YEAR 9

Knowledge

ORGANISER

2025-26
SEMESTER 2

WHO CAN I GET *support* FROM?

You can also speak to your check-in tutor, all your subject teachers, your PD teacher and all your pastoral staff: Miss Leonard, Miss Howe, Mr Sykes. If you are unable to speak to any member of staff, please contact: **studentsupport@bentonpark.mlt.co.uk**

My Year 9 Leader
Miss Charlton

KEY STAGE LEADER
Mrs Collins

MY SLT LINK
Mrs Howard

OTHER YEAR LEADERS

Year 7 – Miss Downing

Year 8 – Miss Bannister

Year 10 – Mrs Sykes

Designated Safeguarding Lead / Assistant Headteacher
Mrs Howard

KS3 Safeguarding Officer
Miss Fox

SENCo / Assistant Headteacher
Miss Tyldsley

Key Stage 4 Leader
Miss Dobby

HOME-SCHOOL *Communication* LOG

DATE	NOTE

HOME *Learning*

HOW DOES HOME LEARNING WORK?

The main way you will complete homework will be via 2 online platforms: SPARX and EDUCAKE.

These online platforms will quiz you on your learning in lesson. It's a great way to test yourself and developing your memory retrieval and retention skills. As well as home learning quizzes, these platforms allow you to prepare for assessments and revise key content.

HOW DO I ACCESS THESE?

PLATFORM	WEB ADDRESS	SUBJECTS
SPARX	www.sparx.com	Maths and Science
EDUCAKE	www.educake.co.uk	English, Geography, History, Languages, and Computer Science

HOMEWORK PLAN

SUBJECT	FREQUENCY
English / Science / Maths	Weekly
Geography / History / Languages / Computer Science	Fortnightly

IN THE LIBRARY YOU CAN:

- Access books and resources
- Use the internet to complete any online home learning
- See staff who can give you any advice and guidance you may need
- Study independently in a quiet place

HOME *Learning*

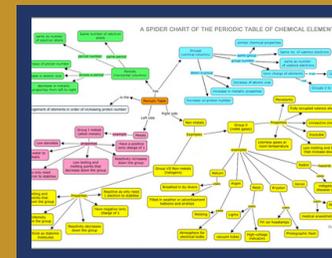## HOME LEARNING AND REVISION PRACTISE

For subjects that do not use an online learning platform for home learning, you will receive homework that is based on your Knowledge Organiser.

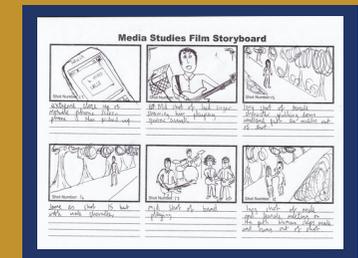You complete this homework on paper that you hand in to your subject teachers.
The purpose of this is to help you know and remember more content over time, by developing your memory recall and supporting your revision practise.

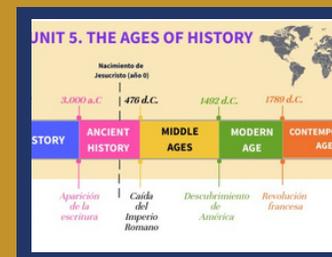## ADDITIONAL HOME LEARNING AND REVISION PRACTISE METHODS:

- Using the Word Revolution words – checking spellings are 100% accurate and that you know the definitions
- Producing a mind map or a spider diagram with the key learning content
- Making a storyboard of key events or draw out key images
- Making a timeline of events
- Copying out a diagram and practising labelling it accurately
- Practising writing out some sentences or phrases in the language you are studying
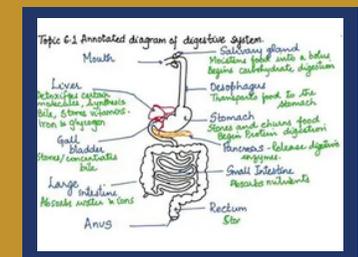- Retrieving and finding information from what you have read

MIND MAP/SPIDER DIAGRAM

STORYBOARD

TIMELINE

DIAGRAM

Organisation AND Planning SHEET

DATE SET	TASK	DUE DATE	TICK WHEN COMPLETE

DATE SET	TASK	DUE DATE	TICK WHEN COMPLETE

STUDENT *Loyalty* CARD

1	2	3	4	5	6	7	8	9	**10**
11	12	13	14	15	16	17	18	19	**20**
21	22	23	24	25	26	27	28	29	**30**
31	32	33	34	35	36	37	38	39	**40**

COLLECT A STAMP EACH TIME YOU ATTEND A LUNCH AND AFTER SCHOOL EXTRA-CURRICULAR ACTIVITY. WHEN YOU'VE REACHED 10, 20, 30 AND 40 STAMPS YOU WILL RECEIVE A REWARD!

WORD REVOLUTION

Allegory	A story in which nearly all elements have a second, symbolic meaning, often to teach a moral lesson.
Connotation	An idea or feeling or association a word invokes in a person in addition to its literal meaning.
Corruption	Dishonest or illegal behaviour by people in power (politicians or leaders), usually for personal gain.
Dictatorship	A government where one person (a dictator) has absolute power, and citizens have no voice.
Exploitation	The act of treating someone unfairly to benefit from their work or resources; taking advantage.
Indoctrination	The process of teaching a person or group to accept a set of beliefs uncritically and without question.
Manipulation	Controlling a person in a dishonest way, so that they don't realize they are being guided.
Naive	Showing a lack of experience, wisdom, or judgement.
Privileged	Having special rights or advantages that others do not have (e.g. social status, wealth, or background).
Propaganda	Biased information used to promote a particular viewpoint, designed to influence how people feel.
Revolution	A relatively sudden change in political power and social organization.
Scapegoat	A person or group who is blamed for the mistakes, faults, or problems of others, as a distraction.
Symbol	A concrete object representing an abstract idea.
Tyrant	An oppressive, cruel, and unjust leader who often seizes power illegally and uses force to maintain it.

What will I study in this topic?
- The novel *Animal Farm,* written by George Orwell *(1945).*
- The representation of characters and dystopian societies.
- Explore how Orwell used allegory to convey his views and opinions.
- Orwell's historical, social and political context: the USSR, WWII.
- How to write creatively in character, and how to analyse linguistic and literary techniques.

What will I be able to do by the end of this topic?
- Analyse how Orwell uses language to create characters and relationships.
- Identify the differences in the representation of characters and how they are presented as a way of conveying political protest.
- Evaluate the importance of contextual knowledge, and its influence on text.
- Understand how to annotate and make clear and helpful notes on a text.
- Be more confident in exploring and evaluating the intentions of a writer.

UNDERSTANDING SOCIETY & ATTITUDES:

Oppressive governments and leaders: written during WWII, the novel reflects such issues of the time – for example how Germany and the USSR were organised, and how leaders wielded power.
Inequality and stratification: Orwell explores how inequality is used as a means of keeping control over people, and scapegoats and an 'enemy' can misdirect and appease citizens.
Political ideologies and conflict: Orwell shows how differing ideas on how society should be run impacts groups and individuals.

FORM, STRUCTURE & LANGUAGE
We recap some the features of a novel explored through class readers in Yr7 and Yr8, and more recently again in the short stories scheme, such as:
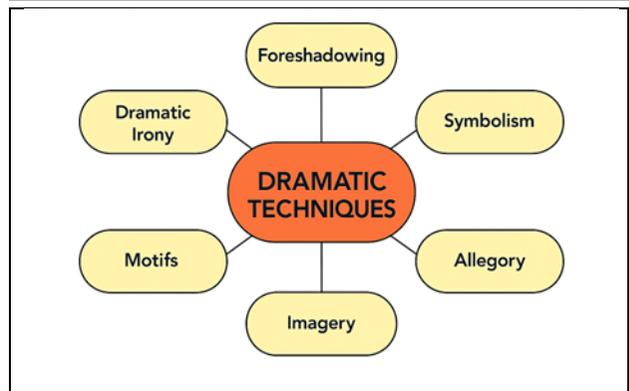- Dramatic irony
- Foreshadowing
- Symbolism
- Allegory
- Motifs
- Imagery
- Rhetoric

PEOPLE & RELATIONSHIPS:

Tyranny and totalitarianism: Orwell explores the effect these political structures have on citizens, and how these power imbalances effect relationships.
Community and collectivism: the novel also explores how relationships within a community can create a sense of identity.
Rebellion and revolution: a key aspect of the novel is how and why rebellions happen, how they develop, and perhaps how they become the very problem they originally sought to eradicate…

Foreshadowing

Dramatic Irony

Symbolism

DRAMATIC TECHNIQUES

Motifs

Allegory

Imagery

Key Questions:	• How does an understanding of context enhance our understanding of a text?
	• How can language be used as a method of persuasion and control?
	• How can a writer use structure to create specific effects?
	• How can a writer use characterisation to promote a viewpoint and evoke reader reaction?
	• How effective is the use of allegory and genre elements in promoting a writer's viewpoint?
	• How can a reader interpret the same text in different ways?

Curriculum Connections:	• **Dystopian fiction:** genre elements; reader contexts; writer contexts (George Orwell) (Yr9).
	• **Short stories**: narrative elements; writer intent; influence of context; language and structural choices and their effects (Yr9).
	• **Political Speeches:** use of rhetorical features; themes of justice and inequality (Yr9).
	• **Protest Poetry:** relationships between the state and the individual; importance of dissent; voice and identity (Yr9).

KEY CHARACTERS:

Mr Jones	The drunk and neglectful owner of Manor Farm.	*"He seized the gun which stood in a corner…"*
Old Major	A wise respected boar who dreams of freedom.	*"All men are enemies. All animals are comrades."*
Snowball	An intelligent, innovative, and idealistic pig.	*"The only good human being is a dead one."*
Napoleon	A power-hungry and manipulative boar.	*"Never mind the milk, comrades!"*
Squealer	A persuasive pig who constantly twists the truth.	*"Surely, comrades, you do not want Jones back?"*
Boxer	A loyal, devoted, strong, and hardworking horse.	*"I will work harder. Napoleon is always right."*
Mollie	A vain and shallow mare who likes her comforts.	*"Shall I still be allowed to wear ribbons?"*
Benjamin	A cynical, sceptical and long-lived donkey.	*"None of you has ever seen a dead donkey."*

Animal Farm is set in the English countryside of the 1940s. Manor Farm is owned by Mr Jones, and is surrounded by other farms, most notably Foxwood, owned by Mr Pilkington, and Pinchfield, owned by Mr Frederick.

Although not mentioned in the novel, Orwell is very much influenced by his experiences of war – the Spanish civil war of the 1930s, in which he fought as a soldier, as well as WWII, whilst living back in England.

IMPORTANT HISTORICAL FIGURES:

Karl Marx: German philosopher whose theories on class struggle and capitalism provided the ideological foundation for modern communism.	**Leon Trotsky:** A brilliant strategist and intellectual, he co-led the Russian Revolution but was later exiled and assassinated after losing a power struggle to Stalin.
Tsar Nicholas II: The last Emperor of Russia whose ineffective leadership and resistance to reform led to the collapse of the monarchy during the Russian Revolution.	**Joseph Stalin:** Brutal dictator of the Soviet Union who transformed the country into a military superpower through industrialization and violent political purges.
Vladimir Lenin: He was the charismatic leader of the Bolsheviks who successfully seized power in 1917 and became the founding head of the Soviet state.	**Vyacheslav Molotov:** Soviet diplomat and leading politician under Stalin, best known for his role in disseminating USSR propaganda.

KEY THEMES:

The Power of Language

Orwell shows how language can be a powerful tool used to control and distort reality, and to therefore control the masses. Either through Old Major, and his rhetorical speech which demonises humans and inspires the animals with his idealistic dreams of a better future, or through the insidious propaganda of Squealer who uses the same rhetorical features, and flat-out lies, to justify the organisation of society. The most telling example of how powerful language can be is exhibited in the gradual alteration of the Seven Commandments, which clearly suggests that those who control the narrative, control the people.

The Power of Education (*or* Lack of Critical Thinking)

Another recurring theme is the naivety and illiteracy of the common animals, which allows the pigs to easily and effectively manipulate them. Because characters like Boxer or the sheep cannot read very well, or remember past events clearly, they cannot challenge the pigs' rewriting of history. Orwell argues that education is a vital tool for freedom; when the populace is unable to think critically or verify the truth, they inadvertently become complicit in their own oppression.

LITERARY TECHNIQUES:

Dramatic irony	When the reader knows something that the characters do not, creating tension or humour.
Foreshadowing	Hints or clues about events that will happen later in the story.
Symbolism	A concrete object representing an abstract idea.
Allegory	A story in which nearly all elements have a second, symbolic meaning, often to teach a moral lesson.
Motif	A repeated idea, image, or symbol that helps develop a theme.
Imagery	Descriptive language used to create mental pictures for the reader.

KEY CONTEXT ON THE GEORGE ORWELL:

Orwell served in the Indian Imperial Police in Burma (Myanmar). He saw firsthand the "dirty work of Empire." This gave him a **lifelong suspicion of any authority figure**—like Mr. Jones or Napoleon—who holds total power over others.

Orwell chose to live in poverty in London and Paris, living in homeless shelters. He wanted to understand the "proletariat" (the working class). **He realized that the workers were the ones who did all the labour but received none of the rewards**.

In 1936, Orwell went to Spain to fight against fascism; he joined a militia that was suddenly betrayed by the **Stalin-backed** Communists. **He watched his friends imprisoned or killed by their own "allies"**, and how the **Soviet-backed press told lies to justify these murders.**

WHY USE ALLEGORY?

To simplify: Transforms abstract concepts (like good vs. evil or totalitarianism) into relatable characters and events, making them easier to understand.

To offer social/political criticism: Provides a safe, indirect way to criticize authority or societal flaws, as seen in George Orwell's Animal Farm commenting on the Russian Revolution.

To explore morality & philosophy: Delivers moral lessons (like in Aesop's Fables) or deeper spiritual truths without being overly preachy.

To add layers of meaning: Creates deeper characters and settings that represent bigger ideas, engaging readers to find hidden messages.

To create timelessness: Universal themes in allegories ensure the work remains relevant and powerful across different generations and cultures.

To protect the author: Allows writers to explore sensitive or personal topics by creating distance, protecting the writer from attack.

To make it entertaining: Wraps potentially dry or unpleasant themes in an engaging narrative, like Disney Pixar's Inside Out exploring emotions through characters.

How will I be assessed?	**READING**: Analysing the language use of Old Major's speech; analysing Orwell's structural choices in a key section of Chapter 9. **WRITING:** Writing in character: diary entry as one of the animals after the rebellion; Boxer's eulogy.

KEY TERMS – RHETORICAL DEVICES:

Direct Address	The writer speaks directly to the audience, or a specific person.	*Now, comrades, what is the nature of this life of ours?*
Alliteration	The repetition of initial consonant sounds in words close together.	*…the fruitful fields of England / prevented from producing…*
Facts	Information that is objectively true and can be proven.	*He does not give milk, he does not lay eggs, he is too weak to plough…*
Opinion	A personal belief, viewpoint, or judgment that cannot be proven.	*The life of an animal is misery and slavery: that is the plain truth.*
Rhetorical Question	A question asked for effect, not requiring an answer.	*Why then do we continue in this miserable condition?*
Emotive Language	Words chosen to evoke a strong emotional reaction in the audience.	*Every animal here will scream his life out at the block within a year.*
Simile	A comparison of two separate but similar things using "like" or "as."	*I know, as surely as I see this straw beneath my feet, justice will be*

SOME SENTENCE TYPES FOR EULOGY WRITING:

- We are gathered here today to honour the life of _____ , someone who…
- _____ was a pillar of our community, known for their unwavering…
- When I think of _____ , the first memory that comes to mind is..."
- The greatest lesson _____ ever taught me was…
- Though _____ is no longer with us, their spirit lives on in the way we…
- Rest in peace, _____ ; you have earned it…

STRUCTURE ANALYSIS SENTENCE STARTERS:

Orwell structures the chapter by beginning with…
This causes the reader to feel tension as they…
Orwell then changes focus to… to create a sense of…
Foreshadowing is used to affect the reader…
Orwell's use of dramatic irony will frustrate the reader / create a sense of foreboding…
By the end of the chapter, Orwell's intention is clear…

Further Reading and Other Resources

Books:
Animal Farm: The Graphic Novel (Illustrated version)
Nineteen Eighty-four by George Orwell (Liked Animal Farm? You'll *love* this!)
The Handmaid's Tale by Margaret Atwood (Feminist spin; scarily prescient…)
Web Resources:
BBC Bitesize - https://www.bbc.co.uk/bitesize/articles/zw2r96f#zw9nydm
Spark Notes - https://www.sparknotes.com/lit/animalfarm/
Audio Book - https://www.youtube.com/watch?v=kc78arfcmRo

Recall Questions

1. How does Old Major convince the animals they need to work together?
2. What happens to the milk and the windfall apples at the beginning of the story?
3. What are the commandments used for?
4. How does Napoleon eventually get rid of Snowball?
5. Which character is used as a constant scapegoat for every failure on the farm?
6. What are the two mottoes that Boxer the horse lives by?
7. Why does Napoleon change the name back to "Manor Farm" after the rebellion?
8. Who do Frederick and Pilkington represent, and why?
9. What happens to Boxer, and what is Orwell saying with this event?
10. What is the moral, or lesson, Orwell wants the reader to consider after reading?
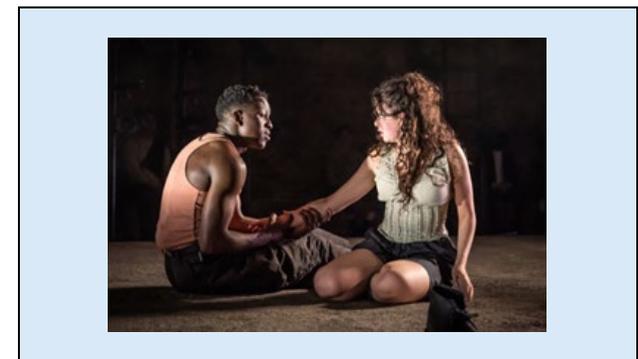
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SUBJECT: ENGLISH	YEAR: 9
TOPIC: ROMEO & JULIET	SEMESTER: 2

BENTON PARK

WORD REVOLUTION

Tragedy	A genre of literature involving death and catastrophe.
Foreshadowing	Hints or clues about events that will happen later in the story.
Soliloquy	A speech in which a character speaks their thoughts aloud, alone on stage.
Monologue	A long speech by one character to others.
Aside	A brief remark by a character intended for the audience, not heard
Dramatic Irony	When the audience knows something the characters do not.
Oxymoron	A figure of speech combining contradictory terms (eg. "loving hate")
motif	A recurring image or symbol used throughout a text.
Simile	A comparison using "like" or "as."
Pun	A play on words with multiple meanings, often humorous.
Prologue	An introductory section of a play, often in verse, setting the scene.
Iambic Pentameter	A rhythmic pattern of five pairs of unstressed and stressed syllables.
Sonnet	A 14-line poem with a strict rhyme scheme, often about love.
Theme	The central idea or message explored in the play (e.g., love vs. fate)

What will I study in this topic?	Plot and characters in one of Shakespeare's most famous plays. Shakespeare's use of language and dramatic techniques. Conventions of the tragedy genre in literature. How the play reflects social attitudes and concerns in the time it was written. Shakespeare's ideas and messages in the play
What will I be able to do by the end of this topic?	Develop a critical personal response to a Shakespeare text. Comment on the effect of Shakespeare's use of language and dramatic techniques. Understand how a text reflects ideas and concerns in the time it was written.

UNDERSTANDING SOCIETY AND ATTITUDES

- Understanding of Elizabethan England
- Attitudes toward women and men, young and old, higher and lower classes
- Exploration of attitudes towards love
- Understanding honour between men, women and families
- Renaissance tragedy, and how a modern audience responds to the genre.

PEOPLE AND RELATIONSHIPS

- Marriage, courtship and love
- Generational conflict
- Honour and rivalry
- Development of relationships
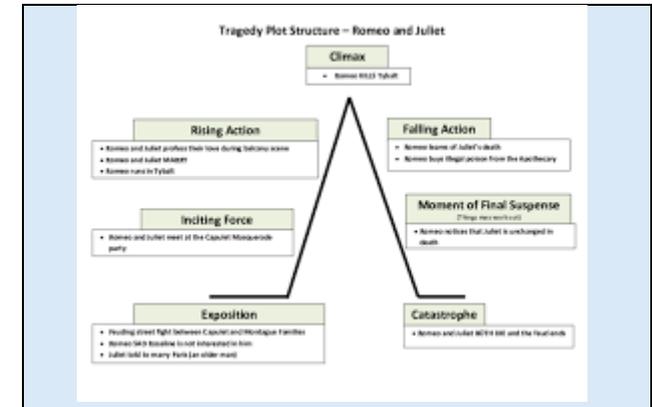- Power dynamics and hierarchy
- Parents and children

FORM, STRUCTURE AND LANGUAGE

- Tragic structure
- Foreshadowing
- Character development
- Dramatic techniques
- Building tension
- Shakespearean language
- Poetic devices

Key Questions:	• How are key characters presented in the play and what is their function? • How does Shakespeare use language and dramatic techniques to present ideas? • How does the play reflect its social and historical context? • How does Shakespeare use aspects of the tragedy genre in the play? • What are the key ideas and messages Shakespeare communicates to the audience?
Curriculum Connections:	• You are introduced to Shakespeare with 'The Tempest' in Year 7 and 'Much Ado about Nothing' in Year 8. • Shakespeare's language is very poetic, so all your study of poetry in Y7, 8 & 9 is good preparation for tackling R&J. • We develop an appreciation of how context is reflected in literary texts in our study of 'A Christmas Carol' in Year 7 and Protest Poetry in Year 9. • Power is a key theme in 'Romeo and Juliet' and this is a thread that runs throughout our literary study in Year 7-11.

POETIC TECHNIQUES

TECHNIQUE	DEFINITION	EXAMPLE
metaphor	Describing one thing as though it is something else	'Juliet is the sun'
simile	Comparing using "like" or "as"	'like a rich jewel…'
personification	Giving human qualities to non-human things	'I am Fortune's fool'
oxymoron	A phrase combining contradictory words.	'loving hate'
Imagery	Vivid descriptions appealing to senses	'So shows a snowy dove trooping with crows'
alliteration	Repetition of consonant sounds	'From forth the fatal loins…'

Tragedy Plot Structure – Romeo and Juliet

THEMES

- **Love** – Powerful, passionate, and impulsive - drives the plot but leads to tragedy.
- **Conflict** – Family feud between Montagues and Capulets causes violence and tension.
- **Fate** – Characters believe destiny controls their lives - "star-crossed lovers" suggests inevitability.
- **Youth vs Age** – Young characters act quickly and emotionally, while older characters are cautious.
- **Violence and Death** – Linked to honour, revenge, and family pride - tragedy results from aggression.
- **Individual vs Society** – Romeo and Juliet fight against family expectations and social rules for love.
- **Family** – The families are depicted as equally powerful, wealthy and deeply entrenched in a violent feud.

LOVE   CONFLICT   FAMILY

SUBJECT: ENGLISH	YEAR: 9	
TOPIC:	SEMESTER: 2	

PLOT SUMMARY

Romeo and Juliet is a tragic play set in Verona, where two noble families, the Montagues and Capulets, are locked in a bitter feud. Romeo Montague crashes a Capulet party and meets Juliet, the daughter of his family's enemy. They instantly fall in love and, despite knowing their families' hatred, decide to marry in secret. With the help of Friar Lawrence and Juliet's Nurse, they wed the next day, hoping their union will end the feud.

Soon after, Tybalt, Juliet's cousin, kills Romeo's friend Mercutio in a street fight. In revenge, Romeo kills Tybalt and is banished from Verona. Before leaving, Romeo spends one night with Juliet. Meanwhile, Juliet's parents arrange for her to marry Paris, unaware she is already married. Desperate, Juliet seeks Friar Lawrence's help. He gives her a potion that makes her appear dead for 42 hours. The plan is for Romeo to rescue her when she wakes.

However, Romeo never receives the message explaining the plan. Believing Juliet is truly dead, he returns to Verona, buys poison, and dies beside her. When Juliet wakes and finds Romeo dead, she kills herself with his dagger. Their deaths finally reconcile the two families, but only after tragedy strikes.

KEY QUOTES – Act 1 & 2

'Star-crossed lovers…death-marked love' (Prologue)
'O brawling love, O loving hate' (Romeo)
'My only love, sprung from my only hate!' (Juliet)
'My life is my foe's debt' (Romeo)
'To strike him dead I hold it not a sin' (Tybalt)
'Romeo, Romeo, wherefore art thou Romeo?' (Juliet)
'Violent delights have violent ends' (Friar Lawrence)

DESCRIBING CHARACTERS

ROMEO – Passionate, impulsive, reckless, loyal, romantic, conflicted.
JULIET – Innocent, intelligent, determined, courageous, devoted, rebellious.
CAPULET – Authoritative, patriarchal, proud, controlling, traditional, volatile.
TYBALT – Aggressive, hot-headed, prideful, loyal, vengeful, violent.
MERCUTIO – Witty, provocative, loyal, energetic, reckless.
BENVOLIO - Peace-loving, level-headed, loyal, honest, observant, calm.
FRIAR LAWRENCE – Wise, benevolent, secretive, naïve, devious.
NURSE – Affectionate, comic, talkative, protective, practical, loyal (?)

KEY QUOTES – Act 3-5

A plague on both your houses!' (Mercutio Act 3)
'I am Fortune's fool!' (Romeo Act 3)
'This day's black fate on more days doth depend' (Romeo Act 3)
'O serpent heart, hid with a flowering face!' (Juliet Act 3)
'Hang thee baggage...disobedient wretch!' (Capulet, Act 3)
'Death lies on her like an untimely frost' (Capulet Act 4)
'I defy you stars!' (Romeo Act 5)
'O happy dagger!' (Juliet Act 5)
'All are punished!' (Prince Escalus Act 5)

'Gentlemen, for shame forbear this outrage! Tybalt! Mercutio! The Prince expressly hath Forbid this bandying in Verona streets.' (Romeo 3.1)

SUBJECT:	ENGLISH	YEAR: 9
TOPIC:	ROMEO AND JULIET	SEMESTER: 2

How will I be assessed?	You will complete an 'extract to whole' question, where you have to explore the way a character is presented in a key extract from the play and also consider how they are presented in the rest of the play. eg. *Starting with this extract, explore how Shakespeare presents _____ as a _____ character.*

CONTEXTUAL INFORMATION

TRAGEDY - Romeo and Juliet is one of Shakespeare's tragedies - a dramatic genre involving pain and suffering of the protagonists. Tragedies often involve high status characters who suffer a dramatic fall due to a fatal flaw in their character. Something good is supposed to come out of the tragic events – the audience should learn something from the misery!

GENDER & MARRIAGE - Gender roles in Romeo and Juliet reflect attitudes at the time it was written. Men are expected to be strong and control family decisions, while women are expected to obey and marry for family advantage. Juliet challenges this by wanting to marry for love, not duty. The play shows conflict between tradition and personal choice.

FATE - In Shakespeare's time, fate and destiny were seen as powerful forces controlling human life. People believed events were guided by God or the stars, and individuals had little control over their future. Tragedies often showed characters struggling against fate, highlighting themes of inevitability and human vulnerability.

Analytical Writing

Writer – What is Shakespeare doing?
Quotation – Which quotations from the text show this?
Significance - Why is the quotation important? What language features help to convey ideas?
Furthermore – What are the big ideas and messages? What is Shakespeare saying?

Big Ideas – Useful phrases

Shakespeare could be suggesting that…
This relates to society at the time because…
This continues the key theme of…
Shakespeare encourages us to think about…
The tragic ending to the play shows that…
Shakespeare's view of _____ seems to be…

Further Reading and Other Resources

There are many re-workings of the 'Romeo and Juliet' story in books and film.
Here are a few:
- *These Violent Delights* by Chloe Gong: Set in 1920s Shanghai
- *Noughts & Crosses* by Malorie Blackman: An alternate world where racial segregation mirrors the Capulet/Montague feud.
- *When You Were Mine* by Rebecca Serle: From the perspective of Rosaline.
- *West Side Story:* A musical set amidst gang warfare in New York.

Recall Questions

- Who is Romeo in love with at the start of the play?
- What does Prince Escalus threaten the warring families with in Act 1?
- Where do Romeo and Juliet first meet?
- Why does Friar Lawrence help Romeo and Juliet to marry in secret?
- Why is Tybalt out to get Romeo in Act 3 and why does Romeo refuse to fight him?
- What is Romeo's punishment for killing Tybalt?
- Who is Juliet supposed to be marrying? Why do her parents want this?
- What plan does Friar Lawrence come up with to reunite Romeo and Juliet?
- Why does the plan fail and what is the consequence?

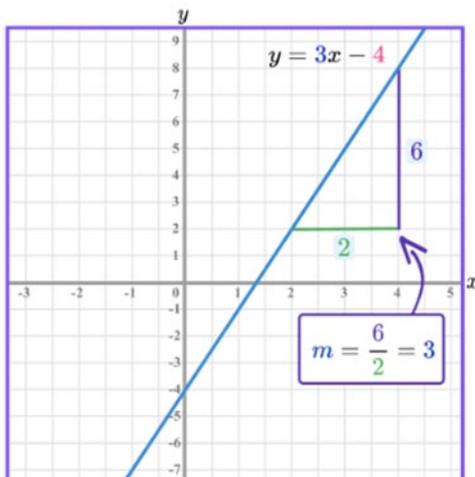| WORD REVOLUTION	
Gradient	The steepness of the graph
Intercept	Where the graph crosses a given axis
Horizontal	Parallel to the plane of the horizon. A line going from left to right.
Vertical	Perpendicular to the horizontal. A line going from bottom to top.
Plot	Mark a coordinate correctly on a grid using (x,y)

What will I study in this topic?	• You will study the equation of the line and the meaning of its variables • You will study various plotting techniques of different graphs • You will study how to use the equation of a line to identify a graph
What will I be able to do by the end of this topic?	• Work out the equation of a line of the form $y = mx + c$, where m and c are integers and fractions • When given the equation of a line you will be able to interpret the variables and plot the graph

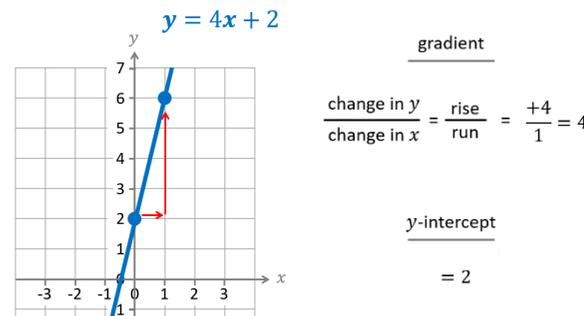A **straight line graph** is a visual representation of a linear function.

A straight line has a general equation of
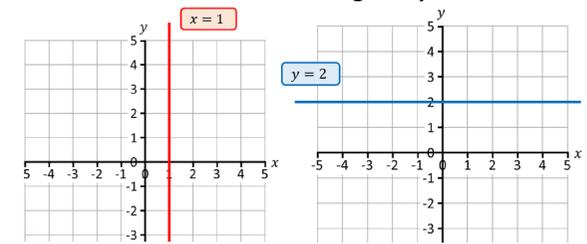
$$y = mx + c$$

gradient   y-intercept

$$y = 3x - 4$$

$$m = \frac{6}{2} = 3$$

Calculating gradient from two points

$$y = 4x + 2$$

gradient

$$\frac{\text{change in } y}{\text{change in } x} = \frac{\text{rise}}{\text{run}} = \frac{+4}{1} = 4$$
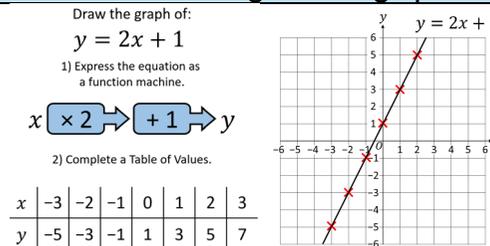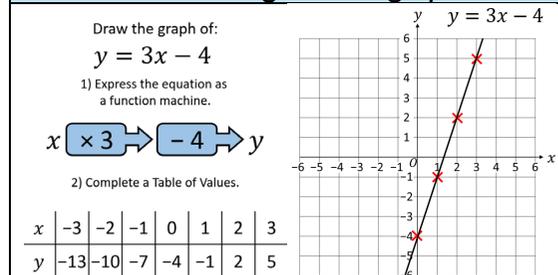
y-intercept

$$= 2$$

$x = a \quad y = b$

All graphs of the form $x = a$ are vertical lines crossing the x – axis. All graphs of the form $y = b$ are horizontal lines crossing the y - axis

Plotting a linear graph

Draw the graph of:

$$y = 2x + 1$$

1) Express the equation as a function machine.

$$x \boxed{\times 2} \Rightarrow \boxed{+ 1} \Rightarrow y$$

2) Complete a Table of Values.

x	−3	−2	−1	0	1	2	3
y	−5	−3	−1	1	3	5	7

$$y = 2x + 1$$

Plotting a linear graph

Draw the graph of:

$$y = 3x - 4$$

1) Express the equation as a function machine.

$$x \boxed{\times 3} \Rightarrow \boxed{- 4} \Rightarrow y$$

2) Complete a Table of Values.

x	−3	−2	−1	0	1	2	3
y	−13	−10	−7	−4	−1	2	5

$$y = 3x - 4$$

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WORD REVOLUTION

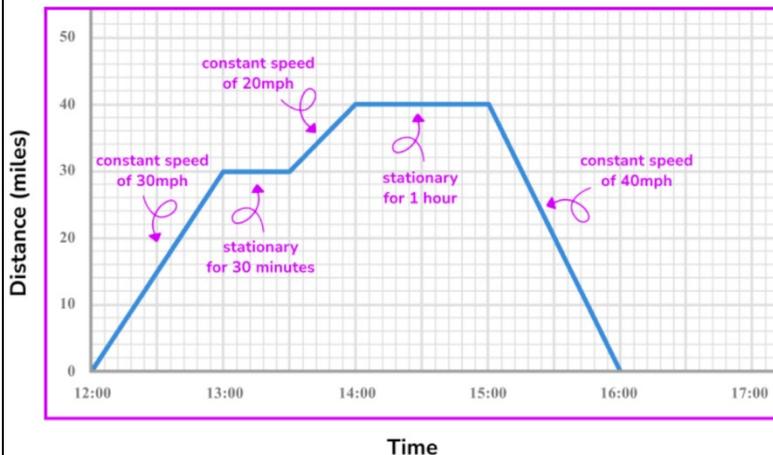|	
Distance	The total length covered by an object.
Time	The duration of the journey, usually plotted on the horizontal (x) axis.
Speed	The rate at which an object covers distance; calculated as distance
Stationary	Not moving; indicated by a flat horizontal line on a distance-time graph (distance does not change).
Average Speed	Total distance travelled divided by the total time taken.

|	
What will I study in this topic?	Calculating with speed Calculating with rates Plotting distance-time graphs Interpreting distance-time graphs Calculating speed from distance-time graphs Plotting distance-time graphs using speeds
What will I be able to do by the end of this topic?	• Plot a graph showing the time and distance travelled on a single or multi-stage journey • Interpret a speed, distance, time graph fully, including distance and time travelled as well as the duration of any stops • Calculating speed from a graph showing a single or multi-stage journey

Distance-Time graphs show the distance an object or person has travelled against time. The graph will show the distance (in m, km, miles etc) on the vertical or y-axis and the time (in secs, mins, hrs etc) on the horizontal or x-axis. To find the Speed, you must be able to find the gradient.

DST Graphs

- Fast, steady speed
- Getting faster
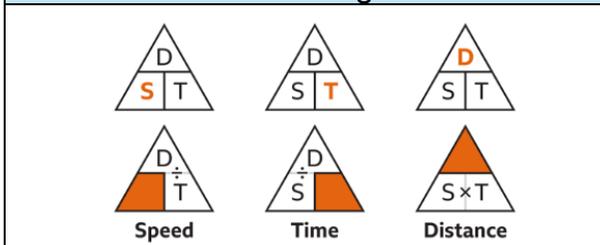- Steady speed
- Stationary
- Returning to start
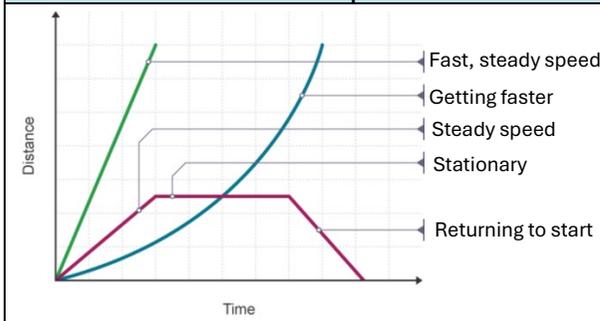
Drawing DST Graphs

How to draw a distance time graph:

1 Draw/label the horizontal axis for the time and a vertical axis for the distance.

2 Use the information about the distance or speed of the object to plot points on the graph.

3 Join the points with straight line segments.

DST Triangles

Formulae

Speed = Distance ÷ Time

Time = Distance ÷ Speed

Distance = Speed × Time

WORD REVOLUTION

|	
Quadratic	An expression containing x^2 and no higher power
Intercept	Where the graph crosses the y axis
Roots	Where the graph crosses the x axis
Turning Point	The minimum or maximum point of the graph where it turns (vertex)
Plot	Mark a coordinate correctly on a grid using (x,y)

Quadratic graphs are graphs of quadratic functions and are u-shaped (positive x^2 coefficient) or n-shaped (negative x^2 coefficient).
The shape of the graph is called a parabola.

The key points are:
- The roots (where the graph touches or crosses the x-axis)
- The y-intercept
- The vertex (also called the turning point)

What will I study in this topic?	• Substitution into advanced expressions • Plotting parabolas • Interpreting roots and intercepts
What will I be able to do by the end of this topic?	• Plot quadratic graphs • Interpret quadratic graphs • Find key points on a quadratic graph
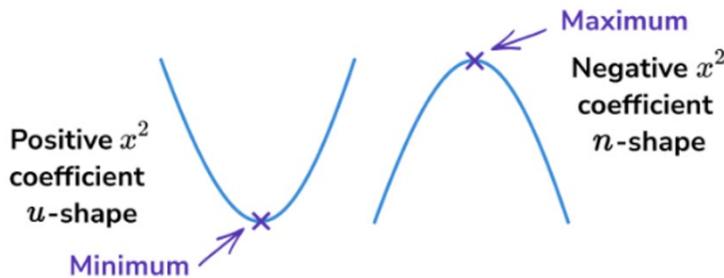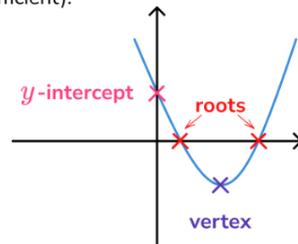
Plotting a Quadratic Graph

Plotting quadratic graphs is drawing up a table of values for the x and y coordinates, and then plotting these on a set of axes.
$y = x^2 + 2x + 5$ is a quadratic function.
In order to complete a table of values, we **substitute** each x value into the quadratic

Table of Values

Each one of these is a coordinate pair. For the function $y = x^2 + 2x + 5$ the table of function to obtain the matching y value. values from $x = -3$ to $x = 2$ would look like this:

x	-3	-2	-1	0	1	2
y	8	5	4	5	8	13

Each pair represents a coordinate pair, for example the last pair represents the coordinate (2,13)

Plotted graph

This is the graph of $y = x^2 + 2x + 5$

Key Points

To plot a quadratic graph
1. Draw a table of values and substitute x and y values
2. Plot these coordinate pairs on a graph
3. Join the points with a smooth curve

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WORD REVOLUTION

Translation	A change in the position of an object by movement along, up or diagonally on a coordinate grid.
Reflection	The image formed when a shape is reflected in a mirror line.
Rotation	Turning an object, through a given angle at a given point.
Vector	This describes how far a shape moves left or right and up or down.
Quadrant	The region/part of a cartesian plane that is obtained when the two axes intersect each other.

Transformation

A transformation is a change to a geometric 2D shape, such as a translation, rotation, reflection or enlargement.

|	
What will I study in this topic?	You will learn about the different ways in which a shape can be transformed to produce a congruent shape. You will investigate positive enlargement of shapes.
What will I be able to do by the end of this topic?	• Identifying which image of the shape is a translation • Working out the vector that translates a shape horizontally or vertically • Describing translations using a vector with positive values Translating a shape using vectors with positive and negative values • Describing translations using a vector on a coordinate grid with two quadrants • Translating a shape on a coordinate grid with four quadrants

Translation

To describe a translation, say how many squares each vertex moves right or left and then up or down.
Eg here, F moves to 6 squares to the right And 4 squares up. You can describe this using vector notation $\binom{6}{4}$
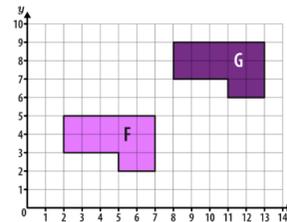

Reflection

A reflection is a mirror image. You reflect a shape through a given mirror line, or line of symmetry. Each vertex is the same number of squares away from the mirror line on either side of it.
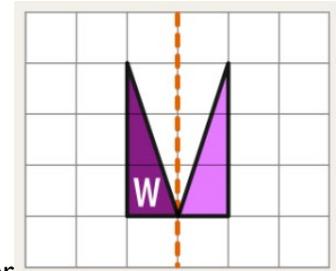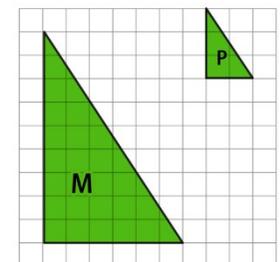

Rotation

You can desribe a rotation by the number of degrees it has turned through, the direction of the turn and if you can, the centre of rotation. Here H, has rotated to H' through 90 degrees clockwise (the direction the hands of a clock turn). We would describe the opposite direction as anti-clockwise.
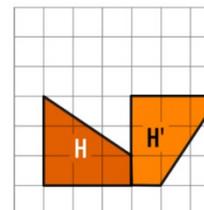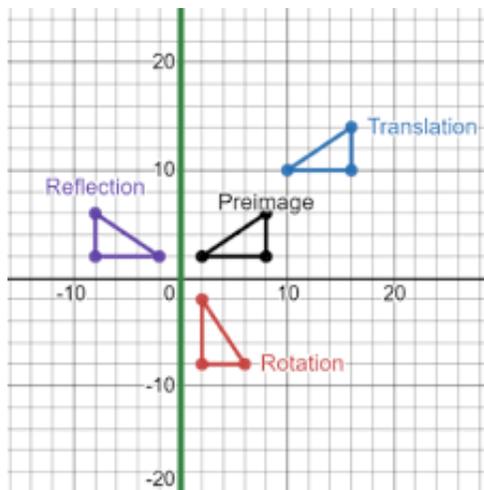

Enlargement

An Enlargement is described using a scale factor (the number the shapes side lengths are multiplied by to give the new side lengths). Here shape P has been enlarged by scale factor 3 to give shape M

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SUBJECT: Maths	YEAR: 9
TOPIC: Angles/Bearings	SEMESTER: 2

WORD REVOLUTION

Corresponding Angles	Corresponding angles in parallel lines are equal
Alternate Angles	Alternate angles in parallel lines are equal
Co-Interior Angles	Co-Interior angles add to 180°
Polygon	A many-sided shape
Bearings	A 3 digit number, measured clockwise from North

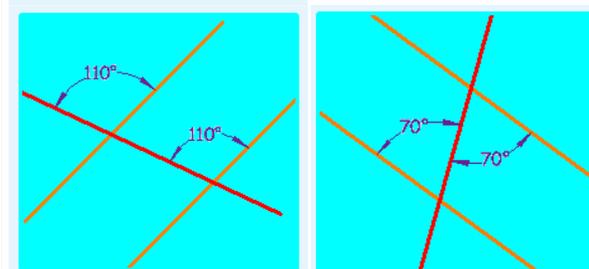| Shape	Sides	Sum of Interior Angles	Shape	Each Angle
Triangle	3	180º		60º
Quadrilateral	4	360º		90º
Pentagon	5	540º		108º
Hexagon	6	720º		120º
Heptagon (also called Septagon)	7	900º		128.57...º
Octagon	8	1080º		135º

What will I study in this topic? You will learn about angles in quadrilaterals, solving angle problems combining angle facts, finding angles on parallel lines, using quadrilateral properties to find angles and finding angles in polygons and using bearings in real life situations

What will I be able to do by the end of this topic?
- Finding angles in quadrilaterals
- Combining angle facts
- Finding angles on parallel lines
- Using properties of quadrilaterals to find missing angles
- Finding angles in polygons
- Measuring and calculating bearings problems
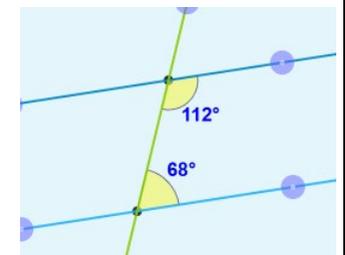
Corresponding Angles   Alternate Angles

Formula for total angles   Co-interior Angles

To calculate the sum of angles in a polygon with n sides, use this formula:
$$S = 180(n-2)$$
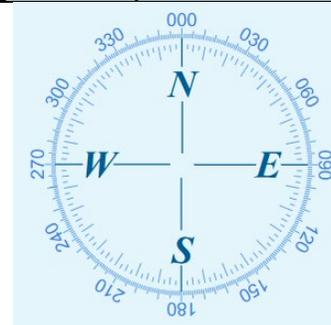You can then divide this by n to find the size of each angle in a regular polygon.
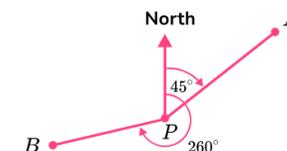

Bearings – a compass

A bearing is a 3-digit number, measuring the size of the angle, clockwise, from the North line.
So due East, would be 090°, South 180° and West 270°.

Bearings

The diagram shows three points A, B and P.

The bearing of **A from P** is 045°.
The bearing of **B from P** is 260°.

WORD REVOLUTION

| Similar shapes	**Similar shapes** are the same shape, but they have different sizes. Corresponding sides are in the same ratio and the corresponding angles are the same
Congruent shapes	**Congruent shapes** are exactly the same shape and the same size. Corresponding sides and corresponding angles are the same.
Scale Factor	A **scale factor** is a ratio between two corresponding sides of similar shapes. A scale factor describes how much a shape has been scaled up or down.

What will I study in this topic?	You will learn about similar and congruent shapes in maths, including what they are and how to identify them. You will also solve problems involving similar shapes where the scale factor is known or can be found. You will go on to learn the conditions for triangles to be congruent.
What will I be able to do by the end of this topic?	• Identifying similar shapes regardless of their orientation • Find the length of an unknown side given the scale factor • Identify congruent shapes regardless of their orientation • Identify corresponding angles and sides on congruent triangles • Recognise when two triangles are congruent by the SSS, SAS, ASA or RHS condition • Construct triangles from a sketch given the condition for congruency

Finding the scale factor and an unknown side
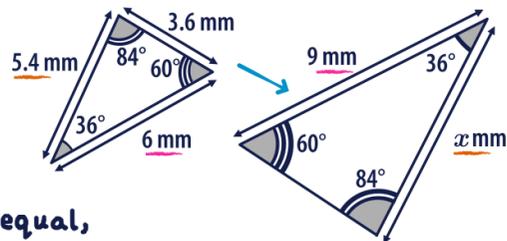
All angles are equal, triangles are similar

$6 \times$ scale factor $= 9$
scale factor $= 1.5$

$x = 5.4 \times 1.5$
$= 8.1$

Congruent or Similar

To identify if shapes are congruent or similar you need to check all the angles and all the sides of the shapes. If two shapes are congruent, they will fit exactly on top of one another.
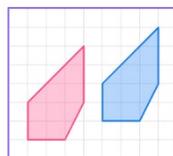
 These two polygons are congruent. The red shape has been translated to give the blue shape.
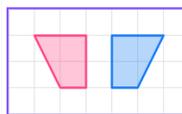
 These two quadrilaterals are congruent. The red shape has been reflected to give the blue shape.

 These two polygons are NOT congruent. They are similar. The red shape has been enlarged by multiplying by a scale factor of 2 to give the blue shape.

Congruent Triangles

There are four conditions to be able to prove if a pair of triangles are congruent.
Reasons for congruency:

SSS SSS (three sides the same)

RHS RHS (right-angled triangle, hypotenuse and a side the same),

ASA ASA or AAS (two angles and one side the same),

SAS SAS (side-angle-side, two sides and the included angle the same).

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SUBJECT: Maths	YEAR: 9
TOPIC: Handling Data	SEMESTER: 2

WORD REVOLUTION

Scatter-Graph	A graph that shows if there is a relationship between two variables. This is shown by crosses or dots that are scattered across the graph
Frequency Polygon	A graph showing data distributions and trends. Crosses are joined together so we can easily see the trends in the data.
Frequency Table	A table showing the number of people or objects for each of the variables. We can find averages from them

What will I study in this topic?	You will learn how to draw and interpret a scatter graph and how you can use a line of best fit to make predictions. You will find averages from frequency tables and be able to drawn and interpret a frequency polygon.
What will I be able to do by the end of this topic?	- Draw and read information from a scatter graph - Draw a line of best fit that can be used to make predictions - Draw a frequency table and find averages and range from it - Draw and read information from a frequency polygon

Averages from a Frequency Table

Time, t (minutes)	Frequency
$0 < t \leq 10$	4
$10 < t \leq 20$	2
$20 < t \leq 30$	3
$30 < t \leq 40$	11

The frequency table above shows the times in minutes that 20 pupils take to get to school. To find the mean time you assume (for example) that the 4 pupils in the first group take 5 mins. (The midpoint of the time). Then these pupils take a total of 20 mins to get to school. If you do it for all the groups you would get $5 \times 4 + 15 \times 2 + 25 \times 3 + 35 \times 11 = 510$

Then divide this by how many pupils there are (20 – sum of the frequencies) to give:

$$\frac{510}{20} = 25.5 \text{ mins per pupil}$$

Scatter Graph

A scatter graph is used to see if there is a relationship between two things. Here we can see a scatter graph showing the scores of 12 pupils in two tests. Each cross represents a different pupil.
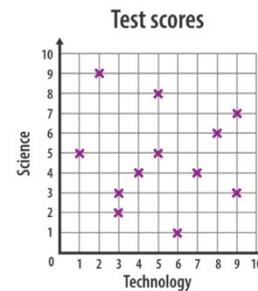
Correlation
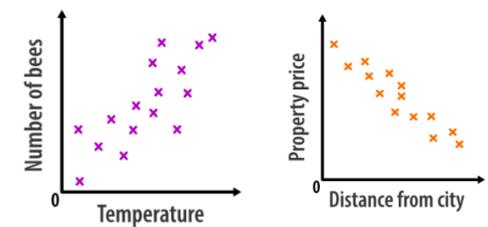
Positive Correlation   Negative Correlation

Line of Best Fit

A Line of Best Fit, is a straight line following the direction of the trend of the data. You can use it to make predictions.
You must get roughly the same number of Crosses above the line as there are below it

Frequency Polygons

In a Frequency Polygon, plot the frequency against the mid-point of the data.

WORD REVOLUTION

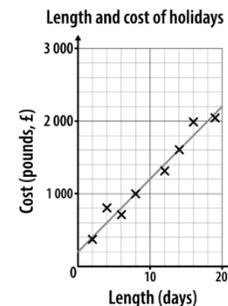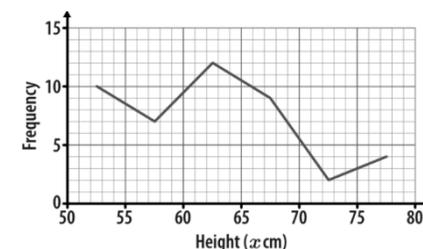|	
Abiotic Factor	A non-living factor of the environment.
Biotic Factor	A living factor of the environment.
Community	The populations of different species living in a habitat.
Ecosystem	The interaction of a community of living organisms with the abiotic parts of their environment.
Habitat	The place where an organism lives.
Population	The number of the same species living in an ecosystem.
Consumer	An organism that eats another organism.
Producer	An organism (usually a plant) that can produce it's own food through photosynthesis. Starts off the food chain.
Predator	An animal that eats another animal.
Prey	An animal that gets eaten by another animal.

What will I study in this topic?	You will study how to interpret food webs, suggest how changes in the environment can lead to changes in the population of an organism. We will look at how plants and animals are adapted to suit their environment and explain the conflicting pressures on maintaining biodiversity.
What will I be able to do by the end of this topic?	By the end of this unit, you will be able to: • Explain how adaptations in plants and animals increase their chances of survival. • Describe how a change in the environment can affect the food chain. • Explain how biotic and abiotic factors affect the organism's survival.

Abiotic and Biotic Factors

Abiotic Factors are the non-living factors of an environment. E.g. Moisture, light, temperature, pH.
Biotic Factors are the living factors of an environment. E.g. predators, competition, pathogens and availability of food.

Predator/Prey Cycles

Populations of predator and prey increase and decrease in cycles. The size of the predator population depends on the size of the prey population and vice versa. Overall, there is a stable community.

Food Chains

The source of all energy in a food chain is the Sun. It is made useful by plants through photosynthesis where glucose is produced. When an organism is consumed, some of the energy is lost.
Remember: the arrow in a food chain indicates the direction of the flow of energy

Key Questions:	How do biotic and abiotic factors affect where organisms live? Can you identify the producer, consumers, predators and prey in a food chain? How are organisms such as the polar bear, camel and cactus adapted to survive?	
Curriculum Connections:	**Previous (Yr 7):** • Revisit food chains and webs. • Revisit adaptations of plants and animals	**Future:** • How humans are changing environments of organisms through global warming, deforestation and land use. • Maintaining ecosystems and biodiversity.

Adaptations

Adaptations are specific features of an organism which enable them to survive in the conditions of their habitat.

Structural Adaptations- features of the organisms body e.g. colour for camouflage.

Behavioural Adaptations- how the organism behaves e.g. migration to a warmer climate during colder seasons.

Functional Adaptations- the ways the physiological processes work in the organism e.g. lower metabolism during hibernation to preserve energy.

A plant or animal will not physically change to adapt to its environment during in its lifetime. Instead there is natural variation where some features will favour the organisms chance of survival.

Small surface area minimises evaporation

Spines instead of leaves

Stems that can store water

Widespread root system
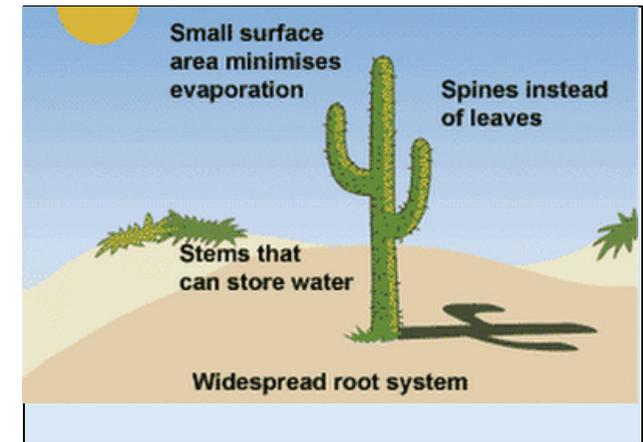
Competition

Species will compete with one another and also within their own species to survive and reproduce.

Mutualism occurs when both species benefit from a relationship.

Parasitism occurs when a parasite only benefits from living on the host.

Animals compete for resources such as food, water and shelter. They may also compete within their own species for mates.

Plants compete for resources including light, water, space and minerals. All resources are needed for photosynthesis so the plants can make their own food.

Small ears help to reduce heat loss.

Thick fur and a thick layer of body fat insulate from the cold.

White fur acts as camouflage.

Large feet spread the body's weight. The wide paws act as good paddles and snow shoes.
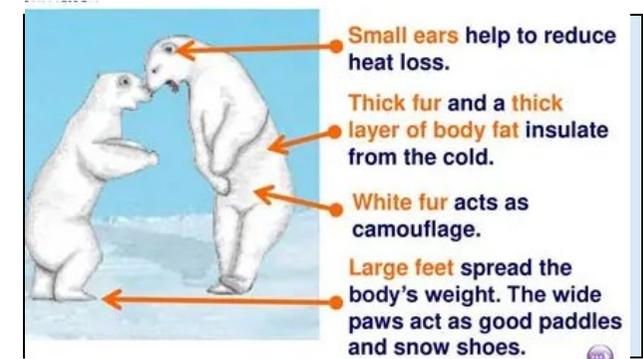
WORD REVOLUTION

Central Nervous System (CNS)	The brain and spinal cord. It's where reflexes and actions are coordinated.
Effector	A muscle or gland which responds to a hormone or nervous impulses.
Motor Neurone	A nerve cell that carries electrical impulses from the CNS to effectors.
Relay Neurone	A nerve cell that carries electrical impulses from sensory neurones to motor neurones.
Sensory Neurone	A nerve cell that carries electrical impulses from a receptor in a sense organ to the CNS.
Reflex	A fast, automatic response.
Receptor	A group of cells that are sensitive to a stimulus (e.g. receptor cells in the eye detect light)
Electrical Impulse	How messages travel through the neurones.
Co-ordination Centre	An organ (e.g. the brain, spinal cord or pancreas) that processes information from receptors and organises a response from the effectors.
Synapse	The connection between two neurones.

What will I study in this topic?	You will study the components of the nervous system and how electrical impulses are transmitted through the body. You will carry out the Reaction Time Required Practical, suggest improvements to the method and explain how caffeine, sugar and alcohol will affect reaction time.
What will I be able to do by the end of this topic?	By the end of this unit, you will be able to: • Describe how a reflex action occurs. • Describe the components of the nervous system. • Explain the role of synapses. • Describe how a nerve cell is adapted for it's function.

The Human Nervous System

The nervous system allows a fast response to a stimulus in the environment. The information is received by a receptor, passed along the neurons as an electrical impulse and results in a response.

The Neurone

The nervous pathway

A stimulus is a change in the environment. This information is received by the receptor and sent as an electrical impulse along a sensory neurone towards the central nervous system. Here the information is processed and an impulse is sent down a motor neurone. The effector receives the impulse and carries out a response.
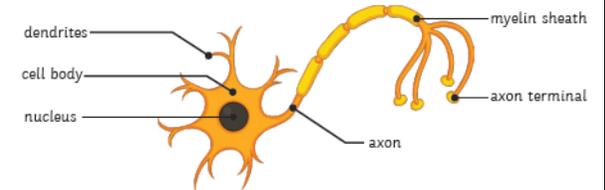
Reflex Arc

A reflex is a fast and automatic response to a particular stimulus which may be harmful to the organism. The impulse bypasses the brain through relay neurones in the spinal cord.

| **SUBJECT: Science** | **YEAR: 9** |
| **TOPIC: Homeostasis and Response** | **SEMESTER: 2** |

| Key Questions: | How do messages move around the body?
 What is the reflex arc and how does it protect us from dangerous stimuli?
 How does caffeine and alcohol affect our reaction times? | |
| Curriculum Connections: | **Previous (Yr 8):**
 • Adaptations of the nerve cell.
 • Reaction time project | **Future:**
 • Explain how an electrical impulse moves across a synapse.
 • Compare the nervous and endocrine systems. |

Reaction Time Practical

The aim of the investigation is to investigate whether reaction times can be reduced with practice.

Method
1. One person sits upright on a chair and places the arm on the table so their hand is hanging over the edge.
2. Place a ruler between the thumb and index finger. Ensure the 0cm mark is level with the top of the thumb.
3. Drop the ruler without telling your partner.
4. Record how many centimetres it took to catch.
5. Repeat nine more times.
6. Repeat the experiment with your other hand.

2 PERSON 1 SITS ON A CHAIR, WITH THEIR ARM RESTING ON THE TABLE WITH THEIR DOMINANT HAND OVER THE EDGE.

RULER HELD WITH 0 cm BETWEEN PERSON 1's THUMB AND FOREFINGER

PERSON 2

PERSON 1

DOMINANT HAND

3 PERSON 1 CATCHES THE RULER AS QUICKLY AS POSSIBLE. RECORD THE NUMBER ON THE RULER THAT IS LEVEL WITH 1's THUMB. REPEAT SEVERAL TIMES.

Variables

The independent variable is the left and right hand.

The dependent variable is the reaction time in seconds (converted from the distance taken to catch the ruler.

The control variables are the distance between your thumb and index finger, the amount of caffeine or glucose the person intakes during the practical and the time of day (as this can affect tiredness)

PERSON 2   30 cm   30 cm

0 cm   10 cm

PERSON 1   0 cm

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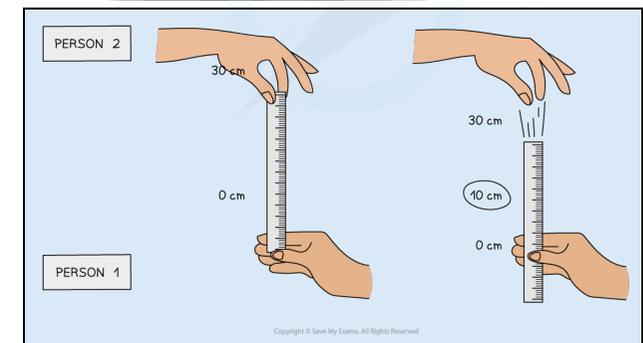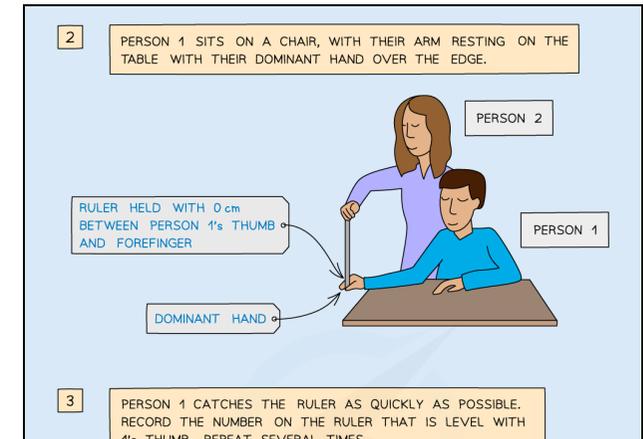
WORD REVOLUTION

DNA	Deoxyribonucleic acid. The molecule in cells that stores genetic information.
Variation	The differences that exist between individuals.
Natural Selection	The process by which species evolve.
Selective Breeding	When humans artificially select the plants or animals that are going to breed, so that the genes for particular characteristics remain in the population.
Fossil	The remains of an organism from many years ago, which is found in rock.
Binomial System	The system used in classification for naming organisms using a two-part Latin
Extinction	When no living individuals of a species remain.
Mutation	A random change in an organism's DNA.
Species	A group of similar organisms that can reproduce to give fertile offspring.
Classification	Organising living organisms into groups based on their characteristics.

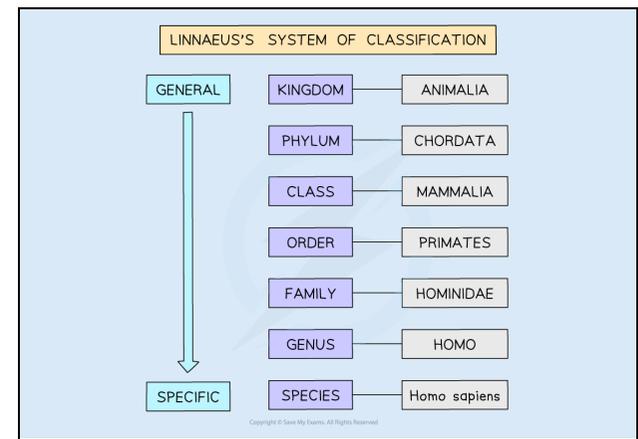|	
What will I study in this topic?	You will study how fossils give humans evidence for evolution. We will look in detail at the stages of Darwin's theory of natural selection and how genetic and environmental factors affect how organisms compete in their environment. We will study how organisms are related and how Scientist's classify organisms through the system of classification. Finally we will look at how humans selectively breed animals and plants in the farming industry.
What will I be able to do by the end of this topic?	By the end of this unit, you will be able to: • Describe the stages of natural selection. • Describe how genetic and environmental factors affect variation. • Describe the ways in which fossils are formed. • Use pedigree charts to classify organisms.

Variation

Variation may be due to differences in-
- The genes that have been inherited.
- The conditions in which they have developed.
- A combination of genes and the environment.

Classification

Linnaeus classified living things into kingdom, phylum, class, order, family, genus and species. Organisms are named by the binomial system of genus and species.
Due to evidence from chemical analysis, there is now a 'three-domain system' developed by Carl Woese.

Fossils

Fossils could be
- The actual remains of an organism that has not decayed.
- Mineralised forms of the harder parts of an organism (e.g. bones)
- Traces of organisms such as footprints or burrows.

Fossils help us to understand how much or little organisms have changed as life developed on Earth.

LINNAEUS'S SYSTEM OF CLASSIFICATION

GENERAL	KINGDOM	ANIMALIA
PHYLUM	CHORDATA
CLASS	MAMMALIA
ORDER	PRIMATES
FAMILY	HOMINIDAE
GENUS	HOMO
SPECIFIC	SPECIES	Homo sapiens

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SUBJECT: Science

YEAR: 9

TOPIC: Variation, Inheritance and Evolution

SEMESTER: 2

Key Questions:	How do mutations in our DNA cause variation? Describe the stages of Darwin's theory of Natural Selection. Describe how humans selectively breed animals. Describe how fossils give us evidence for evolution.	
Curriculum Connections:	**Previous (Yr 8):** • Continuous and discontinuous variation in humans • Stages of natural selection. • Extinction and preserving species.	**Future:** • Resistant bacteria- how bacteria become resistant to antibiotics. • Genetic engineering- using technology to produce desired cells. • Using Punnett squares to calculate the probability of inheriting genes.

Natural Selection

Charles Darwin developed the theory of natural selection. All species of living things have evolved from simple life forms by natural selection.

1. There is variation in the population due to genetic mutations.
2. Organisms compete for food, mates and territory in order to survive.
3. The organisms who are better adapted to the environment (due to genetic and environmental variation) will survive. The others will die.
4. The surviving organisms reproduce and pass on their successful genes to the next generation.

Selective Breeding

1. Choose parents who have the desired characteristic.
2. Select the best offspring and breed these to make the next generation.
3. These offspring are then bred again and again, over many generations, until a desired result is achieved.
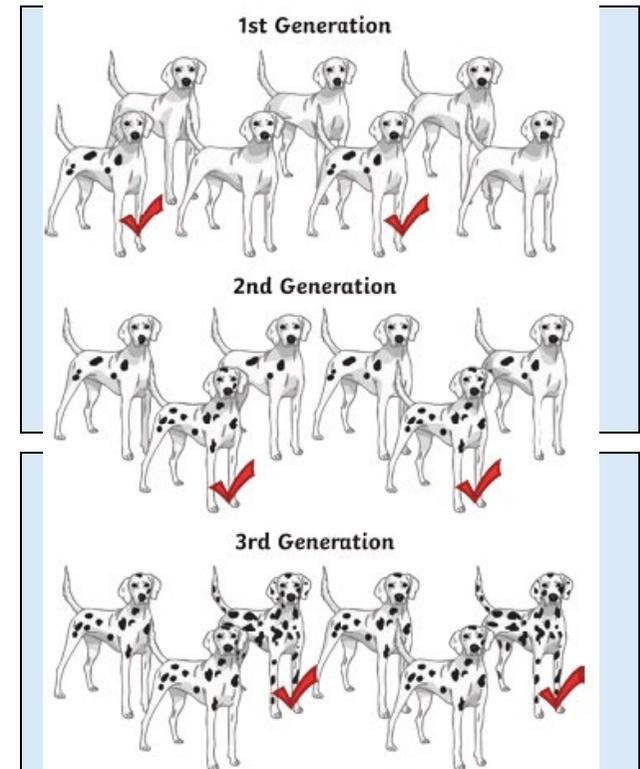
WORD REVOLUTION

Speed	Distance travelled in a certain time
Velocity	Speed and direction of an object
Distance	How far something has travelled
Acceleration	The rate of change of velocity
Scalar	A quantity with magnitude and no direction
Vector	A quantity with magnitude and direction
Deceleration	A reduction in the rate of change of velocity.
Braking Distance	The distance a vehicle travels after the brakes are applied until it comes to a complete stop.
Thinking Distance	The distance a vehicle travels during the driver's reaction time.
Stopping Distance	The distance covered by a vehicle in the time the driver spotting the hazard and the vehicle coming to a stop.
Reaction Time	The time taken for a person to react after an event

What will I study in these topics?	Use forces to be able to describe and calculate the change in shape and motion of objects
What will I be able to do by the end of this topic?	• Classify quantities into scalar and vector quantities. • Calculate speed and velocity. • Describe a journey using a d-t graph and a v-t graph. • Linking reaction times to stopping distances

Scalars and Vectors.

Scalars	Vectors
Time	Acceleration
Distance	Displacement
Speed	Velocity
mass	Force

Distance-time graphs
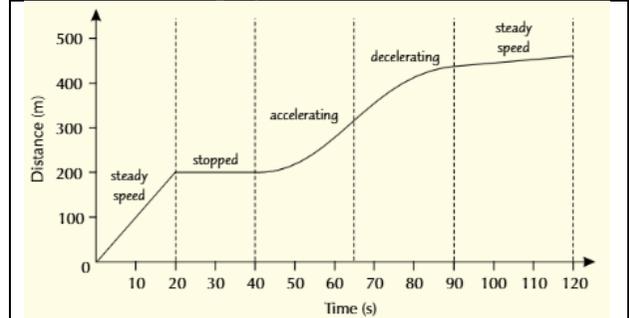
Velocity-time graphs
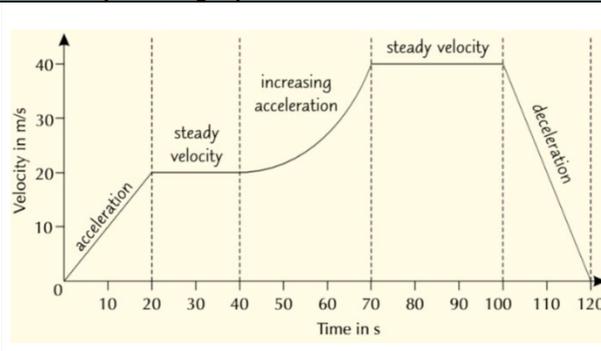
Stopping Distance = Thinking distance + Braking distance

e.g. thinking distance = 12m and braking distance = 18m,
the stopiing distance is 12m + 18m = 30 m

SUBJECT: Physics	YEAR: 9
TOPICS: Waves and Magnetism	SEMESTER: 2

What will I study in these topics?	The properties of waves and how this can help to categorise them. How the force of magnetism works across a permanent magnet and electromagnet.
What will I be able to do by the end of this topic?	• Define and compare longitudinal and transverse waves • Label and describe different features of a wave • Investigate the speed of a wave in water and air. • Be able to draw a magnetic field • Describe how to find the shape of a magnetic field • Describe how a solenoid and electromagnet's magnetic field can be altered. • Describe the uses of electromagnets

Transverse and Longitudinal Waves

Transverse wave – the oscillations are perpendicular to the direction of energy transfer.
Longitudinal Wave – the oscillations are parallel to the direction of energy transfer.
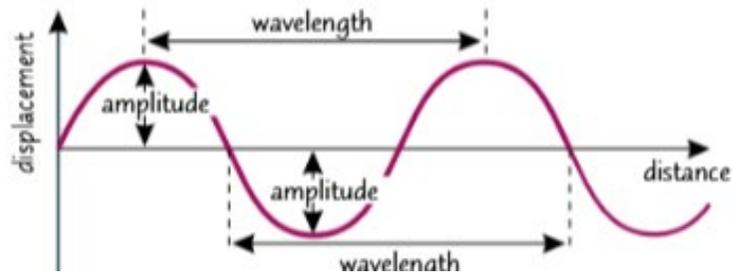
TRANSVERSE   **LONGITUDINAL**
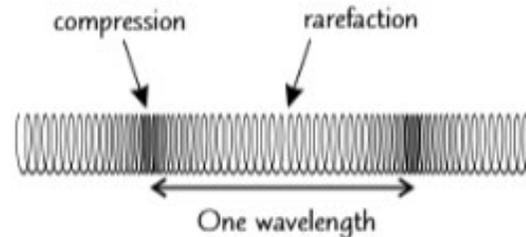
The wave speed is the speed at which energy is being transferred

v = speed (m/s) ⟶ $v = f\lambda$ ⟵ λ = wavelength (m)

f = frequency (Hz)

Magnetism

Magnetic field – a region where magnetic materials experience a force.
Magnets are strongest at the poles (North and South).
Like poles repel each other (N and N, S and S).
Opposite poles attract (N and S)
Magnetic Field lines go from N → S.
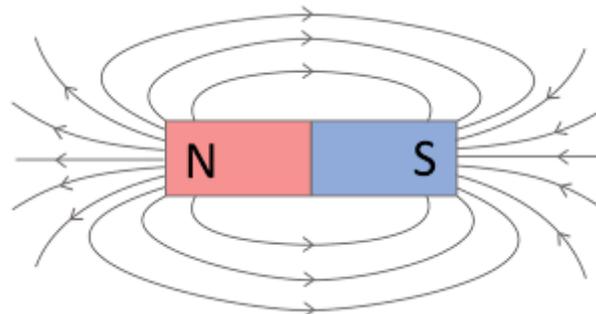
Electromagnets:
A current carrying wire generates a magnetic field around it.
If this is coiled up this becomes a solenoid.
If you place a magnetic material like iron in the coil it becomes an electromagnet. These can be strengthened by increasing the current and the number of coils.

WORD REVOLUTION

Acid	Substances that produce hydrogen ions (H^+) in solution and have a pH below 7.
Alkali	Substances that produce hydroxide ions (OH^-) in solution and have a pH above
Aqueous	Dissolved in water
pH scale	Measures acidity/alkalinity from 0 to 14 based on the concentration of H^+ ions
Salt	An ionic compound formed from the reaction of an acid and a alkali
Neutralisation	A reaction between an acid and an alkali that forms neutral products
Excess	More of a substance than is needed for a reaction; ensures the other reactant is
Relative Atomic Mass	The mass of an element (average of the masses of the element's isotopes)
Relative Formula Mass	The mass of a compound
Law of Conservation of mass	Atoms are not lost or made in a chemical reaction
Ion	An atom that has lost or gained electrons to achieve a full outer shell
Ionic Bonding	Transfer of electrons between metals and non-metals
Covalent Bonding	Sharing electrons between two non-metal atoms
Metallic Bonding	Electrostatic attraction between positive metal ions and a sea of delocalised electrons
Alloy	Mixtures of metals with other metals or elements

|	
What will I study in these topics?	Acids and Alkali reactions (Neutralisation) How metal compounds react with acids to form different products How atoms form ionic, covalent and metallic bonds The law of conservation of mass and how to apply it
What will I be able to do by the end of these topics?	Predict products of different metal compounds reacting with acids Describe a method for producing a pure dry sample of a soluble salt Describe ionic, covalent and metallic bonds Draw dot-cross diagrams for ionic and covalent compounds Calculate masses using the law of conservation of mass

Required Practical: Soluble Salts
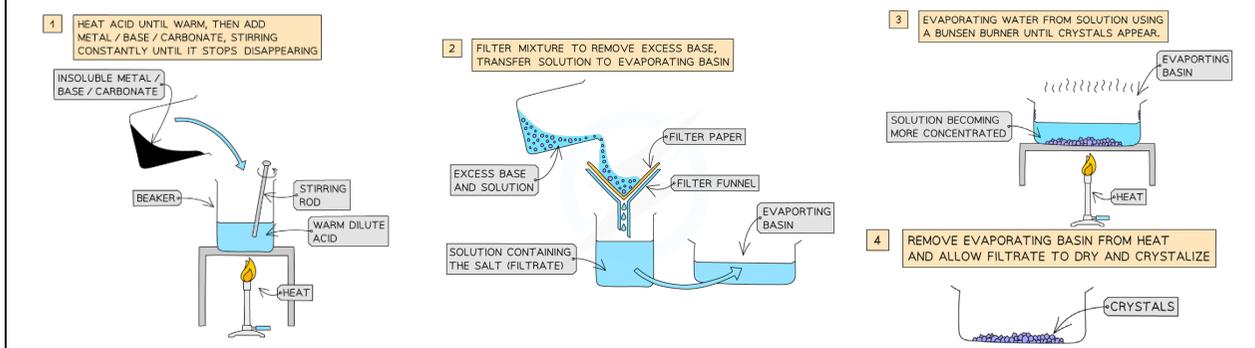
Metal & Acid Reactions

General word equations:
Metal + Acid → Salt + Hydrogen
Metal Oxide + Acid → Salt + Water
Metal Hydroxide + Acid → Salt + Water
Metal Carbonate + Acid → Salt + Water + Carbon Dioxide

Acid used	Last name of the salt
Hydrochloric acid	**Chloride**
Sulphuric acid	**Sulphate**
Nitric acid	**Nitrate**

UNIVERSAL INDICATOR COLOUR CHART

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

ACIDIC   NEUTRAL   ALKALINE

Ions & Ionic Bonding

When a metal atom **transfers electrons** to a non-metal atom; an ionic bond is formed. The ions are attracted to each other because opposite charges attract (electrostatic attraction)

Ionic bonds form ionic compounds such as sodium chloride, iron oxide and copper sulphate.

Covalent Bonding

Metallic Bonding

Alloys

By mixing two or more metals together, the lattice structure of metals is distorted due to the atoms being **different sizes**.

This **distorts the layers** meaning the **layers cannot slide** over each other.

This is why alloys are stronger and harder than pure metals.

PURE METAL   ALLOY

Useful Hints:

Use the periodic table to:
- Work out the charge of ions. E.G. Group 2 forms 2+ charges

- Tell if the substance is metallic, ionic or covalent.
  - Metallic = left side, Ionic = left & right, Covalent = right side

SUBJECT:	Chemistry	YEAR: 9
TOPICS:	Chemical Changes, Bonding & Quantitative Chemistry	SEMESTER: 2

Key Questions:	Explain why mass increases/decreases in an open system reaction?
	Describe a method for producing a pure dry sample of a soluble salt
	Explain why alloys are stronger than pure metals
	Why does hydrogen gas form in metals + acid but water when metal oxide + acid?

Curriculum Connections:	Year 7 – Atoms & Compounds, Acids and Alkalis. Year 8 – Introduction to Chemical Reactants, Metals and their Reactions. Year 9 – Atomic Structure

Law of Conservation of Mass

The law of conservation of mass states that **_"Atoms are not lost or made in a chemical reaction so that the mass of the products equals the mass of the reactants"._**

28 g + 22 g	28 g	22 g
Calcium carbonate	Calcium oxide	Carbon dioxide

48 g		80 g
Magnesium	Oxygen	Magnesium oxide

80 g – 48g = 32 g of oxygen
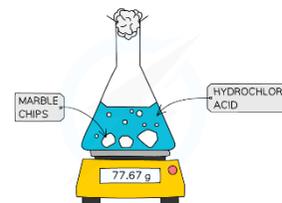
We can calculate an unknown substance's mass when we know the other masses.

In open systems (where substances can enter or leave the container) we **appear** to observe mass changes as gases either add to the reaction or escape. The overall mass of reactants and products is still the same.

MARBLE CHIPS   HYDROCHLORIC ACID

77.67 g

Percentage Composition

O in KNO_3 → **3** atoms of O in KNO_3

Mass of O = **16**

Mass of KNO_3 = 39 + 14 + (16 x 3) = **101**

$$= \frac{\mathbf{3 \ X \ 16}}{\mathbf{101}} \ x \ 100 \quad = \mathbf{47.5\%}$$

Relative Formula Mass (M_r)

M_r is calculated by adding together the masses of elements in the compound. The relative atomic mass (A_r) of each element is used (the big number).

$$C_6H_{12}O_6$$

$^1 H _1$	$^{16} O _8$	$^{12} C _6$

(6 X C) + (12 X H) + (6 X O) =

(6 X **12**) + (12 X **1**) + (6 X **16**) =

72 + 12 + 96 =

$M_r = 180$
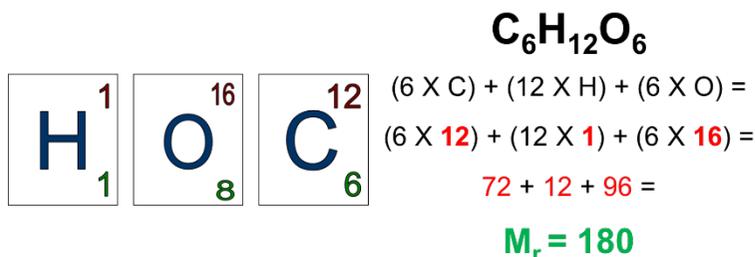
Useful Hints:

A $_{small}$ number just talks about the element it is behind.

Example: O_2 = O,O

Li_2O = Li, Li, O

$MgBr_2$ = Mg, Br, Br

1. WORD REVOLUTION

Conflict	A serious disagreement or struggle
War	Violent conflict between countries.
Civil war	A war that takes place between two or more groups within one country.
Peace	Freedom from conflict or war.
Resources	Materials or things essential for human survival; for example food,
Government	The group of people or person in charge of running a country.
Revolution	A forceful overthrow of the government.
Separatism	A movement where one group tries to leave a country.
Poverty	The state of being extremely poor.
Inequality	The state of one group having more of a resource compared to another
Identity	Beliefs, history and personality that defines a person or group.
Treaty	**An agreement between countries to end conflict.**

2. Examples of conflict

International
Involves the participation of more than one country.
Russia-Ukraine

National
Takes place across one country.
Somalia civil war and piracy

Local
Takes place within a small area.
Leeds Bradford Airport
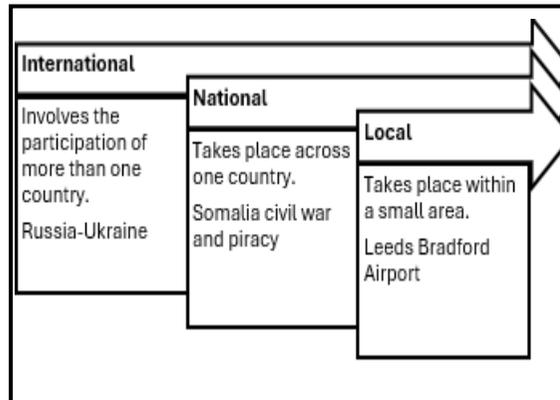
3. Causes of conflict

- **Identity**: Conflict can happen because of how a group views itself as separate or in opposition to another group.

- **Resources:** Multiple groups want to use the same resource, e.g. a water source. Climate change means there are less resources. Population growth means there are more people to use the same resources.

- **Poverty**: Poverty means people have less resources. When people are extremely poor, they often do not have time or energy to fight. However, when groups feel like they are unequal, frustration and anger can build, leading to conflict.

Conflict

4. How is conflict shown?
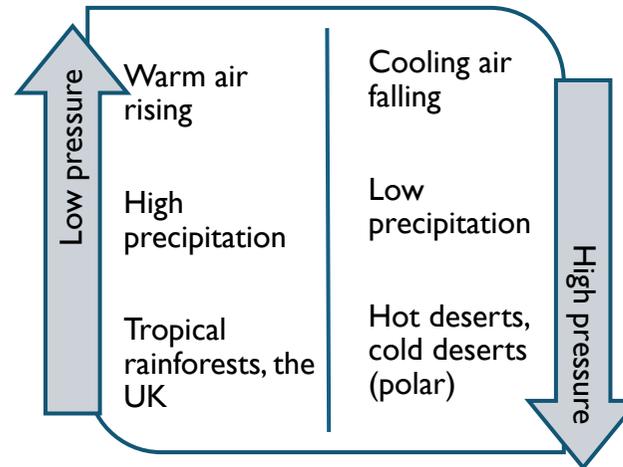
Protests: writing a letter to the government, organising a march.

Revolution: aiming to overthrow the government.

Terrorism: violent acts with the aim of causing fear.

War: groups with weapons fighting each other.

1. WORD REVOLUTION

Atmosphere	The layer of gas that surrounds the earth
Weather	Day-to-day changes in the atmosphere
Climate	Average weather conditions in an area
Precipitation	Water falling from the sky
Forecast	Prediction of future weather conditions
Drought	A long period with little or no rainfall
Tornado	A fast-spinning column of air that touches the ground

2. HIGH and LOW PRESSURE

Low pressure

Warm air rising

High precipitation

Tropical rainforests, the UK

Cooling air falling

Low precipitation

Hot deserts, cold deserts (polar)

High pressure

3. GLOBAL CLIMATE

Latitude: distance from the Equator	Further from the Equator = generally cooler
Altitude: height above sea level	Higher above sea level = cooler
Distance from the sea	Closer to the sea = milder (less extreme)

4. WEATHER FORECAST

☀	Sunshine
🌧	Rainfall
🌨	Snow
⛈	Thunderstorms

5. UK EXTREME WEATHER

Type	Cause	Effect
Heatwave	High pressure traps hot air	Health risks, water shortages, wildfires
Flood	Heavy rainfall or storms	Roads, homes, fields damaged or underwater
Snow	Cold air meets moist air	Travel disruption, schools closed

6. TORNADOES

Formation: Warm, moist air meets cold, dry air, causing strong rotating winds under a thunderstorm
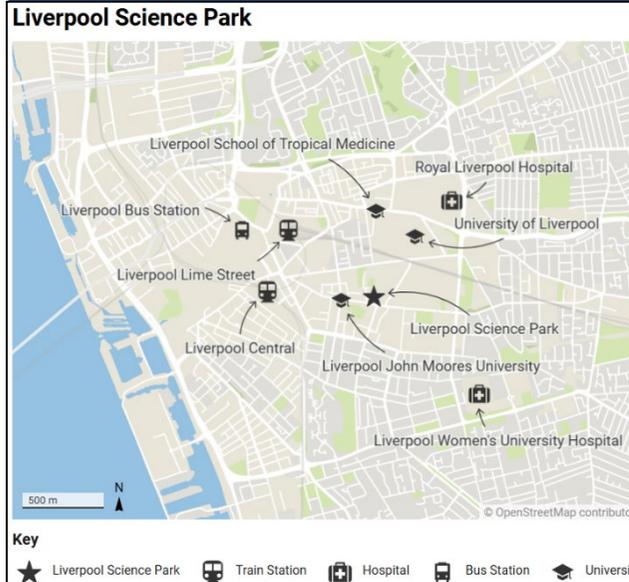
Location: Central USA – 'Tornado Alley'

Effects:

- Destroys buildings and trees
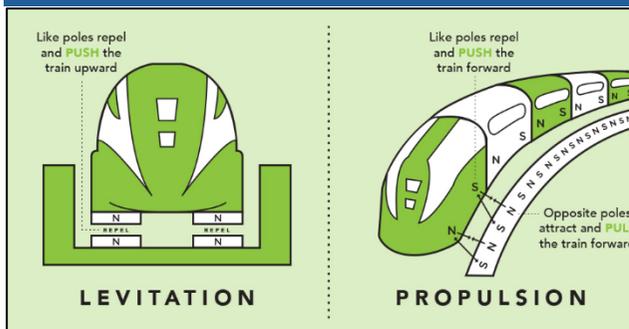- Flips cars and damages power lines
- Kills people and animals

1. WORD REVOLUTION

Quaternary	The quaternary sector consists of those industries providing information services e.g. IT, finance and scientific research.
Career	The job a person chooses to do through their life.
Science Park	A science park is a group of scientific and technical knowledge-based businesses located on a single site.
Sustainable	Meeting the needs of the current population without preventing future generations from meeting their needs.
Transport	A way of moving people or goods from place to place.
Maglev	Maglev (magnetic levitation) uses powerful magnets to move vehicles, getting rid of wheels and friction for super-fast travel.
Self-driving car	A self-driving/driverless car, uses sensors and AI to operate without human input.
Diet	The kind of food people eat
Vertical farming	Growing crops in vertically and horizontally stacked layers.
Lab-grown	Products, like diamonds or meat, created artificially in a laboratory by mimicking
Necessities	Goods and services that are essential to a persons life e.g. food, healthcare, education.
15-minute city	An idea to create a city where everything a resident needs can be reached 15 minutes by foot or bike.

2. SCIENCE PARKS
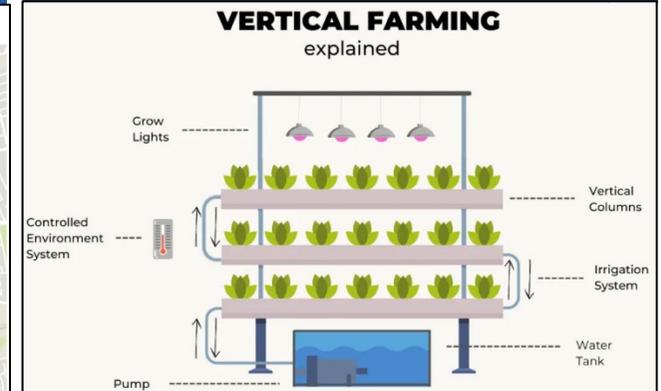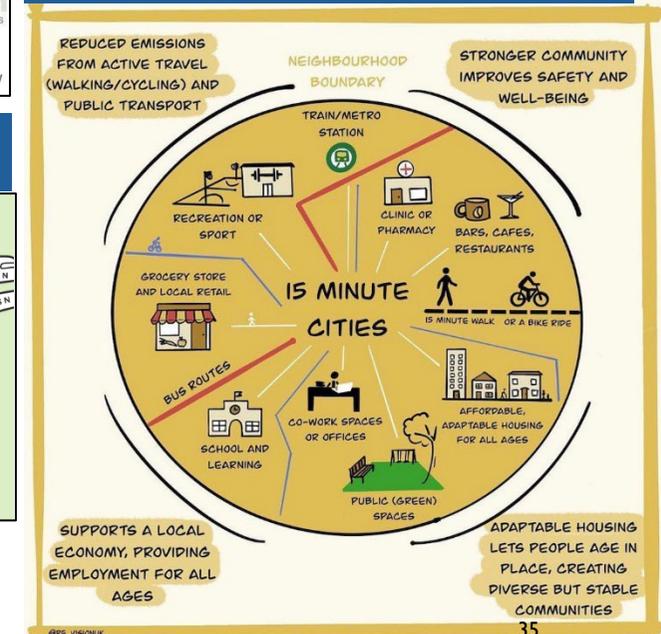
Liverpool Science Park

Key

★ Liverpool Science Park   🚈 Train Station   🏥 Hospital   🚌 Bus Station   🎓 University

3. MAGLEV TRAINS

LEVITATION   PROPULSION

4. VERTICAL FARMING

5. 15 MINUTES CITIES

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1. WORD REVOLUTION

Development	Process of a country or area improving
Life expectancy	Average age people live to in an area.
Literacy rate	Amount of people who can read and write in an area
Erosion	Wearing **away** of rock
Weathering	Weakening of rock **where it is**
Weather	Day to day changes in the atmosphere
Climate	Long term average weather conditions

2. DEVELOPMENT AROUND THE WORLD

Development →

HIC: High income country

Europe and North America have mostly HICs, e.g. UK

NEE: Newly emerging economy

Asia and South America have mostly NEEs, e.g. Pakistan, Brazil

LIC: Low income country

Africa has many LICs, e.g. Niger
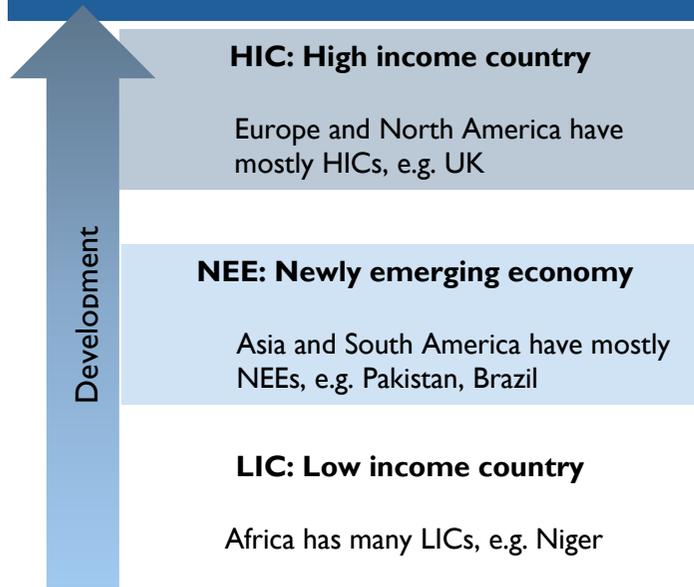
3. JOB TYPES

Tertiary jobs	Providing a service, e.g. doctor, shop assistant, taxi driver
Secondary jobs	Making raw materials into a product, e.g. in a factory
Primary jobs	Extracting raw materials from nature, e.g. farmer, fisher, miner

3. RURAL and URBAN AREAS

Rural

Countryside E.g. Yorkshire Dales
Sparsely populated: not many people in a certain area.

Urban

City or town E.g. Leeds
Densely populated: lots of people in a certain area

4. THE WATER CYCLE

Precipitation Water falling from the sky

Run-off Water flowing over the land

Evaporation Water changes from liquid to gas

Condensation Water changes from a gas to a liquid, forming clouds
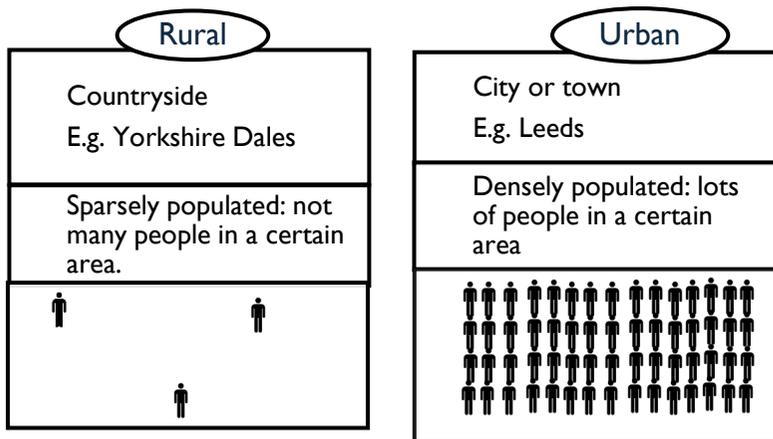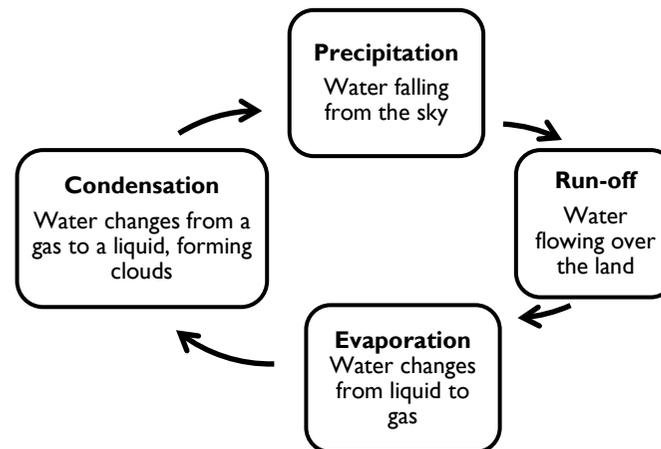
5. WEATHERING

Biological: tree roots grow into rock, animals burrow into rock

Chemical: slightly acidic rainwater dissolves certain types of rock (e.g. limestone)

Freeze-thaw: water freezes and melts inside rock, expanding cracks

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Lines of longitude

150° 120° 90° 60° 30° 0° 30° 60° 90° 120° 150°

ARCTIC OCEAN

Arctic Circle

Lines of latitude

60°
Bering Sea

NORTH AMERICA

30°
Tropic of Cancer

0° Equator

Tropic of Capricorn
30°

60°

Antarctic Circle

Gulf of Mexico

PACIFIC OCEAN

Caribbean Sea

SOUTH AMERICA

ATLANTIC OCEAN

North Sea
English Channel
EUROPE
Baltic Sea

Mediterranean Sea
Red Sea

AFRICA

Caspian Sea
Persian Gulf

ASIA

Arabian Sea
Bay of Bengal

Bering Sea

East China Sea
South China Sea

PACIFIC OCEAN

INDIAN OCEAN

AUSTRALIA AND OCEANIA

ATLANTIC OCEAN

Scale by latitude
60°
30°
0   1,000   2,000 mi
0   1,610   3,220 km

SOUTHERN OCEAN

ANTARCTICA

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North
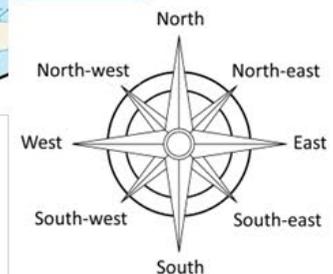North-west   North-east
West   East
South-west   South-east
South

Across the world there are:

7 continents: Europe, Asia, Africa, Oceania, Antarctica, South America, North America
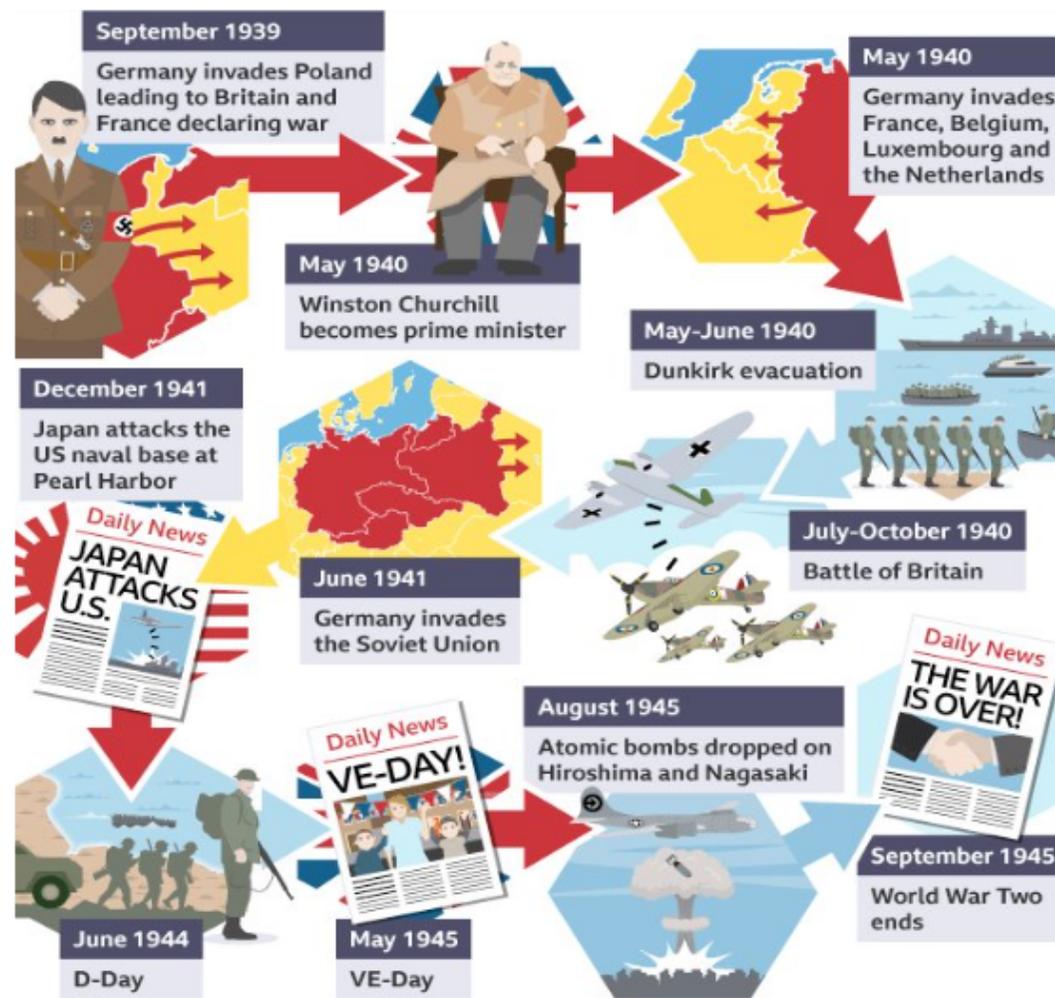5 oceans: Arctic, Southern, Pacific, Indian, Atlantic

Word Revolution

Victory	an occasion when you win a game, competition, election, war, etc. or the fact that you have won:
Disaster	An event that results in extreme damage or loss of life
D Day	The day (6 June 1944) in the Second World War on which Allied forces landed on the beaches in Normandy, northern France to push back the Nazis.
V J Day	Victory in Japan: 15 August 1945 the day Japan surrendered to the Allies, ending World War II.
Luftwaffe	The German airforce.
Operation Sealion	Hitler's plan to invade Britain in September 1940.
Battle of Britain	The air battle which took place after Operation Sealion between the Royal Air Force (Britain) and the German Luftwaffe airplanes.
Allies	Britain, France, Russia, USA
Axis	Germany, Italy, Japan

September 1939 Germany invades Poland leading to Britain and France declaring war

May 1940 Germany invades France, Belgium, Luxembourg and the Netherlands

May 1940 Winston Churchill becomes prime minister

May-June 1940 Dunkirk evacuation

December 1941 Japan attacks the US naval base at Pearl Harbor

Daily News JAPAN ATTACKS U.S.

June 1941 Germany invades the Soviet Union

July-October 1940 Battle of Britain

August 1945 Atomic bombs dropped on Hiroshima and Nagasaki

Daily News THE WAR IS OVER!

June 1944 D-Day

May 1945 VE-Day

Daily News VE-DAY!

September 1945 World War Two ends

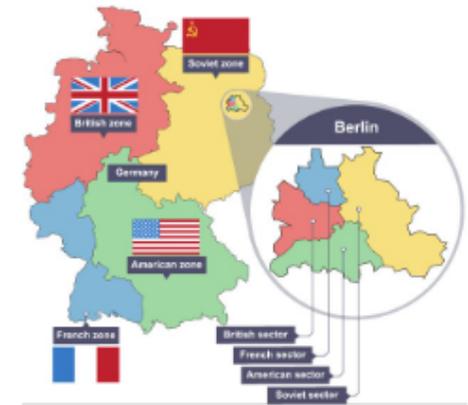| Medieval period					Renaissance		Industrial Period		Modern Period
1000-1100	1100-1200	1200-1300	Sing 1300-1400	1400-1500	1500-1600	1600-1750	1750-1800	1800-1900	1900-present

Capitalism	A political belief and system of government where people can vote, own businesses and property and make profit	
Communism	A political belief that society should have no social classes, everyone works as much as they can and receives what they need.	
Ideology	A set of political or religious beliefs and principles.	
Iron Curtain	The border between Western Europe and the communist countries of Eastern Europe. The Iron Curtain made it very difficult to travel into or out of Eastern Europe.	
Nuclear	Relating to weapons, or the use of weapons, which use the power produced when the nucleus of an atom is divided or joined to another nucleus:	
Refugee	A person who has escaped from their country for political, religious or economic reasons or because of war.	
Blockade	Sealing off a place to prevent people or goods entering or leaving.	
Space race	A 20th-century competition between the United States and the Soviet Union to achieve superior spaceflight capabilities.	
Arms race	A period of intense military buildup and technological competition between the United States and the Soviet Union involving the development and stockpiling of weapons, particularly nuclear weapons,	

Capitalist countries | Communist countries | Iron Curtain

Communism and capitalism are opposite political ideologies. This causes conflict.

When World War Two ended in 1945, there was hope that the wartime allies - the UK, America and Soviet Union - could work together to build a peaceful future. However, relations between the capitalist US and the communist Soviet Union quickly deteriorated, leading to 45 years of tension, a space race, nuclear arms race and a constant threat of nuclear war.

Medieval period					Renaissance		Industrial Period		Modern Period
1000-1100	1100-1200	1200-1300	Sing 1300-1400	1400-1500	1500-1600	1600-1750	1750-1800	1800-1900	1900-present

WORD REVOLUTION

Antisemitism	Hatred of Jewish people/Judaism
Persecution	Consistent cruelty and mistreatment of a person or group of people
Pogrom	The persecution of Jewish people on a mass scale.
Ghetto	A place within a city where people live in poverty with poor housing conditions., disease and not enough food.
Orthodox	Following a religion/faith in a very traditional/strict way.
Fascism	Political far right. Anti-immigration, believe that a country is the greatest and
Genocide	The mass killing/extermination of a population.
Resistance	Fighting against something that is attacking you or refusing to accept something.
Assimilate	To become part of a society, group or country.

Legend:
- Greater Germany
- Axis powers
- Occupied by Nazi Germany
- Extent of German expansion in World War Two
- Allied powers
- Neutral nations
- Ghettos

Antisemitism did not emerge for the first time when Hitler and the Nazis took power in Germany in 1933. Prejudice and hostility towards Jewish people had existed for centuries throughout Europe and beyond. When Hitler came to power in 1933, he acted on this antisemitic prejudice, which had existed for a very long time, and underpinned his ideas.

The Holocaust was the murder of approximately six million Jewish men, women and children by Nazi Germany and its collaborators during World War Two. It is called '**Shoah**' by the Jewish community.

Medieval period					Renaissance		Industrial Period		Modern Period
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WORD REVOLUTION

Abortion	The deliberate ending of a pregnancy so that it does not result in the birth of a baby.
Conception	The moment when a sperm fertilises an egg, marking the beginning of pregnancy.
Ensoulment	The belief about when the soul enters the body of a developing baby.
Foetus	The developing baby in the womb from around 8 weeks after conception until birth.
Miracle of life	The idea that life is special, amazing, and possibly a gift from God.
Pro choice	The belief that a woman should have the right to choose whether or not to have an abortion.
Pro life	The belief that abortion is wrong because life begins at conception and should be protected.
Quality of life	A measure of how good or comfortable someone's life is, including their physical and emotional well-being.
Sanctity of life	The belief that life is holy, sacred, and given by God, so only God should decide when it ends.
Viability	When a baby could survive outside the womb with medical help. (24 weeks)

What will I study in this topic?	You will gain a well-rounded understanding of the key ethical questions and religious and non-religious perspectives surrounding abortion, approaching the topic with sensitivity and an appreciation for its complexity as an ethical, legal, and religious issue.
Curriculum Connections:	During this topic you will learn about the foetal development and the different views on when life begins. This will link to your Science lessons and also allow you to develop a basic understanding of the different religious views towards abortion. This will lay the foundations for GCSE study where this topic is covered in detail from a Christian and Buddhist perspective.

Different ideas on when life begins

Current law on abortion in the UK

Stages of foetal development

RELIGIOUS ATTITUDES TOWARD ABORTION

CHRISTIANITY

- Generally opposes abortion. especially among Catholics.
- Life is sacred from conception

"Before I formed you in the womb I knew you"

Jeremiah 1:5

ISLAM

- Abortion generailiy discouraged but allowed in some cases (e.g, before 120 daye, to save the mother's life)

"Do not kill your children for fear of poverty"

Quran 17:31

JUDAISM

- Permits abortion to protect the mother's life ad health
- The fetus is not considered a full person until birth

"If her life is in danger, the fetus may be destroyed"

Mishnah Ohalot 7:5

BUDDHISM

- Generally opposes abortion due to belief in non-harm (ahimsa)
- Views vary by tradition and context

"The taking of life is to be avolded."

First Precept

Arguments for and against Abortion

ARGUMENTS FOR ABORTION	ARGUMENTS AGAINST ABORTION
Women's right to choose (non-religious)	Life begins at conception (Christian belief)
Prevents suffering in cases of severe fetal abnormalities (non-religious)	Sanctity of life (Islamic and Chrsdain belief)
Permitted in Judaism to protect the mother's life (religious)	Abortion is considered killing (Buddhist and Catholic view)
Islam allows abortion before 120 days in some cases (religious)	Fetus has a right to life (non-religious ethical argument)
Reduces illegal and unsafe abortions (non-religious)	Can cause emotional and psychological harm (non-religious)

WORD REVOLUTION

Cannabis	A class B drug that comes from the cannabis plant. It is illegal in many countries.
Chemical Weapons	Weapons that use harmful chemicals to kill or injure people.
Civil War	A war between groups within the same country.
Drugs	Substances that affect the body or mind.
Euthanasia	The act of deliberately ending someone's life to relieve suffering.
Materialism	The belief that money and possessions are the most important things in life.
Pacifism	The belief that violence and war are always wrong,
Prejudice	Judging someone unfairly before knowing them
Refugee	A person who has had to leave their home country because of war.
Vegetarian	Someone who does not eat meat or fish.
Vegan	Someone who avoids all animal products, including dairy and eggs.
Voluntary Euthanasia	When a person suffering from a terminal illness ask to end their life.

What will I study in this topic?	You will explore a wide range of ethical and philosophical questions and learn how both religious and non-religious people respond to them. You'll also develop skills in analysing religious teachings and understanding the different ways these teachings can be interpreted and applied to real-life issues
Curriculum Connections:	You will build on what you've already learned in Years 7 and 8 about religious beliefs and teachings and start to see how these can be applied to more complex ethical issues. You'll also revisit some of the ethical and philosophical topics you studied before, developing a deeper understanding of them. This will give you a strong foundation for the ethical issues studied in GCSE R.S.

Loving your neighbour

Jesus taught to 'Love your neighbour as you love yourself'

Christians will look at ways to help those in distress. This is illustrated in the parable of the Good Samaritan.

The Golden Rule teaches 'To do unto others what you want others to do to you'

Drugs and Alcohol

CANNABIS: LAW, LEGALITY & PERSPECTIVES

CANNABIS IN THE UK
- Class B Drug under the Misus of Drugs Act 1971
- Illegal to possess, grow, or supply without Home Office licence
- Medical cannabis is legal but only under strcic prescription for specific conditions

WHERE IS CANNABIS LEGAL?

✓ FOR	✗ AGAINST
Medical benefits (e.g. pain relief, epilepsy)	Risk of addiction and mental health issues
Economic gain through taxation	Gateway to harder drugs
Reduces criminal gang activity	Impaired judgment and driving risks
Comparable or less harmful than alcohol /tobacco	Long-term health fects still debated

CHRISTIAN VIEWS ON INTOXICATION

Ephesians 5:18 - "Do not get drunk on wine, which leads to debauchery. Instead, be filled with the Spirit.

Proverbs 20:1 "Wine is a moker, strong drink is raging: and whosoever is deceived thereby is not is wise."

Buddhism *'Abstain from intoxicants that cloud the mind'* (The Five Moral Precepts)
Islam *'Intoxicants are tools of affliction used by the Devil'* (The Quran)

RELIGIOUS QUOTES

TOPIC	ISLAM	CHRISTIANITY	JUDAISM
LIFE AFTER DEATH	"Every soul shall taste death Then to Us will you be returned." (Qur'an 29.57)	"I am the resurrection and the life. The one who believes in me will live, even though they die."	"Many of those who sleep in the dust of the earth shall awake." (Daniel 12.2)
ANIMAL TESTING	"Whoever kills anything bigger than a sparrow without just cause will be accountable."	"The righteous care for the neds of their animals." Proverbs 12.10 "A righteous man regards the life of his animal." (Dhammapada)	"A righteous man regards the life of his animal." "All beings tremble before danger, All fear death." (Dhammapada)
CAUSES OF WAR	"And if anyone seeks your protection, then grant him protection."	"Blessed are the peacemakers, for they will be called children of God." Matthew 5.9	"Seek peace and pursue it." Seek peace and pursue it."

Different Religious and Non-Religious beliefs about Life after death

Christianity	Belief in Heaven and Hell; immortality of the soul; resurrection of the body; final judgement before God
Islam	Belief in Paradise and Hell; resurrection of the body; final judgment before Allah
Humanism	Focus on making the most of this life; no belief in an afterlife
Paranormal	Spirits of the deceased may linger on Earth; Ghosts
Mediums	Individuals who claim to communicate with the spirits of the dead
Near-Death Experiences	Accounts of visions or experiences while close to death

Animal Testing

Advantages	• Medical Advancements: Leads to life-saving treatments and vaccines (e.g., insulin, cancer drugs). • Biological Similarity: Animals like mice share much DNA with humans, aiding disease research.
Disadvantages	• Ethical Concerns: Seen as cruel and inhumane by many due to animal suffering. • Limited Applicability: Animal results don't always predict human outcomes accurately.

Religious Views

Judaism	Permits testing if it benefits humans, but stresses compassion. *"A righteous man regards the life of his animal."* — Proverbs 12:10
Christianity	Allows it if it helps humanity and avoids cruelty. *"Are not five sparrows sold for two pennies? Yet not one of them is forgotten by God."* — Luke 12:6
Islam	Permissible when necessary, but cruelty is forbidden. *"Whoever is kind to the creatures of God is kind to himself."* — Prophet Muhammad (Hadith)

KEY VOCABULARY

temporal adverbs	problems
este fin de semana this weekend	**tuve un día…** I had a …day
la semana próxima next weekend	**…fatal …horrible …difícil** …awful …horrible …difficult
ayer yesterday	**porque…** because…
por la mañana / tarde in the morning / evening	**…comí …no comí (nada)** …I ate ..I didn't eat (anything)
por la noche at night	**…llegué muy tarde** …I arrived very late
el fin de semana pasado last weekend	**…no hice los deberes** I didn't do my homework
el mes pasado last month	**…pasé todo el día en casa** I spent the day at home
hace… días …days ago	**…me caí** I fell
hace una semana a week ago	**…fui a un concierto terrible** ..I went to an awful concert
verb + infinitive	**past verb phrases**
Quiero… I want to…	**comí / bebí** I ate / I drank
Voy a… I am going to…	**hice mucho** I did a lot
..descansar ..estar en casa ..relax ..be at home	**celebré mi cumpleaños** I celebrated my birthday
..hacer deporte/los deberes ..do sport / homework	**escuché música** I listened to music
..ir al parque/cine ..go to the park/cinema	**fui a un restaurant / café** I went to a restaurant/ cafe
…limpiar mi habitación …clean my bedroom	**me quedé en casa** I stayed at home
…salir por la tarde …go out for this evening	**salí con mi amigo al centro** I went to town with my friend
…hacer tareas …do chores	**hablé con mi amigo** I spoke with my friend

What will I study in this topic?
- ☐ 1: Arranging to go out
- ☐ 2: Saying what you did last weekend
- ☐ 3: Talking about something that went wrong

What will I be able to do by the end of this topic?
Say what you like to do when you go out
Understand use of the past and future tenses
Give a narrated event about a bad day

Grammar: Direct Object Pronouns
- ✓ A Direct Object Pronoun replaces the **noun** that has just been mentioned to avoid repetition.
- ✓ The pronoun agrees with the noun it replaces.

	masculine	feminine
singular	**lo**	**la**
plural	**los**	**las**

Grammar: Present Tense Verbs
The verbs **querer** (to want) and **poder** (to be able to) are stem-changing verbs

(yo)	p**ue**do	qu**ie**ro
(tú)	p**ue**des	qu**ie**res
(él / ella)	p**ue**de	qu**ie**re
(nosotros)	p**o**demos	qu**e**remos
(vosotros)	p**o**déis	qu**e**réis
(ellos/as)	p**ue**den	qu**ie**ren

Grammar: Direct Object Pronouns
Preterite
Perdí el móvil. Lo perdí.
I lost my mobile I lost it

Present
Leo libros. Los leo.
I read books. I read them.

Future
Voy a perderlo or **Lo voy a perder.**
I'm going to lose it.

👵 🤪 🐘 ❌ 🍽 Curriculum Connections:
- ☐ O
- ☐ C
- ☐ R
- ☐ Descriptions of events:
Who with? What? When? Where? Why?
- ☐ N
- ☐ F

Key Questions:	**¿Qué vamos a hacer este fin de semana?** What are we going to do this weekend? **¿Qué hiciste el fin de semana pasado?** What did you do last weekend? **¿Qué pasó el fin de semana pasado?** What happened last weekend?

Cultural links :	**Los lugares abiertos** (outdoor spaces)	**La plaza**	**El parque**	**La playa**

Using three time frames: past, present and future ⌛

-ar verbs	preterite (simple past)		-er & -ir verbs		near future	
(yo)	gan**é**	I won	com**í**	I ate	**voy a** jugar	I'm going to play
(tú)	gan**aste**	you won	com**iste**	you ate	**vas a** jugar	you're going to play
(él / ella)	gan**ó**	s/he won	com**ió**	s/he ate	**va a** jugar	s/he's going to play
(nosotros)	gan**amos**	we won	com**imos**	we ate	**vamos a** jugar	we're going to play
(vosotros)	gan**astéis**	you won	com**íste**	you ate	**vais a** jugar	you are going play
(ellos/as)	gan**aron**	they won	com**ieron**	they ate	**van a** jugar	they are going to play

preterite (simple past)
Irregular verbs: **ir*** (to go) and **ser*** (to be)

I went	**fui**	I was
you went	**fuiste**	you were
s/he went	**fue**	s/he was
we went	**fuimos**	we were
you went	**fuistéis**	you were
they went	**fueron**	they were

hacer -> hice I did   **tener -> tuve** I had

Using three time frames: past, present and future ⌛

	-ar verbs **present tense**		-er verbs **present tense**		-ir verbs **present tense**	
(yo)	gan**o**	I win	com**o**	I eat	viv**o**	I live
(tú)	gan**as**	you win	com**es**	you eat	viv**iste**	you live
(él / ella)	gan**a**	s/he wins	com**e**	s/he eats	viv**í**	s/he lives
(nosotros)	gan**amos**	we win	com**emos**	we eat	viv**imos**	we live
(vosotros)	gan**áis**	you pl. win	com**éis**	you pl. eat	viv**ís**	you live
(ellos/as)	gan**an**	they win	com**en**	they eat	viv**ieron**	they live

present tense
Irregular verbs: **ir*** (to go) and **ser*** (to be)

I go	**voy**	I am	**soy**
you go	**vas**	are	**eres**
s/he goes	**va**	s/he is	**es**
we go	**vamos**	we are	**somos**
you go	**vais**	you are	**sois**
they go	**van**	they are	**son**

hacer* - **hago** I do   **tener*** - **tengo** I have

KEY VOCABULARY

adjectives	*temporal adverbs*
soy una persona..	**paso... horas al día** I spend...
soy.. I am.. **es..** s/he is..	**siempre** always
bueno/a good	**todo el tiempo** all the time
positivo/a positive	**todos los días** every day
práctico/a practical	**muchas veces** often
tímido/a shy / timid	**de vez en cuando** time to time
trabajador/a hardworking	**a veces** sometimes
optimista optimistic	**(casi) nunca (**almost) never
creativo/a creative	**una vez por semana** once a week
tranquilo/a calm / quiet	**los fines de semana** weekends
verbal phrases	*verb + infinitive*
mando / recibo mensajes I send / receive messages	**(No) me interesa (nada)..** I'm (not) interested in (at all)
Leo las noticias I read the news	**(No) Me gusta..** I (don't) like
Saco fotos I send photos	**Me encanta..** I love
Grabo videos I make videos	**Prefiero...** I prefer
Uso apps como I use apps like	**compartir imágenes** share messages
hago compras I shop	**ver videos** watch videos
Soy adicto a I am addicted to	**ver series y películas** watch series and films
juego al I play	**leer libros** read books
practico / hago I do	**ir a conciertos** go to concerts
(el) baile / ciclismo / deporte dance / cycling / sport	**jugar al** to play
(el) fútbol / baloncesto / tenis football / basketball / tennis	**practicar / hacer** to do
	salir con amigos to go out
(la) natación / gymnasia swimming / gymnastics	**montar a caballo** horseride
	bailar to dance

What will I study in this topic?	☐ 1: Cultura: Talking about Spanish sports stars ☐ 2: Talking about life online ☐ 3: Talking about sports and free-time activities
What will I be able to do by the end of this topic?	Talk about national & global events Discuss a cultural festival in detail Consider music festivals

Grammar: Adjectival Agreement

✓ Most Spanish **adjectives** come after the noun they describe!

✓ Adjectives change to **agree with** (match) the gender of the noun they describe

Podemos ver **una fiesta animada**
We can watch **a lively festival**

Grammar: El presente (present tense)

✓ The present tense describes what is happening now, things that are always true as well as habitual actions

✓ It has a set of **regular endings**

yo	habl**o**	com**o**	viv**o**
tú	habl**as**	com**es**	viv**es**
él/ella	habl**a**	com**e**	viv**e**
nosotros	habl**amos**	com**emos**	viv**imos**
vosotros	habl**áis**	com**éis**	viv**ís**
ellos/ella	habl**an**	com**en**	viv**en**

Grammar: Verb + infinitive

✓ An **infinitive verb** is a base verb ending in **-ar** (nad**ar**), **-er** (com**er**), or **-ir** (viv**ir**)

✓ **Verb** + **infinitive** explains where the first verb is **conjugated**, the following verb is an **infinitive**

Los eventos globales <u>sirven</u> para <u>unir</u> la gente
verb + infintive
Los partidos <u>pueden</u> <u>formentar</u> el respeto

Grammar: What makes a verb regular?

✓ A **regular verb** is a verb that has predictable endings. The verbs habl**ar**, com**er** and viv**ir** are **regular**.

✓ An **irregular verb** doesn't follow the same pattern as a **regular verb**

hac**er** = to do (hacer is an *irregular verb*)
yo **hago**   nosotros **hacemos**
tú **haces**   vosotros **hacéis**
él / ella **hace**   ellos / ellas **hacen**

SUBJECT: LANGUAGES: SPANISH

TOPIC 5: Free time 1

YEAR: 9

SEMESTER: 2

Key Questions:	¿Qué haces con tu móvil / ordenador / portátil / dispositivo? What do you do with your phone / computer / laptop / device? **¿Qué actividades te gusta hacer?** What activities do you like to do? **¿Qué te gusta hacer en tu tiempo libre?** What do you like to do in your free time?			
Cultural links :	**los pasatiempos de los jóvenes españoles**	**los deportes**	**la vida digital**	**las actividades culturales**

Numbers up to 1000

10	diez	60	sesenta	101	ciento uno	600	seiscientos
20	veinte	70	setenta	200	doscientos	700	setecientos
30	treinta	80	ochenta	300	trescientos	800	ochocientos
40	cuarenta	90	noventa	400	cuatrocientos	900	novecientos
50	cincuenta	100	cien	500	quinientos	1000	mil

For numbers in Spanish there is only one '**and**' (= **y**)

278
doscientos setenta **y** ocho

1725
mil setecientos treinta **y** cinco

👴👧🐘❌🍽 Curriculum Connections:
- ☐ O
- ☐ C
- ☐ R
- ☐ **Description** detailed descriptions of events
- ☐ N
- ☐ **Figurative** language of sports

Spanish in context

Desde mi punto de vista, los eventos deportivos sirven para promover la participación.
From my point of view, sporting events serve to promote participation.
Este festival es muy famoso, se celebra en verano y se puede acampar en un camping.
This festival is very famous, it takes place in summer and you can camp on a campsite.
Una desventaja de los Juegos Olímpicos es efecto del dopaje sobre ciertos deportistas.
A disadvantage of the Olympic Games is the effect of doping on certain athletes. **Me gusta**
Shakira porque sus canciones son originales y sus letras son bastante imaginativas.
I like Shakira because her songs are original and her lyrics are quite imaginative.

Figurative Language
"Estar en la recta final" 🏁
To be in the final stretch / almost finished
"Jugar en equipo" 🤝
To work together / "to play as a team")
"Dar en el blanco" 🎯
To hit the target / get something exactly right
"Ser un fuera de serie" 🌟
To be outstanding ("a one-of-a-kind player")

KEY VOCABULARY

los eventos globales →	global events
los juegos olímpicos de inverno →	the winter olympics
verbs	**nouns**
Sirven para… they serve to…	**todo el mundo** everyone
Nos gustaría… we would like	**el turismo** tourism
poder [o :ue] to be able	**los valores de** the values of
Podemos… we can…	**el orgullo** pride
(**deber** to have to)	**el respeto** respect
Debemos… we must…	**la disciplina** discipline
promover (to) promote	**la gente** the people
elevar (to) raise / elevate	**el dopaje** doping
unir (to) unite	**la solidaridad** solidarity
transmitir (to) transmit	**el riesgo** risk
celebrar (to) celebrate	**el empleo** employment
ganar (to) win	**un campeonato** a championship
correr (to) run	**un partido** a match
parecer (to) seem	**una temporada** a season
formentar (to) bring about	**Festivals**
respetar (to) respect	**el encierro** bull running
adjectives	**los toros** bulls
orgulloso proud	**los desfiles** parades
peligroso dangerous	**una plaza de toros** bullring
animado lively	**la canción** the song
valiente brave	**la empieza** the start
contra against	**el final** the end
a favor in favour	**los fuegos artificiales** fireworks

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él / ella **hace**	ellos / ellas **hacen**

Key Questions:	**¿Qué evento deportivo internacional es el más importante para ti?** What event international sport is the most important for you? **¿Qué piensas de los eventos deportivos internacionales?** What do you think of international sports? **¿Te gustaría asistir a una fiesta de música en el extranjero?** Would you like to go to a music festival abroad?

Cultural links :	**los Juegos Olímpicos de Invierno**	Spanish athletes likely to medal and their sport:		Februario 6- Februario 22
		Queralt Castellet - Halfpipe de snowboard **Lucas Eguibar** - Snowboard cross	**Núria Pau** - Esquí alpino **Oriol Cardona** - Esquí de montaña	MILANO CORTINA 2026

Present tense verbs with irregular 'I' forms in present tense

'go' verbs	*'cer' / 'cir' verbs*	*completely irregular verbs*
hacer → **hago** I do	*conocer* → **conozco**	dar → **doy** I give
poner → **pongo** I put	I know	saber → **sé** I know
salir → **salgo** I go out	*conducir* → **conduzco**	ver → **veo** I see / watch
tener → **tengo** I have	I drive	caber → **quepo** I fit
venir → **vengo** I come	*producir* → **produzco**	ser → **soy** I am (*permanent*)
decir → **digo** I say	I produce	estar → **estoy** I am
oír → **oigo** I hear	*traducir* → **traduzco**	(*temporary / location*)

👵 😀 🐘 ❌ 🍽 **Curriculum Connections:**
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Figurative Language

"Estar en la recta final" 🏁
To be in the final stretch / almost finished
"Jugar en equipo" 🤝
To work together / "to play as a team")
"Dar en el blanco" 🎯
To hit the target / get something exactly right
"Ser un fuera de serie" 🌟
To be outstanding ("a one-of-a-kind player")

WORD REVOLUTION

Artificial Intelligence (AI)	Technology that enables machines to mimic human intelligence.
Machine Learning	A type of AI where systems learn from data to improve performance.
Neural Network	A model inspired by the human brain, used in deep learning.
Automation	The use of technology to perform tasks without human input.
Ethics	Moral principles that govern the use and impact of technology.
Digital Artifact	A digital product created for a specific purpose (e.g., website, video).
Design Specification	A detailed plan outlining the purpose and features of a product.
User Interface (UI)	The part of a system users interact with.
Multimedia	The use of text, images, sound, and video in digital content.
Evaluation	Assessing how well a product meets its intended goals.
Phishing	A scam where attackers trick users into revealing personal information.
Scamming	Fraudulent schemes to deceive and exploit users online.
Data Protection	Measures to safeguard personal and sensitive information.
Firewall	A security system that controls incoming and outgoing network traffic.

What will I study in this topic?

In this topic, you will explore how artificial intelligence is used in the real world and consider the ethical questions it raises. You will learn how to plan, design, and create digital artifacts for a specific purpose, using a range of tools and media. You will also take part in a group project on web security, where you will investigate online risks such as phishing, scams, and data breaches. You will develop your understanding of online safety. These topics will help you build confidence in using technology creatively and responsibly, while preparing you for more advanced computing and IT work in Key Stage 4.

What will I be able to do by the end of this topic?

By the end of this topic, you will be able to explain how artificial intelligence is used in different industries and discuss its ethical implications. You will have planned and created a digital artifact that meets a specific need, using appropriate tools and techniques. You will also have worked as part of a team to research and present findings on web security threats, including how to recognise and protect against scams and phishing. You will be able to apply your knowledge to stay safe online and make informed decisions about your digital footprint.

Who will be affected by AI?

AI will change almost every type of job.
Repetitive tasks (e.g., data entry, customer service, factory work) may be automated.
AI will support complex jobs like medicine, law, and finance.
Creative jobs (design, writing, music) will use AI as a tool, not a replacement.
Driving and delivery may change with self-driving vehicles.
AI will also create new jobs we don't yet know about.

My email address: _____@bentonpark.net

My computer log in: _____

My EduCake user name: _____

What is Artificial intelligence?

Artificial Intelligence (AI) is the ability of a computer or machine to perform tasks that typically require human intelligence. These tasks include recognising speech, making decisions, solving problems, and understanding language. A key part of AI is **machine learning**, where computers learn from data and improve their performance without being explicitly programmed. For example, a machine learning system can learn to recognise images of animals by analysing thousands of examples.
A more advanced form of AI is the **Large Language Model (LLM)**, like ChatGPT. LLMs are trained on vast amounts of text and can understand and generate human-like language. They are used in chatbots, translation tools, and writing assistants. AI is already part of everyday life—from voice assistants to recommendation systems—and is shaping the future of work, communication, and technology.

Key Questions:	1. How is artificial intelligence used in everyday life, and what are its benefits and limitations? 2. What ethical issues arise from the use of AI, and how can we address them responsibly? 3. What steps are involved in planning, designing, and creating a digital artifact? 4. How can we evaluate whether a digital artifact meets its intended purpose effectively? 5. What are the most common online threats to personal data, and how can we protect ourselves from them? 6. How do scams like phishing work, and what strategies can we use to avoid falling victim to them?
Curriculum Connections:	This semester builds on key skills from Years 7–9, such as AI awareness, digital design, and online safety. You explore how AI is applied in real-world contexts, preparing you for topics like data use and ethical computing in both OCR J277 and BTEC Digital IT. The creation of digital artifacts develops planning and design skills introduced in earlier multimedia units, linking directly to BTEC coursework. The web security project deepens understanding of online risks, reinforcing e-safety knowledge and introducing cybersecurity threats and protections—core to OCR J277's Unit 6. These topics strengthen digital literacy, problem-solving, and collaboration, bridging KS3 learning with the technical and analytical demands of KS4 Computing and IT.

Top Tips for this semester

- **Be curious about AI –** Explore how it's used in apps, games, and websites you already use.
- **Think ethically –** Ask yourself how AI decisions might affect people differently.
- **Plan before you create** – Sketch or outline your digital artifact before starting.
- **Use the right tools –** Choose software that suits your project's purpose and audience.
- **Stay alert online –** Don't click on suspicious links or share personal info with strangers.
- **Use strong passwords –** Combine letters, numbers, and symbols, and don't reuse them.
- **Work as a team –** Share ideas and divide tasks fairly in your web security project.
- **Ask for help –** If something doesn't make sense, talk to your teacher or classmates.
- **Keep learning –** Technology changes fast—stay updated and keep experimenting!

Where can this take me?

The skills you develop can lead to exciting careers in technology. Understanding **AI** could lead to roles like *Machine Learning Engineer* or *Data Scientist*, with starting salaries around **£35,000**, rising to over **£70,000** with experience.

Creating **digital artifacts** builds skills for careers in *Web Design*, *App Development*, or *Digital Marketing*, where salaries typically range from **£25,000 to £50,000**.

Your work on **web security** connects to careers in *Cybersecurity*, such as *Security Analyst* or *Ethical Hacker*, with starting salaries around **£30,000**, and experienced professionals earning **£60,000+**. These roles are in high demand and offer opportunities to work in many industries—from gaming and healthcare to finance and education.

To get the best answers from Copilot, it helps to be clear, specific, and polite. Here are some tips:

- **Be specific** – Instead of asking "Tell me about AI," try "Can you explain how AI is used in healthcare?"
- **Give context** – If you're working on a project or homework, say so. For example: "I'm doing a project on cybersecurity—can you help me explain phishing?"
- **Ask one thing at a time** – If you have lots of questions, break them into smaller parts.
- **Use full sentences** – It helps Copilot understand exactly what you need.
- **Be curious!** – Copilot works best when you explore ideas, ask follow-up questions, and think critically.

SUBJECT: Computer Science	YEAR: 9
TOPIC: Machine learning and web security	SEMESTER: 2

How will I be assessed?	At the end of each unit of work you will have an end of unit assessment on the computer. You will also have assessed homework through Educake. As the "Web Security" project is completed in small groups, you will be assessed on the visual, factual, and functional quality of the finished product, as well as the suitability for the target audience. You will receive an ATL grade for each unit of work that reflects your attitude and effort for the topic.

Setting out a group project.

- **Plan together** – Start by agreeing on your goals, deadlines, and who will do what. As an example, please agree what the end product is you're going to make, then plan how you're going to get there. Everyone should have a part to play in the "shared vision".
- **Communicate clearly** – Use respectful language and listen to everyone's ideas. Often, the team members with the loudest voices have the most say, but everyone has great ideas, so make sure they are all listened to.
- **Stay organised** – Keep track of tasks and check in regularly to stay on schedule. Agree how long a task will take and *stick to the timescales!*
- **Be flexible** – If someone is struggling, help out and adjust plans if needed. Being in a team is all about collaborative working.
- **Reflect as a team** – After the project, discuss what went well and what could improve. Knowing the best way to approach a similar project if you were to do it again is great learning.

Using the technology

- **OneDrive** – Store and share files securely with your group. You can share these so that others in the group can access them even when you're not there.
- **Word Online / PowerPoint Online** – Work on the same document or presentation at the same time. This can really speed up the delivery of your project.
- **Teams** – You can use this to have calls with your teams or share documents. You will need to hand in your work through Teams when completed.
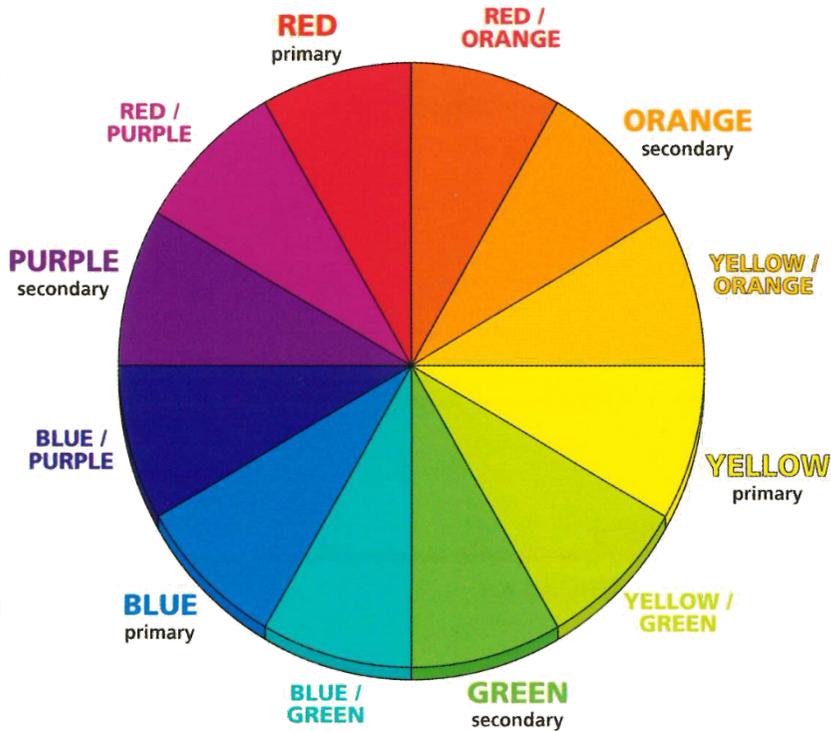
Reflection questions

1. Can you explain how AI is used in something you've interacted with recently (e.g., a phone app or website)?
2. What are some of the benefits and risks of using AI in everyday life?
3. What steps did you take to plan and create your products?
4. How did you make sure your product met its intended purpose?
5. What are some common online threats, and how can you protect yourself from them?
6. What did you learn from working in a group on the web security project?
7. Which topic this semester did you find most interesting, and why?
8. How do you think the skills you've learned could help you in the future?

Further reading

1. ***Hello World: How to Be Human in the Age of the Machine*** by Hannah Fry
   A brilliant introduction to how algorithms influence decisions in areas like healthcare, policing, and social media—written in a very readable style.

2. ***You Are Not a Gadget*** by Jaron Lanier
   A thought-provoking look at how digital technology affects identity, creativity, and society. Some parts may be more advanced, but selected chapters are great for discussion.

3. ***The Big Data Survival Guide*** by David McCandless (visual content)
   Infographics and short explanations about how data is collected and used—ideal for visual learners.

4. ***AI for Kids*** by Dale Lane
   A hands-on, friendly introduction to artificial intelligence, with examples and activities that show how AI is already part of daily life.

THE COLOUR WHEEL

RED primary
RED / ORANGE
ORANGE secondary
YELLOW / ORANGE
YELLOW primary
YELLOW / GREEN
GREEN secondary
BLUE / GREEN
BLUE primary
BLUE / PURPLE
PURPLE secondary
RED / PURPLE

COMPLEMENTARY COLOURS

The colours opposite each other on the wheel are called complementary colours.

RED is opposite GREEN
BLUE is opposite ORANGE
YELLOW is opposite PURPLE

If a colour is surrounded by its complementary colour it will appear stronger and brighter.
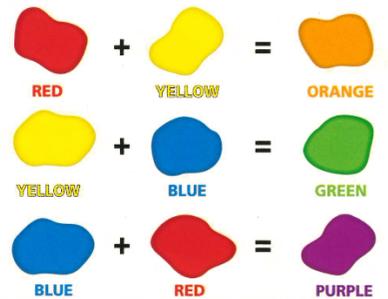
PRIMARY COLOURS

There are THREE PRIMARY COLOURS.
These are pure colours which cannot be made by mixing other colours.

RED   YELLOW   BLUE

SECONDARY COLOURS

Secondary colours are made by mixing each primary colour with one other primary colour.

PRIMARY	+	PRIMARY	=	SECONDARY
RED	+	YELLOW	=	ORANGE
YELLOW	+	BLUE	=	GREEN
BLUE	+	RED	=	PURPLE

TERTIARY COLOURS

TERTIARY COLOURS CONTAIN A MIX OF ALL THREE PRIMARY COLOURS. A PRIMARY, MIXED WITH ITS COMPLEMENTARY COLOUR EQUALS A TERTIARY COLOUR

PRIMARY + COMPLEMENTARY = TERTIARY

Use mostly blue. Add its complementary colour (orange). This produces a grey-brown.
BLUE + RED + YELLOW = ORANGE = GREY-BROWN

Use mostly red. Add its complementary colour (green). This produces a red-brown.
RED + BLUE + YELLOW = GREEN = RED-BROWN

Use mostly yellow. Add its complementary colour (purple). This produces a yellow-brown.
YELLOW + RED + BLUE = PURPLE = YELLOW-BROWN
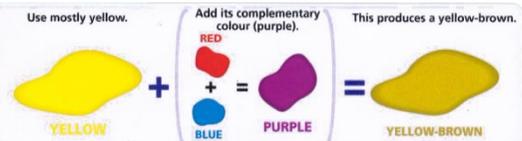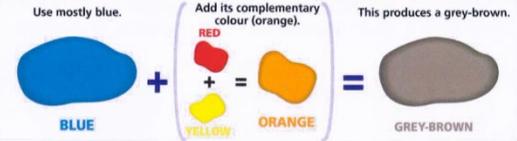
By using varying amounts of each colour, an infinite number of shades are possible. The more colours are mixed on the palette, the less luminous the result.
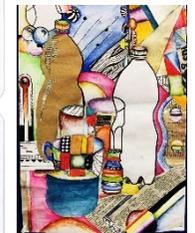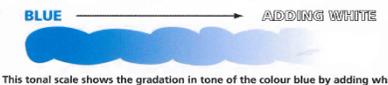
TONE

This tonal scale shows the gradation of dark tones, mid tones and light tones.
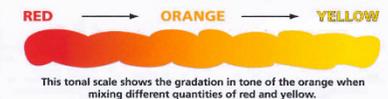It shows the passage from black through grey to white.

DARK → MID → LIGHT
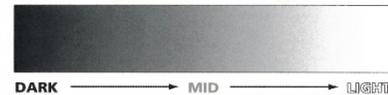
TINTING AND SHADING

Tinting and shading refer to making a colour lighter by adding white (tinting) or darker by adding black (shading).

BLUE → ADDING WHITE
This tonal scale shows the gradation in tone of the colour blue by adding white.

RED → ADDING BLACK
This tonal scale shows the gradation in tone of the colour red by adding black.
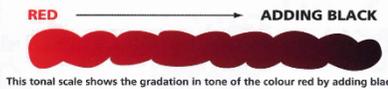
TINTING AND SHADING WITH COLOUR

RED → ORANGE → YELLOW
This tonal scale shows the gradation in tone of the orange when mixing different quantities of red and yellow.

WORD REVOLUTION VOCABULARY

PORTRAIT	VIEWPOINT	GRAPHIC ART
OBSERVATION	SYMMETRICAL	ILLUSTRATION
FACIAL -	STILL-LIFE	FINE ART
PROPORTION	ELLIPSE	ICONOGRAPHY
EXPRESSION	VERTICAL	SYMBOLISM
TONE	DEPTH	ZENTANGLE
TINT	PROPORTION	MARK-MAKING
SHADE	ACCURACY	HATCHING
CUBISM	LIMITED PALETTE	CROSS HATCHING
CONTOUR	MONOCHROME	STIPPLING
DISTORTION	COLLAGE	TONAL RANGE
GRADATION	DEFINE	COMPOSITION
COMPLIMENTARY	COMPOSITION	CONTEXTUAL
- COLOUR	DIAGONAL	ANALYSIS
	METHOD	PERSONAL
	PERSPECTIVE	LAYERING
		VISUAL IDENTITY

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PORTRAIT

HOW TO DRAW A PORTRAIT - A STEP BY STEP GUIDE

STEP 1

top of the head

median line

bottom of the face

- Draw an egg-shaped oval.
- Split the oval in two halves with a horizontal line (median line).

STEP 2

line of symmetry

five ovals across the median line

- Draw a vertical line of symmetry.
- Draw 5 ovals across the median line.
- Two of the ovals become the eyes.

STEP 3

width of the nose

bottom of the nose

- The nose is the width of the centre oval.
- The base of the nose lies halfway between the median line and the bottom of the face.

STEP 4

bottom of the mouth

- The mouth lies above a line halfway between the base of the nose and bottom of the face.
- The bottom lip is usually fuller than the top.

STEP 5

top of the ear

bottom of the nose

- The ears are bigger than you would imagine.
- They are drawn from the median line to just below the base of the nose line.

STEP 6

width of the mouth and distance between the centre of the eyes

- Add the eyebrows which are thicker in the middle and thinner on the outside of the face.
- Add a hair style of your choice.

CIRCLES & ELLIPSES

An ellipse is a circle tilted away from you - a circle in perspective.
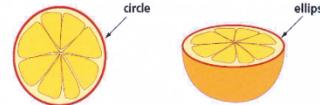
circle   ellipse

HOW A CIRCLE BECOMES AN ELLIPSE

A circle can be drawn in a square.

By tilting the square, it is now in perspective.
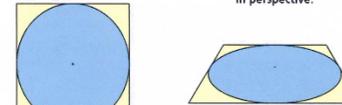
The centre of the square is also the centre of the circle.

The circle has now become an ellipse.

HOW TO DRAW AN ELLIPSE

1. Draw a square in perspective.

2. Find the perspective centre of the square by drawing diagonal lines.

3. Mark the perspective centre of each side of the square.

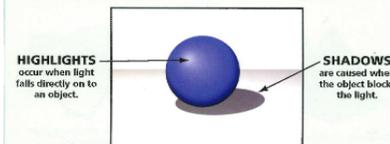4. Now draw an ellipse so the curve touches each of the four sides.
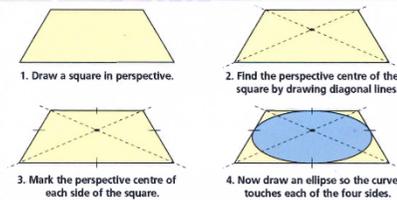
LIGHT AND SHADE
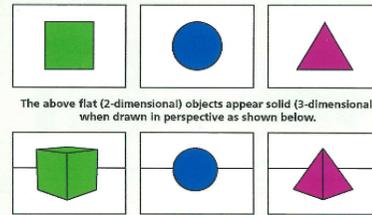
The above flat (2-dimensional) objects appear solid (3-dimensional) when drawn in perspective as shown below.
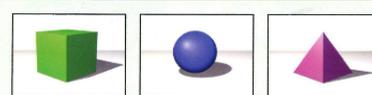
Light helps show the volume of an object. When light falls on an object, shadows and highlights occur.

HIGHLIGHTS occur when light falls directly on to an object.

SHADOWS are caused when the object blocks the light.

ANALYSING IMAGES

### CONTENT
- What is the image about?
- Is it a representational or an abstract piece of work?

Pablo Picasso (1881-1973) Portrait of Dora Maar (1937)

- Are there any hidden meanings in the picture?

FORM
- What colours have been used?
- Is it realistic, harmonious or contrasting?

Jacoba van Heemskerck (1876-1923) Landscape (1915)

- Are there any recurrent shapes, lines, forms, patterns or textures?

PROCESS
- How was the piece produced and of what was it made?

Jackson Pollock (1912-1956) Number 33 (1949)

- What techniques and processes were used?

MOOD
- Does the work capture a mood, feeling or emotion?

Joseph Mallord William Turner (1775-1851) Pembroke Castle (1801)

- What techniques has the artist used to convey the mood?

FORMAL ELEMENTS

THE FORMAL ELEMENTS ARE THE BASIC COMPONENTS FROM WHICH TWO-DIMENSIONAL DESIGNS ARE COMPOSED

LINE
Connection between two points.

SHAPE
Created by a closed line or by a solid colour.

TEXTURE
Visual and tactile surface.

COLOUR
Primary, secondary, tertiary, complementary colours.

TONE
Shadows, mid-tones, highlights.

PATTERN
Natural, man-made, repeat or mirrored.
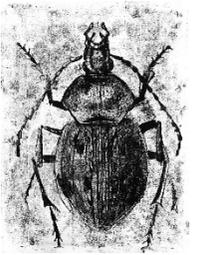
WORD REVOLUTION

🎭 **Characterisation**	The way an actor uses voice, body, and emotions to show what a character is like.
💬 **Subtext**	The hidden meaning behind what a character says or does — what they really feel or think.
🏠 **Naturalism**	A style of acting and performance that tries to look and feel like real life.
🎭 **Stylised Theatre**	Theatre that uses exaggerated movement, voice, or design instead of trying to look real.
🤝 **Ensemble Work**	When a group of actors work closely as a team, with no one person being more important than the others.
💡 **Stimulus**	Something that inspires an idea for a drama — like a picture, word, sound, or object.
🗣 **Genre**	A style of theatre, for example Musical Theatre
❤️ **Emotional Truth**	When an actor shows real, believable feelings that connect with the audience.
💃 **Practitioner**	Someone who creates, performs, or teaches theatre using a specific approach or style.
🧠✨ **Devising**	Creating your own piece of drama from scratch, often in a group, instead of using a script.

🎭 **Devising Challenge Task – The Ticking Clock:** In a small group, create a short drama scene (2–3 minutes) using the idea of a ticking clock. The clock should represent something deeper, like pressure, fear, or time running out. Your scene should have a clear story, show strong emotions through movement and voice, and include everyone in the group. Try to show the meaning of the clock without using a real one and be ready to explain what your scene is about.

What will I study in this topic?

- I will develop deeper, more complex characters using emotion and backstory.
- I will learn to break down scripts and find hidden meanings (subtext).
- I will explore performance styles like naturalism and stylised theatre.
- I will work in groups to create original drama based on themes or issues.
- I will perform comedy scenes and monologues with emotional depth.

What will I be able to do by the end of this topic?

- I can perform believable characters with emotion and strong physical choices.
- I can analyse and perform scripts with clear understanding of subtext.
- I can switch between acting styles and adapt to different genres.
- I can collaborate in a group to create and perform original work.
- I can deliver monologues and comedy scenes with skill and confidence.

Naturalistic Theatre Performance

- Characters behave and speak like real people in believable, everyday situations.
- Dialogue is natural and realistic.
- Actors create detailed backstories to understand their character's thoughts and emotions.
- Performers react truthfully on stage, even when they aren't speaking.
- Sets, props, and costumes are realistic and match the real world of the play.

Devising and Using a Stimulus

- Start by discussing what the stimulus makes you think or feel.
- Brainstorm ideas as a group and decide on a clear theme or message.
- Create characters, settings, and scenes based on your chosen idea.
- Use improvisation to try out different moments and develop the story.
- Rehearse, and shape the performance to make it clear and engaging for an audience.

Brecht and Epic Theatre

- Bertolt Brecht was a German playwright and director.
- He created Epic Theatre, which aimed to make the audience think, not just feel.
- Brecht used the alienation effect to stop emotional immersion.
- Techniques include direct address, placards, songs, narration, and visible scene changes.
- His goal was to encourage audiences to question society and politics.

Stimulus for drama could be....
- Pictures
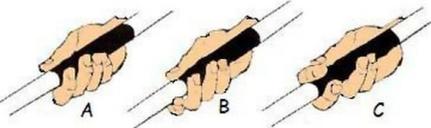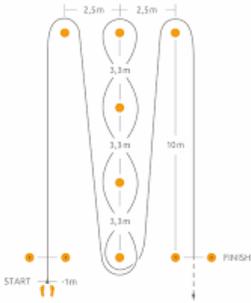- Props
- Scripts
- Location

WORD REVOLUTION

Agility	*The ability to change body position and direction quickly and effectively while maintain control.*
Cardiovascular Endurance	*The ability of the heart and lungs to supply oxygen to the muscles during sustained physical activity.*
Acceleration	*The rate at which an athlete changes their velocity over time.*
Baton exchange zone	*A specific area on the track where the baton must be passed from one runner to the next.*
Backstop	*In rounders, a specific fielding position that is responsible for fielding behind the batter.*
Donkey drop	*A high, looping ball delivery.*
Drive (A)	*A straight-batted shot played with a vertical bat, moving the front foot forward to meet the ball.*
Cut (B)	*A cross-batted, attacking shot played on the side of the batter's body away from their legs.*
Flick (C)	*A batting shot played on the leg side where the batter uses a strong, rapid movement of wrists.*
Reaction time	*the amount of time it takes for a person to respond to a stimulus.*
Articulating Movements	*Movement of joints in the body. These movements allow for actions such as bending, rotating, or extending limbs during physical activity*

PB Records	
Event	**Time/Distance**
100m	
200m	
Relay	
Javelin (A)	
Javelin (B)	
Javelin (C)	
High jump	

A

B

C

Athletics - Field	Athletics - Track	Rounders	Cricket	Fitness	Dance
Javelin: - Firm grip, relaxed - Javelin rests along forearm - Throw with straight arm - Release at 45 degree angle - Follow through with arm and body rotation **Run up:** - Final steps should be quick and powerful - Smooth transition **Grips:** **Grip A – Thumb and first finger** **Grip B – Thumb and second finger** **Grip C – Forefinger and middle finger** **High Jump:** - Smooth curved run leaning inward - Take-off from inside foot - Drive arms and outside knee upward - Maintain upright posture - Rotate hips and shoulders mid-air to turn back to the bar - Lead with head and shoulders - Arch back to clear bar - Land on upper back with knees bent	**Sprint start:** - Front foot flat, rear foot on toes (plantar-flexion) - Hands shoulder-width apart, fingers behind line - Drive out low and fast - Push off both feet **Sprint technique:** - Head neutral - Arms drive hip to chin, elbows at 90 degrees - Knees lift high - Push off the balls of the feet - Relax shoulders and face - Arms drive powerfully to assist leg movement - Explosive pushes **Sprinting on the bend:** - Lean slightly inward to counteract centrifugal force - Short strides to maintain control - Head and shoulders aligned with the curve - Drive arms forward	**Overarm throw:** - Side on to the target - Non throwing arm stretched out - Raise throwing arm at shoulder height with elbow slightly bent - Step towards target and release ball - Follow through **Low catc h:** - Cupped hand position - Bring hands into body - Watch the ball **Donkey drop:** - Underarm BOWL where ball is bowled high - Ball drops into the batter's hitting zone - Forces batter to hit upwards and makes it an easier catch	**Wicketkeeping:** - Stood behind the wicket - Role is to try and get the batters out **Bowling (spin):** - Spin is generated by the first and second fingers of bowling hand - The more revolutions put on the ball, the better chance of it turning - Turn the wrist and index finger to generate spin in a clockwise direction **Tactical play:** - Depending on the length of the ball's distance from the batter… **Do you play forward or back? Drive or defend?** - Fast bowls may require different shots - Fielders need to be placed differently	Cardiovascular endurance - 12minute cooper run Muscular strength – handgrip dynamometer Muscular endurance – 1-minute sit-up test Flexibility – sit and reach test Agility – Illinois agility test Speed – 30m sprint test Power - vertical jump test Balance – standing stork test Coordination – wall toss test Reaction time – ruler drop test.	**Choreography Techniques by Decade** 1980s: Focus on breaking, popping, and locking. Emphasize isolations, sharp movements, and floor work. 1990s: Introduce hip-hop freestyle, house, and rave styles. Teach groove-based movement and fluid transitions. 2000s: Explore krumping, street jazz, and commercial dance. Highlight expressive, high-energy, and stylized choreography. SCAN ME **Constructive Feedback** Use specific language when giving feedback (e.g., "Your arm isolations in the popping section could be sharper."). Encourage feedback on: Choreographic structure (beginning, middle, end) Use of space and levels Energy and commitment Synchronization in group work

SUBJECT: Design & Technology

YEAR: 9

TOPIC: Textiles

SEMESTER: 1 / 2

WORD REVOLUTION

Sustainability	To reduce the harm products cause the environment by considering how they are made, what materials they are made from and how they can be disposed of after use.
Annotate	To add labels and comments explaining an idea in full.
Evaluate	To judge how well something meets its purpose & suggest improvements
Properties (of materials)	How a material behaves (eg: is it absorbant, stretchy, strong, malleable)
Decorative Technique	A way of adding decoration to the surface of a textile product realistic
Sample	A practice version to test out the idea before creating the final piece
Applique	A technique where layers of fabric are applied to a larger piece to form decorative patterns or pictures.
Embroidery	Decorative sewing stitch technique.
Embellishment	A technique where decorative details are added such as button & beads.
Template	A guide that is traced around on to fabric before cutting out the pieces
Seam Allowance	The extra fabric between the sewing line and the cut edge
Seam	The line where two or more pieces of material are joined together

What will I study in this topic?

- The relevance of sustainability in design and as consumers
- How to decorate fabric using a range of sewing techniques
- How to create a 3D textiles product by making a template and using safe and accurate construction techniques
- How fabrics are made (their construction) and how that effects how they behave (their properties)

What will I be able to do by the end of this topic?

- Follow the design process: research, design, make and evaluate
- Use a range of specialist equipment safely and effectively including the sewing machine and fabric shears

Key Tools:

Needle

Thread

Sewing Machine

Pins

Fabric Shears

Curriculum Connections:

Builds upon earlier making skills & specialist knowledge in readiness for study at GCSE
- Developing ideas through sampling
- Safe and effective use of the sewing machine
- Testing and evaluating decorative techniques
- Understanding that fabrics have different properties and this impacts their suitability
- Understand the environmental issues associated with Textiles

Health & Safety

 Take care with sharp objects.

 Keep the room tidy to avoid trip hazards.

 Tie back long hair.
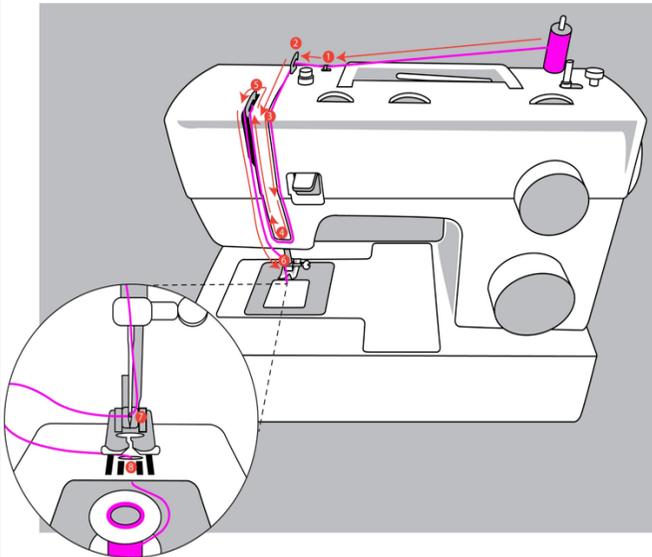
How will I be assessed?

 Design Ideas

 Practical outcomes

 End of unit test

Key practical skill: Threading the Sewing Machine

Follow the numbers 1-7 printed on the sewing machine, ensuring the thread also goes through the hole at the pointed end of the needle (point 7). There should be a second thread that comes up from the panel below the needle. This come from another, smaller spool of thread called the bobbin.

Decorative Techniques:

Applique: layer/s of fabric applied and stitched to base

Embellishment: adding buttons/sequins/beads

Embroidery: decorative stitch, eg: running, back, chain, cross-stitch

The 6Rs of Sustainability

RETHINK Always thinking 'do I really need this?', 'is there another way this could be done?'

RECYCLE Choose recycled and recyclable products. Take time to sort the rubbish!

REDUCE Reduce how much material we use, how much we buy & how much gets thrown away

REPAIR Before you throw away, can your product be fixed and it's life extended?

REUSE Don't just throw things away! Can you pass on to someone else or keep using in a different way?

REFUSE Change your habits! Check labels, refuse to buy products with poor sustainability. Refuse to just throw away and buy more.

QUICK 6 RESEARCH TASK: *How are companies being more sustainable?*

Which of the 6Rs are being demonstrated in the below examples?

Challenge: Can you find examples like these on any products you own?

Picture: 1   Picture: 2   Picture: 3   Picture: 4

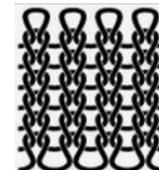## Specialist Technical Knowledge: Fabric Construction

Fabrics behave differently (have different **properties**) depending on how they are made. Knowing the construction of a fabric will help you choose the right fabric for the product you want to make.
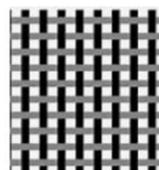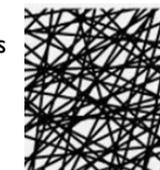
Woven
- Strong
- Smooth surface (good to print on)
- Rigid (no stretch)
- Fray when cut

Knitted
- Stretchy
- Warm
- Permanent patterns can be knitted into fabric
- Can ladder and edges curl when cut

Non/Woven
- Does not fray
- Can be permanently shaped using heat & pressure (eg: hat making)
- No stretch and least strong

SUBJECT: Design & Technology	YEAR: 9
TOPIC: Product Design	SEMESTER: 1 & 2

WORD REVOLUTION

Sustainability	Using resources in a way that meets current needs without harming the environment or reducing resources for the future.
Eco-friendly	Not harmful to the environment; designed to reduce pollution and waste.
Client	The person or group you are designing a product for.
User needs	The requirements and preferences of the person who will use the product.
Container home	A house built using shipping containers, often adapted for comfort and sustainability.
Accessibility	Design features that make a product or space usable for people with different abilities or needs.
Insulation	Material used to keep heat in or out of a building, improving energy efficiency.
Perspective drawing	A way of drawing objects so they appear three-dimensional and realistic, showing depth.
Functionality	How well a product or design works to meet its intended purpose.
Iterative design	A process of constantly improving a design through testing, feedback, and refinement.
Recycled materials	Items that have been used before and processed to be reused in new products.
Design specification	A clear list of requirements that a product must meet, based on the user's needs.
Low-impact living	A lifestyle that tries to reduce damage to the environment through choices like saving energy and reducing waste.
Innovation	A new idea or method that improves how something works or looks.

What will I study in this topic?	• How eco-friendly and sustainable homes are designed and built • The needs of different users and how design can meet those needs • How to sketch and develop ideas using 1-point perspective drawing • How to plan, make, and evaluate a model of an eco-container home
What will I be able to do by the end of this topic?	• Explain what makes a home sustainable and eco-friendly • Create design ideas that respond to a specific client's needs • Draw a container home in accurate 1-point perspective with annotations • Build and evaluate a 3D model that reflects your design and client brief

Key Tools:

Try Square

Scroll Saw

Coping Saw

Tenon Saw

Curriculum Connections:

Builds on your practical and drawing skills from Year 7 and 8 to create more detailed designs.

Introduces sustainability and client needs – key ideas for GCSE projects.

Follows the same design process used in the GCSE NEA, helping you get ready for Year 10.

Health & Safety

 Wear goggles when operating machinery

 Tie back long hair

 Wear an apron.

How will I be assessed?

 Design Ideas

 Practical outcomes

 End of unit test

Key drawing skill:
1 point perspective

Step 1
Draw the horizon and vanishing point

Step 2
Draw the front of the shape

Step 3
Draw lines to the vanishing point

Step 4
Add lengths to show depth

Why is energy efficiency important for housing?

They help reduce energy bills – using less electricity and gas saves money.

They are better for the environment – using less energy means less pollution and fewer greenhouse gases.

They keep homes more comfortable – better insulation means homes stay warmer in winter and cooler in summer.

They reduce demand on power stations – helping the country avoid blackouts and reduce fuel imports

The needs of the client

Accessibility – e.g. ramps, wide doorways, or step-free access for wheelchair users or people with mobility issues.

Comfort – spaces that are warm, well-lit, ventilated, and suitable for everyday living.

Privacy – areas for sleeping, relaxing, or working without being disturbed.

Storage – enough space to safely store personal belongings, tools, or equipment.

Personal lifestyle needs – e.g. a space for pets, hobbies, working from home, or family time.

Evaluation Tool - Pugh's Plates

Functionality – Does the design meet the client's needs and work well in daily use?

Aesthetics – Does the design look good and suit the client's style or preferences?

Ease of manufacture – Is the design easy to build using the tools and materials available?

Space efficiency – Does the design make good use of space, especially in a small container home?

Cost – Is the design affordable and does it make good use of materials?

Sustainability – Does the design use eco-friendly materials and reduce environmental impact?

Safety – Is the design safe for the user and safe to make in the workshop?

Innovation – Does the design include any creative or original ideas that make it stand out?

Moodboard - Ideas for inspiration!

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