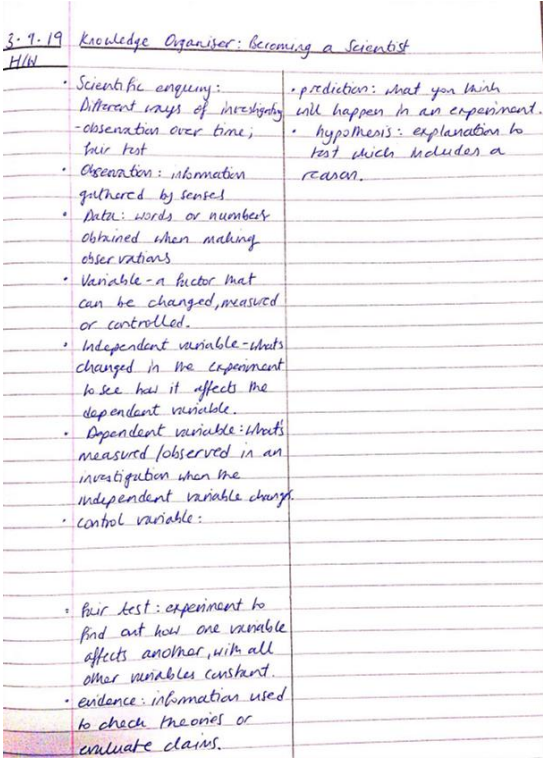
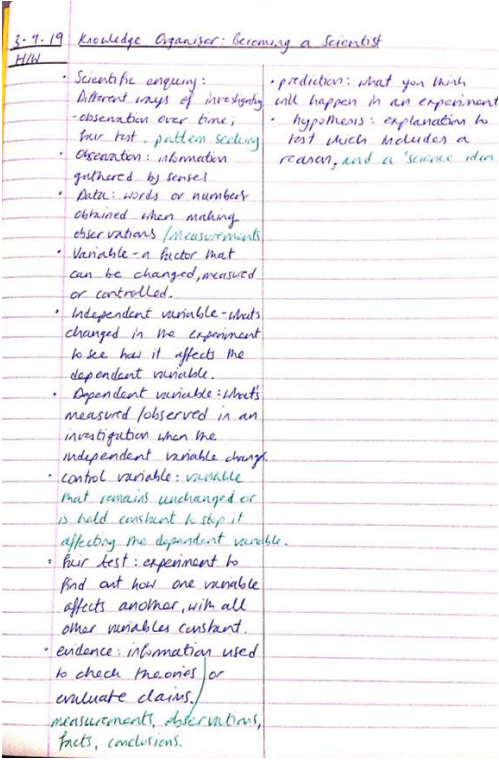
Why do we use knowledge organisers?

Knowledge organisers support you to build knowledge for long-term learning.
They also support you to learn to study independently.




Challenge!

At SPWT, we encourage you to explore your learning further outside of the classroom. To do so, research and write about the topic you are learning about, in your subject exercise books.

How do I use my knowledge organiser?

 <p>3.7.19 Knowledge Organiser: Becoming a Scientist HW</p>	 <p>3.7.19 Knowledge Organiser: Becoming a Scientist HW</p> <ul style="list-style-type: none">Scientific enquiry:<ul style="list-style-type: none">Different ways of investigating will happen in an experiment.- observation over time;- fair testObservation: information gathered by sensesData: words or numbers obtained when making observationsVariable - a factor that can be changed, measured or controlled.Independent variable - what's changed in the experiment to see how it affects the dependent variable.Dependent variable: what's measured / observed in an investigation when the independent variable changescontrol variable: <ul style="list-style-type: none">fair test: experiment to find out how one variable affects another, with all other variables constant.evidence: information used to check theories or evaluate claims.	 <p>3.7.19 Knowledge Organiser: Becoming a Scientist HW</p> <ul style="list-style-type: none">Scientific enquiry:<ul style="list-style-type: none">Different ways of investigating will happen in an experiment.- observation over time;- fair test - pattern seekingObservation: information gathered by sensesData: words or numbers obtained when making observations / measurementsVariable - a factor that can be changed, measured or controlled.Independent variable - what's changed in the experiment to see how it affects the dependent variable.Dependent variable: what's measured / observed in an investigation when the independent variable changescontrol variable: variable that remains unchanged or is held constant to stop it affecting the dependent variable.fair test: experiment to find out how one variable affects another, with all other variables constant.evidence: information used to check theories or evaluate claims, measurements, observations, facts, conclusions.
<p>Start a new page. Write the date and HW in the margin and underline. Write the title at the top of the page (Knowledge Organiser *Topic*).</p> <p>Draw a line down the middle of the page using a ruler (measure accurately where the middle is).</p>	<p>COVER the right-hand side of the table in a section of the Knowledge Organiser.</p> <p>WRITE down the word/ question on the left, followed by your answer.</p>	<p>CHECK your answers by uncovering and reading the right-hand side</p> <p>CORRECT any answers that are incorrect using a green pen</p>

I, Me, Mine

Artists	
	Dryden Goodwin (born in 1971)- British artist known for his intricate line drawings , often in combination with photography and live action video; he creates films, gallery installations, projects in public space, etchings, works on-line and soundtracks. Central to Goodwin's practice is a fascination with drawing. He is engaged with time as well as line, and with the sculptural potential of two-dimensional images. Other concerns in his practice are the city, ideas of public and private, voyeurism, desire and emotional distance and proximity.
	Loui Jover (born April 1967) – Australian painter and artist. He is known for ink wash paintings on vintage book pages. He considers himself a melancholic artist. He also creates collages where he uses a portrait of a famous person and cuts it up. He has then re arranged the portrait and uses line, pattern and shapes to draw and join the parts together.
	Lou Ros (born 1984) is a French painter known for his figurative-come-expressionist and abstract art . He is a notable exponent of the figurative expressionist Movement . When Ros was 16 years old, he discovered Marcel Duchamp who inspired him to do graffiti. Each of his compositions is influenced by images of films, both his own and those taken from several social media platforms. His artworks represent bodies, animals or landscape.

Dada Art Movement	
Dada or Dadaism was an art movement that emerged from countries in Europe and New York in the early 20th century (1910-20). It was formed by people who were considered 'avant-garde' (experimental rebels who wanted to disrupt the norm) and developed in reaction to horrors and follies of World War I. Dada artists expressed their discontent/dislike of violence, war, and nationalism/patriotism, they were radically left-wing and far-left politics. The Dada movement consisted of artists who rejected the logic, reason, and rejected typical idea of what was beautiful, instead expressing nonsense, irrationality and anti-upper-class in their works. The art mediums of the movement included collage, sound poetry, cut-up writing, and sculpture.	



Raoul Hausmann, 'The Art Critic', 1920



Hannah Höch, 'Follow Flucht (Flight)', 1931



Raoul Hausmann, 'ABCD', 1920



Francis Picabia, 'Tableau Rastadada', 1920

Art

PORTRAIT KNOWLEDGE ORGANISER

Portrait: an artistic representation of a person, in which the face and its expression is predominant. The intent is to display the likeness, personality, and even the mood of the person. **Self-portrait:** a portrait that an artist produces of themselves.

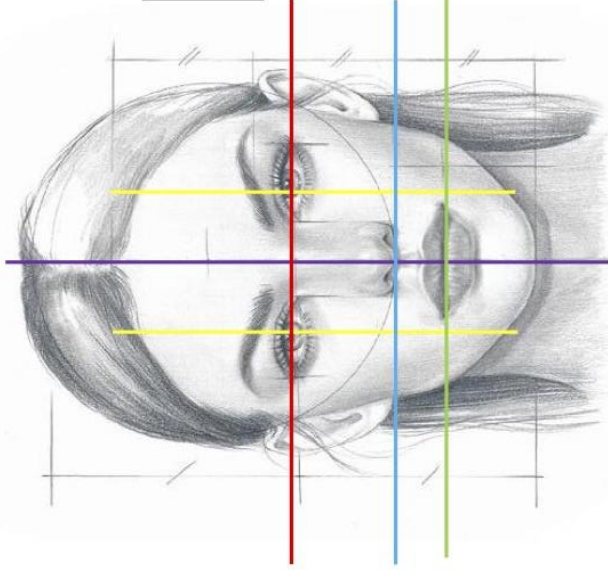
Portrait doesn't have to be simply a literal representation. Portrayed person can be represented by using or adding images of **personal objects, places, memories, animals, people**. It can also use **abstract shapes** and **symbols** to express moods, emotions, personality.

Types of portraits: painting, drawing, photograph, sculpture, graphic design...

The eyes are half-way from the top of the head to the chin. IF YOU DRAW IMAGINARY LINES FROM THE CENTRE OF YOUR EYES THIS WILL GIVE YOU THE MOUTH WIDTH.

The NOSE is half-way from the eyes to the chin. IF YOU DRAW IMAGINARY LINES FROM INSIDE CORNERS OF YOUR EYES THIS WILL GIVE YOU THE NOSE WIDTH.

Mouth is 1/3 from the nose to the chin



The ears run from the top of the eyes to the top of the mouth

The neck runs from behind the ears

Composition is the layout or where the objects are placed within a picture. Good composition should be pleasing to the eye, have a focal point and have a balance of elements. Portrait composition includes **facial features** drawn with correct **proportions**, and using **formal elements**.

Contour- follows the shape of a round or curved object

Tone -represents the appearance of the objects surface (texture, light and colour).



Light direction-source of light that defines highlights and shadows

Surface/Direction planes- gives an object shape, form and perspective



Perspective-3D representation of objects in a drawings which appear to have depth and space. Often achieved by making objects smaller as they get further away in the foreground/ middle ground and background.

Examples of portrait artists: Vincent van Gogh, Frida Kahlo, Andy Warhol, Leonardo Da Vinci, Paul Gauguin, Pablo Picasso, Corrine Day, David Bailey, Rankin, Barbara Kruger

Keywords: life, identity, hobbies, past, present, future, memories, activities, places, collage, painting, drawing, sketch, texture, tone, story, combine, manipulate, facial proportions, facial features, balance of elements, focal point, space, placement, background, foreground, middle ground, story, composition

Computer Science KO

Topic: Unit 9.3 Algorithms & Programming

Key vocabulary

Python	A high level programming language.
Programming	The process of writing computer programs.
Code	The instructions that a program uses.
Sequence	Parts of the code that run in order and the pathway of the program reads and runs very line in order.
Selection	Selects a pathways through the code based on whether a condition is true
Iteration	Code is repeated (looped), either while something is true or for a number of times
Algorithm	A set of rules/instructions to be followed by a computer system
Variable	A value that will change whilst the program is executed. (eg. temperature, speed)

Operator	Explanation
<	Less than
<=	Less than or equal to
>	Greater than
>=	Greater than or equal to
==	Equal to
!=	Not equal to
and	Both conditions must be met

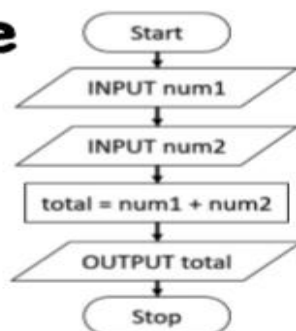
Key vocabulary

Comparative Operator	When comparing data, an operator is used to solve the equality such as <>, != or ==
Syntax	The punctuation/way that code has to be written so that the computer can understand it. Each programming language has its own syntax.
Data Type	This indicates how the data will be stored. The most common data types are integer, string, and float/real.
String	A collection of letters, numbers or characters. (eg, Hello, WR10 1XA)
Integer	A whole number. (eg. 1, 189)
Float/Real	A decimal number, not a whole number. (eg. 3.14, -26.9)
Boolean	1 of 2 values. (eg. True, False, Yes, No)

Python -> English	
<code>print('hello!')</code>	Prints a value on screen (in this case, hello!)
<code>input('')</code>	Inputs a value into the computer.
<code>x=input('')</code>	Inputs a value and stores it into the variable x.
<code>x=int(input(''))</code>	Inputs a value into x, whilst also making it into an integer.
<code>print(str(x))</code>	Prints the variable x, but converts it into a string first.
<code>if name == "Fred":</code>	Decides whether the variable 'name' has a value which is equal to 'Fred'.
<code>else:</code>	The other option if the conditions for an if statement are not met (eg. name = 'Bob' when it should be Fred)
<code>elif name == "Tim"</code>	elif (short for else if) is for when the first if condition is not met, but you want to specify another option.
<code>#</code>	# is used to make comments in code – any line which starts with a # will be ignored when the program runs.

Sequence

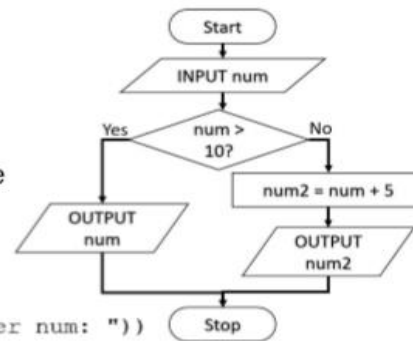
The running order of the program (usually from top to bottom unless directed to a subprogram).



```
num1 = int(input("Enter num1: "))
num2 = int(input("Enter num2: "))
total = num1 + num2
print(total)
```

Selection

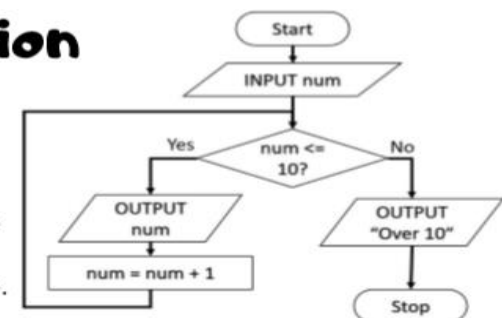
A decision is made to dictate the route that is taken, from two possible options, through the program



```
num = int(input("Enter num: "))
if num > 10:
    print(num)
else:
    num2 = num + 5
    print(num2)
```

Iteration

A loop which is repeated. This can be a **condition-controlled loop** or a **count-controlled loop**.



```
num = int(input("Enter num: "))
while num <= 10:
    print(num)
    num = num + 1
print("Over 10")
```



LOOK



COVER



WRITE



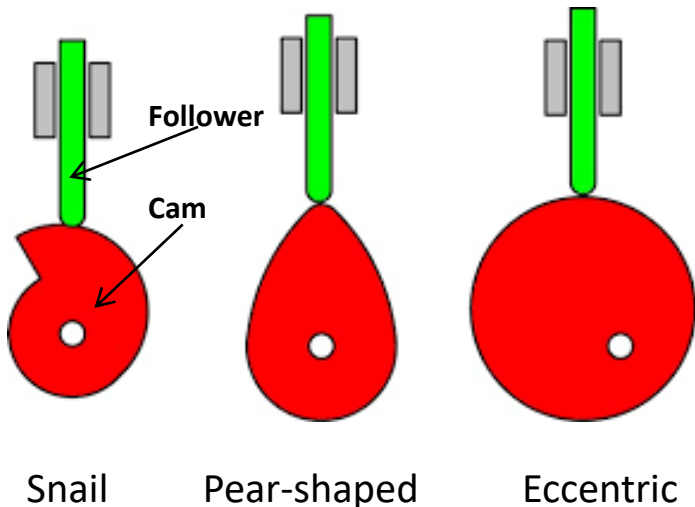
CHECK

DT: Year 9 Product Design

Project: Mechanical toy

Natural timber	Timber taken from trees e.g. oak
Hard wood	Wood that comes from deciduous trees e.g. Oak
Soft wood	Wood that comes from coniferous trees e.g. pine.
Manufactured timber	Timber that is manmade e.g. MDF
Hazard	A potential danger
Precaution	A measure taken to prevent something dangerous

Cam and Follower: A cam changes the input motion, which is usually rotatory motion, to a reciprocating motion of the follower. They are found in many machines and toys.



Tenon Saw: used for general wood sawing



Bench Hook: Secured in a vice, this is used when cutting wood with a Tenon saw



Chisel: Used to chisel out waste wood when making joints



Mallet: Used with a chisel to remove waste wood when making joints



Try Square: used to mark straight lines on to material



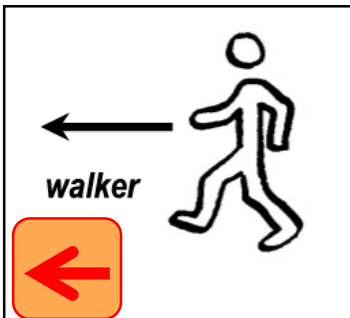
Pillar Drill: used to drill holes through wood, metal, plastic



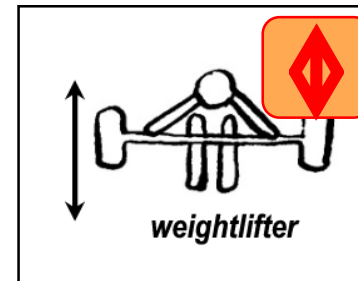
Hegnar/Jigsaw: used to cut wood, plastic



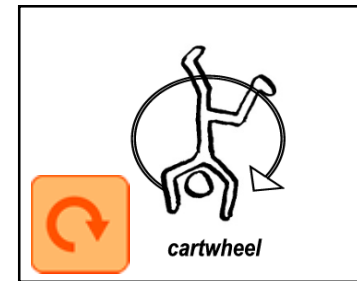
Bandfacer: used to smooth the edges of wood, plastic



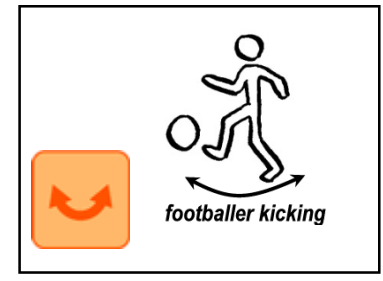
Linear motion
Motion in a straight line indefinitely



Reciprocating motion
Back and forth motion



Rotary motion
Motion in a circle.



Oscillating motion
Oscillation is a back and forth motion about a pivot point

DT: Year 9 Food

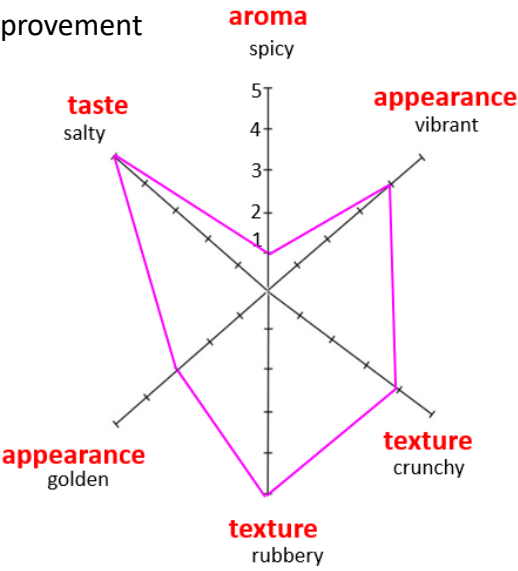
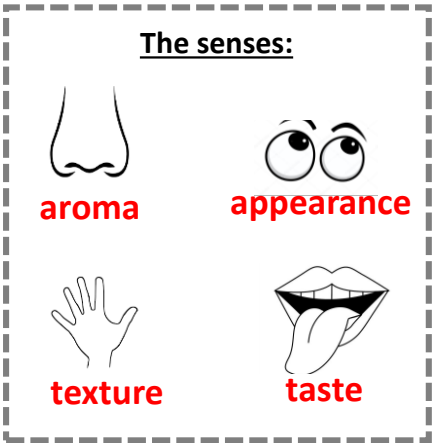
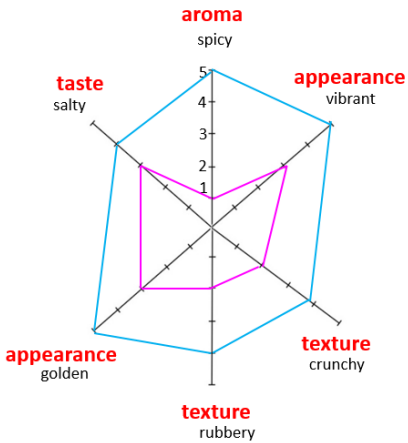
Food Groups	What do they do?	Where do we find them?
Protein	Help build, repair and maintain our muscles, organs and body tissue	Meat, beans, eggs, lentils, fish
Dairy	Helps maintain healthy bones and teeth	Milk, yoghurt, cream, cheese
Carbohydrates	Gives us energy	Potatoes, pasta, breads, rice, cereal
Vitamins & minerals	Helps us to grow maintain a healthy body	Fruit, vegetables
Fats & sugars	Used for energy, insulation and to protect the vital organs	Cakes, biscuits, sweets, oil

Vegan	A person who does not eat any food derived from any animals.
Lacto-ovo vegetarian	A person who does not eat meat or fish but does eat eggs and dairy products.
Lacto vegetarian	A person who does not eat meat, fish or eggs but will eat dairy products.
Pescetarian	A person who does not eat meat but does eat fish.
Deficiency	An inadequate supply of essential nutrients such as vitamins and minerals in the diet. These can be supplemented in the diet with nutrient rich foods, fortified foods and supplements such as tablets.
Allergy	A food allergy is a rapid and potentially serious response to a food by the immune system. It can trigger classic allergy symptoms such as rash, wheezing and itching. In rare cases the symptoms can be severe and fatal.

Sensory Star Graph

We use a star graph to record our opinions of a dishes sensory qualities.

- The bigger the shape the better the dish was received over all
- Areas that scored less indicate areas for modification/improvement
- A smaller shape indicates more areas for modification/improvement



aroma aromatic floral rotten musty acid citrus sweet perfumed fragrant buttery strong spicy	Taste bitter warm zesty hot cool tangy sharp rich salty bland acidic weak spicy strong aweat
appearance Round square bright dull plain colourful stacked cubed Small large stringy interesting shapes variety boring size	texture brittle rubbery short gritty clammy stodgy tender waxy Soft hard crumbly crispy chewy smooth mushy sticky dry fluffy firm moist

Iron	A mineral that helps make red blood cells which carry oxygen around the body.	Red meat is a really good source of iron.
-------------	---	---

Other sources of iron include:

- dark-green leafy vegetables, such as watercress and curly kale
- iron-fortified cereals or bread
- brown rice
- pulses and beans
- nuts and seeds
- meat, fish and tofu
- eggs
- dried fruit, such as dried apricots, prunes and raisins

A deficiency in iron can commonly cause tiredness and lack of energy, shortness of breath, heart palpitations, and a pale complexion.

DT: Year 9 Graphics



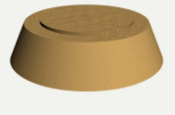
Project: Blister packs

Sources of plastic:

- Synthetic - Oil & Chemical production
- Natural - Plant starch polymers

Most plastics are made from crude oil

By V.Ryan



Step 1 First, a former is made from a material such as a soft wood.

Step 2 The former is placed in the oven and a sheet of plastic (for example, compressed polystyrene) is clamped in position above the mould.

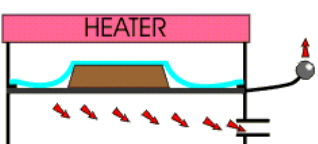
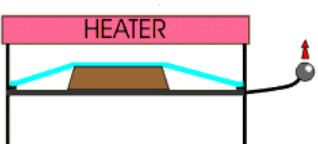
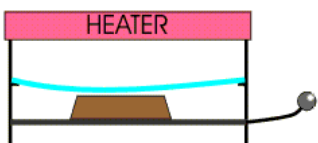
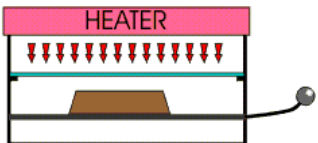
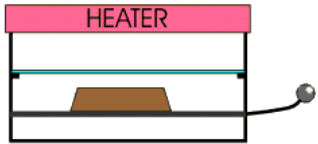
Step 3 The heater is then turned on and the plastic slowly becomes soft and pliable as it heats up. The plastic can be seen to 'warp' and 'distort' as the surface expands.

Step 4 After a few minutes the plastic is ready for 'forming' as it becomes very flexible.

Step 5 The heater is turned off and the mould is moved upwards by lifting the lever until it locks in position.

Step 6 The 'vacuum' is turned on. This pumps out all the air beneath the plastic sheet. Atmospheric pressure above the plastic sheet pushes it down on the mould. When the plastic has cooled sufficiently the vacuum pump is switched off.

Step 7 The plastic sheet is removed from the vacuum former. The sheet has the shape of the former pressed into its surface.



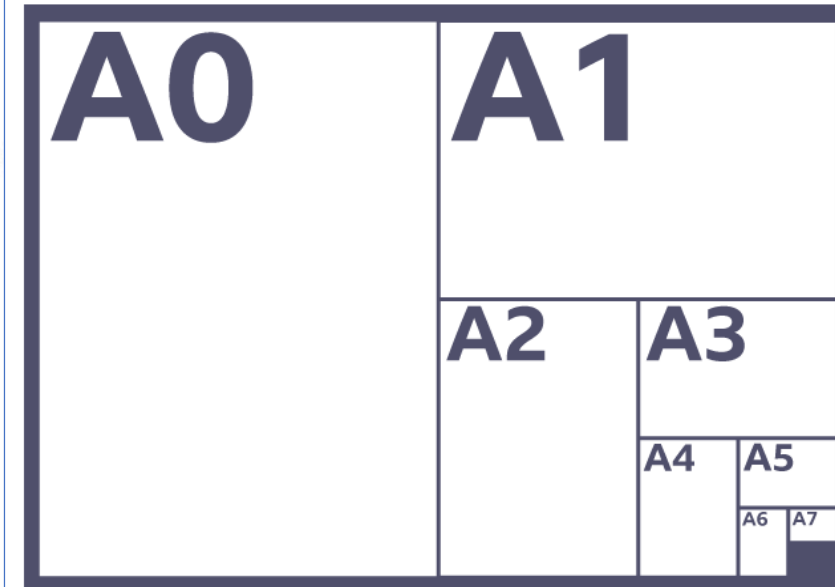
CAD	Computer aided design e.g. 2D design
CAM	Computer aided manufacture e.g. laser cutter
Thermosetting plastic	Plastics can not be heated and re-moulded e.g. Urea formaldehyde.
Thermoforming plastic	Plastics can be heated and re-moulded e.g. Acrylic.
Branding	The promotion of a particular product or company.
Vacuum forming	Process of heating plastic around a mould using a vacuum.
GSM	Grams per square metre: measurement of the weight of paper
Microns	Measurement of the weight thickness of card
Trend in design	The common features in similar products

Using a craft knife safely



- Stand up when using the knife
- Do not walk around with the knife open
- Keep fingers away when using the knife
- Use a safety mat and safety ruler

Standard paper sizes



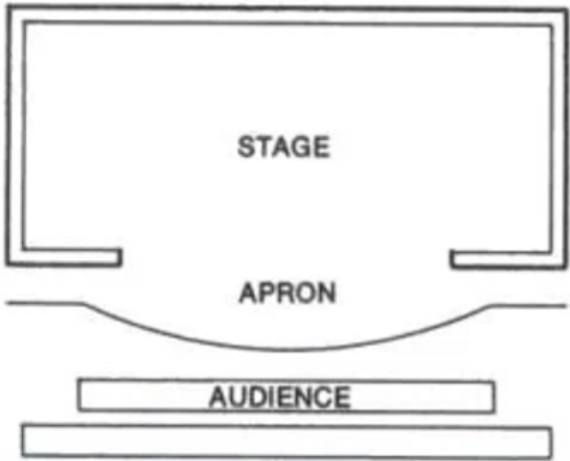
Drama Year 9 Spring 1

An exploration of the Horror genre

Context	
Horror genre	Horror is a genre of speculative fiction which is intended to frighten, scare, disgust, or startle its audience by inducing feelings of horror and terror.
Conventions	a way in which something is usually done e.g. conventions of the horror genre could include death, fear of the unknown etc.
Conventions of the Horror genre	These could include: dramatic sound or music, props that have an association with death, secluded locations, investigations, fears and deaths.
Suspense	a state or feeling of excited or anxious uncertainty about what may happen



Stereotypical character in the horror genre



Proscenium arch or End on staging

Drama skills: Physical and Vocal skills	
Soundscapes	A <u>collection</u> of sounds to create atmosphere/mood
Sound effects	A sound to create an atmosphere and to assist with storytelling
Vocal Pause	Pausing lines to create dramatic effect such as tension.
Silence	The absence of noise. This can be used to create a tense or suspenseful moment on stage.
Antagonist	The antagonist is the principal source of conflict for the protagonist. Often, the antagonist is a villain.
Protagonist	The leading character or one of the major characters in a play, film, novel, etc.

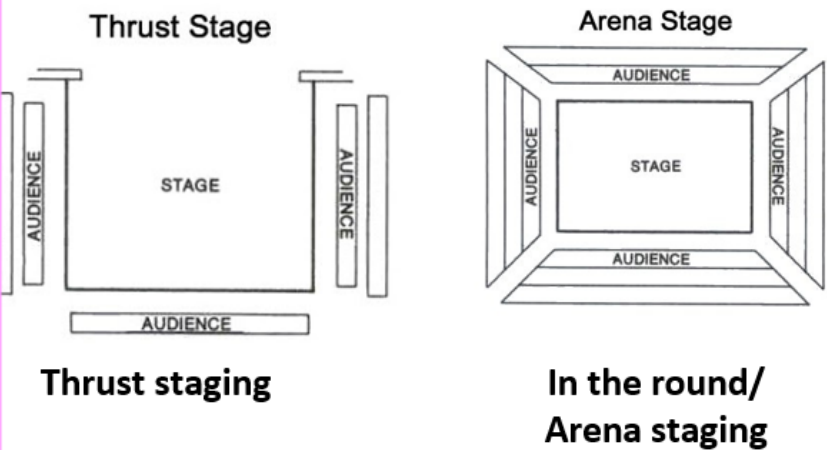
Year 9 Drama Spring 2

Death and the King's Horseman by Wole Soyinka

Context	
African Theatre	Storytelling, dance, and ritual are three early forms of African theatrical practices. While these types of performances may seem different from theatre you may have seen, they each include the same basic elements: performers, performance spaces, audiences, and some form of script. Africa has 54 different countries, each made up of many different cultural and ethnic groups.
Colonialism	This is when settlers have been sent to a place and establish political control over it.
Post Colonial Theatre	Postcolonial theatre criticizes colonialism and often combines European theatre methods with early, African theatre practices. Nigeria (in West Africa) became a British colony in 1901. Colonisation lasted until 1960, when an independence movement succeeded in gaining Nigeria its independence.
Wole Soyinka	Wole Soyinka (born in 1934) is a Nigerian playwright who wrote <i>Death and the King's Horseman</i> . The play was first performed in 1970. Soyinka won the Nobel prize for literature in 1986.
Ritual	A set of fixed actions and sometimes words performed regularly, especially as part of a ceremony

















Image from a production of *Death and the King's Horseman* at The National Theatre



Drama skills: Physical and Vocal skills	
Mime	The theatrical technique of suggesting action, character, or emotion without words, using only gesture, expression, and movement.
Narration	The action or process of narrating a story. The 'narrator' would tell the story to accompany the action.
Still images	This is a frozen picture which communicates meaning. It's sometimes called a freeze frame or tableau.
Duologue	A play or part of a play with speaking roles for only two actors

Year 9- English Knowledge Organiser – Dystopian Genre

Dystopia: a very bad or unfair society, especially an imaginary society set in the future.

Dystopian Fiction:		A Dystopian Protagonist:		Dystopian Settings:			
<p><u>Five Main Conventions:</u></p> <ul style="list-style-type: none">- Governmental Control - Environmental Destruction - Loss of Individualism - Survival - Technological Control 		<p><u>Attributes:</u></p> <ul style="list-style-type: none">- Brave- Empathetic- Leader- Strong- Curious- Rebellious		<p><u>Four Main Conventions:</u></p> <ul style="list-style-type: none">- Feels trapped - Questions system - Sees a problem - Helps audience see problem 		<p><u>Five Main Conventions:</u></p> <ul style="list-style-type: none">- Futuristic, industrial cities - The false utopia - Destroyed natural habitat - High levels of surveillance - Environments and weather that creates a strong sense of oppression or constraint 	
Key Terminology:				Dystopian Word Bank:			
<p><u>Useful Dystopian Vocabulary:</u></p> <p>Oppression - prolonged cruel or unjust treatment</p> <p>Utopia - an imagined place or state of things in which everything is perfect</p> <p>Equity - the quality of being fair and impartial</p> <p>Surveillance - close observation</p> <p><u>Subject Specific Vocabulary:</u></p> <p>Protagonist - the main character in a text</p> <p>Antagonist - the person (or thing) that antagonises the leading character in a text</p> <p>Pathetic fallacy - the attribution of human feelings and responses to nature (especially weather)</p> <p>Symbolism - the use of something to represent ideas or qualities in a text</p> <p>Imagery - Visually descriptive or figurative language (e.g. metaphors, similes, personification)</p> <p>Semantic field - set of words grouped semantically that refers to a specific subject</p>				<div><div><p>Bureaucratic</p><p>Malicious</p><p>Dehumanising</p><p>Dictatorship</p><p>Totalitarian</p><p>Tyrannical</p><p>Wretched</p><p>Repressive</p><p>Liberation</p><p>Captive</p><p>Constrained</p><p>Censorship</p><p>Compliance</p><p>Macrocosm</p></div><div><p>Propaganda</p><p>Revolution</p><p>Dissent</p><p>Compliance</p><p>Apocalypse</p><p>Conformity</p><p>Free <u>will</u></p><p>Democracy</p><p>Dysfunction</p><p>Omnipresent</p><p>Dehumanisation</p><p>Illusion</p><p>Post-apocalyptic</p><p>Microcosm</p></div></div>			

Year 9 - Knowledge Organiser – English: Of Mice and Men

Of Mice and Men by John Steinbeck (1937)



Who's who?

Lennie: Lennie is one of the protagonists of the novel; simply put, he loves to pet soft things, is blindly devoted to George and their vision of the farm, and possesses incredible physical strength. Nearly every scene in which Lennie appears confirms these and only these characteristics. His innocence and his friendship with George are paramount to the plot and the unfolding of events.

George: Like Lennie, George can be defined by a few distinct characteristics. He is short-tempered but a loving and devoted friend, whose frequent protests against life with Lennie never weaken his commitment to protecting his friend. George's first words, a stern warning to Lennie not to drink so much lest he gets sick, set the tone of their relationship. George may be terse and impatient at times, but he never strays from his primary purpose of protecting Lennie.

Curley: Curley is the boss's son, and because his father only appears once, Curley is the main representative in the novella of the land-owning class. Like his father, Curley wears "high-heeled boots" to mark his wealth and status, and most likely to lessen the smallness of his stature. Curley's primary character trait is insecurity. He is constantly anxious about maintaining his dominance over the workers, and often picks fights with men twice his size.

Candy: One of the book's major themes and several of its dominant symbols revolve around Candy. The old handyman, aging and left with only one hand as the result of an accident, worries that the boss will soon declare him useless and demand that he leave the ranch. Of course, life on the ranch—especially Candy's dog, once an impressive sheep herder but now toothless, foul-smelling, and brittle with age—supports Candy's fears.

Curley's Wife: Steinbeck generally depicts women as troublemakers who bring ruin on men and drive them mad. Curley's wife, who walks the ranch as a temptress, seems to be a prime example of this destructive tendency—Curley's already bad temper has only worsened since their wedding. Aside from wearisome wives, *Of Mice and Men* offers limited, rather misogynistic, descriptions of women who are either dead maternal figures or prostitutes.

Crooks: Crooks is a lively, sharp-witted, black stable-hand, who takes his name from his crooked back. Like most of the characters in the story, he admits that he is extremely lonely. His character explores the impact of racism and inequality.

Slim: Slim, the "jack-of-all-trades skinner," is a figure of natural authority. He commands the respect of the other men through his professional skill and his strength of character, "a gravity in his manner and a quiet so profound that all talk stopped when he

Key Quotes:

Slim: "He ain't mean," said Slim. "I can tell a mean guy from a mile off." (3.28-30)

George: "Hell no. He just scared her. I'd be scared too, if he grabbed me. But he never hurt her. He just wanted to touch that red dress, like he wants to pet them pups all the time."

Lennie: "Guys like us, that work on ranches, are the loneliest guys in the world. They got no family. They don't belong no place."

Lennie broke in. "But not us! An' why? Because... because I got you to look after me, and you got me to look after you, and that's why." He laughed delightedly. "On now, George!" (1.115-116)

George: "O.K. Someday—we're gonna get the jack together and we're gonna have a little house and a couple of acres and a cow and some pigs and—"

"An' I live off the fatta the land," Lennie shouted. "An' have rabbits."

Crooks said darkly, "Guys don't come into a colored man's room very much." (4.76-77)



Themes:

Friendship: George and Lennie's relationship shapes the plot of the novel. In *Of Mice and Men*, friendship is dangerous: every time any character gets close to any other, something goes wrong.

Prejudice: The novel explores racism, sexism, ageism, ableism, and other discrimination too. Those who are discriminated against accept the prejudice against them as a way of life.

Dreams: In *Of Mice and Men*, dreams are necessary, even if the characters know that they'll never achieve them. Steinbeck sees dreams as foolish and unnecessary, just leading to more sorrow.

Innocence: Innocence may protect Lennie, because he never has to deal with the reality of what he's done and it doesn't protect the people (or pets) around him.

Justice: In *Of Mice and Men*, the ranch operates by its own set of rules, without a higher order dictated by the law. Lennie has no grasp of the consequences of his actions, so justice has no meaning for him. Steinbeck suggests that mental disability shouldn't make someone immune to justice.

Violence: Violence in the novel is physical, psychological, and emotional. Characters are so accustomed to suspicion and failure that they treat each other cruelly, more ready to destroy each other's dreams (and bodies) than to build them up.

Year 9 - Knowledge Organiser – English: Of Mice and Men

Contextual Information:

John Steinbeck:

Written by American author John Steinbeck, *Of Mice and Men* was first published in 1937. The novel is set in a place called Soledad, (a Spanish word meaning solitude or loneliness) in California. The novel is set during the Great Depression, a period of significant poverty and unemployment across the USA following the Wall Street Crash in 1929. John Steinbeck was born in Salinas, California in 1902. Although his family were not poor, when he was a teenager he spent time working on ranches near his home and this had a big impact on his writing. His experience of working with farm labourers and his interest in their lives is clearly evident in 'Of Mice and Men', as well as in some of his other books, like 'The Grapes of Wrath'.



The Great Depression:

The novel is set during the Great Depression, a period of significant poverty and unemployment across the USA following the Wall Street Crash in 1929. Farmers were usually less affected than the rest of the population during depressions because they were able to grow their own food; however, during the Great Depression, there was also the Dust Bowl – drought and dust storms swept across several states in mid-west America. This resulted in crops being very poor in these areas, which was coupled with falling prices for food. Small farmers were affected particularly badly by these conditions. Many small farmers were in debt because they would borrow money from banks to buy seeds and then pay back the loans when the crops came in; during the Dust Bowl, farmers could not pay back these loans and could also not afford to feed themselves and their families. In worst case scenarios, this led to banks repossessing farms, making the farmers and their families homeless.

Migrant workers and California:

As a result, many farmers migrated to California to look for work, as this state was perceived to have spare land and a lot of work. However, because so many people moved to California (an estimated 1.3 million), work was not so easy to find. Ranch workers like George and Lennie often moved from one place to another looking for work, as jobs on ranches would be temporary and seasonal. Wages for men like these were low and jobs were scarce, so the lifestyle that they lived was very insecure. Without work, people would have no way of supporting themselves. This is why the dream is so important to George and Lennie; it would give them a sense of safety and independence. Steinbeck illustrates how grueling, challenging, and often upre-warding the life of migrant farmers could be. Just as George and Lennie dream of a better life on their own farm, the Great Plains farmers dreamed of finding a better life in California.

Key Vocabulary and Definitions:

American Dream : This is the idea that in America, it is possible for anyone to achieve success and improve their lives through hard work. This is linked to the United States Declaration of Independence which states that 'all men are created equal'.

Dust Bowl: The Dust Bowl was the name given to the drought-stricken Southern Plains region of the United States, which suffered severe dust storms during a dry period in the 1930s. People and livestock were killed and crops failed across the entire region.

Economic Class: In *Of Mice and Men* Steinbeck shows that hard-working Americans like George, Lennie, and the rest of their co-workers are unable to rise to a desirable middle class lifestyle due to social and natural forces outside of their control.

Poverty: Having no money

Prejudice: Prejudging a person or group before knowing them.

Novella: Short novel

Symbolism : When writers describe or include significant places or items to represent an idea.

Plot overview:

'Of Mice and Men' tells the story of George Milton and Lennie Small, two displaced migrant ranch workers, who move from place to place in California in search of new job opportunities during the Great Depression in the United States. George is a small, intelligent man who looks after his friend Lennie, a large, strong man who has a learning disability. Lennie's strength becomes increasingly problematic throughout the story as it becomes clear that he does not understand how much damage he can cause.

At several points during the novel, the two men discuss their dream of owning their own ranch and working for themselves, but this is shown to be impossible as by the end of the book Lennie has accidentally killed a woman and George's only option is to shoot him before he is caught.

Reflecting a period of economic devastation in the United States, '*Of Mice and Men*' demonstrates the damaging effects of the Great Depression upon ordinary working men.

French



A. VERBS: PRESENT TENSE

	Jouer = To play	Être = To be
(I)	Je joue	Je suis
(you)	Tu joues	Tu es
(he/she/we)	Il/elle/on joue	Il/elle/on est
(we)	Nous jouons	Nous sommes
(you all)	Vous jouez	Vous êtes
(they)	Ils/elles jouent	Ils/elles sont

A. VERBS PERFECT TENSE (past)

	Être = To be	Aller = to go
	J'ai été	Je suis allé(e)
	Tu as été	Tu es allé(e)
	Il/elle/on a été	Il/elle/on est allé(e)
	Nous avons été	Nous sommes allé(e)
	Vous avez été	Vous êtes allé(e)
	Ils/elles ont été	Ils/elles sont allé(e)

A. VERBS IMPERFECT TENSE

	Jouer = To play	Être = To be
	Je jouais	J'étais
	Tu jouais	Tu étais
	Il/elle/on jouait	Il/elle/on était
	Nous jouions	Nous étions
	Vous jouiez	Vous étiez
	Ils/elles jouaient	Ils/elles étaient

B. GRAMMAR: Imperfect vs perfect

When do we use the Imperfect Tense ?	We use the imperfect tense to say 'used to...' or to <u>describe</u> things in <u>the past</u> : sa passion était la musique disco
When do we use the Perfect Tense ?	We use the perfect tense to refer to singular actions in the past; Elle est allée à la discothèque

C. GRAMMAR: direct object pronouns

When do we use a Direct Object pronoun?	You use a Direct Object pronoun (him/her/it/them) to replace a noun. It goes in front of the verb	
Masculine	Feminine	Plural
Je le trouve...	Je la trouve...	Je les trouve...
I find him/it...	(I find her/it...)	(I find them...)
<u>Abbreviate le and la to l' before a vowel sound:</u>		
Je l' aime (I like him/her/it)		

D. GRAMMAR: asking and answering questions

What do I need to check ?	You need to check the Question word. Is it asking: Quoi? (what?)/ Quand? (When?)/ Où? (where?)/ Pourquoi? (Why?)
What do I need to change ?	Change son/sa/ses (his) to mon/ma/mes (my) The verbs in the 'He/she' form to the 'I' form : Il est né (He was born...)- Je suis né

E. Comparatives

You use comparatives to compare two or more things. The adjective must agree with the first noun mentioned.	
Plus + adjective (+ que...)	More... (than)...
Moins + adjective (+ que...)	Less...(than...)
Ma prof de français est plus sérieuse que mon instituteur.	My French teacher (f) is more serious than my primary school teacher
Meilleur/meilleure.meilleurs/meilleures	Means better

F. COMPLEX STRUCTURES

Ça me donne envie	It makes me want (to do something)
Je veux aller	I want to go
Il y avait	There was/ there were
Ce sera vraiment utile	It will be really useful

CULTURE CORNER! In France l'école primaire (primary school) is divided in two stages: 3- 6 Years old (l'école maternelle) and 6-11 years old (l'école élémentaire)

French

G. VOCAB

Point de départ (pages 56–57)

Sur la photo, il y a un groupe pop.	<i>In the photo, there is a pop group.</i>	les musiciens?	<i>the musicians?</i>
À gauche/droite, il y a ... une fille qui chante.	<i>On the left/right, there is ... a girl who is singing.</i>	la chanson en général?	<i>the song in general?</i>
un garçon qui porte ...	<i>a boy who is wearing ...</i>	Je le/la/les trouve ...	<i>I find it/them ...</i>
Il/Elle a les cheveux ...	<i>He/She has ... hair.</i>	démodé(s)/e/es).	<i>old-fashioned.</i>
Derrière lui/elle	<i>Behind him/her</i>	original/originaux/originale(s).	<i>original.</i>
Il/Elle joue ...	<i>He/She is playing ...</i>	ennuyeux/ennuyeuse(s).	<i>boring.</i>
du violon / du piano.	<i>the violin / the piano.</i>	bon(s)/bonne(s).	<i>good.</i>
de la batterie.	<i>the drums.</i>	bête(s).	<i>stupid.</i>
de la clarinette.	<i>the clarinet.</i>	Qu'est-ce que tu aimes comme musique?	<i>What sort of music do you like?</i>
de la flûte.	<i>the flute.</i>	J'aime toutes sortes de musique.	<i>I like all sorts of music.</i>
de la guitare.	<i>the guitar.</i>	J'écoute souvent du hip-hop.	<i>I often listen to hip-hop.</i>
de la trompette.	<i>the trumpet.</i>	Ça me donne envie de danser.	<i>It makes me want to dance.</i>
du jazz / du R'n'B.	<i>jazz. / R'n'B.</i>	Ça me rend heureux/heureuse.	<i>It makes me happy.</i>
de la musique classique.	<i>classical music.</i>	Sa musique est inspirante.	<i>His/Her music is inspiring.</i>
du hip-hop / du rap.	<i>hip-hop. / rap music.</i>	Est-ce que tu joues d'un instrument?	<i>Do you play an instrument?</i>
du hard rock.	<i>hard rock.</i>	Je ne joue pas d'un instrument.	<i>I don't play an instrument.</i>
de la techno.	<i>techno music.</i>	Je joue de la flûte.	<i>I play the flute.</i>
Comment tu trouves ...	<i>What do you think of ...</i>		
le chanteur/la chanteuse?	<i>the singer?</i>		
la mélodie?	<i>the melody?</i>		
les paroles?	<i>the lyrics?</i>		
le rythme?	<i>the rhythm?</i>		

Unité 1 (pages 58–59) Tu étais comment?

Tu étais comment?	<i>What were you like?</i>	Qu'est-ce que tu faisais à la maison?	<i>What did you do at home?</i>
Quand j'étais petit(e) ...	<i>When I was younger ...</i>	Je jouais ...	<i>I used to play ...</i>
j'avais (les cheveux frisés).	<i>I used to have (very curly hair).</i>	Je faisais ...	<i>I used to do ...</i>
j'étais sage / méchant(e).	<i>I used to be good / naughty.</i>	J'allais ...	<i>I used to go ...</i>
timide / mignon(ne).	<i>shy / cute.</i>	Je lisais ...	<i>I used to read ...</i>
je n'étais pas très sage.	<i>I didn't use to be very well behaved.</i>	Je restais (dans ma chambre).	<i>I used to stay (in my bedroom).</i>
Qu'est-ce que tu portais?	<i>What did you wear?</i>	Qu'est-ce que tu aimais?	<i>What did you like?</i>
Je portais (un sweat jaune).	<i>I used to wear (a yellow sweatshirt).</i>	J'aimais (le chocolat).	<i>I used to like (chocolate).</i>
Qu'est-ce que tu faisais à l'école?	<i>What did you do at school?</i>	Cependant, je n'aimais pas (le poisson).	<i>However, I didn't use to like (fish).</i>

Unité 2 (pages 60–61) Ton école primaire était comment?

Ton école primaire était comment?	<i>What was your primary school like?</i>	Le bâtiment était ...	<i>The building was ...</i>
Mon école primaire était ...	<i>My primary school was ...</i>	moderne / vieux.	<i>modern / old.</i>
grande / petite.	<i>big / small.</i>	beau / laid.	<i>beautiful / ugly.</i>
de taille moyenne.	<i>middle-sized.</i>	Il y avait combien d'élèves?	<i>How many pupils were there?</i>
		Il y avait trois cents élèves.	<i>There were 300 pupils.</i>

Unité 2 (pages 60–61) Ton école primaire était comment?

Ton instituteur était comment?	<i>What was your primary school teacher like?</i>	Je préférais mon école primaire.	<i>I preferred my primary school.</i>
Il/Elle était ...	<i>He/She was ...</i>	Je préfère le collège.	<i>I prefer secondary school.</i>
drôle / gentil(le).	<i>funny / kind.</i>	Les activités extrascolaires du collège sont plus amusantes.	<i>The extra-curricular activities at secondary school are more fun.</i>
sévère / impatient(e).	<i>strict / impatient.</i>	Mon instituteur était moins sérieux que mes profs au collège.	<i>My primary school teacher was less serious than my teachers at secondary school.</i>
patient(e) / sympa.	<i>patient / nice.</i>	La journée scolaire est trop longue!	<i>The school day is too long!</i>
Qu'est-ce que tu étudiais?	<i>What did you study?</i>	Les repas de la cantine sont meilleurs.	<i>The meals at the canteen are better.</i>
J'étudiais l'anglais.	<i>I studied English.</i>	L'emploi du temps est plus chargé.	<i>The timetable is fuller.</i>
Quelle était ta matière préférée?	<i>What was your favourite subject?</i>	Les cours sont plus stimulants.	<i>The lessons are more stimulating.</i>
Ma matière préférée, c'était le français.	<i>My favourite subject was French.</i>		
J'adorais lire.	<i>I loved to read.</i>		
Tu étais heureux/heureuse à l'école?	<i>Were you happy at school?</i>		
J'étais heureux/heureuse ...	<i>I was happy ...</i>		
J'aimais ... / J'adorais ...	<i>I liked ... / I loved ...</i>		
Je détestais ...	<i>I hated ...</i>		

Unité 3 (pages 62–63) Autrefois ... aujourd'hui ...

il y a (six) ans	<i>(six) years ago</i>	Pour écouter de la musique aujourd'hui, ...	<i>To listen to music today. ...</i>
Pour écouter de la musique, ...	<i>To listen to music. ...</i>	on utilise un gramophone.	<i>people use a gramophone.</i>
on achetait des CD.	<i>people used to buy CDs.</i>	on achète des cassettes audio.	<i>people buy audio cassettes.</i>
on allait à un concert.	<i>people used to go to a concert.</i>	on écoute en streaming.	<i>people listen by streaming.</i>
on utilisait Spotify.	<i>people used to use Spotify.</i>	Aujourd'hui, les jeunes Français écoutent ...	<i>Today, young French people listen to ...</i>
Écouter de la musique à la radio était ...	<i>Listening to music on the radio was ...</i>	toutes sortes de musique.	<i>all sorts of music.</i>
plus populaire.	<i>more popular.</i>	de la musique rap.	<i>rap music.</i>

Unité 4 (pages 64–65) De jeunes réfugiés

Où est-ce que tu es né(e)?	<i>Where were you born?</i>	la famine.	<i>famine.</i>
Je suis né(e) en / au ...	<i>I was born in ...</i>	la persécution.	<i>persecution.</i>
J'habite maintenant en / au ...	<i>Now I live in ...</i>	Quand est-ce que tu as immigré en France?	<i>When did you immigrate to France?</i>
Où est-ce que tu habitais?	<i>Where did you live?</i>	J'ai immigré en France il y a quatre ans.	<i>I immigrated to France four years ago.</i>
J'habitais ...	<i>I lived ...</i>	Qu'est-ce que tu fais maintenant?	<i>What do you do now?</i>
Maintenant, j'habite ...	<i>Now I live ...</i>	Je vais au collège.	<i>I go to school.</i>
Pourquoi est-ce que tu as quitté (le Soudan)?	<i>Why did you leave (Sudan)?</i>	Qu'est-ce que tu veux faire, à l'avenir?	<i>What do you want to do in the future?</i>
Nous avons quitté le Soudan à cause de ...	<i>We left Sudan because of ...</i>	Je veux être (professeur).	<i>I want to be (a teacher).</i>
la guerre.	<i>war.</i>	Je veux devenir infirmier/ infirmière.	<i>I want to become a nurse.</i>
la pauvreté.	<i>poverty.</i>		



A. VERBS: PRESENT TENSE

	Manger = To play	Boire = To drink	Recycler = to recycle	Aller = to go	Vouloir = To want	Aimer = To like
(I)	Je mange	Je bois	J'ai recyclé	Je suis allé(e)	Je voudrais	J'aimerais
(you)	Tu manges	Tu bois	Tu as recyclé	Tu es allé(e)	Tu voudrais	Tu aimerais
(he/she/we)	Il/elle/on mange	Il/elle/on boit	Il/elle/on a recyclé	Il/elle/on est allé(e)	Il/elle/on voudrait	Il/elle/on aimerait
(we)	Nous mangeons	Nous buvons	Nous avons recyclé	Nous sommes allé(e)	Nous voudrions	Nous aimerions
(you all)	Vous mangez	Vous buvez	Vous avez recyclé	Vous êtes allé(e)	Vous voudriez	Vous aimeriez
(they)	Ils/elles mangent	Ils/elles boivent	Ils/elles ont recyclé	Ils/elles sont allé(e)	Ils/elles voudraient	Ils/elles aimeraient

A. VERBS PERFECT TENSE (past)

A. VERBS CONDITIONAL TENSE

B. GRAMMAR: The conditional tense

When do we use the Conditional tense ?	We use the conditional tense to say what we would like to do
J'aimerais changer le monde	<i>I would like to change the world</i>
Je voudrais acheter plus de produits bios	<i>I would like to buy more organic products</i>

C. GRAMMAR: Negatives

When do we use a negative?	You use a negative to say when you don't/never do something. They must form a "sandwich" around the verb
Je ne mange pas	I don't eat
Je ne mange jamais	I never eat
Je ne mange plus	I don't eat anymore
Je ne refuse rien	I don't refuse anything

D. GRAMMAR: The superlative

What do I use the superlative for ?	The superlative is used to say the most important, the biggest etc	
	<u>Adjective before noun</u>	<u>Adjective after noun</u>
Masculine nouns	le plus grand village <i>The biggest village</i>	le village le plus important <i>The most important village</i>
Feminine nouns	la plus grande ville <i>The biggest town</i>	la ville la plus importante <i>The most important town</i>

E. Comparatives

You use comparatives to compare two or more things . The adjective must agree with the first noun mentioned.	
Plus + adjective (+ que...)	More... (than)...
Moins + adjective (+ que...)	Less... (than)...
Le repas français est plus savoureux que le repas britannique	French food is tastier than British food
Meilleur/meilleure, meilleurs/meilleures	Means better

F. COMPLEX STRUCTURES

Je suis pour/contre	I am for/against
Tu rigoles!	You're joking!
Quand j'étais plus petit, j'utilisais...	When I was younger, I used to use ...
Ce serait...	It would be

CULTURE CORNER! In France, recycling is not as common as in the UK, with a recycling rate of only 23%. How does this compare to how much you recycle?

French

G. VOCAB

Point de départ (pages 80-81)

Qu'est-ce qu'on mange?	What do you eat?	C'est ...	It is ...
Les élèves mangent ...	The pupils eat ...	équilibré.	balanced.
du pain	bread	sain.	healthy.
du poulet	chicken	savoureux.	tasty.
du riz	rice	simple.	simple.
du yaourt	yoghurt	varié.	varied.
de la salade	salad	Sur la photo, il y a trois	In the photo, there are three
de la viande	meat	enfants et un(e) adulte.	children and an adult.
des haricots	beans	Ils sont à la plage.	They're at the beach.
des légumes	vegetables	Ils ramassent des déchets.	They're collecting rubbish.
des pommes de terre	potatoes	Ils portent ...	they are wearing ...
un fruit	a piece of fruit	Ils cherchent ...	they are looking for ...
un petit gâteau	a biscuit		
Ils/Elles boivent ...	They drink ...		
du lait / de l'eau.	milk / water.		

Unité 1 (pages 82-83) Est-ce que tu manges de la viande?

Est-ce que tu manges de la viande?	Do you eat meat?	L'empreinte carbone de la viande est très grande.	The carbon footprint of meat is very big.
Je mange ...	I eat ...	Il faut protéger l'environnement.	We must protect the environment.
de la viande.	meat.	Le régime végétarien est plus sain que le régime ordinaire.	A vegetarian diet is healthier than an ordinary diet.
du poisson.	fish.	On doit respecter les animaux.	We must respect animals.
des céréales.	cereals / grains.	Il est difficile de faire des repas variés quand on ne mange pas de viande.	It's difficult to make varied meals when you don't eat meat.
des fruits de mer.	seafood.	La viande, c'est très savoureux.	Meat is very tasty.
des produits laitiers.	milk products.	La viande apporte beaucoup de vitamines importantes.	Meat provides lots of important vitamins.
des produits d'origine animale.	animal products.		
Je ne porte jamais ...	I never wear ...		
de vêtements en cuir.	leather clothes.		
Je ne refuse rien!	I refuse nothing!		
Je suis pour le végétarisme.	I am in favour of vegetarianism.		
Je suis contre le véganisme.	I am against veganism.		

Unité 2 (pages 84-85) Action pour la nature!

Qu'est-ce qu'il faut faire pour protéger les animaux?	What must we do to protect animals?	consommer moins d'énergie.	consume less energy.
Il faut ...	We must ...	aller ... à pied ou à vélo.	go ... by foot or by bike.
ramasser les déchets.	pick up litter.	Il ne faut jamais ...	We must never ...
recycler.	recycle.	acheter des souvenirs d'origine animale.	buy souvenirs made from animal products.
manger moins de viande.	eat less meat.	consommer des espèces de poisson menacées.	eat endangered fish species.
utiliser moins de plastique.	use less plastic.	laisser des sacs en plastique sur la plage.	leave plastic bags on the beach.



Unité 3 (pages 86-87) Mission anti-plastique!

Il/Elle est né(e) ...	He/She was born ...	recycler le plastique	to recycle plastic
dans une usine.	in a factory.	refuser les sacs en plastique	to refuse plastic bags
Il/Elle a voyagé ...	He/She travelled ...	organiser des campagnes anti-plastique	to organise anti-plastic campaigns
en camion.	by lorry.	acheter des produits recyclés	to buy recycled products
Il/Elle est rentré(e) à la maison.	He/She went home.	utiliser une bouteille réutilisable / un sac réutilisable	to use a reusable bottle / reusable bag
Il/Elle est allé(e) ...	He/She went ...	La semaine dernière, j'ai organisé ...	Last week, I organised ...
au collège.	to school.	Quand j'étais plus jeune, j'utilisais ...	When I was younger, I used to use ...
Il/Elle est entré(e) ...	He/She entered ...	À l'école primaire, je ne faisais rien.	At primary school, I didn't do anything / I did nothing.
dans le bac de recyclage.	the recycling bin.		
Il/Elle a retrouvé ...	He/She met up with ...		
ses ancien(ne)s ami(e)s.	his/her old friends.		
Il/Elle est devenu(e) ...	He/She became ...		
un ballon de foot.	a football.		
Qu'est-ce que tu fais pour réduire le plastique?	What do you do to reduce plastic?		



Unité 4 (pages 88-89) J'aimerais changer le monde ...

Qu'est-ce que tu voudrais faire pour changer le monde?	What would you like to do to change the world?	consommer plus de produits bio.	to consume more organic products.
Je voudrais / J'aimerais ...	I would like ...	refuser le plastique à usage unique.	to refuse single-use plastic.
acheter moins de vêtements.	to buy fewer clothes.	faire du travail bénévole.	to do voluntary work.
manger moins de viande.	to eat less meat.	devenir membre d'un groupe écologique.	to become a member of a green group.



Les mots essentiels High-frequency words

Est-ce que tu es pour ou contre ...?	Are you for or against ...?
Je suis pour / contre ...	I am for / against ...
À mon avis, ...	In my opinion, ...
Pour moi, ...	For me, ...
Je trouve que ...	I find/think that ...
Je pense que ...	I think that ...
Tu es d'accord?	Do you agree?
Je suis d'accord.	I agree.
Je ne suis pas d'accord.	I disagree.
Tu as raison!	You're right!
Tu as tort!	You're wrong!
Tu rigoles!	You must be joking!
par contre, ...	on the other hand, ...
cependant, ...	however, ...
d'un côté, ... mais d'un autre côté, ...	on one hand, ... but on the other hand, ...

Stratégie

When you are learning new vocabulary, grouping words together in word families can help you remember them. E.g:

- utiliser (to use)
- réutiliser (to reuse)
- réutilisable (reusable)
- le plastique (plastic)
- en plastique (made of plastic)
- une campagne anti-plastique (an anti-plastic campaign)
- le plastique à usage unique (single-use plastic)

Tectonic Hazards

Key words

Continental Drift	The gradual movement of the continents across the earth's surface
Convection currents	The transfer of heat through molten rock
Slab pull	The downward pulling motion caused by subduction
Convergent	Two plates moving towards each other
Divergent	Two plates moving away from each other
Conservative	Two plates sliding past each other at different speeds
Composite	Large, steep volcano built up of layers of lava and ash
Shield	Dome shaped volcano with a gentle eruption
Viscosity	Stickiness of lava caused by silica content
Governance	The rules created by a country's political system
Rural isolation	Absence of urban characteristics
Corruption	Dishonest conduct by those in power

Earth's Processes

Give three pieces of evidence for continental drift

- Continents fit together as a jigsaw
- Same fossils found in multiple continents
- Same rocks/mountains lined up between continents

Describe the distribution of earthquakes and volcanoes

- Majority are found by plate boundaries
- Hotspots and intraplate earthquakes are found in the middle of plates

Explain two theories for plate movement

- Convection Currents: Radioactive decay → Rising heat → Convection currents → Movement of plate
- Slab pull

Describe the characteristics of each layer of the earth

Layer	Temp.	Density	Physical state	Composition
Crust	Lowest	Least dense	Solid	Basalt and granite
Asthenosphere			Plastic	Magma (silica)
Lower mantle			Solid	
Outer core	Highest	Most dense	Liquid	Iron and nickel
Inner core			Solid	

Describe the characteristics of each plate boundary

Plate boundary	Movement	Volcanoes	Earthquakes
Divergent		Shield volcanoes	Weak
Convergent (oceanic-continental)		Composite	Strong
Convergent (continental-continental)		X	Strong
Transform		X	Strong

Volcanoes

What is a volcano?

Push factors, Pull factors, Intervening obstacles

Describe the three states of volcanoes

- Active
- Dormant
- Extinct

Describe the differences between shield and composite volcanoes

	Shield	Composite
Appearance	Gently sloping dome	Steep sides, large
Lava	Low silica content, low viscosity	High silica content, viscous
Eruption	Frequent, gentle	Infrequent, explosive

Name two ways in which eruptions can be predicted and monitored

- Gas samples
- Tiltmetres

Give three reasons why people live near volcanoes

- Geothermal energy
- Agriculture
- Tourism

Earthquakes

What is an earthquake?

Vibrations caused by a sudden slip on a fault where friction has caused two plates to lock.

Give three physical factors that influence the severity of impact

- Magnitude
- Depth
- Plate boundary type

Give three human factors that influence the severity of impact

- Population density
- Level of preparation
- Effectiveness of response

Give two ways countries prepare for earthquakes

- Earthquake proof buildings
- Earthquake drills

Earthquake case studies

	Haiti	Chile
Magnitude	7.0	8.8
Depth	13km	33km
Plate boundary type	Conservative	Oceanic-continental convergent
Deaths	316,000	562
Preparation	<ul style="list-style-type: none"> Poorly built buildings—existence of slums 	<ul style="list-style-type: none"> Strict building regulations Prepared emergency services
Response	<ul style="list-style-type: none"> Slow distribution of resources Confusion over who was in charge 	<ul style="list-style-type: none"> Vaccinations against tetanus and hepatitis Military ordered to prevent looting
Level of development	Developing	Developed

Volcano case study: Pinatubo

Describe the size of the eruption	Second largest of the century
Name three hazards created	<ul style="list-style-type: none"> Pyroclastic flows Lahars Ash loading
How was it predicted and monitored?	PHIVOLCS and USGS used seismic monitors
How was it responded to?	<ul style="list-style-type: none"> 20,000 evacuated Dams built to stop lahars Resettlement of population

Year 9 History – totalitarian regimes

	When in power?	What was the one party state?	Who was the one strong leader?	How did the police state work?	How was propaganda used?	How were institutions controlled?	How was the economy controlled?
Communist Russia	1917 - 1991	<ul style="list-style-type: none"> Bolshevik Party takes power after 1917 revolution All other parties and elections banned in 1917 	<ul style="list-style-type: none"> Lenin (1917-24) Joseph Stalin (1925-1953) 	<ul style="list-style-type: none"> NKVD spied on people Anyone found guilty of opposing the government sent to work in the gulags Purges and show trials used to eliminate any opposition to Stalin 	<ul style="list-style-type: none"> Personality cult of 'Uncle Joe' Artists and writers had to glory Stalin in their work Censorship and rewriting of history 	<ul style="list-style-type: none"> Religion banned as a threat to Stalin's authority as leader Education controlled through government interference in curriculum and textbooks Youth groups created to teach students how to be a good communist and promote healthy lifestyle 	<ul style="list-style-type: none"> Five year plans: Economic targets designed to rapidly transform industry Failures included poor quality goods and false statistics Production did increase but at huge human cost – deaths and famines Collectivisation: Peasants lost their own land which they owned and instead all resources were pooled to create collective farms Lack of incentive to work led to famines
Fascist Italy	1922 - 1943	<ul style="list-style-type: none"> Fascist Party takes power in 1922 Gradually reduces parliamentary power in the 1920s 	<u>Il Duce</u> – Benito Mussolini	<ul style="list-style-type: none"> OVRA spied on people <u>Blackshirts</u> beat up political opponents Critics of the government were punished by losing their jobs or imprisonment Less harsh punishments than other regimes 	<ul style="list-style-type: none"> Mussolini created his image of a man with all the talents Used newspapers and public speeches to promote his image 	<ul style="list-style-type: none"> Catholic Church not controlled Education focused on obedience ('you must obey because you must') and national unity 	<ul style="list-style-type: none"> Agreement between workers and bosses to increase workers rights but in reality supported big business Standard of living fell for most
Nazi Germany	1933 - 1945	<ul style="list-style-type: none"> Nazi Party elected in 1933 during the Great Depression Used the Reichstag Fire increase powers All other political parties banned a few months later using Enabling Act Got rid of internal opposition in Night of the Long Knives 	Der Fuhrer – Adolf Hitler	<ul style="list-style-type: none"> Gestapo and SS spied on people and had vast networks of ordinary people as informants Opponents sent to work in concentration camps Persecuted minorities and 'undesirables' including Jews, gypsies and disabled people 	<ul style="list-style-type: none"> Hitler portrayed as a fatherly figure, war hero and almost god-like Radio, newspapers, film, posters, books and art all used to promote Nazis ideas 	<ul style="list-style-type: none"> Protestant church controlled and Catholics persecuted Hitler Youth set up to indoctrinate and control young people Control of curriculum and teachers 	<ul style="list-style-type: none"> Government schemes to reduce unemployment and improve standard of living through building infrastructure <u>Labour Service Corps</u> was compulsory manual <u>labour</u> for men 18-25 Rearmament created huge number of jobs in the armed forces and weapons factories Invisible unemployment – women, Jews, prisoners in concentration camps were not counted

Keyword	Definition
Totalitarianism	A form of government that has total control over people's lives. It does not allow individual freedom
Communism	A political and economic system where everyone is equal. Housing, land and industry are collectively owned. No individual or private ownership is allowed
Capitalism	A political and economic system where wealth is unequally shared, some people are rich, others are poor. Business and land is privately and individually owned
Means of production	Businesses that produce goods to be sold
Dictatorship	a government in which one person or a small group possesses total power
Bolsheviks	The Russian communist party that took power in 1917
Cult of personality	Unquestioning worship of a leader
Police state	Spying on people, controlling the legal system, imprisoning anyone who is seen as a threat
Purges	The expulsion of members of the Bolshevik Party
Show trials	Public trials of 'traitors'
Gulags	Russian prison and work camps
Propaganda	Information, often misleading, which is used to promote a particular view
Five Year Plans	Economic targets to improve industry in Russia
Collectivisation	Sharing of land and resources to improve farming in Russia
Fascism	A political and economic system emphasising national unity, tradition and opposition to democracy
Aryan race	The superior or 'master race' according to the Nazis
Untermenschen	Sub humans
Fuhrer	Leader
Concentration camp	German prison and work camps
SS	Military wing of the Nazi Party
Gestapo	German secret police
Rearmament	Rebuilding armed forces in preparation for war
Anti-Semitism	Anti-Jewish hatred

Latin

1. Core Vocab

	Latin	English
Verbs	appropinquo, appropinquare, appropinquavi	Approach, come near to
	narro, narrare, narravi	Tell, relate
	pugno, pugnare, pugnavi	Fight
Nouns	epistula, epistulam (f)	Letter
	homo, hominem (m)	Man, person
	imperator, imperatorem (m)	Emperor, general
	iuvenis, iuvenem (m)	Young person
	miles, militem (m)	Soldier
	nauta, nautam (m)	Sailor
	pars, partem	Part
	puer, puerum (m)	Boy
	res, rem (f)	Thing, story
	silva, silvam (f)	Wood, forest
Adjectives	ingens	Huge
Useful words	cur?	Why?
	minime	No
	olim	Once, some time ago
	saepe	Often
	tum	Then
	vehementer	Loudly, violently, strongly

YEAR 9 LATIN – CHAPTER 7 – LONDINIUM

2. Culture

Londinium	The Romans conquered Britain in 43 CE and established Londinium (London) in about 50 CE as a base for trade, using the river Thames to bring in goods from the rest of the empire.
Made in Londinium	Londinium's population included native Britons, Roman soldiers and many craftsmen and merchants from across the Empire. Goods made in Londinium included glass, wool and clothes, metalwork and jewellery and leather.
Food	Romans brought new foodstuffs to Britain including a range of vegetables and fruits, nuts, herbs, animals, olives and olive oil, spices, and wine.



4. Key Terms

Tense	When the action of the verb is happening
Imperfect	Tense used for a continuous action in the past
Perfect	Tense used for a completed action in the past

3. Grammar

a) The imperfect and perfect tenses

What is the imperfect tense used for?	Actions that were taking place in the past and were happening for some time
How do we recognize it?	The letters –ba- in the ending plus the same person endings as the present tense (except for –m instead of –o for 'I').
How do we translate it?	I was doing something or I used to do something – e.g. I was working, I used to work
What is the perfect tense used for?	A completed action that happened at a set point in time in the past.
How do we recognize it?	The letter –v- followed by the endings: i, isti, it, imus, istis, erunt
How do we translate it?	I did something or I have done something – e.g. I worked, I have worked

b) All verb endings so far

Person		Present tense	Imperfect tense	Perfect tense
SINGULAR	1 st , 'I'	voco	vocabam	vocavi
	2 nd , 'you'	vocas	vocabas	vocavisti
	3 rd , 'he/she/it'	vocat	vocabat	vocavit
PLURAL	1 st , 'we'	vocamus	vocabamus	vocavimus
	2 nd 'you all'	vocatis	vocabatis	vocavistis
	3 rd 'they'	vocant	vocabant	vocaverunt

Latin











1. Core Vocab		
	Latin	English
Verbs	ago, agere, egi	Do
	bibo, bibere, bibi	Drink
	Conspicio, conspicere, conspexi	Catch sight of, notice
	gero, gerere, gessi	Wear
	iaceo, iacere, iacui	Lie down
	incendo, incendere, incendi	Burn, set on fire
	procedo, procedere, processi	Go along, proceed
	surgo, surgere, surrexi	Get up
Nouns	domus, domum	Home, house
	porta, portam	Gate
	senex, senem	Old person
Useful words	de + abl.	From, down from, about
	eam	Her; it
	eum	him; it
	mox	Soon
	nihil	Nothing
	noster	Our
	postquam	After
	tandem	At last, finally
	trans + acc.	Across

YEAR 9 LATIN – CHAPTER 8 – BRITANNIA

2. Culture	
Britannia	Iron Age Britain was divided into tribes ruled by a king or queen. The Romans changed this by building a network of roads and towns, dividing Britain into areas they could administer called civitates.
Camulodunum	Camulodunum (modern Colchester) was the site of the Britons’ defeat by the Romans, and the first capital of the new province. A fortress was built which then grew into a town with Roman-style buildings including an arch and a temple to the emperor Claudius, who had led the invasion of Britain.
Resist or accept?	Some British leaders, like Togidubnus, were strong supporters of the Romans, adopting Roman names, building temples and Roman-style villas. Others, like Caractacus, led fierce resistance movements that were defeated by military strength.
Druids	Druids were priests, teachers and judges and some of the most powerful people in pre-Roman British society. They organized British resistance to the Romans but were defeated in a final battle in 60 CE. The Romans then banned Druids, accusing them of practicing human sacrifice.

4. Key Terms	
Superlative	Form of an adjective that means ‘most’ or ‘very’ in English

3. Grammar	
a) The Perfect tense continued	
Which letter often indicates the perfect tense?	-v-, e.g. vocavi = I called; laboravi = I worked, salutavi = I greeted (see Chapter 7)
What are other examples of how verbs form their perfect tense?	With –u-, e.g. habui = I had; with –s- or –ss-, e.g. discessi = I left, with –x- e.g. dixi = I said. Some verbs have very unusual perfect tenses that have to be learnt, e.g. cucurri = I ran (from curro)
How can I check if a verb is perfect tense?	When a verb is listed in the dictionary you are given 3 pieces of information, e.g. voco, vocare, vocavi - call These are the present tense (‘I call’), the infinitive (‘to call’) and the perfect tense (‘I called’)
b) Superlatives	
What type of word is a superlative an example of?	Adjective
How do we recognize superlatives in Latin?	They usually have the letters –issim- before the ending, e.g. tristissimus = very sad (some have ‘illim’ or ‘errim’ instead)
How do we translate them?	With ‘very’ or ‘most’, or by adding ‘-est’ on the English adjective, e.g. saddest
What is a good mnemonic to remember this?	‘issi’ and ‘erri’ mean ‘most’ and ‘very’!

Key Vocab	Definition	Dances Through the Decades		Decade					Logic Icon	Name
Four to the Floor	Four crotchet beats played on a kick drum	<div>  <div>Early Drum Machine</div>  <div>Early Synthesizer</div> </div>	<div> <div>Waltz</div> <div>Swing/Charleston</div> <div>Mambo</div> <div>Cha Cha/Twist</div> <div>Locking and Popping/Robot</div> <div>Disco</div> <div>Electro Dance</div> </div>	13 th Century (unknown decade)						Pointer
Panning	Moving sound to the left or right (speaker or headphone)			1920's						Pencil
Loop	Repeating a musical phrase in cycles using technology			1940's						Mute
Delay	Repeating a sound after it has been heard.			1950's						Solo
Arpeggiation	Playing notes of a chord individually and in a pattern			1960's						Pan
Syncopation	Playing off the beat			1970's						Metronome
Ostinato	A small repeating pattern of notes			1990's onwards						Count in
MIDI	Virtual music notes									Record Enable
		EDM Style	Dub	Ambient	Bhangra	Electro	Garage	House	Jungle	UK Garage
		Country	Jamaica	Germany/ Uk	India/ Pakistan	Japan/ USA	USA	USA	UK	UK
		Decade	60's	60's	70's	80's	Late 80's	Late 80's	90's	90's

Islam Beliefs Knowledge Organiser

Key Words			
Islam	Submission (to God)	Hadith	Recorded sayings of Muhammad.
Muslim	Someone who follows Islam by submitting to God.	Allah	The Arabic word for God.
Sunni	Muslims who believe Abu Bakr and the Caliphs were successors of Prophet Muhammad.	Tawhid	Belief in One God; monotheism.
Shia	Muslims who believe Ali and the Imams were successors of Prophet Muhammad.	Adalat	Divine justice.
Source of Authority	Religious texts or bodies responsible for guiding people. For Muslims, this is the Quran and Sunnah of Muhammad.	Shirk	Giving Allah partners or worshipping other than Allah; polytheism
Sunnah	The sayings and actions of Muhammad.	Freewill	Freedom to act as you wish.
Key Ideas			
What are the origins of Islam?			
What do Muslims believe about the origins of Islam?	It is a faith that has always existed and that it was gradually revealed to humanity by a number of prophets.		
How do Sunni Muslims believe is the best way to know about Muhammad?	Through his companions beginning with Abu Bakr and then the Caliphs.		
How do Shia Muslims believe is the best way to know about Muhammad?	Through his family and beginning with Ali and his chosen descendants.		
What are the 6 Articles of Iman (Faith) & 5 Usul ad Din (Roots of Religion)?			
What are the 6 Articles of Iman (faith) for Sunni Muslims?	1. Belief in Allah (Tawhid); 2. Belief in angels (malaikah); 3. Belief in the books (kutub); 4. Belief in the prophets (nubuwwah/risalah); 5. Belief in the Last Day (Qiyamah) and the afterlife (Akhirah); 6. Belief in predestination (Al Qadr)		
What are the 5 Usul ad Din (Roots of Religion) for Shia Muslims?	1. Belief in Allah (Tawhid); 2. Belief in Divine Justice (Adalat); 3. Belief in the prophets (Nubuwwah); 4. Belief in the authority of the Imams (Imamah); 5. Belief in Resurrection/Last Day (Ma'ad/Qiyamah)		
What do Muslims believe about the nature of Allah?			
Why do Muslims believe it is impossible to fully describe or depict Allah?	He is so much more than our minds can comprehend.	What are 3 forms of shirk?	To give Allah partners Giving someone or something Allah's attributes To worship something other than Allah.
How do Muslims try to understand Allah?	Through the way He describes Himself in the Quran or how Prophet Muhammad described Him.	What does the Quran say about Tawhid?	"Say: He is Allah, the One." (Quran 112:1)
What are some of the qualities of Allah?	Omnipotence (all powerful); Beneficence (Kindness) Mercy; Immanence; Transcendence Just (Al-Adl) (The Just)	What does the Quran say about shirk?	"Surely Allah does not forgive that anything should be associated with Him, and forgives what is besides that to whomsoever He pleases." (Quran 4:48)
What do Muslims believe about angels (Malaikah)?			
What are malaikah created out of?	Light	What is the role of Izrail?	Death through taking the souls of people.
What are some features of malaikah?	Praise, worship and obey Allah. No freewill	What is the role of Israfil?	Blows a trumpet to announce the Day of Judgement.
Why is Shaytan not an angel?	He has freewill and disobeyed Allah	What is the role of Munkar and Nakir?	Question the dead in their graves.
What is the role of Jibril?	Angel of revelation who communicates the words of Allah to the prophets	What is the role of Kiraman and Katibeen?	Record a person's actions throughout their life recording it in the book of deeds.
What is the role of Mikail?	Giver of rain, food and rewards.	What does the Quran say about malaikah?	"Whoever is an enemy to Allah and His angels...then indeed, Allah is an enemy to the disbelievers." (Quran 2:98)

What do Muslims believe about Prophethood (Nubuwwah/Risalah)?			
How many prophets were sent by Allah?	124,000	What is Risalah?	A method of communication between God and human beings
What was the key message of all prophets?	Oneness of God (Tawhid)	Why is Adam important?	Father of human race Shaytan refused to bow to him.
What may be different between what the prophets taught?	Laws	Why is Ibrahim important?	Built the Ka'aba Faith tested by Allah
What is a Rasul?	A prophet given a specific book and new laws by Allah.	Why is Muhammad important?	Seal of the prophets Given the Quran Sunnah comes from him.
What is a Nabi?	A prophet that carries on teaching the previous Rasul's book and laws.	What does the Quran say about Nubuwwah?	"Every community is sent a messenger, and when their messenger comes, they will be judged and they will not be wronged" (Quran 10:47)
What do Shia Muslims believe about Imamah?			
What is Imamah?	The Shia belief of Allah choosing leaders to succeed Muhammad.	What are some features of the Imams?	Sinless Free from error Able to interpret scripture Knowledge passed down from Muhammad
How many Imams do most Shia believe in?	12	Who is the 12 th Imam?	Mahdi
Who was the first Imam?	Ali	What do Shia believe about the 12 th Imam?	He was taken away by Allah at a young age and will return with Jesus to make the world peaceful.
How are Imams different to prophets?	They do not receive revelation.	What does the Quran say about Imamah?	"O you who have faith! Obey Allah and obey the Messenger and those given authority among you." (Qur'an 4:59)
What do Muslims believe about Kutub (the Divinely Revealed Books)			
Which book was given to Ibrahim?	Suhuf	Which book was given to Isa?	Injil
Which book was given to Dawud?	Zabur	Which book was given to Muhammad?	Quran
Which book was given to Musa?	Tawrat	What does the Quran say about the kutub before the Quran?	"And indeed, there is among them a party who alter the Scripture with their tongues so you may think it is from the Scripture, but it is not from the Scripture." (Quran 3:78)
What do Muslims believe about Al-Qadr (Predestination)?			
What do some Sunni Muslims believe about Al Qadr?	Allah has already predestined everything that will happen in the universe. We cannot change our destiny but we can choose our actions.	What is fixed taqdeer?	Events that are predestined that cannot ever be changed
What do some Sunni and most Shia Muslims believe about Al Qadr?	Although Allah knows everything that will happen, it doesn't mean He has decided what will happen. Although Allah knows what choice people will make, He has given them the freewill to choose.	What is changing taqdeer?	Events that are not absolute and can be changed
How does Al Qadr link to Allah's attribute of Al Qadir (all powerful)?	Allah has the power to decide or change the future	What does the Quran say about trusting Allah's plan?	"Only what God has decreed will happen to us. He is our Master: let the believers put their trust in God" (Quran 9:51)
What do Muslims believe about Akhirah (Afterlife) / Ma'ad (Resurrection) & Qiyamah (The Last Day)?			
What happens at Barzakh?	A period in the grave where questioning takes place by Munkar and Nakir.	What is Jannah?	Heaven, eternal peace with Allah.
What happens at resurrection?	Every single human will be resurrected (raised from the dead) for judgement.	What is Jahannam?	Hell, punishment for evil.
What happens on the Last Day (Judgement Day)?	Every single human will be judged by Allah based on the life they lived on earth.	What does the Quran say about akhirah?	"Every soul shall have a taste of death: in the end to Us shall you be brought back." (Quran 29:57)

Spanish



St Paul's Way
Education • Foundation • Trust

Knowledge Organiser Year 9 Spanish Spring 1 Module 3 *En forma*



A. STEM-CHANGING VERBS, PRESENT TENSE (now or generally)

	Jugar (to play)	Preferir (to prefer)	Dormir (to sleep)	Despertarse* (to wake up)	Levantarse (to get up)	Vestirse* (to get dressed)
Yo (I)	Juego	Prefiero	Duermo	me despierto	me levanto	me visto
Tú (you)	Juegas	Prefieres	Duermes	te despiertas	te levantas	te vistes
Él/ella (he/she)	Juega	Prefiere	Duerme	se despierta	se levanta	se viste
Nosotros/as (we)	Jugamos	Preferimos	Dormimos	nos despertamos	nos levantamos	nos vestimos
Vosotros/as (you)	Jugáis	Preferís	Dormís	os despertáis	os levantáis	os vestís
Ellos/as (they)	Juegan	Prefieren	Duermen	se despiertan	se levantan	se visten

A. REFLEXIVE VERBS, PRESENT TENSE (*=also stem-changing)

B. KEY GRAMMAR Direct object pronouns

What are direct object pronouns?	They replace a <u>previously-mentioned</u> noun.
When do we use them?	To avoid repeating the noun.
Where does it go? (2)	Before the conjugated verb. OR at the end of an <u>infinitive</u> .
How to decide which pronoun?	Depends if the <u>noun you're replacing</u> is <u>masculine/feminine/singular/plural</u> :

What are the direct object pronouns ?		masculine	feminine
	singular	<u>lo</u>	<u>la</u>
	plural	<u>los</u>	<u>las</u>

I bought <u>an apple</u> . I ate <u>it</u> .	Compré <u>una manzana</u> . <u>La</u> comí.
I have <u>two books</u> . I am going to read <u>them</u> .	Tengo dos <u>libros</u> . Voy a <u>leerlos</u> .

C. KEY GRAMMAR Reflexive verbs

When to use it?	Used to describe actions that you do "to yourself".
How can you recognise them?	It will end in <u>se</u> after the <u>-ar/-er/-ir</u> infinitive ending (e.g. <u>levantarse</u>)
How do you conjugate them?	1) Take off the <u>se</u> and move it to the front <u>Levantarse</u> → <u>Se levantar</u> 2) Change it to the correct reflexive pronoun <u>Se levantar</u> → <u>Me levantar</u> 3) Conjugate the verb normally for the right person <u>Me levantar</u> → <u>Me levanto</u>

What are the reflexive pronouns?	<u>me</u>	<u>nos</u>
	<u>te</u>	<u>os</u>
	<u>se</u>	<u>se</u>

I get dressed	<u>Me visto</u>	We get up	<u>Nos levantamos</u>
---------------	-----------------	-----------	-----------------------

D. KEY GRAMMAR Doler

How do you use it?	It works like " <u>me gusta</u> ", using the indirect object pronoun for the person, and the definite article for the body part
--------------------	--

What are the indirect object pronouns?	<u>me</u>	<u>nos</u>
	<u>te</u>	<u>os</u>
	<u>le</u>	<u>les</u>

My eye hurts	<u>Me duele el ojo</u>	Her foot hurts	<u>Le duele el pie</u>
--------------	------------------------	----------------	------------------------

E. COMPLEX STRUCTURES: Se debe

What does it mean?	'One must' or 'you must'
What must follow it?	An infinitive verb
Para ser sano, <u>se debe beber agua</u>	To be healthy one must drink water
<u>No se debe fumar</u>	You mustn't smoke

F. CULTURE CORNER!

The traditional Spanish diet (or 'Mediterranean diet') includes plenty of fruit, vegetables, pulses, fish, olive oil and some meat.
¡Qué sanos son los españoles!

Spanish

G. OPINIONS: Spanish idioms

An idiom is an expression that is not used literally, e.g. 'it's raining cats and dogs'. They exist in Spanish too and are a great way to impress!

¡Está para chuparse los dedos!	It's finger-licking good!
¡Estoy hasta las narices!	I'm fed up to the back teeth
Cuesta un ojo de la cara	It costs an arm and a leg
¡Me tomas el pelo!	You're pulling my leg!

H. VOCAB

¿Llevas una dieta sana? Do you have a healthy diet?

Llevo una dieta sana.	I have a healthy diet.	la pasta / la pizza	pasta / pizza
Me gusta (bastante / mucho) el pan.	I (quite / really) like bread.	los caramelos	sweets
Me gustan las galletas.	I like biscuits.	los huevos	eggs
No me gusta(n) (nada)...	I (really) don't like... (at all).	los pasteles	cakes
el arroz / el pan	rice / bread	las galletas	biscuits
el pollo / el pescado	chicken / fish	las verduras	vegetables
la carne / la ensalada	meat / salad	Como / Comí verduras.	I eat / ate vegetables.
		Bebo / Bebí agua.	I drink / drank water.

¿Con qué frecuencia comes pescado? How often do you eat fish?

Lo / La / Los / Las como...	I eat it / them...	muy a menudo	very often
tres veces al día	three times a day	a veces	sometimes
cada día / todos los días	every day	de vez en cuando	from time to time
dos veces a la semana	twice a week	(Casi) nunca lo / la /	I (almost) never eat it /
los fines de semana	at weekends	los / las como.	them.
una vez al mes	once a month		

¿Qué haces para estar en forma? What do you do to keep fit?

Me gusta mucho hacer deporte.	I really like doing sport.	Juego a la pelota vasca.	I play pelota (Basque ball game).
Hago artes marciales.	I do martial arts.	...en el parque / gimnasio	...in the park / gym
Hago atletismo.	I do athletics.	Voy al polideportivo.	I go to the sports centre.
Hago footing.	I go jogging.	Soy miembro de un club.	I belong to a club.
Hago gimnasia.	I do gymnastics.	Voy a clases de baile.	I go to dance classes.
Hago natación.	I go swimming.	Prefiero jugar al fútbol.	I prefer playing football.
Juego al baloncesto.	I play basketball.	Es mi deporte preferido.	It is my favourite sport.
Juego al ping-pong.	I play table tennis.	Empecé (a jugar)...	I started (playing)...
Juego al tenis.	I play tennis.	a los (diez) años	at the age of (ten)
Juego al voleibol.	I play volleyball.	Voy a empezar a (hacer)...	I am going to start (doing)...

¿Cuál es tu rutina diaria? What is your daily routine?

me despierto (muy temprano / a las siete)	I wake up (very early / at 7 o'clock)	meriendo	I have an afternoon snack
me levanto (enseguida)	I get up (straight away)	ceno (...)	I have (... for) dinner
me lavo los dientes	I brush my teeth	salgo (a correr)	I go out (running)
me ducho	I shower	corro (veinte kilómetros)	I run (twenty kilometres)
me visto	I get dressed	entreno	I exercise / train
me acuesto	I go to bed	voy al insti / trabajo	I go to school / work
desayuno	I have breakfast	termino (a las dos)	I finish (at two o'clock)
		duermo (ocho horas)	I sleep (for eight hours)

Consejos para estar en forma Advice for keeping fit / in shape

Para estar en forma...	To keep fit / in shape...	No se debe...	You/One must not...
Se debe...	You/One must...	beber alcohol	drink alcohol
beber agua	drink water	beber muchos refrescos	drink lots of soft drinks
frecuentemente	frequently	comer comida basura	eat junk food
comer más fruta y verduras	eat more fruit and vegetables	fumar	smoke
comer menos chocolate / caramelos	eat less chocolate / fewer sweets	Soy adicto/a al / a la / a los / a las...	I am addicted to...
dormir ocho horas al día	sleep for eight hours a day	A partir de ahora, voy a...	From now on, I am going to...
entrenar una hora al día	train for one hour a day		

¿Qué tal estás? How are you?

¿Qué te duele?	What hurts?	Me duelen los ojos.	My eyes hurt.
¿Te duele el estómago?	Does your stomach hurt?	Tengo catarro.	I have a cold.
Me duele el brazo / el estómago / el pie.	My arm / stomach / foot hurts.	Tengo náuseas.	I feel sick / nauseous.
Me duele la cabeza / la espalda / la garganta.	My head / back / throat hurts.	Tengo quemaduras del sol.	I have sunburn.
Me duele la mano / la pierna.	My hand / leg hurts.	Tengo tos.	I have a cough.
Me duelen los dientes.	My teeth hurt.	Estoy cansado/a.	I'm tired.
Me duelen los oídos.	My ears hurt / I have earache.	Estoy enfermo/a.	I'm ill.
		No me encuentro bien.	I don't feel well.

Palabras muy frecuentes High-frequency words

lo / la	it	ayer	yesterday
los / las	them	hace (dos) años	(two) years ago
casi	almost / nearly	el fin de semana pasado	last weekend
cada	each / every	la próxima vez	next time
todo/a/os/as	all	para	(in order) to
mucho/a/os/as	a lot (of)	creo que	I think that

Estrategia 3

Learning new vocabulary

- Make your own word games. For example, write down the Spanish words you need to learn in one column and their English translations in another. Cut them up and play a game of pairs. Say each Spanish word to yourself as you pick it up.
- Next, take your learning further. In your vocabulary lists, highlight the words you definitely know in green. Highlight the ones that you don't know in red. Work harder at learning the red words. When you think you know a red word, draw a star by it.

la mano	hand
la pierna	leg
el pie	foot

Spanish



A. PRESENT TENSE (now or generally):

	trabajar (to work)	comer (to eat)	vivir (to live)	poder* (to be able to)	tener (to have)	ir* (to go)	ser* (to be)
Yo (I)	trabajo	como	vivo	puedo	tenía	iba	era
Tú (you)	trabajas	comes	vives	puedes	tenías	ibas	eras
Él/ella (he/she)	trabaja	come	vive	puede	tenía	iba	era
Nosotros/as (we)	trabajamos	comemos	vivimos	podemos	teníamos	íbamos	éramos
Vosotros/as (you)	trabajáis	coméis	vivís	podéis	teníais	ibais	erais
Ellos/as (they)	trabajan	comen	viven	pueden	tenían	iban	eran

A. VERBS IMPERFECT TENSE (ongoing in the past)

B. KEY GRAMMAR

Describing things in the third person

What is the 'third person'?	'He/she' or 'they' (First person = I/we Second person = you)
Which two elements do I need to change?	1) The verb ending AND 2) possessive adjectives
What is a possessive adjective?	e.g. 'my' → 'his/her' In Spanish, these agree with the thing that belongs to someone
How to say 'his/her/their'?	'su' for singular things 'sus' for plural things
His mother and his friends	Su madre y sus amigos

C. KEY GRAMMAR The Imperfect tense

When do we use it?	To give descriptions in the past, or what we 'used to' do		
How do we form it?	We remove the -ar/-er/-ir from the infinitive form, and add the following endings:		
	-AR	-ER	-IR
What are the imperfect tense endings? (endings are underlined in bold)	trabaj a trabaj ab as trabaj a trabaj áb amos trabaj ab ais trabaj ab an	com í a com í as com í a com í amos com í ais com í an	viv í a viv í as viv í a viv í amos viv í ais viv í an
Irregulars*	Era = It was (from <i>ser</i> = to be) Iba = I used to go (from <i>ir</i> = to go) Veía = I used to see/watch (from <i>ver</i> = to see)		

D. KEY GRAMMAR Nationality adjectives

Do these start with a capital letter?	In English - yes In Spanish - NO	
How do they agree?	Like all adjectives: by gender (masculine/feminine) and number (singular/plural)	
ends in:	masc.sing.	fem.sing.
-o	mexican o	mexican a
-és	ingl és	ingl esa
Other consonant	español !	español a

E. OPINIONS

Lo bueno es que...	The good thing is that...
Lo malo es que...	The bad thing is that...
Es inaceptable	It is unacceptable
(No) es justo	It is (not) fair

F. COMPLEX STRUCTURES Constructions using the infinitive

(No) puedo... + infinitive	I can (not) ...
Se puede... + infinitive	One/you can...
Para... + infinitive	(In order) to...
Se debería ... + infinitive	One/you should...
Para proteger el medio ambiente, se debería reciclar	To protect the environment, you should recycle

G. CULTURE CORNER!

Fairtrade is an international organisation that fights for better working conditions and prices for farmers/workers in the developing world. A **cooperative** is an organisation owned by its members.
Fair trade = *el comercio justo*
A cooperative = *una cooperativa*

Spanish

H. VOCAB

Mis derechos My rights

Tengo derecho...	I have the right...
al amor y a la familia	to love and to family
al juego	to play
a la educación	to education
a la libertad de expresión	to freedom of expression
a un medio ambiente sano	to a healthy environment
a vivir en armonía	to live in harmony
No puedo...	I cannot...
dar mi opinión	give my opinion
jugar con mis hermanos	play with my brothers and sisters
salir solo/a	go out alone
dormir	sleep

Las nacionalidades Nationalities

Soy...	I am...
boliviano/a	Bolivian
colombiano/a	Colombian
mexicano/a	Mexican

ir al insti(tuto)	go to school
respirar	breathe
porque...	because...
soy chico/a	I am a boy/girl
tengo que ganar dinero	I have to earn money
hay mucha violencia	there is a lot of violence
en mi ciudad	in my city
mi padre grita mucho	my dad shouts a lot
tengo que trabajar	I have to work
el aire está contaminado	the air is polluted
No es justo porque...	It isn't fair because...
Es inaceptable porque...	It is unacceptable because...

El comercio justo Fair trade

Tiene (diez) años.	He/She is (ten) years old.
Vive / Viven...	He/She lives / They live...
con su familia	with his/her family
en una plantación	on a plantation
Trabaja / Trabajan...	He/She works / They work...

(catorce) horas al día	(fourteen) hours a day
(seis) días a la semana	(six) days a week
para un patrón	for an employer
para una cooperativa	for a cooperative
Gana / Ganan	He/She earns / They earn
(treinta) euros al mes.	(thirty) euros a month.

¡Reciclamos! Let's recycle!

¿Qué se debería hacer para proteger el medio ambiente?	What should you/we do to protect the environment?
Para proteger el medio ambiente, ...	In order to protect the environment, ...
Se debería...	You/We should...
ahorrar energía en casa	save energy at home
apagar la luz	turn off the light
cerrar el grifo	turn off the tap
conservar el agua	save water
desenchufar los aparatos	unplug electrical devices

ducharse en vez de bañarse	have a shower instead of a bath
ir en bici(cleta)	go by bike
reciclar el papel / el plástico / el vidrio	recycle paper / plastic / glass
usar transporte público	use public transport
No se debería...	You/We shouldn't...
malgastar el agua	waste water
tirar la basura al suelo	throw rubbish on the ground
usar bolsas de plástico	use plastic bags

Mi ciudad My town / city

¿Cómo era tu ciudad antes?	What was your town / city like before?
Antes...	Before...
era (bastante) aburrida	it used to be (quite) boring
era (muy) peligrosa	it used to be (very) dangerous
estaba sucia	it used to be dirty
había mucha basura	there used to be a lot of rubbish
había mucha contaminación	there used to be a lot of pollution
había mucha violencia	there used to be a lot of violence
no había medios de transporte público	there didn't use to be means of public transport

no había nada para los jóvenes	there didn't use to be anything for young people
¿Cómo es ahora?	What is it like now?
Ahora...	Now...
está limpia	it is clean
hay menos basura	there is less rubbish
hay menos contaminación	there is less pollution
hay parques y espacios públicos muy bonitos	there are very nice parks and public spaces
hay una red de transporte muy buena	there is a very good transport network
hay muchas cosas para los jóvenes	there are lots of things for young people
no tiene barrios peligrosos	it doesn't have dangerous neighbourhoods

Palabras muy frecuentes High-frequency words

mi/mis	my	para	in order to / for
su/sus	his/her	hay	there is/are
nuestro/a/os/as	our	había	there was/were/used to be
más... (que)	more... (than)	a partir de ahora	from now on
menos... (que)	less... (than)	además	in addition, what's more

Estrategia 4

Extending your answers

Look at these two answers.

Hay mucha basura.

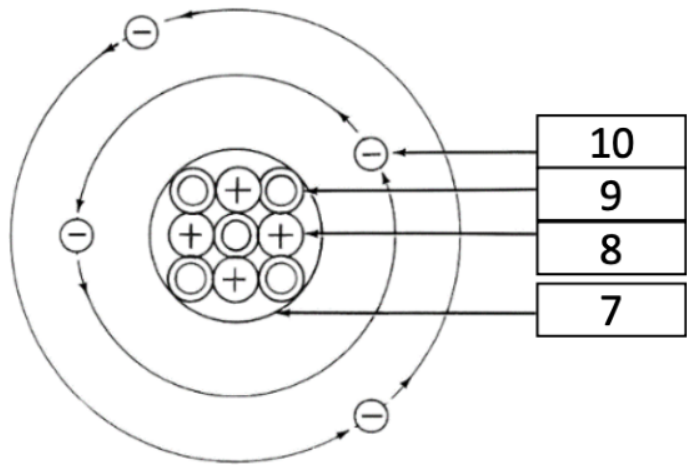
En mi región hay mucha basura. Mucha gente tira la basura al suelo, por ejemplo. La ciudad está muy sucia también. No me gusta nada. Se debería reciclar el papel y el vidrio.

Get into the habit of showing off what you know:

- Make a point.
- Give an opinion.
- Give an example.
- Say what should be done.
- Add something.

Chemistry topic 1: Atomic structure

1. Keywords	
1. Atom	The smallest possible piece of an element. Has a radius of 0.1nm (or $1 \times 10^{-10} \text{m}$)
2. Element	A substance in which all the atoms have the same atomic number
3. Isotope	Atoms with the same number of protons but different numbers of neutrons
4. Molecule	Two or more atoms bonded together
5. Compound	Two or more <u>different</u> atoms bonded together
6. Mixture	At least two different elements or compounds together. Can be separated easily
7. Nucleus	The centre of an atom. Contains protons and neutrons
8. Proton	A positively charged particle found in the nucleus
9. Neutron	A neutral particle found in the nucleus. Has no charge
10. Electron	A negatively charged particle found in energy levels (shells) around the nucleus



2. Properties of sub-atomic particles			
Particle	Relative mass	Relative charge	Location
Proton	1	+1	Nucleus
Neutron	1	0	Nucleus
Electron	0	-1	Shells

Key

relative atomic mass

atomic symbol

name

atomic (proton) number

1

H

hydrogen

1

3. Using the periodic table		
Number of..	Is the...	Found by..
Protons	Atomic (proton) number	Smaller number on periodic table
Electrons	Atomic (proton) number	Smaller number on periodic table
Neutrons	Difference between the atomic mass and atomic number	Big number – small number

4. History of the atom			
Discovery	By	Model	Diagram
Solid particle called atom	John Dalton	Particle: solid spheres	1
The electron	JJ Thompson	Plum pudding: positive 'cake' with negative 'plums'	2
Nucleus	Rutherford	Nuclear: Positive nucleus surrounded by electrons	3
Neutron	James Chadwick	Nuclear: Now with protons and neutrons in nucleus	3
Energy levels (shells)	Niels Bohr	Planetary: Electrons now 'orbit' in different shells	4

1.

2.

3.

4.

Science

5. Electron arrangement rules

1.	Always fill from the inside to the outside
2.	The first shell can only hold 2 electrons
3.	The second and third can hold 8

6. History of the Periodic Table

Invented by	Dmitri Mendeleev , a Russian scientist.
Arranged	In order of atomic mass , and by their chemical properties
What was special about it?	Predicted the existence of other elements not discovered, and left gaps for them in his table
Why was it used?	New elements were discovered that matched these gaps

7. Properties – metals and non-metals

Property	Metals	Non-metals
Density	High (they feel heavy for their size)	Low (they feel light for their size)
Strength	Strong	Weak
Malleable or brittle	Malleable (they bend without breaking)	Brittle (they break or shatter when hammered)
Conduction of heat	Good	Poor (they are insulators)
Conduction of electricity	Good	Poor (they are insulators) apart from graphite

8. Layout of the periodic table

Period	No. of shells	Groups																	
		1	2											3	4	5	6	7	0
1	1																		
2	2																		
3	3																		
4	4																		
5	5																		
6	6																		
7	7																		

TL/DR:

Group number
Tells you're the number of outer electrons

Period number
Tells you how many shells

Group	1	2	3	4	5	6	7	8
Electrons in outer shell	1	2	3	4	5	6	7	8
Charge of ion	+1	+2	+3	N/A	-3	-2	-1	N/A
Number of covalent bonds	N/A	N/A	N/A	4	3	2	1	N/A

N/A = not applicable (does not do it)

Science

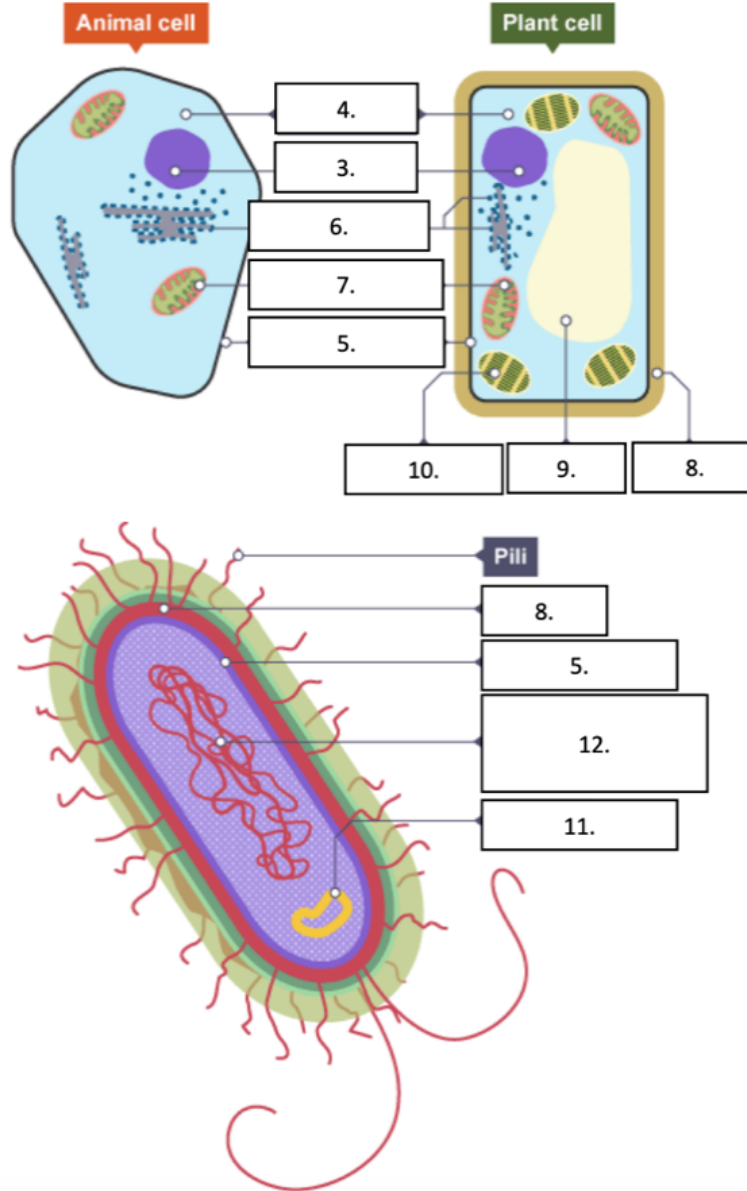
9. Properties – Groups 1 and 7											
Group 1 (I)	Melting point	Density	Reactivity	Group 7 (VII)	Melting point	Density	Reactivity	Group 0 (VIII)	Melting point	Density	Reactivity
Lithium (Li)	Decreases down the group	Increases down the group	Increases down the group	Fluorine (F)	Increases down the group	Increases down the group	Decreases down the group	Helium (He)	Increases down the group	Increases down the group	INERT (DO NOT REACT)
Sodium (Na)				Chlorine (Cl)				Neon (Ne)			
Potassium (K)				Bromine (Br)				Argon (Ar)			
Rubidium (Rb)				Iodine (I)				Xenon (Xe)			

10. Transition metals (TRIPLE ONLY)	
Properties compared to group 1 elements	Other useful properties
More dense	Ions can have different charges
Harder	Form coloured compounds
Stronger	Good catalysts
Higher melting points	
Less reactive	

11. Common separation techniques
1. Chromatography Used to separate a mixture of dyes in ink.
2. Filtration Used to separate insoluble solids from liquids (e.g. sand from water).
3. Evaporation Used to separate a soluble salt from solution. The solution is heated strongly in an evaporating basin until dry crystals are left.
4. Crystallisation Used to separate a soluble salt from solution. The solution is heated gently in an evaporating basin until crystals form; the remaining liquid is filtered out.
5. Simple distillation Is used to separate a liquid from a solution – e.g. water from ink. A condenser is used to cool hot gas until it forms a liquid.
6. Fractional distillation Used to separate a mixture of liquids with different boiling points.

Biology Topic 1: Cell Biology

1. Cell structure



Keywords

1. Eukaryotic	A complex cell with a nucleus (e.g. animal or plant cells).
2. Prokaryotic	A smaller cell without a nucleus (e.g. bacterial cell).
3. Nucleus	Contains genetic material.
4. Cytoplasm	Where a cells chemical reactions happen.
5. Cell membrane	Controls what goes into and out of a cell.
6. Ribosome	Part of a cell where proteins are made.
7. Mitochondria	Where aerobic respiration takes place.
8. Cell wall	Only found in plant cells. Made of cellulose and supports the cell.
9. Vacuole	Only found in plant cells. Contains cell sap.
10. Chloroplasts	Only found in plant cells. Where photosynthesis takes place.
11. Plasmid	Only found in bacterial cells. A small loop of DNA.
12. Genetic material	Long strands of genes not tightly pack in a nucleus.

2. Specialised cells

Keywords

Differentiation	A stem cell turning into a specialised cell
Stem cell	A special type of cell which can turn into other specialised cells
Adult stem cells	Can only produce certain types of cell -found in bone marrow
Embryonic stem cells	Can produce all types of cells - controversial
Meristems	Where plant stem cells are found
Sperm cells	Take male DNA to the egg <ul style="list-style-type: none"> • Tail to help it swim • Lots of mitochondria for energy
Nerve cells	Carry electrical signals around the body <ul style="list-style-type: none"> • Long to cover long distances • Branches to connect to other cells
Muscle Cells	Muscle cells contract <ul style="list-style-type: none"> • Long so have space to contract • Lots of mitochondria for energy
Root hair cells	Root hair cells absorb water and minerals <ul style="list-style-type: none"> • Long hairs • Big surface area for absorption
Phloem Cells	Phloem cells transport sugars (plants) <ul style="list-style-type: none"> • Long tube joined end to end
Xylem cells	Xylem cells transport water (plants) <ul style="list-style-type: none"> • Long tubes joined end to end • Hollow so water can flow through

Science


3. Comparing types of microscope

Type of microscope	Advantages	Disadvantages
Light microscope	<ol style="list-style-type: none"> Cheaper Can see colours Can see live specimen 	<ol style="list-style-type: none"> Lower magnification
Electron microscope	<ol style="list-style-type: none"> Expensive Higher magnification (x1000 more) 	<ol style="list-style-type: none"> Can only see dead specimen No colour

4. Calculating magnification

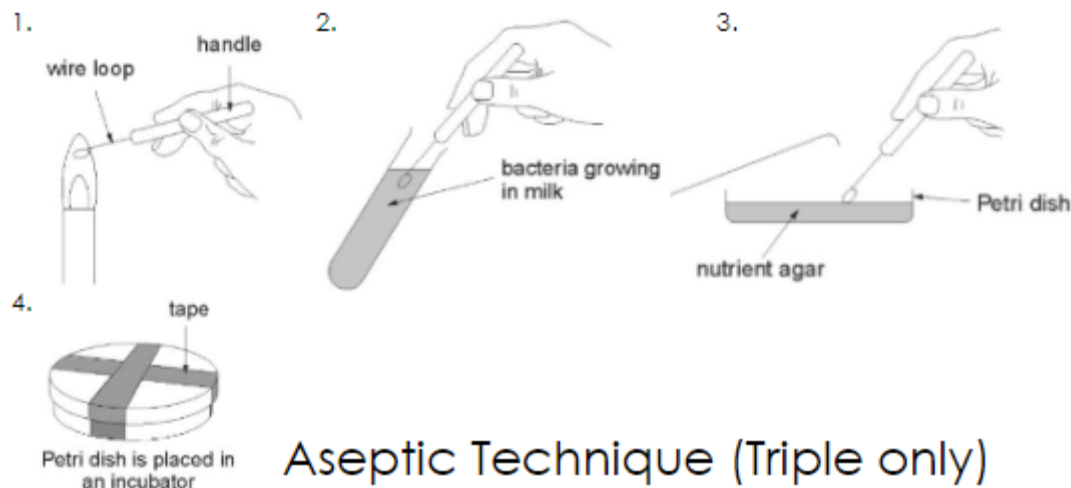
$$\text{magnification} = \frac{\text{size of image}}{\text{actual size of object}}$$

$$\text{actual size of object} = \frac{\text{size of image}}{\text{magnification}}$$



	(mm)	(μm)	(nm)
2mm	2	2000 (2×10^3)	2000000 (2×10^6)
130 μm	0.13	130	130000 (1.3×10^5)
0.032m	32	32000 (3.2×10^4)	32000000 (3.2×10^7)
7.25 μm	0.00725	7.25	7250 (7.25×10^3)

Conversion factors: mm to μm is $\times 1000$, μm to nm is $\times 1000$. Reverse conversions are $\div 1000$.



Aseptic Technique (Triple only)

1. Sterilize the wire loop.
2. Inoculate the loop with bacteria growing in milk.
3. Streak the bacteria onto the nutrient agar in the Petri dish.
4. Seal the Petri dish with tape and place it in an incubator.

5. Culturing micro-organisms TRIPLE ONLY

Keywords

Binary fission	"Splitting in two" how bacteria divide every 20 mins
Agar gel	A gel of nutrients bacteria can grow on
Nutrient broth	A liquid bacteria grow well in
Colony	A group of bacteria making a small circular shape
Inoculating loop	A metal loop use to transfer microorganisms
Petri dish	A small plastic dish used for growing microorganisms
Aseptic	Free from bacteria and viruses
Incubator	Device kept at constant temperature to help the microorganisms grow

Aseptic technique

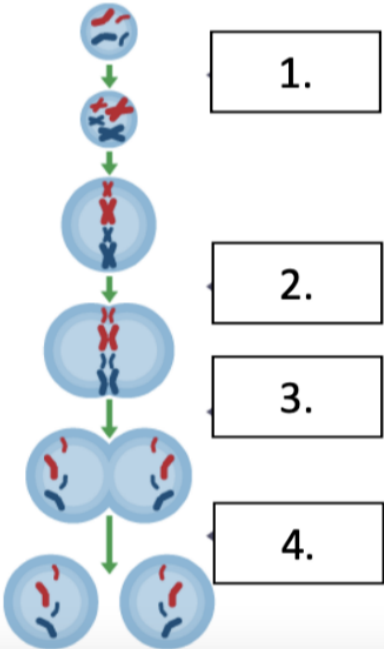
prep	All agar plates and broth must be sterilised before use
1.	The inoculating loop must be sterilised by passing through a flame
2.	Sample to be cultured is taken using the loop
3.	Sample spread on agar in petri dish
4.	Dish sealed shut with tape and incubated at 25° C

Science

6. Cell division	
Keywords	
Chromosomes	Long strands of DNA containing genes. Found in 23 pairs in a human
Cell cycle	The process the cell goes through to divide
Mitosis	A type of cell division that creates 2 identical daughter cells
Therapeutic cloning	Using an embryo create to have the same genes as the patient. Controversial

8. Transport in cells		
Keywords	Definition	Examples
Diffusion	The passive movement of a substance from an areas of high concentration to an area of low concentration	<ul style="list-style-type: none">• Oxygen and carbon dioxide in the lungs• Perfume in a room
Osmosis	The movement of water molecules across a partially permeable membrane from a less concentrated solution to a more concentrated solution.	<ul style="list-style-type: none">• Water uptake in plants• Water absorption in the intestine
Active transport	Movement of a substance from a lower concentration to a higher concentration, against the concentration gradient. Uses energy.	<ul style="list-style-type: none">• Mineral absorption by roots• Glucose absorption by the intestine
Surface area to volume ratio	The surface area divided by the volume expressed as a ratio	All high <ul style="list-style-type: none">• Unicellular organisms• Alveoli in the lungs• Villi in the intestines

7. Stages of mitosis	
1.	The cell grows and copies all its DNA, mitochondria and ribosomes
2.	The nucleus dissolves and the copied chromosomes pair up
3.	The chromosomes are pulled to opposite sides of the cell
4.	The cytoplasm and cell membrane divides making two identical cells



9. Factors that effect the rate of diffusion/osmosis	
Speed up	Slow down
High concentration gradient	Low concentration gradient
High temperature	Low temperature
High surface area of membrane	Low surface area of membrane

Physics topic 1: Energy

1. Key Term	Definition
Kinetic energy (KE)	The energy an object has because it is moving
Gravitational potential energy (GPE)	The energy an object has because of its position
Elastic potential energy	The energy stored in a springy object when you stretch or squash it
Thermal energy	The energy a substance has because of its temperature
Chemical energy	The energy stored in fuels, food, and batteries
Conservation of energy	Energy cannot be created or destroyed only transferred.
Work done	The energy transferred by a force
Dissipation	The process of energy being transferred or lost to the surroundings
Friction	A force that opposes movement
System	An object or group of objects
Closed system	An isolated system where no energy transfers take place into or out of the energy stores in the system.
Useful energy	Energy in the place it is wanted in the form that it is needed in
Wasted energy	Energy that is not usefully transferred, usually as thermal.

2. Calculating efficiency

- Efficiency = $\frac{\text{Useful output energy transferred by the device}}{\text{Total input energy supplied to the device}}$
- Efficiency = $\frac{\text{Useful power out}}{\text{Total power in}}$
- No device can be more than 100% efficient.
- Machines waste energy because of friction between their moving parts, air resistance, electrical resistance, and noise.

5. Energy is transferred by:

- Heating
- Waves
- Electric current
- Force when it moves an object.

3. Equations to recall and apply

$$\text{Work done, } W = \text{force applied, } F \times \text{distanced moved, } s$$

(joules, J) (newtons, N) (metres, m)

$$\text{Change in objects gravitational potential energy store, } \Delta E_p = \text{mass, } m \times \text{Gravitational field strength, } g \times \text{Change of height, } \Delta h$$

(joules, J) (kilograms, kg) (newtons per kilogram, N/kg) (metres, m)

$$\text{Elastic potential energy, } E_e = \frac{1}{2} \times \text{spring constant, } k \times \text{extension}^2, e^2$$

(joules, J) (newtons per metre, N/m) (metres, m)

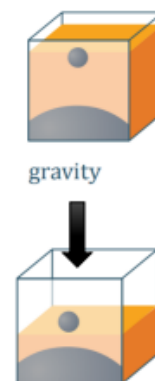
$$\text{Kinetic energy, } E_k = \frac{1}{2} \times \text{mass, } m \times \text{speed}^2, v^2$$

(joules, J) (kilograms, kg) (metres per second, m/s)

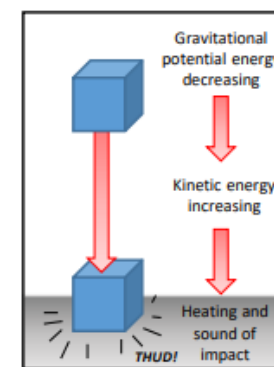
4. Power

- The more powerful an appliance, the faster the rate at which it transfers energy
- Power, P** = $\frac{\text{Energy transferred to appliance, E (joules, J)}}{\text{Time taken for energy to be transferred, t (seconds, s)}}$
(watts, W)
- The power wasted by an appliance = total power input - useful power output

6. Conservation of energy in action



- A falling object:
- Decreases its GPE store
 - Increases its KE store as it falls
 - Waste energy transferred as thermal and sound



Science

4. Energy Resources			
Energy Resource	Renewable	Advantages	Disadvantages
Fossil Fuels	No	<ul style="list-style-type: none"> • Low cost. • Easily transportable. • Reliable. 	<ul style="list-style-type: none"> • Produces large amounts of Carbon Dioxide. • Produces some Sulfur Dioxide.
Nuclear	No	<ul style="list-style-type: none"> • Generates a lot of electricity. • Reliable. 	<ul style="list-style-type: none"> • Expensive to construct and run. • Produces dangerous radioactive waste which will last for thousands of years.
Solar	Yes	<ul style="list-style-type: none"> • No fuel costs. • No pollution. 	<ul style="list-style-type: none"> • Expensive to set up. • Doesn't work at night.
Wave	Yes	<ul style="list-style-type: none"> • No fuel costs. • Reliable. 	<ul style="list-style-type: none"> • Can damage marine ecosystems. • Not everywhere is near water.
Tidal	Yes	<ul style="list-style-type: none"> • No fuel costs. • No pollution. • Reliable. 	<ul style="list-style-type: none"> • Can damage marine ecosystems. • Not everywhere is near water.
Wind	Yes	<ul style="list-style-type: none"> • No fuel costs. • No pollution. 	<ul style="list-style-type: none"> • Not always reliable. • Noisy. • Some think they are ugly (eyesore).
Geothermal	Yes	<ul style="list-style-type: none"> • No fuel costs. • No pollution. 	<ul style="list-style-type: none"> • Very few areas where it is accessible.
Biomass	Yes	<ul style="list-style-type: none"> • Low cost. • Readily available. • Carbon neutral. 	<ul style="list-style-type: none"> • Large scale land use requiring lots of water. • Destruction of habitat to grow crops.
Hydro-electric	Yes	<ul style="list-style-type: none"> • No fuel costs. • Reliable. • Easily controlled. 	<ul style="list-style-type: none"> • Requires flooding land to build

Carbon neutral: a process by which no extra carbon is released to the atmosphere.