



ALL SAINTS'

CATHOLIC VOLUNTARY ACADEMY

Year 7 Absolutes



Opportunity . Achievement . Success

Fortitudo House

Term 1 2025-26

NAME:

FORM:

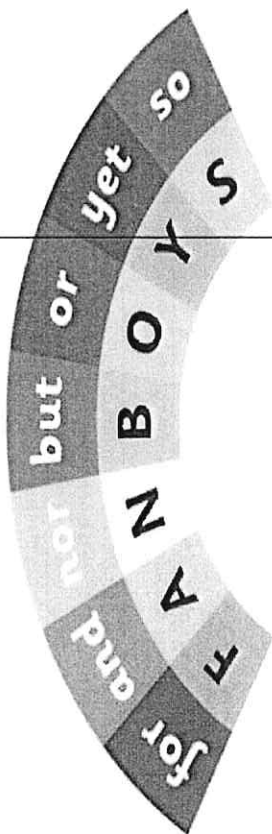
Y7 SPAG Absolute

Word Classes		Punctuation	
Proper noun	A naming word - Chris, East Anglia, Nimbus3000 - needs a capital initial letter.	Capital letter	An upper case letter used after a full stop to begin a sentence or to indicate a proper noun.
Concrete Noun	A thing you can see -you can put 'the' or 'a' before a noun e.g 'the table'.	Full stop	. Used to mark the end of a sentence.
Abstract Noun	The name of something you can't see e.g: hate/love/creativity/passion. Again, can put 'the' or 'a' in front: The <u>love</u> I feel...	Comma	- Lists e.g: I bought several things from the shop: books, pens and pencils. -before a FANBOYS conjunction to join two independent clauses in a compound sentence. The cat sat on the mat and the dog barked. - sentences which start with a fronted adverbial (SPACED) starts Because it was raining, we ran for cover. - embedded clauses where the clause could be removed The boy, who I disliked intensely, pulled my hair.
Adjective	A word that is used to describe a noun e.g. 'The <u>tall</u> teacher talked to the class.'	Colon	: Used to precede lists, expansions or explanations e.g: I bought several things from the shop: books, pens and pencils.
Verb	A word used to describe an action, state or occurrence. What is being done? E.g: hit/jump/feel/believe	Semi colon	; Used to join two related independent clauses e.g: I ate too much pizza; I felt very sick.
Modal verb	Verbs used to express possibility or certainty (may/might/must/will/shall).	Dash	Also to separate longer items in a list. Used after an independent clause or parenthetically, instead of commas for an embedded clause. Used to emphasise the clause after the dash. You are late - this is the third time!
Adverb	A word that is used to modify a verb e.g. 'He ran quickly.'	Brackets	() Used to indicate an afterthought/sarcasm in a lower tone, like an 'aside' to the reader which can be taken out to leave a grammatically complete sentence. The old man (who smelled like cheese) sat next to me on the bus.
Pronoun	A word that can replace a noun: I, you, he, she, it, they, them, we.	Exclamation mark	! Used at the end of an exclamatory sentence to show strong emotion.
Preposition	A preposition is a word that tells you where or when something is in relation to something else. (at, in, on, after, before, under, inside and outside).	Question mark	? Used to indicate an interrogative sentence or rhetorical question.
Determiner	A determiner comes before a noun and helps to define it. E.g. a boy (a, an/the/those/these)	Apostrophe	' Used to show ownership (Sam's bag) or missing letters 'They're late'.
		Ellipsis	... Can be used to create suspense e.g: I couldn't believe my eyes... or to show the trailing off of a sentence e.g: 'I wonder...' she said.
Sentences			
Main clause	A clause that can stand alone as a sentence. Contains a subject (the person or thing doing the action) and a verb (the action). e.g. 'The cat sat on the mat'.		
Subordinate clause	A clause that depends on an independent clause to make sense e.g. 'The cat sat on the mat <u>without turning around</u> '. Often uses a subordinating ISAWAWABUB conjunction (if, since, as, when, although, while, after, before, until and because.)		
Fronted subordinate clause	As above - but the subordinate clause comes at the front of the sentence: e.g. <u>Without turning around</u> , the cat sat on the mat.' Also can be called a 'fronted adverbial'.		
Relative clause	Relative clauses use a relative pronoun or relative adverb to give us more information, usually about a specific word or phrase (that, which, who, whom, whose when, where, why). Relative clauses that contain non essential information need parenthetical commas and can also be called embedded clauses: e.g. The boy, <u>who I disliked intensely</u> , pulled my hair. The sentence should make sense if the clause was removed and the meaning should be intact.		
Simple sentence	Contains just one main clause. Makes complete sense.		
Compound sentence	Two main clauses joined together with a co-ordinating FANBOYS conjunction (for/and/nor/but/or/yet/so). The cat sat on the mat <u>and</u> the dog barked.		
Complex sentence	A main clause plus a subordinate clause. The subordinate clause <u>ay</u> come after the main clause or before (when it would be a fronted subordinate clause). 'The cat sat on the mat <u>without turning around</u> '.		
Fronted adverbial	Words, phrases or fronted subordinate clauses at the start of sentences which tell us when, where or how something is done (they describe the verb) Can remember them using SPACED. E.g: <u>Because it was raining</u> , we ran for cover.		
Expanded noun phrases	A phrase that contains a determiner (the/a) and a noun (table - e.g the table) and one or more adjectives (the black table). Can also contain a prepositional phrase e.g: The black table with wonky legs.		

Co-ordinating and subordinating conjunctions

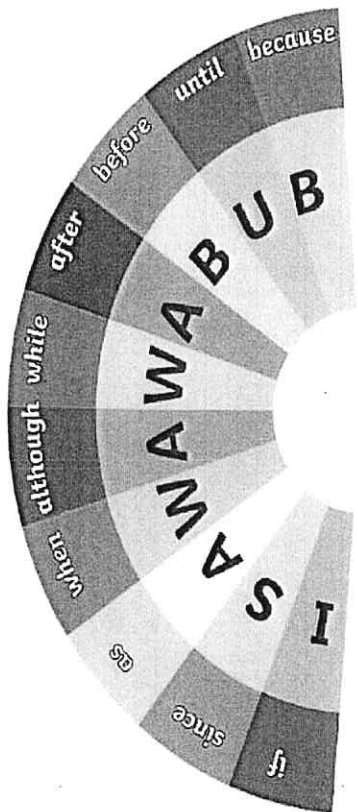
Co-ordinating Conjunctions

There are seven co-ordinating conjunctions. They give equal importance to the words or sentences they connect.



Subordinating Conjunctions

There are 10 subordinating conjunctions. They are used at the beginning of a subordinating clause which is a clause that doesn't make sense on its own.



Their/They're/There

Hear/Here

Your/You're

Was/Were

Ask yourself these two simple questions:

Does the word after it belong to **their**
'them'?

Is it short for 'they are'? **they're**

For everything else, it's **there**

Your
pizza

Your = you own it



It is yours.

You're
pizza

You're = you are



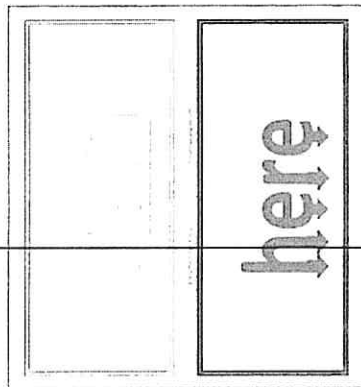
You are pizza!

'WAS' is used if you are talking about **ONE** person or thing (I, he/she/it):

'WERE' is used if you are talking about **TWO OR MORE** people/things (we/they/you):

'You' is always 'were',

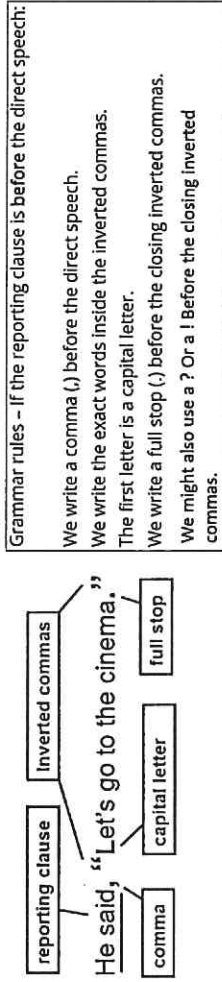
Punctuating Direct Speech



Reporting clause before the direct speech

The reporting clause of direct speech is the short clause that indicates who is talking. It is the clause that is outside of the inverted commas. It is therefore not the words being spoken.

We can write the reporting clause either before or after the direct speech. If the reporting clause is before the direct speech, we write it as follows:



Sometimes we break up the direct speech into 2 parts:

"If you come to London," she said, "then call me."

reporting clause small letter

The second part of the direct speech starts with a small letter if it is the same sentence as the first part of the direct speech.

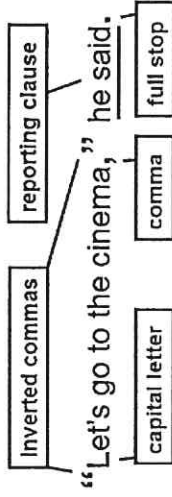
"I'm tired," she said, "Let's stay at home."

reporting clause capital letter

The second part of the direct speech starts with a capital letter if it is a new sentence.

Notice that the first part still ends with a , (unless you need a ? Or a !)

Reporting clause after the direct speech



If the reporting clause is after the direct speech:

We write the exact words inside the inverted commas.

The first letter is a capital letter.

We write a comma (,) before the closing inverted commas. We might also use ? or !

We write a full stop (.) at the end of the reporting clause.

New speaker, new line

If someone else speaks, we start a new line.

"Your book is over there," said the teacher.

"Thanks!" replied Johnny.

Using Fronted Adverbial openings - ISPACED

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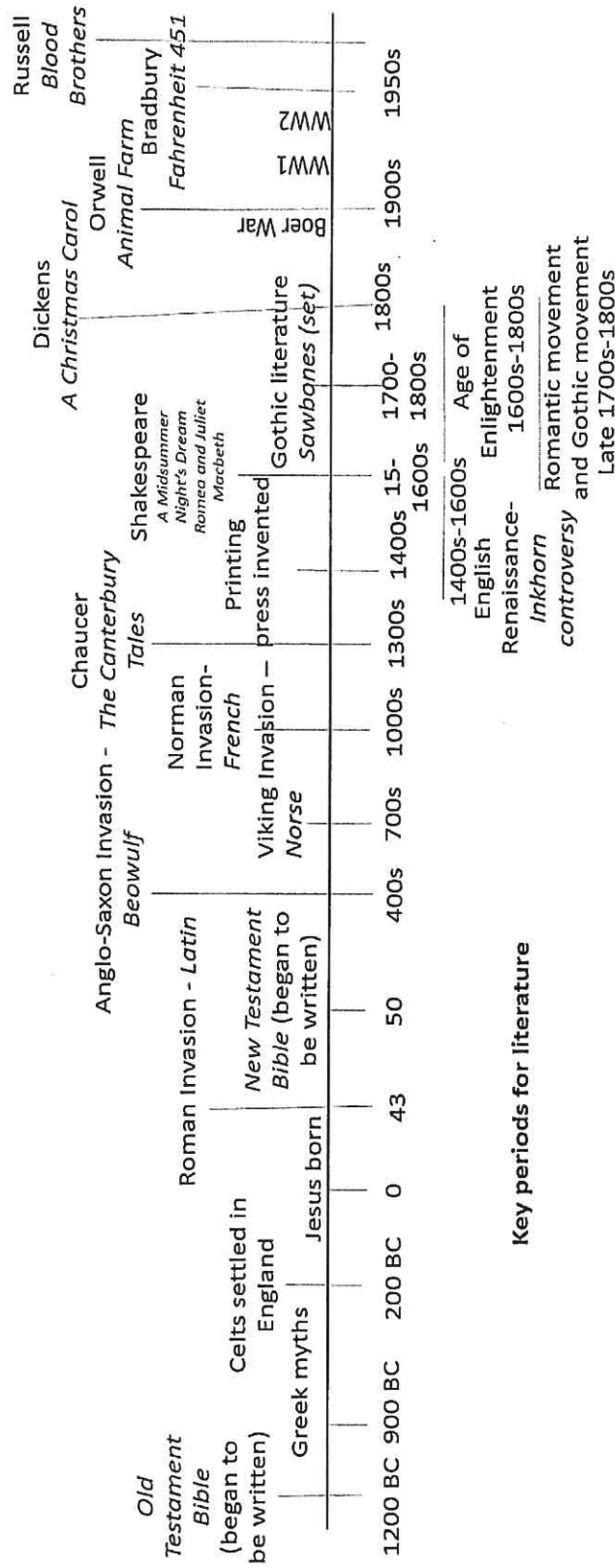
E

Ing words	Similes	Prepositions		Adverbs		Conjunctions	Ed words
		Over	On top of	Hastily	Quickly		
Walking	Like a mouse	Above	On	Calmly	Slowly	First	Excited
Skipping	Like a cheetah	Beneath	Underneath	Casually	Gently	Later on	Delighted
Running	Like a statue	Below	Under	Cautiously	Shyly	Suddenly	Pleased
Crawling	Like a tree	Through	Between	Softly	Nervously	Immediately	Amazed
Creeping	Like a predator	Inside	Beside	Neatly	Messily	Finally	Astonished
Jumping	Like a monster	By	Across	Angrily	Busily	After that	Shocked
Leaping	Like a villain	Before	After	Spitefully	Loudly	Before long	Scared
Escaping	As quiet as a	During	At	Ominously	Honestly	Since	Puzzled
Bursting	As loud as a	In	Off	Foolishly	Crazily	Whereas	Dazed
Grasping	As still as a	By	To	Madly	Readily	As	Surprised
Grabbing	As fast as a	About		Amazingly		Next	Worried
Seizing	As timid as a			Expectantly		Whenever	Petrified
Clutching	A bright as a			Generously		Despite	Horrificed
Picking	As slowly as a			Chaotically		Until	Exhausted
Shaking	As noisy as a			Unexpectedly		So	
Hiding	As calmly as a			Intelligently		Eventually	
Sleeping	As angry as a						

Remember to use a comma before the main clause: Creeping through the forest, I trembled with fear.

Year 7 English Origins Absolute

Language and Literature Timeline



Key concepts

Concept	Definition	Use in a sentence
Sin (noun) To sin (verb)	A bad or wicked act considered to be a rule break against God.	Murder is a sin. He sinned when he committed murder.
Injustice (noun)	Unfair action or treatment.	Murder is an injustice. I stand up to injustice when I see it.
Morality (noun)	The set of rules which help us tell the difference between good and bad or right and wrong behaviour.	It is always important to think about the morality of an action.
Moral (adjective)	An action that is good and right. Can also be used to mean the 'lesson' in a story.	The moral thing to do is to be kind to others.
Immoral (adjective)	An action that is bad and wrong.	The moral of the story is to be kind. It is immoral to steal.

Temptation (noun) To tempt (verb)	The wish to do or have something that you know you should not do or have.	She gave in to temptation and ate the apple. She was tempted to eat the apple.
Transformation (noun) To transform (verb)	The act of changing from one thing to another.	He underwent a transformation from a miserable old man to a joyful one. He magically transformed from a creature into a man.

Key Vocabulary

Word	Definition	Use in a sentence
Immigration (noun) Immigrant (noun)	When people leave their country and move to another. Someone who leaves their country to live in another.	Our language has been shaped through immigration. Rodney the Roman was an immigrant in Britain.
Emigrate (verb)	The act of moving to a new country.	Rodney the Roman emigrated from Rome to conquer Britain.
Duplicitous (adjective)	If someone is duplicitous, they lie, and the way they show themselves to others is not how they really are.	The girl's friend was duplicitous because he convinced her that others were laughing at her when they were not.
Villainous (adjective) Villain (noun)	Wicked behaviour. A wicked person.	The snake villainously persuaded Eve to eat the apple. The snake was a villain.
Mythological (noun)	Greek myths are untrue stories created by the ancient Greeks. If we say something is a 'myth', we mean it is a story that is not true.	Bigfoot is a myth – nobody has ever found proof. He is a mythological creature.
Protagonist	The main character in a book – usually the hero, in the case of Greek myth.	Hercules was a powerful protagonist.
Antagonist	The opponent to the protagonist/hero (in the case of Greek myth).	Cyclops was a powerful antagonist.
Climactic (adjective) Climax (noun)	The exciting part of a story or event.	The climax in <i>Harry Potter</i> is Harry's fight with Voldemort.
Sympathetic (adjective)	We feel sorrow/pity for someone.	I feel sympathy for the homeless. I am sympathetic towards them.
Unsympathetic (adjective)	We do not feel sorrow/pity for someone.	The teacher was unsympathetic when I said the dog ate my homework.
Pilgrimage (noun)	A journey undertaken for a religious motive.	Some Catholics go on pilgrimage to Lourdes, as it is a holy site.
Feudal system (noun)	The old way of ordering society so that the king owned all the land and gifted it to the rich, so the poor could not own their own land, but they still had to pay rent to farm on it, making little money.	The feudal system punished the poor but benefitted the rich.

Key Techniques/forms

Word	Definition	Use in a sentence
Allusion	Allusions are often used in books, and they make reference to other books or ideas that are outside the text, that aren't further explained.	Many books contain biblical allusion – for example, referring to a place as 'paradise'.
Symbol	When something stands for something else.	His snake bracelet symbolises he is an untrustworthy, duplicitous character.
Metaphor	When something is described as something else in order to bring out the similarities between the two things.	The metaphor 'The teacher was a dragon' conveys a negative impression of the teacher.
Dramatic monologue	A poem written as if a single person is speaking.	Medusa by Carol Ann Duffy is a dramatic monologue written as if Medusa were a real woman, speaking about feeling betrayed.
Epic poem	Long, narrative poems which tell stories involving a battle between good vs evil.	<i>Beowulf</i> is an epic poem .

SPAG revision

Sentences	
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Co-ordinating and subordinating conjunctions

for	and	nor	but	or	yet	so
F	A	N	B	O	Y	S

if	since	as	when	although	while	after	before	until	because
I	S	A	W	A	W	A	B	U	B

Using Fronted Adverbial openings - ISPAECED



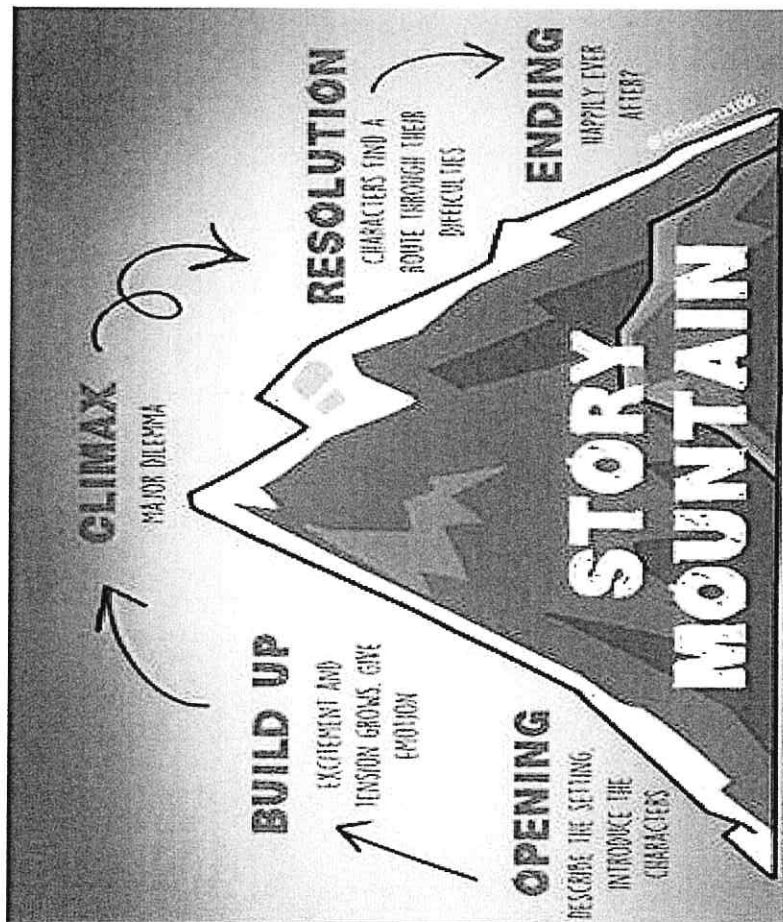
Ing words		Similes		Prepositions		Adverbs		Conjunctions	Ed words
Walking	Shivering	Like a mouse		Over	On top of	Hostily	Quickly	First	Excited

Remember to use a comma before the main clause: Creeping through the forest, I trembled with fear.

Story Mountain

Narrative techniques

Showing not telling



Bad writers tell us everything: *Harry killed Voldemort.*

Good writers show us things, so we can picture what happened clearly:

"Expelliarmus!"

The bang was like a cannon blast, and the golden flames that erupted between them, at the dead centre of the circle they had been treading, marked the point where the spells collided. Harry saw Voldemort's green jet meet his own spell, saw the Elder Wand fly high, dark against the sunrise, spinning across the enchanted ceiling like the head of Nagini, spinning through the air toward the master it would not kill, who had come to take full possession of it at last. And Harry, with the unerring skill of a **Seeker**, caught the wand in his free hand as Voldemort fell backward, arms splayed, the slit pupils of the scarlet eyes rolling upward. Tom Riddle hit the floor with a mundane finality, his body feeble and shrunken, the white hands empty, the snakelike face vacant and unknowing. Voldemort was dead, killed by his own rebounding curse, and Harry stood with two wands in his hands, staring down at his enemy's shell.

Nagini – Voldemort's pet snake

Seeker – a player of the magical sport of Quidditch who must catch a very fast flying golden ball with wings.

Key Techniques/forms/word classes

Word	Definition	Use in a sentence
Literal language	The actual meaning of the words without over exaggeration or saying something as something else (metaphor)	Literally , 'My teacher is a dragon' would mean that you had an actual fire breathing dragon for a teacher.
Figurative language	Language that does NOT use the word's literal meaning but instead uses language creatively. Techniques such as simile, metaphor, hyperbole and personification are all examples of figurative language.	Figuratively , 'My teacher is a dragon' would be a metaphor to suggest that your human teacher is terrifying like a dragon is.
Metaphor	Describing something as something else in order to suggest a similarity between the two.	My teacher is a dragon. The classroom was an oven.
Idiom	A common saying that uses metaphor – the meaning of the saying is hard to understand by the words alone, but we all accept what it means.	"It's raining cats and dogs" "You're driving me round the bend"
Slapstick comedy	A style of humour involving exaggerated physical comedy.	The pantomime was full of slapstick comedy .
Pun	A humorous use of a word or phrase that has several meanings that sounds like another word.	My favourite pun is in the joke: "Why didn't the skeleton go to the dance? He had no body to go with!"
Hyperbole	Over exaggeration for effect.	I am starving – I've waited a million hours for dinner.
Oxymoron	When two contradictory words are placed together in the same phrase	That movie was bittersweet . That was seriously funny ! It was awfully good .
Imperative verb	A 'bossy' verb that issues a command.	e.g "Come here" "Let me go" "Put that down"
Pronoun	Used instead of a noun.	'I, me, we, you'
Superlative adjective	Adjectives that are used to indicate that a word is the most extreme it can be. This is created through the superlative adjective 'most' or the addition of 'est' to the end of the word.	This is the most difficult task. She was the prettiest cat. He was the smallest man.
Parody	To imitate with deliberate exaggeration for comic effect.	The Mechanicals play is a parody of other actors and writers' plays at the time.
Personification	Describing something non-human as if it has human characteristics, or is alive in some way.	The chairs sat quietly in the classroom. The books danced in the flames.

Year 7 A Midsummer Night's Dream Absolute

Features of Comedy

Key ages / concepts

-Slapstick/Physical humour; -Wordplay/Puns; -Funny names; -Music and dance; -Ridiculous / exaggerated behaviour; -Chaos; -Incongruity; (<i>The ___ is incongruous (out of place) with the ___</i>) -Disguises/ costumes/ impersonating different genders; -Timing; -Foolish characters; -Characters who think they possess talent when they don't.
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Concept	Definition
The Renaissance	A period of time where people started to become more interested in philosophy, art, science and politics, and interested in looking back and revising ancient Greek and Roman literature.
The Age of Enlightenment	Science became more understood as people learned more about how the world works. People became more interested in using reason and the evidence of the senses.
The Inkhorn Controversy	In the 1500s-1600s, the borrowing of Greek and Latin words by writers really annoyed some people, who said that writers doing this were 'diluting' or 'polluting' the English language with these foreign words, which they called 'inkhorn terms'.
Patriarchy (noun) Patriarchal (adjective)	A system where men hold the power – A patriarchy existed in Shakespearean times. A <i>Midsummer Night's Dream</i> is set in a patriarchal society.

Key Vocabulary

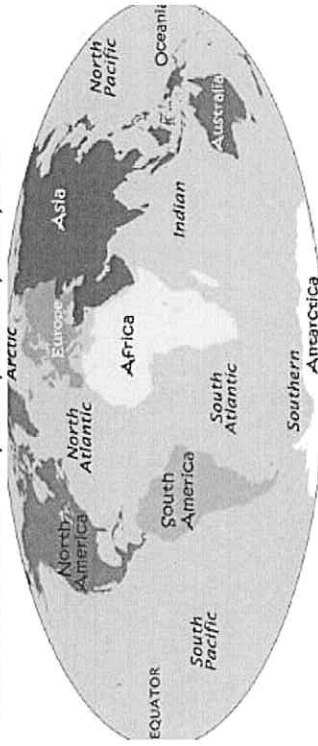
Word	Definition	Use in a sentence
Convention (noun)	A way of doing things that is accepted and followed.	The conventions of most Disney animations include songs, talking animals and a happy ending.
Incongruity (noun) Incongruous (adjective)	If something is incongruous, it appears strange or wrong in a particular situation.	The elephant was incongruous in the classroom.
Amateur	Someone who is not a professional at doing something – usually does it unpaid.	I am an amateur tennis player.
Tragedy play	A genre of play based on human suffering, where terrible events befall the protagonist.	I cried a lot when I watched the tragedy play .
Highlight	To draw attention to.	My teacher highlighted my excellent homework to the class.
Establish	To set up/ introduce	Shakespeare establishes the Mechanicals as comic characters.
Criticise	To judge something, often by picking out the faults.	My teacher criticised my homework.

Geography – How can I save the world?																					
Background - What is human geography? The study of how people and their activities <u>affect the earth and society</u>. - What is physical geography? The study of the <u>natural environment</u>. - What are HICs? High income countries such as <u>USA, UK, Germany, France, Canada, Spain, Italy, Australia</u> - What are NICs? Newly industrialised countries such as <u>China, Vietnam, India, Brazil, Mexico, South Africa</u> - What are LICs? Low income countries such as <u>Bangladesh, Chad, Haiti, Kenya, Madagascar and Somalia</u>. 	Globalisation – Food Miles - How can a person be connected to the rest of world? The food they eat, TV shows or films they watch, the holidays they go on, the clothes they buy, the sports they watch or play. - What are food miles? The distance that a food product has travelled from farm to plate. - What are the disadvantages of high food miles? Food is transported via planes, ships, trains and lorries which all have <u>high carbon emissions</u>. The further the food travels, the more carbon is released. - Why are food miles not the biggest contributor to emissions within food? Actually farming and producing products creates <u>83% of food carbon emissions</u> and transporting it only produces 11%. Rest from retail stores. - Why is organic farming seen as a better option? Organic farms use methods which release less carbon dioxide, conserve water and reduce soil erosion. They also do not use pesticides which is better for animals and people who live nearby. 																				
Globalisation – Clothing - Where are the headquarters for many clothing companies? In <u>HICs (high income countries)</u>. This is where research and development of products takes place. The <u>highest paid jobs</u> in the company are here. - Where are clothes actually made? Many companies outsource production to <u>NICs</u> (Newly industrialised countries) like Taiwan, Vietnam and China. - What are the benefits of outsourcing for the company? The company can find a cheap contract in a factory, <u>saving them money and creating a higher profit margin</u>. They do not have to build their own factory and are free to move to a different country if they can get a cheaper contract. - What are the issues with outsourcing for the host country? The managers of the factories are receiving contract from companies and they are often <u>under pressure to meet deadlines</u>. This often leads to <u>poor conditions</u> in the factories such as: <u>long days, low wages, no breaks, no trade unions, physical punishments</u>. These are often called <u>sweatshops</u>. How can consumers help to stop sweatshops? By checking where brands and companies make their clothes. This will be an indication of how <u>ethical</u> the factory is. 	Fairtrade    - What is Fairtrade? This changes the way trade works through <u>better prices, decent working conditions</u> and a <u>fairer deal</u> for farmers in developing countries. - What are the ways in which consumers can support Fairtrade? Always choose Fairtrade products when shopping, if you cannot find Fairtrade bananas in your local supermarket, fill in a customer comment card or ask to speak to the manager and <u>request</u> that Fairtrade bananas are stocked, encourage your <u>local, independent shop</u> to stock Fairtrade and learn more about Fairtrade and <u>tell your friends and family</u> all about how it benefits farmers and workers. - What is a social impact(s) of the Banana Industry on St. Vincent through Fairtrade? No child labour is allowed, and farmers are better educated about how to conserve the environment. - What is an economic impact(s) of the Banana Industry on St. Vincent through Fairtrade? Money (wages) go to the rural areas that helps keep people on the land and social premiums help <u>build schools</u> in the area, <u>improve roads</u>, and makes it easier for farmers to get their produce to the markets. - What is an environmental impact(s) of the Banana Industry on St. Vincent through Fairtrade? Number of birds increase and wildlife benefits from <u>less chemical pollution</u>, bananas are not planted as close to rivers which prevents any chemicals reaching the water supply and farmers who are part of the Fairtrade scheme are given <u>trees to plant on their land</u> which helps with <u>soil conservation</u> on steep hills.																				
Keywords <table border="1"> <tr><td>Human Geo</td><td>The study of people and the man-made world.</td></tr> <tr><td>Physical Geo</td><td>The study of the natural environment.</td></tr> <tr><td>Food Miles</td><td>How far food has travelled from farm to plate.</td></tr> <tr><td>Outsourcing</td><td>When a business in a HIC asks a business in a LIC/NEE to make a product for them.</td></tr> <tr><td>Symbol</td><td>A character used on maps which represents something in real life.</td></tr> <tr><td>Relief</td><td>The height and shape of the land</td></tr> <tr><td>Sustainable</td><td>Meeting the needs of today without compromising the ability of future generations to meet their own needs.</td></tr> <tr><td>Fairtrade</td><td>This changes the way trade works through better prices, decent working conditions and a fairer deal for farmers and workers in developing countries.</td></tr> <tr><td>Winward Islands</td><td>A group of islands in the south-eastern West Indies.</td></tr> <tr><td>Climate Change</td><td>A change in the usual temperature and weather patterns found in a place that can be naturally occurring or accelerated by human activities.</td></tr> </table>	Human Geo	The study of people and the man-made world.	Physical Geo	The study of the natural environment.	Food Miles	How far food has travelled from farm to plate.	Outsourcing	When a business in a HIC asks a business in a LIC/NEE to make a product for them.	Symbol	A character used on maps which represents something in real life.	Relief	The height and shape of the land	Sustainable	Meeting the needs of today without compromising the ability of future generations to meet their own needs.	Fairtrade	This changes the way trade works through better prices, decent working conditions and a fairer deal for farmers and workers in developing countries.	Winward Islands	A group of islands in the south-eastern West Indies.	Climate Change	A change in the usual temperature and weather patterns found in a place that can be naturally occurring or accelerated by human activities.	Test yourself questions - What is the difference between human and physical Geography? - Give three example topics for human geography and three example topics for physical geography. - Explain how you would locate a particular place on an OS map using 4 figure and 6 figure grid referencing. - Describe three different ways that consumers can do to shop more sustainably? - Why does outsourcing have negative views globally? Research a company that has been in the media for outsourcing. - Outline what food miles are, the negatives of food miles and a way to reduce the negative impacts of food miles. - Outline what fairtrade is and explain three ways in which you could support fairtrade. - State a social, economic, and environmental impact of The Banana Industry in St. Vincent. - For each scale, state a way in which climate change is being combatted on a locally, nationally, and globally. - Why is it important to consider ways in which we can live and act more sustainably for the future of our planet?
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Physical Geo	The study of the natural environment.																				
Food Miles	How far food has travelled from farm to plate.																				
Outsourcing	When a business in a HIC asks a business in a LIC/NEE to make a product for them.																				
Symbol	A character used on maps which represents something in real life.																				
Relief	The height and shape of the land																				
Sustainable	Meeting the needs of today without compromising the ability of future generations to meet their own needs.																				
Fairtrade	This changes the way trade works through better prices, decent working conditions and a fairer deal for farmers and workers in developing countries.																				
Winward Islands	A group of islands in the south-eastern West Indies.																				
Climate Change	A change in the usual temperature and weather patterns found in a place that can be naturally occurring or accelerated by human activities.																				

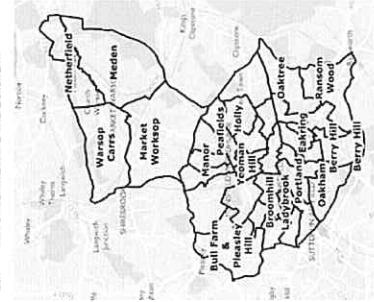
Geography – How does my local place compare to the rest of the world?

1. Continents and Oceans

- What are the 7 continents? Europe, Africa, Asia, North America, South America, Australasia and Antarctica.
- What are 5 oceans? Atlantic, Pacific, Southern, Indian, Arctic.



3. Mansfield's location



Mansfield is 10km north east of junction 28 of the M1 and 20km north of Nottingham.



2. Comparing Mansfield locally

- How can geographers collect data on towns and cities? Conducting surveys like transects and land use surveys.
- Why would geographers collect data on towns and cities? To learn about the place and its identity so town planners know how to improve the area.
- How does Mansfield compare to local towns? Mansfield has many similarities to Sutton, Worksop and Chesterfield, like TNCs, pedestrianized areas and fast food. However, Mansfield has a popular football club unlike Sutton and Worksop and strong mining history, unlike Chesterfield which alters its identity.



Comparing Mansfield globally

Place	Location	Population	Identity	Similarities	Differences
Mansfield, UK	20km N of Nottingham	108,576	Ex-mining, Stags and brewery.		
Mansfield, MA, USA	30km S-W of Boston	23,860	Upper middle class, liberal.	Surface area (76.69 vs 53.7km ²)	Pop. density (sparse)
Rocinha, Brazil	5km S-W of Rio de Janeiro	180,000	Vibrant, happy, slum.	Some deprivation in both places	Rapid pop. increase
Cape Coast, Ghana	100km S-W of Accra	217,032	Fishing, art, history.	Mans 22%, Cape 29% high. education	Mans 6%, Cape 7% unemployed
Daet, Philippines	200km E-S-E of Manila	111,700	Surfing, University.	Warmer months May to August	Rainfall range 28mm in Mans, 460mm in Daet
Christchurch, New Zealand	330km S-W of Wellington	381,500	Rural landscapes and earthquakes	Experienced earthquakes	Magnitude 5.2 vs 7.0

Test yourself questions

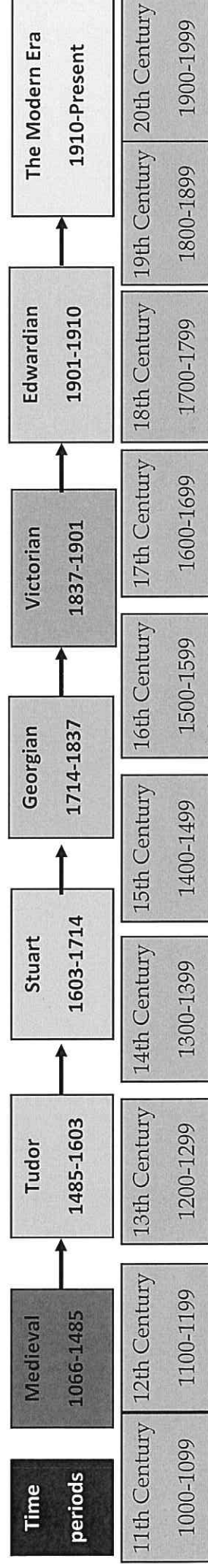
- Which is the largest ocean and largest continent?
- Describe the location of Mansfield.
- Ask someone to quiz you on the keyword spellings and definitions.
- Do you think Mansfield is a clone town?
- Which local town do you think Mansfield is most similar to? Why?
- Which local town do you think Mansfield is different to? Why?
- Which international town do you think Mansfield is most similar to? Why?
- Which international town do you think Mansfield is different to? Why?
- How would you describe Mansfield's identity?
- Does Mansfield experience the same problems as other places around the world?

Keywords

Comparison	Look for similarities and differences between places
Demographic	Statistical data relating to the population and particular groups within it
Evaluate	To judge the significance of something
Fieldwork	Practical work conducted out in the environment or the 'field'.
Identity	The physical features and culture of a place that make it unique
Land use survey	Fieldwork technique to find out how land is being used e.g. retail, residential
Place	Used in geography to discuss a specific location like Mansfield
Population	The people who live in an place e.g. village, town, city, country, country.
TNC/MNC	Trans-national or Multi-national Corporation e.g. Nike
Transect	Data collected in a straight line to measure changes from one point to another

Key words	
1.	Chronology Listing event in the order in which they happened
2.	Cause Leads to an event
3.	Long term cause Something that has been around for a long time that leads to an action
4.	Short term cause Something that leads to immediate action
5.	Consequence The result of an event
6.	Inference Work things out using clues
7.	Evidence The available information that leads you to believe something
8.	Interpretation One specific view about the past
9.	Judgement Make a decision/ come to a conclusion
10.	Balance Understanding and using both sides of the argument
11.	Significant Judging whether an event, person or place is worth remembering
12.	Aim What was the evidence created for?
13.	Author Who created the evidence?
14.	Audience Who is the evidence created for?
15.	Cross-referencing Using more than one piece of evidence to support a point.

Key concepts
Chronology rules: 1. BC always comes before AD 2. For BC, the bigger the number, the earlier it is 3. For AD, the smaller the number, the earlier it is
Paragraph rules: In History, we like to PEEL! Point: make a point linked to the title Evidence: back this point up with specific examples and facts Explanation: explain how these facts relate to the question and what they mean Link: finish off with a sentence which links back to the question in the title and answers it in some way. Balanced argument: This usually follows a 'how far do you agree' question and requires you to consider both sides of the argument before reaching a judgement based on these points. A good way to structure this is: On the one hand... On the other hand...



History

Year 7

Topic Norman Conquest (Unit 2)

Timeline of events: Battle of Hastings 1066	
1.	1066- England's population was 1.5 million. Edward the Confessor is ruler. Country divided by Earldoms, some of whom rebelled against Edward.
2.	5 th January 1066- Edward dies without children.
3.	Three claimants to the throne...
4.	Harold Godwinson- Belonged to the most powerful family in England and controlled Wessex
5.	William, Duke of Normandy- Edward's cousin, supported Edward by sending troops when Harold Godwinson had rebelled in 1051. Edward had made William his heir.
6.	Harald Hardrada- wanted to revive Viking Empire of King Knut; ancestors had held position on King of England previously; Viking families in the North who supported.
7.	20 th Sept 1066: Harald H arrives on East coast with 500 ships. Harold G marches army North and defeats Harald H, who is killed at Stamford Bridge.
8.	27 th Sept 1066: William of Normandy sails fleet across the Channel. Harold G marches an exhausted army south to face William.
9	William gathered an invasion fleet of 700 ships and a large army. Landed at Pevensey, built a castle and raided the surrounding area.
10	Harold was marching south after the battle at Stamford Bridge with an exhausted army.
11	The two sides met at Senlac Hill, near Hastings. Harold's army at the top of the hill, formed a shield wall to protect themselves and the Norman knights could not charge uphill.
12	Some Norman soldiers fled thinking William had been killed; he removed his helmet to show them he was alive. Normans pretended to run away, then turned and cut down the Saxons when the inexperienced fyrd (farmers with weapons- inexperienced soldiers) chased them.
13	William's knights on horse back and archers with cross bows were well equipped. William's archers broke the Saxon shield wall.
14	Housecarls (household troops) formed a ring around Harold, yet he was killed; the Bayeux Tapestry (a famous tapestry documenting the battle) has the words "Harold is killed" next to a man with an arrow in his eye. But it is impossible to know as all Saxon soldiers are dressed identically on the tapestry.

Key words	
1	Edward the Confessor King in 1066- has no children
2	Earldoms Territory of an Earl
3	Roman Catholic Church England was a Christian country, belonged to the RC Church.
4	Pope Head of the Catholic Church and in charge of Bishops and Priests
5	Harold Godwinson Edward's brother in law, belonged to the most powerful family in England
6	William Duke of Normandy Edward's named heir
7	Harald Hardrada Wanted to revive the Viking Empire.
8	Stamford Bridge Location of battle between Harold G and Harald H
9	Feudal System Hierarchy (system of land ownerships) whereby William had granted land in England to men who had helped him conquer England; these barons sent knights for the king's army; knights were given land, which peasants farmed on.
10	Domesday Book William uses a survey to find the value of people's land. Information from 13000 villages
11	Battle of Hastings Battle between William and Harold G- Harold G killed and William victorious.
12	Motte and Bailey Style of castle based on the design of Normandy castles- built within to weeks, providing immediate safety.
13	Norman Keep Later, castle design with a stone keep- more difficult to attack. Used to control surrounding areas-location for people to pay taxes or attend court of law.

Why did William win the Battle of Hastings?		
Preparations	Luck	Leadership
William: well trained, professional soldiers, fresh and well rested, lots of supplies Harold: large number of untrained farmers who left to collect the harvest, tired and reduced numbers following Battle of Stamford Bridge	The weather changed when William was trying to Harold had to fight the Vikings this gave William the advantage. The Saxons left the shield wall to chase the Normans down the hill. At a key moment in the battle Harold was killed.	William was very brave and led his men well. William showed his face during the battle to keep his soldiers from running away.



Key words	
1. Medieval	The period between 1066-1500.
2. Feudal System	The social structure of Medieval England.
3. Villein	Peasant at the bottom of the Feudal system.
4. Baron	Noble land owner that pledged their loyalty to the King.
5. Normans	People from the Normandy region of France, led by King William.
6. Motte and Bailey	The first type of castle made by William. It was made out of wood and had a higher Motte part and a lower Bailey part.
7. Stone Keep Castle	Similar to Motte and Bailey but made of stronger materials such as stone.
8. Concentric Castle	A castle with two or more supporting walls with a stone keep.
9. Domesday Book	A record of what everyone owned in the country in order to decide how much tax people should pay.
10. Taxes	Money collected from people by the King.

Key events: Castles

William kept control by building castles throughout England. Over time 3 types of castles developed throughout Britain:

Motte and Bailey: The first castles built to fight against rebellions. They were built quickly and made out of wood, meaning that they were not very strong and could easily be destroyed. The Bailey was on flat land where the majority of the people lived. The Motte was the higher land of the castle where the fort was.

Stone Keep: This castle was now made out of stone and had tower a form of defence. The main part of the castle was the Keep, a large square tower, used as the main defence.

Concentric- At least two surrounding walls with the inner wall higher than the outer to help defence. These protected the central tower which was made of stone.

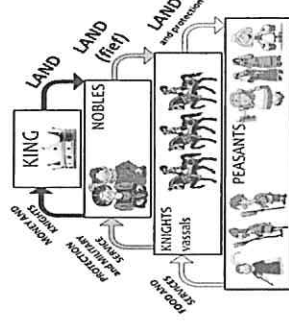


Key events: Problems faced

1. Short term	Threat of invasion from the North; many English Lords did not accept his control and many of Harold's supporters were still in London.
2. Long term	Needed to collect taxes but to do this he needed to find out who owned what and needed to make sure the whole country was under his control. This resulted in creating the Feudal system, the Domesday book and building castles.

Key events: The Feudal System

After taking the throne in 1066, William had a few problems: he doesn't trust the English lords, who do not like him, he had to force the English to accept him as King and many were rebelling and fighting against him. He had to pay the French knights who helped him win the throne. His solution was to crush the rebellions and take land from the English lords to give to his supporters. He then had his supporters helping him to control the whole country. He also set up the Feudal System which forced the English to give William their taxes and loyalty in return for protection and land to farm. William was at the top of this system as he had all the land and money, which he gave to the Barons. They promise William their money, soldiers and loyalty. They give the land to the Knights in return for loyalty and military service. Finally the knights give the land to the peasant to farm in return for money and services.



Feudal Pyramid of Power



Key events: Domesday Book

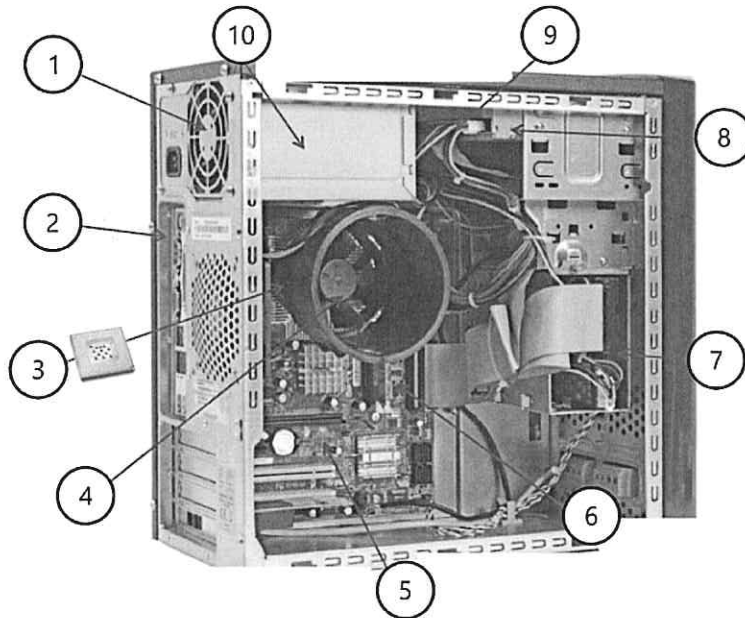
In 1086, William sent out surveyors to every part of England, with orders to list:

- How much land there was
- Who had owned it in 1066 and who owned it now
- What was the place like and who lived there
- How much was it worth in 1066 and how much now.

William did this to allow him to effectively tax the land and earn money and so that he knew what could be seized if the landowners didn't show loyalty.

Year 7 Computing All Saints' Absolutes: Introduction to Computing

- 1 Main Fan: Draws in cool air to prevent the computer from overheating
- 2 Ports: HDMI, USB, Audio, Video, Monitor
- 3 (CPU): Central Processing Unit: - the brain of the computer, handles all instructions it receives from hardware and software running on the computer.
- 4 Heat sink: pictured is directly over the Central Processing Unit (CPU) to prevent overheating.
- 5 Motherboard: enables all computer hardware components to communicate with each other



- 8 DVD ROM: Digital Versatile Disk-Read Only Memory
- 9 Power cables: otherwise known as an electrical cables are used to transmit electricity or power to the computer
- 6 RAM is the temporary memory bank which goes away when the power is turned off it's ideal for things the computer is actively working on such as if you're browsing the internet, using PowerPoint or even typing a document in Word.
- 7 Hard drive: - where your documents or files are stored, it's long term storage which means that your saved files will be still available even if you turn the computer off.
- 10 Power supply unit: is the hardware component that provides electricity to power the computers components

INPUT AND OUTPUT DEVICES



Scanner **Input**
Takes a digital image of a document so that it can be saved on the computer.



Mouse **Input**
A handheld device that controls a computer screen's cursor or pointer.



Monitor **Output**
A device that displays information in pictorial or text form.



Keyboard **Input**
A device that enables a user to input text into a computer.



Digital Camera **Input**
A device that takes photographs and stores the image as data on a memory card.



Printer **Output**
A device that accepts text and graphic from a computer and transfers the information to paper.



Webcam **Input**
A device commonly built into a computer. Its main function is to transmit pictures over the Internet.

POWERPOINT PRESENTATION SKILLS

Add text
adds a text description on a slide

Add images
adds an image on a slide

Animations
makes powerpoint information more memorable

Triggers
causes an animation to occur on a slide

Transitions
adds visual effect from one slide to the next

Hyperlinks
Allows you to jump back and forth between slides

Year 7 Computing All Saints' Absolutes: E-Safety

Keywords for E-Safety	
1	Cyberbullying The bullying of another person using the internet, mobile phone or other digital devices, with the intent to deliberately upset them.
2	Online grooming Online grooming is when someone builds an online relationship with a young person and manipulates or pressures them into doing something that they shouldn't or something that makes them feel uncomfortable.
3	Password This is a security feature to stop others from gaining access to your accounts.
4	Hacking Gaining unauthorized access to data stored on a computer.
5	Spam Unwanted emails from companies that are advertising products or services.
6	Social network Online communities that allow the sharing of images, video and chat.
7	Virus A virus harms your computer in some way, usually by deleting or altering files and stopping programs from running.
8	Phishing Trying to trick someone into giving out personal information over email.
9	Digital footprint Digital footprints are a trail of places that you have visited on the internet and the activities and games you have taken part in.
10	Malware Malware is a general term that describes lots of different programs that try to do something unwanted to your computer.
11	Trojan horse A trojan starts by pretending to be a trusted file but gives unauthorised access to your computer when you run it.
12	Worm Worms are difficult to get rid of. They copy themselves over networks to external storage devices.
13	Spyware Spyware collects information from your computer and sends it to someone.
14	Ransomware Ransomware is malicious software that locks up files and holds them for ransom. It usually requires some form of payment to release them.
15	Anti-virus Anti-virus software prevents malware from attacking your computer or mobile device.
16	Firewall A firewall monitors connections to and from your computer. If it spots something suspicious, it closes the connection or disconnects it.

Choosing a password

A strong password is:

- at least eight characters long
- a mixture of numbers, uppercase and lowercase letters and other symbols, eg !@#£\$
- not a real word
- impossible to guess

Where to find help

There are lots of different ways that you can seek help from reputable organisations, including text-based support, digital chat support and online counselling, as well as face to face or via phone.

Websites and phone numbers:

- Childline - www.childline.org.uk Phone: 0800 1111
- Samaritans - www.samaritans.org Phone: 116 123
- Shout - a 24-hour text service for someone experiencing a crisis and needing immediate help: 85258
- CEOP - Make a report to one of CEOP's Child Protection Advisors <https://www.ceop.police.uk/>



childline

ONLINE, ON THE PHONE, ANYTIME

Place Value

Integer – a whole number e.g. 6, -2, 25

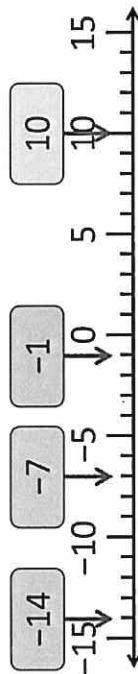
Negative integer – whole number less than 0

Place Value – the value of each digit in a number e.g. in 9.35 the 3 is 3 tenths

Significant figures (sf) – the first non zero figure in a number e.g. the first 2 sfs in 456.7 are 4 (400) and 5 (50)



Hannah, Tom, Marie & Joe have different amounts in their bank accounts.
Who would you prefer to be?



£10



-£14



-£7



-£1

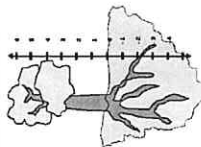
Here are two number sequences.

8, 5, 2, -1, n, m, -10,

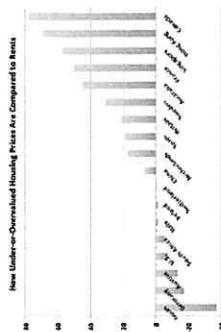
-9, n, p, 6,

Find the values of n, m and p.

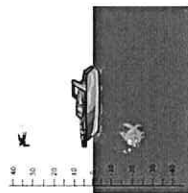
$$n = -4 \quad m = -7 \quad p = 1$$



Here are different places you would encounter negative numbers in real life.



Account	12.720	-0.1
ACS	15.120	0.6
AMADEUS	11.165	-3.9
ARCELOHM	1.264	-23.6
BANKIA	4.742	-3.3
BBVA	2.927	-5.4
BANKINTE	1.835	-8.1
B...POPULA	1.503	-3.0



Which number is warmer?

8°C or -3°C

8°C

Put these temperatures in order from coldest to warmest.
-3°C, -5°C, 3°C, -1°C, 0°C

-5°C

-3°C

-1°C

0°C

3°C

Which number is bigger?

-2 or -6

-2

Put these numbers in order from smallest to largest.
2, -4, -7, -2, 1

-7

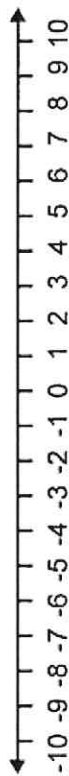
-4

-2

1

2

Adding and Subtracting

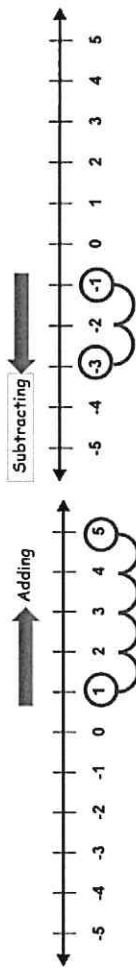


To add a positive integer we move forwards up the number line →

To add a negative integer we move backwards down the number line ←

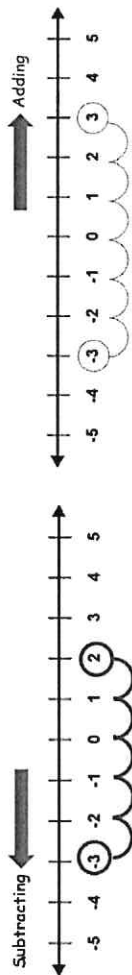
To subtract a positive integer we move backwards down the number line ←

To subtract a negative integer we move forwards up the number line →



$$1 + 4 = 5$$

$$-1 - 2 = -3$$



$$2 - 5 = -3$$

$$-3 - (-6) = -3 + 6 = 3$$

Double negative makes positive

$$a) 8 + -3 = 5$$

$$d) 3 + -4 = -1$$

$$b) 9 - +5 = 4$$

$$e) 10 + -16 = -6$$

$$c) 2 - -9 = 11$$

Multiplying and Dividing

Same signs = Positive

$$+ \text{ and } + = +$$

$$- \text{ and } - = +$$

Different signs Negative

$$+ \text{ and } - = -$$

$$- \text{ and } + = -$$

What is 3×-5 ?

"What is 3 lots of minus 5?"

$$(-5) + (-5) + (-5) = ??$$

What is -4×-4 ?

"What is minus 4 lots of minus 4?"

Why? Because two negatives make a positive!

What is -3×0 ?

"What is 0 lots of minus 3?"

... = ...

1)

$$3 \times -4 = -12$$

5)

$$4 \times -1 \times 3 = -12$$

2)

$$-7 \times -2 = 14$$

6)

$$-20 \div 5 = -4$$

3)

$$9 \times 9 = 81$$

7)

$$-100 \div -10 = 10$$

4)

$$6 \times -6 = -36$$

8)

$$-10 \times 2 = -20$$

1. Algebra - Introduction

Variable – A letter used for an unknown value.

Term – a number or letter on its own or numbers and letters multiplied together.

Collect like terms – describes how many of each letter/variable we have



$$a + a + a = 3 \text{ lots of } a = 3a$$



We can write this as: $2b + f + d + 3b + 2f + 2d$
If we combine like terms, we get a simplified list as follows:

$$5b + 3f + 3d \quad \checkmark$$



Cassie has 2 boxes of sweets, 5 bags of sweets & she eats 4 sweets.



This expression describes how many sweets Cassie has now.

$$2x + 5b - 4$$

terms	variables	coefficients
$2x$	x	2
$5b$	b	5
-4		

These are all expressions.
we express the information using algebra.

b

$2b$

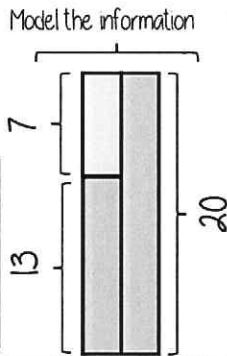
$3b - 2$

This is an equation,
we can solve it to find the value of b .

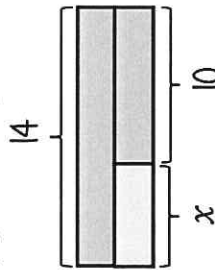
$$3b - 5 = 55$$

Fact Families

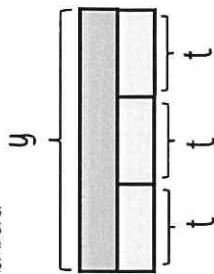
Use a bar model to display the relationships between terms and numbers.



Fact Family

$$\begin{array}{l} 13 + 7 = 20 \\ 7 + 13 = 20 \\ 20 - 7 = 13 \\ 20 - 13 = 7 \end{array}$$


$$\begin{array}{l} x + 10 = 14 \\ 10 + x = 14 \\ 14 - 10 = x \\ 14 - x = 10 \end{array}$$



$$\begin{array}{l} t + t = y \\ 3 \times t = y \\ 3t = y \\ y - t = t \\ y - 3 = t \\ y - t = 3 \end{array}$$

Like and unlike terms

Like terms are those whose variables are the same

♥ and 3♥
the variable is the same
are like terms

★ and 3♥
the variables are NOT the same
are unlike terms

Examples and non-examples

Like terms

$y, 7y$
 $2x^2, x^2$
 $ab, 10ba$
 $5, -2$

Un-like terms

$y, 7x$
 $2x^2, 2c^2$
 $ab, 10a$
 $5, -2t$

Note here ab and ba are commutative operations, so are still like terms

Collecting like terms $\equiv$ symbol

The $\equiv$ symbol means equivalent to

it is used to identify equivalent expressions

Collecting like terms

Only like terms can be combined

$$4x + 5b - 2x + 10b$$

$$(4x) + (5b) - (2x) + (10b)$$

$$2x + 15b$$

Substitution into expressions

Jacob buys doughnuts & ice creams for his friends.



= £1



= £2

We can **substitute** to calculate the **value** of the **expression**.



2

+

4

= £10

$$2 + 4 = 1 + 4$$

$$5 + 6 = 12$$

$$4 - 3 + 2 = 3$$

$$6 - 2 - 4 = 0$$

Menu

Coffee (c) = 10

Tea (t) = 10

Muffin (m) = 4

Flapjack (f) = 2

Juice (j) = 5

Sandwich (s) = 20

Biscuits (b) = 3

Water (w) = 1

Substitute in the given amounts to find the price of the items from the cafe:

$$c + 2t = £30$$

$$3m + 2b = £20$$

$$w + f + s = £26$$

2. Expanding and Factorising Expressions

Expression – A set of terms combined by an operation e.g. $+ - \times \div$

Expanding Brackets

Everything inside the bracket is multiplied by what is on the outside.

$$4(y + 2) = 4(y + 2) = 4y + 8$$

Factorising

The reverse of expanding. Find the highest common factor of the expression.

$4y + 8 =$ The HCF of both terms is 4.

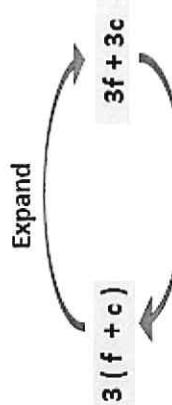
$$4(\quad)$$

Divide the expression by the HCF to find the inside of the bracket.

$$4(y + 2)$$



Expand



Factorise

a)	n	-2	b)	2x	+7
3	3n	-6	4	8x	+28

$$3(n-2) = 3n - 6$$

$$4(2x+7) = 8x + 28$$

• To 'fully' or 'completely' factorise we find the highest common factor(s) in all the terms and take this outside the bracket.

• Then work out what goes in the bracket using division or multiplication.

$$6b - 10bc = 2b(3 - 5c)$$

$$2b(3 - 5c) = 6b - 10bc$$

6. Factors, Multiples and Primes

Factor – a number which divides exactly into another number is called a factor of that number.

Multiple – A number that is part of another's times table

Prime number – has exactly two factors 1 and the number itself

7. How to find factors of a number

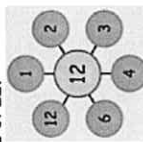
e.g. Here are all the factors of 12:

$$1 \times 12 = 12$$

$$2 \times 6 = 12$$

$$3 \times 4 = 12$$

(Two tip – learn your times tables!)



It is usual to write the factors of a number in an ordered list e.g.

The factors of 12 are 1, 2, 3, 4, 6, 12.

8. How to find multiples of a number

The multiples of a number are the values in its times table.

e.g. Find the first 5 multiples of 12.

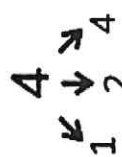
12, 24, 36, 48, 60

(Clue – what are the first 5 numbers in the 12 times table?)

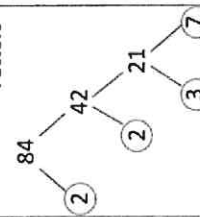
13 has only two factors – itself and 1. So it is a prime number.



4 has three factors – itself, 1 and 2. So it is NOT a prime number.



e.g. Write 84 as a Product of Prime Factors



$$84 = 2 \times 2 \times 3 \times 7$$

$$84 = 2^2 \times 3 \times 7$$

10. Prime Factor Decomposition

Step 1: Start by writing your number at the top middle of the page.

Step 2: Think about two numbers that multiply together to make your number, writing these down to the sides, connecting with straight lines, and circling any prime numbers.

Step 3: Repeat Step 2 on the numbers that haven't been circled until the ends of each branch are circled.

Step 4: Write all of the prime (circled) numbers together as a multiplication.

Decomposition – splitting a number down into pairs of factors until you reach only prime numbers

11. HCF and LCM

Highest Common Factor (HCF) – the largest number that is a factor of all numbers

Lowest Common Multiple (LCM) – the smallest number that is a multiple of all numbers.

12. HCF Listing Method

1. List the FACTORS of ALL the numbers
2. Find the BIGGEST number in both lists

e.g. Find the HCF of 24, and 42

Factors of 24 are: 1, 2, 3, 4, 6, 8, 12, 24

Factors of 42 are: 1, 2, 3, 6, 7, 14, 21, 42

Therefore the HCF is 6.

13. LCM Listing Method

1. List the MULTIPLES of ALL the numbers
2. Find the SMALLEST number in both lists

e.g. Find the LCM of 9 and 15

Multiples of 9 are: 9, 18, 27, 36, 45, 54, 63

Multiples of 15 are: 15, 30, 45, 60, 75

Therefore the LCM is 45.

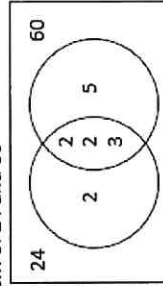
14. LCM/HCF Venn Diagram (Higher)

Find the HCF and LCM of 24 and 60

$$24 = 2 \times 2 \times 2 \times 3$$

$$60 = 2 \times 2 \times 3 \times 5$$

Complete the Venn diagram allocating the factors that are shared in the centre.



HCF is the region of intersection (overlap of circles).
 $2 \times 2 \times 3 = 12$

LCM is the numbers in the circles all multiplied together.
 $2 \times 2 \times 2 \times 3 \times 5 = 120$

Square Numbers are what you get when you multiply a whole number by itself. 1

$$1^2 = 1 \times 1 = 1$$

$$4 = 2^2 \text{ or } 2 \times 2 = 4$$

$$9 = 3^2 \text{ or } 3 \times 3 = 9$$

$$16 = 4^2 \text{ or } 4 \times 4 = 16$$

$$25 = 5^2 \text{ or } 5 \times 5 = 25$$

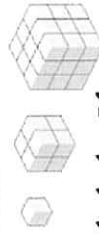
$$36 = 6^2 \text{ or } 6 \times 6 = 36$$

The first 15 square numbers are:

1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 225

15. Cube Numbers

Cube Numbers are what you get when you multiply a whole number by itself and itself again.



$$1^3 = 1 \times 1 \times 1 = 1$$

$$2^3 = 2 \times 2 \times 2 = 8$$

$$3^3 = 3 \times 3 \times 3 = 27$$

$$4^3 = 4 \times 4 \times 4 = 64$$

$$5^3 = 5 \times 5 \times 5 = 125$$

16. Square Roots and Cube Roots

Square root – is the opposite of squaring a number. It uses the symbol $\sqrt{\quad}$ e.g. $\sqrt{9} = 3$

Cube root – is the opposite of cubing a number. It uses the symbol $\sqrt[3]{\quad}$ e.g. $\sqrt[3]{8} = 2$

Powers of 10 and Decimals

Billions			Millions			Thousands			Ones		
H	T	O	H	T	O	H	T	O	H	T	O
			3	1	4	8	0	3	3	0	2
											9

Placeholder

Ones	Tenths	Hundredths
	0.1	0.1

Ones	Tenths	Hundredths
	0.1	0.01

$$0.3 > 0.23$$

"There are more counters in the furthest column to the left"

0.30
0.23

Comparing the values both with the same number of decimal places is another way to compare the number of tenths and hundredths

Put these decimals in ascending order:
increasing

2.68 2.957 2.62

Starting with the most valuable column, compare digits until you find the lowest number.

2 nd lowest	lowest
2.68	2.62

2 nd lowest	lowest	3 rd lowest
5.45	5.38	5.405

2.62, 2.68, 2.957 5.359, 5.38, 5.405, 5.45

Multiplying Decimals By Powers of 10

Look for Place Value Patterns

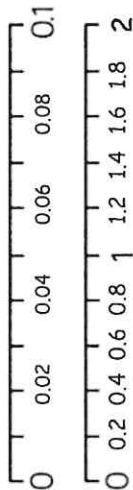
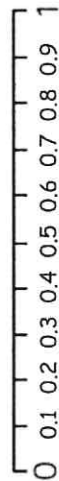
47.63 $\times$ 100 = 4,763
47.63 $\times$ 10 = 476.3
47.63 $\times$ 1 = 47.63
47.63 $\times$ 0.1 = 4.763
47.63 $\times$ 0.01 = 0.4763
47.63 $\times$ 0.001 = 0.04763

If its greater than 1, move to the right.
If its less than 1, move to the left.

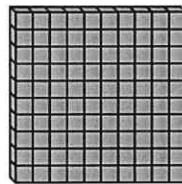
Power of 10	Calculation	Result	In Words
10^0	-	1	units
10^1	$10 (\times 1)$	10	tens
10^2	$10 \times 10 (\times 1)$	100	hundred
10^3	$10 \times 10 \times 10$	1,000	thousand
10^4	$10 \times 10 \times 10 \times 10$	10,000	ten thousand
10^5	$10 \times 10 \times 10 \times 10 \times 10$	100,000	hundred thousand
10^6	$10 \times 10 \times 10 \times 10 \times 10 \times 10$	1,000,000	million

Decimal intervals on a number line

One whole split into 10 parts makes tenths = 0.1
One tenth split into 10 parts makes hundredths = 0.01



Use blocks & numbers to express:



= 1

Addition

0.05 + 0.06



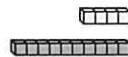
0.11

Subtraction



= 0.1

0.3 - 0.16



0.14

Multiplication with decimals

Convert to an integer calculation

$$0.17 \times 0.4 = 0.068$$

Use any method to multiply

$$17 \times 4 = 68$$

Convert the answer back.

$$\begin{array}{r} \div 10 \\ \div 10 \\ \div 10 \\ \hline 0.068 \end{array}$$

Division with decimals

Write the division as a fraction

$$2.4 \div 0.4 = \frac{2.4}{0.4}$$

Multiply both parts of the fraction to eliminate the decimal denominator.

$$\begin{array}{r} \times 10 \\ \hline \frac{2.4}{0.4} = \frac{24}{4} = 24 \div 4 = 6 \end{array}$$

Finish the division.

Fractions

Learn by heart

Numerator: the top number in a fraction.
This is how many parts are selected.

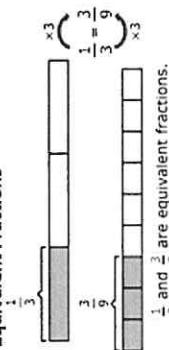
Denominator: the bottom number in a fraction
This is how many equal parts the whole is split into.

$$\frac{2}{5}$$

Whole:
All of the parts
e.g. $\frac{5}{5}$ or $\frac{101}{101}$

Unit Fraction:
A fraction with
a numerator
of 1
e.g. $\frac{1}{5}$

Equivalent Fractions



Adding and subtracting fractions

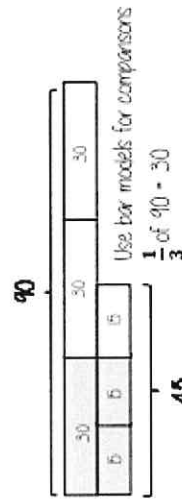
$$\frac{2}{5} + \frac{3}{7} = \frac{14}{35} + \frac{15}{35} = \frac{29}{35}$$

To add and subtract unlike fractions
convert both of them to have the
same denominator as the other.

Subtracting

$$\frac{21}{4} - \frac{8}{3} = \frac{63}{12} - \frac{32}{12} = \frac{31}{12}$$

Finding fractions of amounts

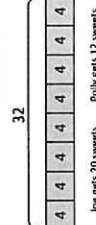


$$\frac{1}{3} \text{ of } 45 = \frac{2}{3} \text{ of } 45$$

Joe & Polly share 32 sweets.

Joe gets $\frac{5}{8}$ of them. Polly gets $\frac{3}{8}$ of them.

How many sweets do they each get?



Comparing Fractions

$$\frac{1}{3} = \frac{5}{15} \quad \frac{2}{5} = \frac{6}{15} \quad \frac{1}{3} < \frac{2}{5}$$

Step 1:

$$= \frac{6}{17} \quad \frac{16}{17}$$

Denominators are same

Step 2:

$$= \frac{6}{17} \quad \frac{16}{17}$$

By comparing the numerators
16 is greater than 6

Step 3:

$$= \frac{6}{17} < \frac{16}{17}$$

Inequalities

> Is greater than

< Is less than

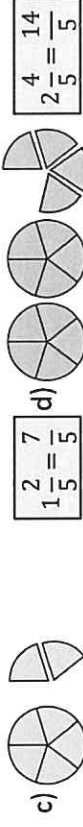
≥ Is greater than or
equal to

≤ Is less than or
equal to

Improper fractions and mixed numbers



$1\frac{2}{5}$ and $\frac{7}{5}$ are equivalent.



Half-term 1 – Introductions and basic details

Quiz 1.1 – Introducing yourself and saying how you are

Hello	Bonjour
Hi	Salut
How are you?	Ça va?
I am fine/bad, thank you	Ça va bien/mal, merci
I am called ----- and you?	Je m'appelle ----- et toi?
Goodbye	Au revoir

Quiz 1.2 – Numbers and age

How old are you?	Quel âge as-tu?
I am 11/12 years old ("I have 11/12 years")	J'ai onze/douze ans
I am 13/14 years old	J'ai treize/quatorze ans
I am 25 years old	J'ai vingt-cinq ans

Quiz 1.3 – Dates and birthdays

Know days and months to create dates and birthdays (see page 7 in this booklet)	lundi sept septembre <i>Monday 7th September</i>
When is your birthday?	Quelle est la date de ton anniversaire?
My birthday is on the ---	Mon anniversaire, c'est le ---

Quiz 1.4 – Saying what objects you have and don't have

I have a phone	J'ai un portable
I have a games console and a tablet	J'ai une console et une tablette
I have <u>two</u> teddies	J'ai <u>deux</u> peluches
I don't have a <u>small car</u>	Je n'ai pas de <u>petite voiture</u>
I would like a <u>pen</u>	Je voudrais <u>un stylo</u>
My favourite object is <u>a book</u>	Mon objet préféré, c'est <u>un livre</u>

Quiz 1.5 – brothers and sisters

I have a brother and a sister	J'ai un frère et une soeur
I have a half-brother	J'ai un demi-frère
I don't have a brother or a sister	Je n'ai pas de frère ou soeur
I would like a half-sister	Je voudrais une demi-soeur
who is called <u>Bob</u>	qui s'appelle <u>Bob</u>
I have <u>two sisters</u> who are called Lucy and Megan	J'ai <u>deux soeurs</u> qui s'appellent Lucy et Megan

Parallel texts

Hi! How are you? My name is Francine and I have 12 years. My birthday is the 13th January. And you? In my family I have a brother who is called Daniel and a half-brother who is called Luc. I have also two sisters who are called Elisha and Annabelle. I don't have half-sister but I would like A half-sister. My object favourite is a phone. In addition, I have a book and a pen, however I don't have medal. I would like a console. Goodbye!	Salut. Ça va? Je m'appelle Francine et j'ai douze ans. Mon anniversaire est le treize janvier. Et toi? Dans ma famille j'ai un frère qui s'appelle Daniel et un demi-frère qui s'appelle Luc. J'ai aussi deux soeurs qui s'appellent Elisha et Annabelle. Je n'ai pas de demi-soeur mais je voudrais une demi-soeur. Mon objet préféré est un portable. En plus, j'ai un livre et un stylo, cependant je n'ai pas de médaille. Je voudrais une console. Au revoir!
Hi! How are you? My name is Francine and I have 12 years. My birthday is the 13th January. And you? In my family I have a brother who is called Daniel and a half-brother who is called Luc. I have also two sisters who are called Elisha and Annabelle. I don't have half-sister but I would like A half-sister. My object favourite is a phone. In addition, I have a book and a pen, however I don't have medal. I would like a console. Goodbye!	Salut. Ça va? Je m'appelle Francine et j'ai douze ans. Mon anniversaire est le treize janvier. Et toi? Dans ma famille j'ai un frère qui s'appelle Daniel et un demi-frère qui s'appelle Luc. J'ai aussi deux soeurs qui s'appellent Elisha et Annabelle. Je n'ai pas de demi-soeur mais je voudrais une demi-soeur. Mon objet préféré est un portable. En plus, j'ai un livre et un stylo, cependant je n'ai pas de médaille. Je voudrais une console. Au revoir!

End of half-term checklist			
I can...	☹	☺	☺
give my name and age			
ask for someone's name and age			
give my birthday			
ask for someone's birthday			
recall months, days and numbers 1-31			
talk about objects I have/don't have			
talk about brothers and sisters			

Half-term 2 – Describing myself and others



Quiz 2.1- Other family members and their ages

I have a brother	J'ai un frère
I don't have a sister	Je n'ai pas de soeur
He has an uncle	Il a un oncle
I have an Aunt. She is called Andrea	J'ai une tante. Elle s'appelle Andrea
In my family there is my dad, my mum and me	Dans ma famille, il y a mon père, ma mère et moi

Quiz 2.2 – Pets/Objects/Colours

I have a black dog and a brown hamster	J'ai un chien noir et un hamster marron
He has a white cat	Il a un chat blanc
She has a blue bird	Elle a un oiseau bleu
I have a green tortoise	J'ai une tortue verte
I don't have a black mobile	Je n'ai pas de portable noir

Quiz 2.3 – Describing hair and eyes

I have long, brown hair	J'ai les cheveux bruns et longs
I have short, blonde hair	J'ai les cheveux blonds et courts
I have blue eyes	J'ai les yeux bleus
he has green eyes	Il a les yeux verts
my mum has red hair	Ma mère a les cheveux roux

Quiz 2.4 – Describing personalities and height

I am sporty and intelligent	Je suis sportif et intelligent
I am not active	Je ne suis pas actif / active
He is very fun	Il est très amusant
She is quite boring	Elle est assez barbante / ennuyeuse
I am really tall (f)	Je suis vraiment grande
He is fun however she is shy.	Il est amusant cependant elle est timide.

Parallel texts

Good day. I am called Kacper. I have twelve years. My birthday is the 14 September. In my family there is my mum, my dad, my brother and two sisters who call themselves Bart, Kinga and Ola. Bart is very sporty like me but my sister Ola is really stupid and Kinga is quite difficult even if she is fun. Finally, I have two hamsters white, a cat who calls himself Oskar and a fish but I would like to have a dog black. I have the hair dark and short, and the eyes blue. I am quite tall. I am also sporty and I am not shy in general. In my class Dawid is cool and he loves the football. In GCSE you often have to cope with translating words you have not met before and work them out from the clues around them How did you cope?	Bonjour. Je m'appelle Kacper. J'ai douze ans. Mon anniversaire est le 14 septembre. Dans ma famille, il y a ma mère, mon père, mon frère et mes deux soeurs qui s'appellent Bart, Kinga et Ola. Bart est très sportif comme moi mais ma soeur Ola est vraiment stupide et Kinga est assez difficile, même si elle est amusante. Enfin, j'ai deux hamsters blancs, un chat qui s'appelle Oskar et un poisson mais je voudrais avoir un chien noir. J'ai les cheveux noirs et courts et les yeux bleus. Je suis assez grand. Je suis aussi sportif et je ne suis pas timide en général. Dans ma classe Dawid est cool et il adore le foot.
Good day. I am called Kacper. I have twelve years. My birthday is the 14 September. In my family there is my mum, my dad, my brother and two sisters who call themselves Bart, Kinga and Ola. Bart is very sporty like me but my sister Ola is really stupid and Kinga is quite difficult even if she is fun. Finally, I have two hamsters white, a cat who calls himself Oskar and a fish but I would like to have a dog black. I have the hair brown and short, and the eyes blue. I am quite tall. I am also sporty and I am not shy in general. My mum is fun and intelligent. She has the eyes green and the hair long and blonde.	Bonjour. Je m'appelle Kacper. J'ai douze ans. Mon anniversaire est le 14 septembre. Dans ma famille, il y a ma mère, mon père, mon frère et mes deux soeurs qui s'appellent Bart, Kinga et Ola. Bart est très sportif comme moi mais ma soeur Ola est vraiment stupide et Kinga est assez difficile, même si elle est amusante. Enfin, j'ai deux hamsters blancs, un chat qui s'appelle Oskar et un poisson mais je voudrais avoir un chien noir. J'ai les cheveux bruns et courts et les yeux bleus. Je suis assez grand. Je suis aussi sportif et je ne suis pas timide en général. Ma mère est amusante et intelligente. Elle a les yeux verts et les cheveux longs et blonds.

Year 7: RE– Introduction to Catholicism

Big Picture

Catholicism is a **worldwide Christian faith** that teaches us how to live in **friendship with God** and with others.

It is built on the **life and teachings of Jesus Christ**, passed down through **Sacred Scripture**, the **Church**, and its **Traditions**.

In this unit, you'll explore what **Catholics believe**, how they **worship**, and how they try to live with **love, faith**, and **hope** every day

Key Vocabulary

Term	Meaning
Trinity	God is one, but known in three Persons: Father, Son, and Holy Spirit.
Monotheism	Belief in one God.
Messiah / Christ	"Anointed one" – chosen by God. Jesus is the Messiah.
Denomination	A group within Christianity, e.g. Catholic, Anglican, Methodist.
Sacrament	An outward sign of an inward grace. There are 7 in the Catholic Church.
Pope	The leader of the worldwide Catholic Church.

Key Christian Beliefs

Christians believe in one God (Monotheism).

Jesus is God in human form (God the Son).

Jesus died to save humans from sin.

The Bible is the holy book of Christians.

Christians follow Jesus' teachings and the 10 Commandments.

The Cross is the main symbol of Christianity.

Roman Catholic Church & Organisation

Jesus started the Church.

After He rose to heaven, His apostles spread His message.

The apostles chose bishops to lead new Christian communities.

Peter was chosen by Jesus to lead the Church.

The Pope is the successor of Peter

The Pope is the Bishop of Rome

The Pope leads the Catholic Church today.

Catholics are the largest Christian group – 1.4 Billion

Catholics follow the Bible and the Pope's guidance.

Catholics believe in 7 sacraments (e.g. Baptism, Eucharist)

Sacraments help to reach heaven.

Revision Tips

Chunk your revision: Learn 2–3 terms at a time.

Use dual coding: (e.g.  for Jesus,  for Church).

Flashcards with term on one side and meaning on the other.

Quiz yourself or a friend regularly.

Use colour coding to group ideas

Year 7: RE– Branch 1 – Creation and Covenant

General Revelation & Human Reason

Big Picture

Humans can come to **know God** using **natural reason**—by **reflecting** on **creation**, **human experience**, and the search for **meaning**. This is called **General Revelation**.

This unit explores how Catholics believe that both General Revelation and Human Reason **help us understand God's existence and nature**.

Key Vocabulary

Term	Definition
Revelation	How God makes Himself known to humans.
General Revelation	God revealed through nature, beauty, and human experience.
Divine Revelation	God revealing Himself directly (e.g. through Jesus, Scripture, miracles).
Human Reason	The ability to think, reflect, and understand truth using our minds.
Creation	The act of God bringing everything into existence.
Creation ex nihilo	Latin for 'creation out of nothing'—shows God's power.
Prayer	Talking and listening to God—a response to Revelation.
Stewardship	Caring for the world as a gift revealed by God.
Scientism	The belief that only science can explain truth—rejects Revelation.
Literal Sense	The meaning the author intended in Scripture.
Creationism	Belief that Genesis is literally true—rejects symbolic meaning.

Understanding Revelation

Revelation means uncovering or making known what was previously unknown.

God **reveals** Himself so we can **know Him** and **live in relationship** with Him.

This is done in two ways:

- **Divine Revelation:**
Direct—through Jesus, Scripture, miracles.
- **General Revelation:**
Indirect—through nature, beauty, and reason.

What is Human Reason?

Reason is our ability to **think**, **question**, and **understand**.

We use reason to:

- **Reflect** on the world and universe
- **Ask** big questions (e.g. "Why am I here?").
- **Recognise** signs of God in creation.

Faith and reason work together in Catholic belief.

Scripture and Revelation

The Bible is a key source of **Divine Revelation**.

Genesis reveals truths about:

- **God** (powerful, loving Creator),
- **Humans** (made in God's image),
- **Creation** (good and with purpose).

Literal sense = what the author meant.

Reading literally = taking every word as fact

Prayer: Responding to Revelation

"Raising of one's mind and heart to God." (CCC 2559)

We pray because **God has revealed Himself** to us.

Types of prayer:

- **Petition** – Asking for Self
- **Intercession** – Asking for others
- **Reconciliation** – Seeking forgiveness
- **Thanksgiving** – recognising our blessings
- **Adoration** – Recognising our reliance on God

Other religions also pray,

Each religion **understands Revelation differently** due to different scriptures and traditions.

Creation, Science & Revelation

Creationism believes Genesis is **literally true** - rejects science.

Catholic View: The Church **does not support** Creationism. It teaches that Genesis is a **symbolic story** revealing **spiritual truths**, not a scientific explanation.

- Pope Pius XII (1950, Humani Generis) allowed for belief in evolution **as long as it did not deny God** as Creator.
- Pope John Paul II (1996) said evolution is **"more than a hypothesis"** because of the scientific evidence supporting it

Scientism believes only **science gives truth** - rejects Revelation.

Catholic View: The Church **rejects** scientism because it **denies** the role of **faith, philosophy, and divine revelation** in understanding truth.

- Pope John Paul II in Fides et Ratio (1998) taught that **faith and reason** are **both essential** paths to truth.

Catholic view: Science and Revelation work together.

- **Science** explains **how** the world works.
- **Revelation** explains **why** we exist and what it means.

Stewardship: A Response to Revelation

The world reveals God's beauty and power.

Example: A Sunset Over the Ocean

When someone watches a sunset—seeing the colours, the calm waves, and the vast horizon—they often **feel a sense of awe and wonder**. This experience can lead people to **reflect on the beauty and order of the world**, which Catholics believe **points to a Creator**.

Source of Authority:

- “The world, starting from movement, becoming, contingency, and the order and beauty of the world, can be known as the origin and end of all things: God.”

(CCC 32)

By observing the natural world, people can use **reason** to come to know that God exists.

This does not rely on Scripture or religious teaching.

Catholic Social Teaching (CST):

1. Human Dignity – Everyone is made in the **image of God**
2. Common Good - **Work** for what is **best** for **everyone**
3. Solidarity - **Stand together** and **help** each other.
4. Stewardship - God gave the Earth. **Care** for it **not waste** it

- “Everything is connected.”

- “We must hear the cry of the Earth and the poor.”

Modern Example: Sister Dorothy Stang

A **Catholic nun** and **missionary** from the United States who lived and worked in Brazil.

Believed that **God is revealed in nature and in people**, especially the **poor and vulnerable**.

Saw **the rainforest** as part of **God's creation** that must be protected.

Defended the Amazon rainforest from illegal logging and destruction.

Supported poor farmers by helping them gain land rights and live sustainably.

She **taught people about their dignity** and the importance of caring for creation.

Responded to **General Revelation** by recognising God in the beauty of creation and the **dignity** of every person.

Lived out her faith with **love, courage, and justice**, even when it was dangerous.

2005, **martyred** for standing up to powerful landowners.

Her life and death are a powerful example of **faith in action**.

Laudato Si' (Pope Francis):

- “The Earth is our common home.”

Year 7: RE– Branch 2 – Prophecy and Promise
Divine Revelation and Sacred Scripture

Big Picture

While human reason can help us know some things about God (General Revelation), there are truths we could never discover on our own. These are revealed through **Divine Revelation**—God’s direct communication with humanity.

This unit explores how **Sacred Scripture** is a key source of Divine Revelation and how Catholics believe the Bible reveals **God’s** plan, His promises, and our purpose.

Key Vocabulary

Term	Definition
canon (of scripture)	the agreed list of books that make up the Catholic Bible
Dei Verbum	‘Word of God’. a document from the Second Vatican Council explaining how Jesus is the Word of God
inspired	God breathed; the belief that the Holy Spirit guides a person to act or write what is good and true
Liturgy of the Word	the part of Mass where the word of God is proclaimed (announced)
magisterium	from the Latin term magister, meaning teacher or master; it is the authority of the Church to teach
New Testament	Second half of the Bible, which tell the story of Jesus’ life, ministry, death and resurrection, and the establishment of the early Church
Old Testament	First half of the Bible showing the creation of the world and God’s relationship with the Israelites
revelation	The way in which God is made known to humans, which Catholics believe is most perfectly done through Jesus

Understanding Revelation

Catholics believe that God reveals Himself in two ways:

- **General Revelation:** through nature, beauty, and human reason.
- **Divine Revelation:** through Scripture, Tradition, and the life of Jesus.

The **Magisterium** (teaching authority of the Church) helps interpret Revelation so that the message of God is faithfully passed on.

Scripture and Interpretation

The Bible was originally written in **Hebrew, Aramaic, and Greek**.

Different **translations** of the Bible can vary in wording and tone, which can affect how a passage is understood.

The Bible contains many **literary forms** such as poetry, law, history, and prophecy.

It is best read as a **library of books**, not as a single book.

Old Testament Overview

The Old Testament tells the story of God's covenant with the people of Israel.

It includes key figures such as **Abraham, Moses, and David**.

Many of these books are also part of the **Jewish Tanakh**.

It reveals God as **Creator, Lawgiver, and Faithful** to His promises.

God as Creator

- **Genesis 1:1** – *"In the beginning, God created the heavens and the earth."*

Genesis 2 – The second creation account shows God forming humanity with care, breathing life into Adam.

God as Lawgiver

- **Exodus 20:1–17** – The **Ten Commandments**
- Deuteronomy 5** – A restatement of the Law, reinforcing God's authority and expectations.

God as Faithful to His Promises

- **Exodus 2:24** – *"God heard their groaning and he remembered his covenant with Abraham, with Isaac and with Jacob."*
- **Joshua 21:45** – *"Not one of all the Lord's good promises to Israel failed; every one was fulfilled."*

New Testament Overview

The New Testament focuses on the life, death, and resurrection of **Jesus Christ** and the growth of the early Church.

It includes:

- **The Gospels** – Tell the story of Jesus' life, teachings, death, and resurrection (Matthew, Mark, Luke, and John).
- **Acts of the Apostles** – Describes the early Church and the spread of the Gospel after Jesus' ascension.
- **Letters (Epistles)** – Written by apostles like Paul to guide and encourage early Christian communities.
- **The Book of Revelation** – A symbolic vision of hope and final victory, showing God's ultimate triumph over evil.

It shows the **fulfilment** of the promises made in the Old Testament.

OT - 2 Samuel 7:12–13 – God promises David a descendant whose kingdom will last forever.

NT – Luke 1:32–33 – *"The Lord God will give him the throne of his father David ... his kingdom will never end."*

Scripture in the Mass

Scripture is central to the **Catholic Mass**,

In the **Liturgy of the Word**, Bible readings are proclaimed.

Many prayers and responses in the Mass are based on

Scripture, including the **Psalms**.

Understanding the structure of the Mass helps Catholics participate more fully in worship.

Mass

Introductory Rites

The congregation gathers, prepares to worship, and asks for forgiveness.

Liturgy of the Word

Scripture readings are proclaimed, followed by a homily and prayers.

Liturgy of the Eucharist

The bread and wine are consecrated and received as the Body and Blood of Christ.

Concluding Rites

The priest blesses the people and sends them out to live the Gospel.

The **Lindisfarne Gospels** are an example of illuminated manuscripts

They show the **reverence and beauty** with which Scripture has been treated.

Reflect the importance of the Bible in the **life of the Church**.

Sacred Texts in Other Religions

The Torah in Judaism

Most sacred text in Judaism, consisting of the first five books of the Hebrew Bible

Contains the **Law of Moses**, including the Ten Commandments,

The Torah is read regularly in **synagogue worship**, written on scrolls, and treated with great **reverence**—never touched directly, often adorned with decorative covers and crowns.

The Qur'an in Islam

Holy book of Islam, believed to be the **literal word of God (Allah)** revealed to the Prophet Muhammad in Arabic.

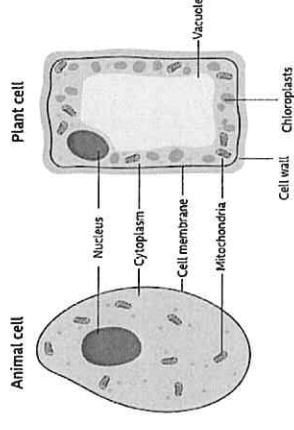
Divided into **114 chapters (surahs)** and covers guidance on faith, worship, morality, and law.

Recited in Arabic, memorised by many Muslims, and treated with deep **respect**—Muslims perform **ritual washing (wudu)** before touching it, and it is often kept on a high shelf or wrapped in cloth.

Art and Scripture

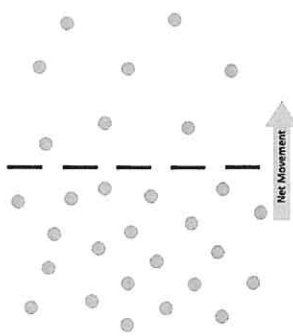
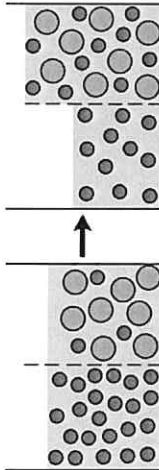
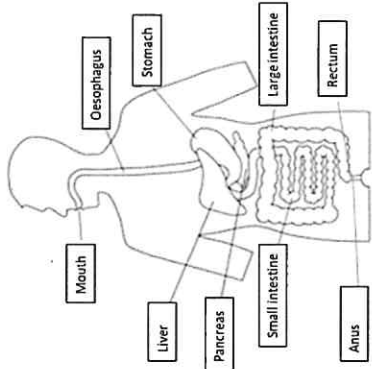
1. Living and Non-Living	2. Classification of Living Organisms
7 life processes something has to be able to do to be classified as being 'living'	Species – A group of organisms that can breed with each other to form fertile offspring.
M - Movement R - Respiration S - Sensitivity G - Growth R - Reproduction E - Excretion N - Nutrition	Kingdoms – Animal, Plant, Fungi, Prokaryotes and Protocists
	Vertebrates - Animals with backbones. Invertebrates – Animal without backbones.

3. Cell Structure		IN PLANTS CELLS ONLY	
IN ANIMAL AND PLANT CELLS		Permanent Vacuole	Contains cell sap, to keep the cell turgid.
Structure	Function	Cell wall	Supports and strengthens the cell (made of cellulose).
Cytoplasm	Where chemical reactions take place.	Chloroplast	Site of photosynthesis. Contain chlorophyll, which absorbs sunlight.
Nucleus	Contains genetic material and controls cell activities.		
Cell membrane	Controls the movement of substances into and out of the cell.		
Ribosome	Site of protein synthesis.		
Mitochondrion	Site of respiration, where energy is released.		



4. Types of Cells	
TYPE OF CELL	FUNCTION
Sperm cell	Carries the fathers' DNA in nucleus
Red blood cell	Carries oxygen around the body
Nerve cell	Carries electrical impulses around body
Root hair cell (plant cell)	Absorb water and minerals from the soil.
Egg cell	Carries the mothers' DNA in the nucleus
Palisade cell (plant cell)	Carry out photosynthesis. Found in leaves, contain chloroplasts.

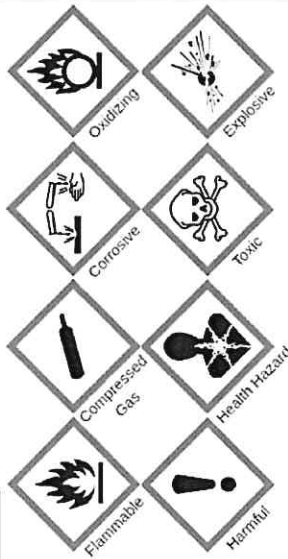
5. Microscopes	6. Systems

7. Cell Transport - Diffusion Diffusion is the movement of a substance from an area of higher concentration to an area of lower concentration. 	8. Cell Transport – Osmosis Movement of water particles from an area of higher water concentration to lower water concentration, across a partially permeable membrane. 	9. Respiration Aerobic respiration requires oxygen. Aerobic respiration occurs in the mitochondria. The word equation is Glucose + Oxygen → Carbon dioxide + Water Anaerobic respiration occurs when there is not enough oxygen. Anaerobic respiration is less efficient than aerobic respiration (releases less energy). In humans, the equation for anaerobic respiration is glucose → Lactic acid Lactic acid causes muscle cramp	10. Fermentation and Anaerobic Respiration Anaerobic respiration in plants and yeast produces ethanol and carbon dioxide which can be used for baking and brewing. The word equation in plants is Glucose → ethanol + carbon dioxide																																																																																																																													
11. Balanced Diet and Deficiency <table><tr><th>Food group</th><th>Why do we need this food group in our diet?</th></tr><tr><td>Carbohydrates</td><td>Gives us energy.</td></tr><tr><td>Lipids (fats and oils)</td><td>stores energy in the body and insulates us against the cold.</td></tr><tr><td>Proteins</td><td>For growth and repair.</td></tr><tr><td>Vitamins and minerals</td><td>Needed in small amounts to maintain health.</td></tr><tr><td>Fibre</td><td>To provide roughage to help to keep the food moving through the digestive system.</td></tr><tr><td>Water</td><td>Needed for cells and body fluids.</td></tr></table>	Food group	Why do we need this food group in our diet?	Carbohydrates	Gives us energy .	Lipids (fats and oils)	stores energy in the body and insulates us against the cold.	Proteins	For growth and repair .	Vitamins and minerals	Needed in small amounts to maintain health .	Fibre	To provide roughage to help to keep the food moving through the digestive system.	Water	Needed for cells and body fluids.	12. Food Test <table><tr><th>Food group:</th><th>Food test:</th><th>Positive sample:</th></tr><tr><td>Starch</td><td>Iodine solution</td><td>From brown to blue-black</td></tr><tr><td>Glucose</td><td>Benedict's solution and heated in water bath</td><td>From blue to brick red</td></tr><tr><td>Protein</td><td>Biuret solution</td><td>From blue to lilac(purple)</td></tr><tr><td>Fat</td><td>Ethanol</td><td>Goes cloudy</td></tr></table>	Food group:	Food test:	Positive sample:	Starch	Iodine solution	From brown to blue-black	Glucose	Benedict's solution and heated in water bath	From blue to brick red	Protein	Biuret solution	From blue to lilac(purple)	Fat	Ethanol	Goes cloudy	13. Digestive System Structure and Function  <table><tr><th></th><th>Rectum</th><th>Stores faeces.</th></tr><tr><td>Anus</td><td>Where faeces is released.</td><td></td></tr></table> <table><tr><th></th><th>Mouth</th><th>Oesophagus</th><th>Stomach</th><th>Liver</th><th>Gall bladder</th><th>Pancreas</th><th>Small intestine</th><th>Large intestine</th><th>Rectum</th></tr><tr><td>Teeth</td><td>chew up food into smaller pieces. Saliva is added, which digests starch.</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Food</td><td>moves down into the stomach, pushed along by the contractions of the muscular walls. (peristalsis)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Stomach</td><td></td><td></td><td>Stomach walls churn up food further and digestive juices and stomach acid are added.</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Liver</td><td></td><td></td><td></td><td>Bile is produced here. Bile helps to digest fats.</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Gall bladder</td><td></td><td></td><td></td><td>Bile, which is produced in the liver, is stored here.</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Pancreas</td><td></td><td></td><td></td><td></td><td></td><td>Produces digestive enzymes.</td><td></td><td></td><td></td></tr><tr><td>Small intestine</td><td></td><td></td><td></td><td></td><td></td><td></td><td>Nutrients diffuse from the small intestine into the blood stream.</td><td></td><td></td></tr><tr><td>Large intestine</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Excess water is re-absorbed into the body. Left behind is waste which cannot be digested.</td><td></td></tr></table>			Rectum	Stores faeces.	Anus	Where faeces is released.			Mouth	Oesophagus	Stomach	Liver	Gall bladder	Pancreas	Small intestine	Large intestine	Rectum	Teeth	chew up food into smaller pieces. Saliva is added, which digests starch .									Food	moves down into the stomach, pushed along by the contractions of the muscular walls. (peristalsis)									Stomach			Stomach walls churn up food further and digestive juices and stomach acid are added.							Liver				Bile is produced here. Bile helps to digest fats.						Gall bladder				Bile , which is produced in the liver, is stored here.						Pancreas						Produces digestive enzymes .				Small intestine							Nutrients diffuse from the small intestine into the blood stream.			Large intestine								Excess water is re-absorbed into the body. Left behind is waste which cannot be digested.	
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Year 7 Chemistry 1 - Matter

1. Safety in the Laboratory

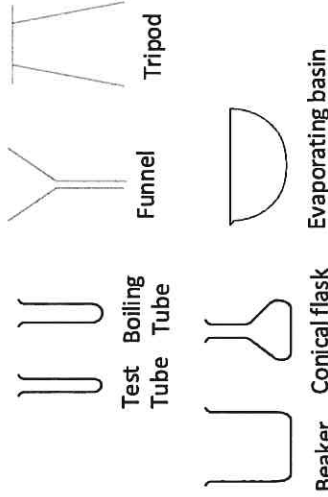
Hazard symbols are used to warn people of potential dangers in a laboratory.



2. Scientific Equipment

Rules for Scientific drawing :

1. Use pencil
2. No sketching
3. No shading.
4. Rulers should be used to draw straight lines for labels
5. Drawing is done in 2D
6. Include labels



3. Variables & Data

Independent variable – The variable you change
Dependent variable – The variable you measure
Control variable – The variables that must be kept constant to make the investigation fair.
Categoric Data – Data which goes into categories e.g. eye colour & hair colour.
Continuous Data – Data which has a numerical value e.g. Weight, height.

4. States of matter

	Solid	Liquid	Gas
Arrangement of particles	Close together Regular pattern Particles are touching	Close together Random arrangement	Far apart Random arrangement
Movement of particles	Vibrate in a fixed position	Move around each other	Move quickly in all directions
Diagram			

5. Properties of matter

Most substances can exist in three states, the state of the substance depends on its temperature.

Solid have a definite shape, they have a fixed volume and cannot be compressed. Solids do not flow
Liquid have no definite shape, take the shape of the bottom of the container. Liquids can flow but can be compressed

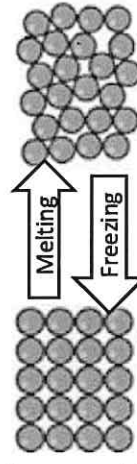
Gas have no definite shape, they take the shape of the whole container they are in. Gases can flow and can be compressed (squashed)

Change of state – When a substance changes from one state to another

6. Melting and Freezing

Changing state from solid to liquid is called melting. Adding energy to a substance causing the particles to vibrate more and move around, this causes a solid to melt into a liquid
 Changing state from liquid to solid is called freezing. Removing energy from a substance causing the particles to slow down, this will cause a liquid to freeze into a solid

Melting point – The temperature at which a substance will turn from solid to liquid – This is also the freezing point –
 The melting point of water is 0°C

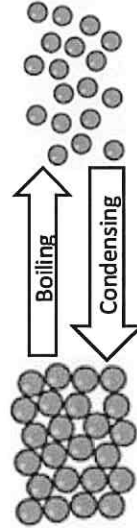


7. Boiling and Condensing

Changing state from liquid to gas is called boiling. Adding energy to a liquid causes the particles to move around more until they gain enough energy to break the bonds between the atoms which are holding them together in a liquid and become a gas

Changing state from gas to liquid is called condensing. Removing energy from a gas causing the particles to slow down, this will cause a gas to condense into a solid

Boiling point – The temperature at which a substance will turn from liquid to gas – This is also the temperature at which it condenses at – The boiling point of water is 100°C



8. How do substances dissolve?

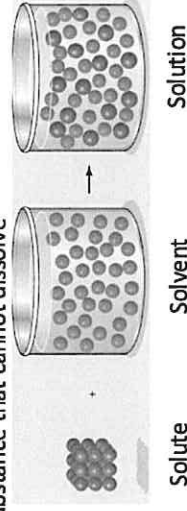
Solute – A substance that is dissolved in a solvent

Solvent – a substance used to dissolve a solute

Solution – A mixture of solvent and solute

Soluble – A substance that can dissolve

Insoluble – A substance that cannot dissolve



Year 7 Chemistry 1 - Matter

9. Elements & Compounds

An atom – The simplest type of particle matter is made of
 An Element - A substance that is made up of only one type of atom.
 Elements are found on the periodic table. The first letter is always a capital letter and the second letter (if applicable) is always a lower case letter e.g. Copper = Cu, Zinc = Zn, Hydrogen = H and Iron = Fe.

Compound - A substance made up of two or more elements chemically joined together.

When a metal reacts with a non-metal, the compound is always named with the metal first and then the non-metal ends in 'ide'.

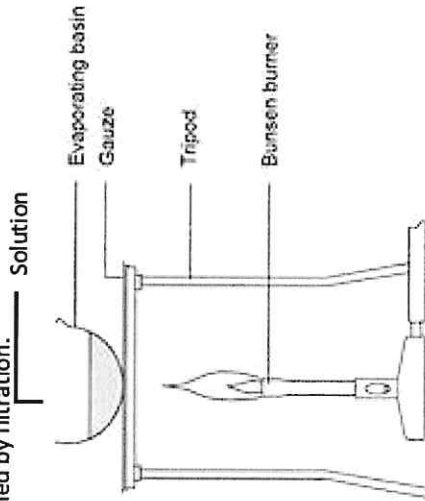
E.g. Copper + Chlorine → Copper Chloride

Iron + Sulphur → Iron Sulphide

Aluminium + Bromine → Aluminium Bromide

12. Evaporation

One way to separate a soluble solid from its solution is to make crystals. This involves evaporating the solution to a much smaller volume and then leaving it to cool. As the solution cools, crystals form, and these can be obtained by filtration.

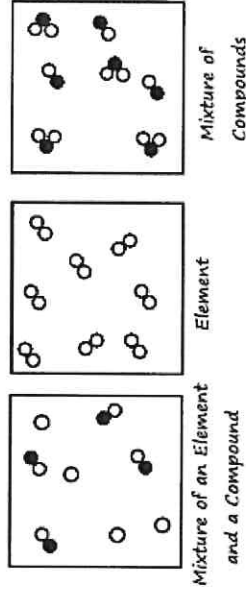


10. Separating Mixtures

Mixture – Made up of several substances that are not chemically joined.

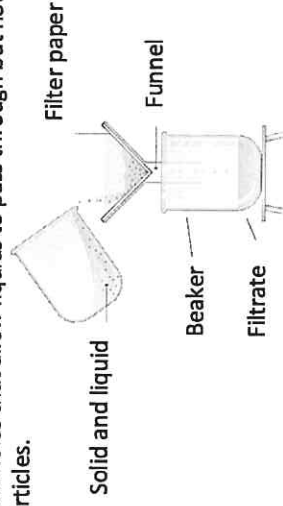
Mixtures can be easily separated using filtration, evaporation, distillation and chromatography.

Examples of mixtures include: Air, salt water and coffee.



11. Filtration

Filtration is a process used to separate insoluble solids from liquids. E.g. Sand and water. The apparatus you would use to filter is a funnel and filter paper. Filter paper contains really small holes that allow liquids to pass through but not solid particles.

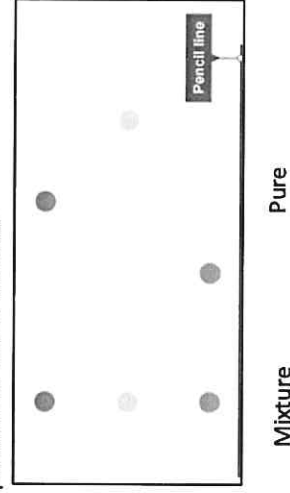


14. Chromatography

Chromatography is a method for separating dissolved substances from one another e.g. inks and food colourings. Chromatography works because some of the coloured substances dissolve in the solvent better than others and travel further up the paper.

The most soluble chemicals travel further up the paper, whereas the less soluble substances do not travel up the paper as much.

Pure substances will only separate into one dot. A mixture will separate into two or more dots



13. Distillation

Distillation is a method for separating two liquids.

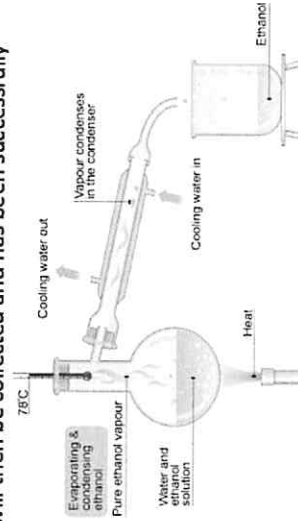
For example, water can be separated from ethanol due to them having two different boiling points.

Water boils at 100°C and Ethanol boils at 78°C.

If you heat the mixture to 80°C the Ethanol will boil but the water will not.

Therefore the ethanol will evaporate and travel up and along the condenser where it will cool down and condense turning it back into a liquid.

The Ethanol will then be collected and has been successfully separated.

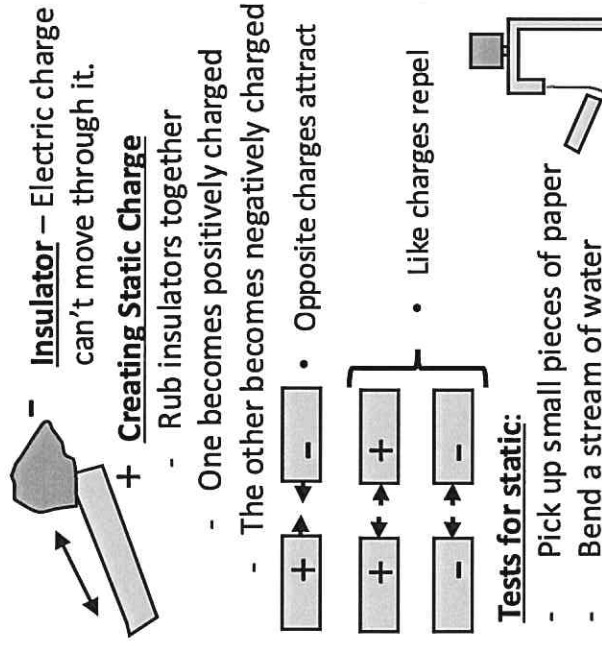


Year 7 – P1 - Forces and Motion

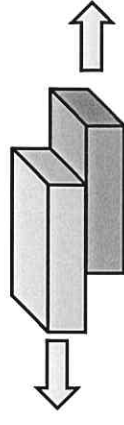
1 – Forces

- Forces are:- **pushes, pulls and twists**
- measured in **Newton's (N)**
 - measured using a **Newtonmeter**
- Contact Forces :- **Objects must be touching:**
- **Friction** – Between objects rubbing together
 - **Tension** – Pull from a tight rope or string
 - **Normal Contact** – 90° to a surface
 - **Air Resistance** – frictional force on object moving through *air*
 - **Thrust** – Force from an engine
 - **Upthrust** – buoyancy force in a liquid & gas
- Non-Contact Forces :- **Objects do not need to be touching (can act from a distance)**
- **Gravitational** – Force from objects having a mass
 - **Weight** – Force due to gravity
 - **Magnetic** – Attraction / repulsion in magnetic objects
 - **Electrostatic** – Attraction or repulsion of charges

2 – Electrostatic Force

- Insulator** – Electric charge can't move through it.
- Creating Static Charge**
- Rub insulators together
 - One becomes positively charged
 - The other becomes negatively charged
- Opposite charges attract
- Like charges repel
- Tests for static:**
- Pick up small pieces of paper
 - Bend a stream of water
- 

3 – Friction



Frictional forces **always** act in the opposite direction to motion

Reducing friction:

- Move at a lower speed
- Smoother surface
- Lubrication (E.g. Oil)

Friction Problems

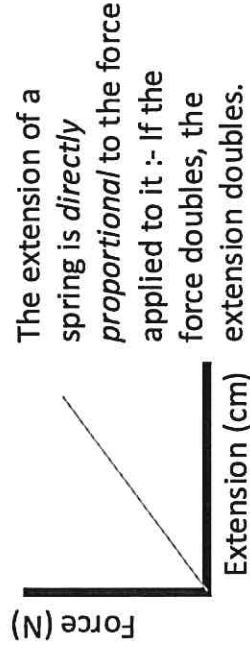
- Objects heat up
- Objects get worn down

Useful friction: Getting a grip on things

Air resistance and drag are both frictional forces!

4 – Springs

Springs are **elastic** :- They return to their original shape when the force is removed.



When a spring is stretched, it stores **energy** which can later be released, causing objects to move.

Newtonmeters are **calibrated** springs.

5 – Balanced and Unbalanced Forces

- If all **opposite** forces are equal, then the forces are **balanced**.
- Unbalanced** forces will cause a change in **speed** and / or **direction**
- To find the **OVERALL RESULTANT** force, find the difference between opposite forces. The **direction** of the force is the **same** as the **biggest force**
- E.g.
15 N – 10 N = 5 N to the left

6 – Know Your Scientists!



Sir Isaac Newton (1643-1727)

Newton was a great mathematician and physicist. His discoveries included:

- The 3 Laws of Motion
- The Law of Gravity
- Splitting white light into the spectrum

Year 7 – P1 - Forces and Motion

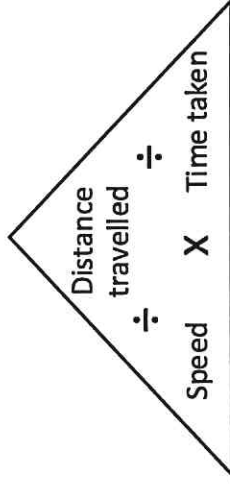
1 – Speed

Speed tells us how *far* something can travel in a certain *time*

Speed's unit is **metres per second, (m/s)**



$$\text{Average speed} = \frac{\text{Distance Travelled}}{\text{Time Taken}}$$

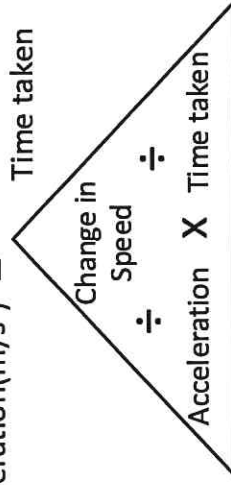


4. Acceleration

Acceleration tells us how much something's speed *changes* in a certain time – The number of metres per second **per second**, or **metres per second squared, (m/s²)**.

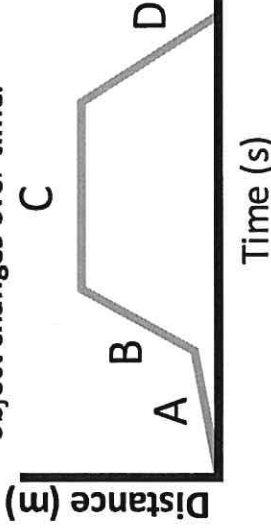
Slowing down is called **deceleration** and has a negative value of acceleration, e.g. -2 m/s²

$$\text{Acceleration(m/s}^2\text{)} = \frac{\text{Change in Speed}}{\text{Time taken}}$$



2 – Distance-Time Graphs

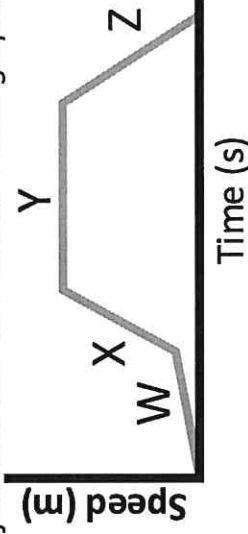
These graphs show how the **distance** of an object **changes** over **time**.



A	Constant speed, away from start
B	Constant Speed – Greater than A
C	Stationary (at rest)
D	Constant Speed – Back to Start

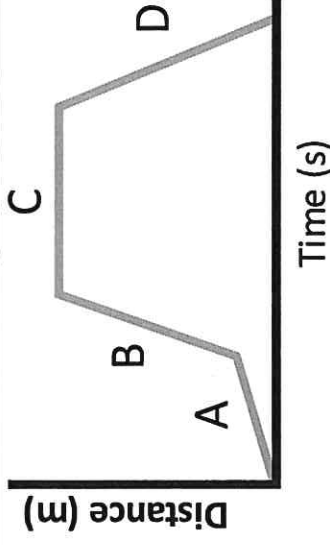
5 – Speed-Time Graphs

These graphs show how the **speed** of an object **changes** over **time**. *Beware the differences with the Distance-Time graphs!*



W	Constant acceleration (small)
X	Constant acceleration (large)
Y	Constant Speed
Z	Decelerating (slowing down) to stop.

3 – Distance Time graphs Calculations



Steeper gradient = *greater* speed
Gradient - A gradient is a measure of how steep a line on a graph is
$$\text{Gradient} = \frac{\text{Change in distance}}{\text{Change in time}}$$

6 – Parachutes

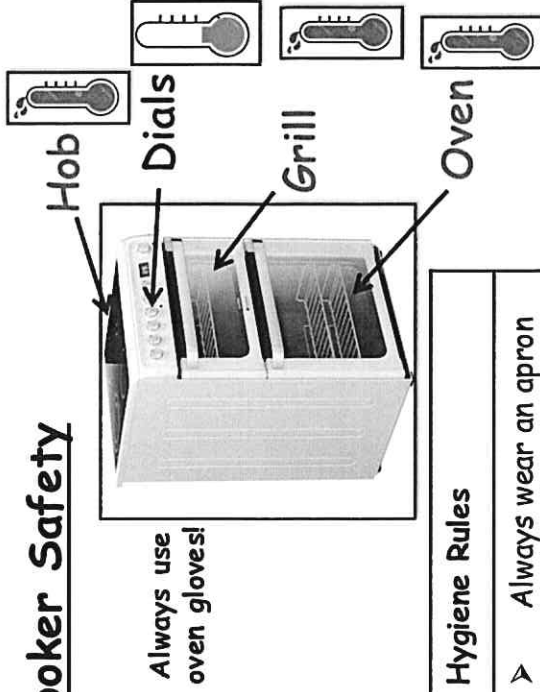
↓ W = Weight A = Air Resistance ↑

Fall Section	Forces	Speed
	$W > A$	Increases
	$W = A$	Constant
	$W < A$	Decreases
	$W = A$	Constant (lower than first constant speed)

Parachutes have a LARGE SURFACE AREA to increase air resistance.

Y7 Food Preparation and Nutrition – Knowledge Absolute

Cooker Safety



Food Science term	Definition
Dextrinisation	The browning of starch
Shortening	Stopping the gluten strands from stretching
Denaturation	When the structure of a food containing protein is altered by heat, chemical or mechanical action
Caramelisation	When sugar turns brown

8 tips for healthier eating

These eight practical tips cover the basics of healthy eating, and can help you make healthier choices.

1. Base your meals on starchy carbohydrates.
2. Eat lots of fruit and veg.
3. Eat more fish – including a portion of oily fish.
4. Cut down on saturated fat and sugar.
5. Eat less salt (max. 6g a day for adults).
6. Get active and be a healthy weight.
7. Don't get thirsty.
8. Don't skip breakfast.

Ingredient	Function
Flour	Bulk out products like muffins and scones. To dextrinise in scones and muffins
Egg	To bind ingredients together in muffins and scones.
Butter	To shorten scones and biscuits
Sugar	To sweeten sweet products. To caramelise in biscuits and cakes

Hygiene Rules

- Always wear an apron
- Tie long hair back
- Remove nail varnish
- Remove jewellery
- Wash pots in hot soapy water

Method of Heat Transfer and explanation	Example of food cooked using this method
Conduction – Transfer of heat through the vibration of the particles. When the particles collide they pass on some energy.	Pasta Roast Beef Pizza
Radiation – Transfer of heat energy through waves of radiation. No direct contact between the food and heat source. When the waves of radiation reach food they are absorbed and heat up the food.	Toast Grill meat or fish
Convection – Transfer of heat energy through gases or liquids. When you heat the liquid the part near the heat source heats up first. The warmer liquid rises and cooler liquid falls. This circulation continues until all the liquid is heated. Convection also happens in ovens.	Pasta Rice Boiling vegetables

Key Terms
 Combine: To mix 2 or more things together
 Hygiene: Cleanliness
 Bacteria: germs
 Organelle: involving the use of sense organs
 Function: what something does
 Provenance: where food comes from
 Nutrient: Provides nourishment for the body
 Dextrinisation: Browning of starch by dry heat
 Coagulation: When a mixture sets
 Sensory test: using sense organs to evaluate food
 Enzymic: Action of enzymes
 Carbon Footprint: Amount of carbon dioxide something releases into the environment
 Greenhouse Gas: emissions that are harmful to the planet
 Bridge and claw: knife holds
 Quality Control: measures put into place to ensure uniformity

 Name: Spatula Use: Scraping bowls	 Name: Sharp knife Use: Cutting vegetables	 Name: Saucepan Use: Boil or simmer food	 Name: Teaspoon Use: Measuring ingredients
 Name: Mixing Bowl Use: Mixing ingredients together	 Name: Fish slice Use: To lift products off baking trays	 Name: Mixing Bowl Use: Mixing ingredients together	 Name: Spatula Use: To scrape mixture out of bowls

Bridge



Always use the correct knife techniques.

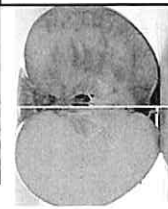
Claw



Claw
 Rubbing in = incorporating butter into flour using fingertips

Four C	Description	Examples
Cleaning	Ensuring you clean yourself and your work area to prevent bacteria growth.	Wash your hands Wipe surfaces Wash all equipment
Cooking	Ensure food is cooked thoroughly to at least 72c in the centre.	Cooking meat until juices run clear
Chilling	Keep all food stored correctly, if it needs to be chilled keep in a fridge.	Keep chilled food in a fridge like cheese, milk and chicken.
Cross-Contamination	Ensure raw and cooked food are kept apart.	Use separate chopping boards and utensils for raw and cooked food. Keep raw food at the bottom of the fridge

Bacteria	Source	Symptoms
Salmonella	Raw meat, poultry, eggs, milk, dairy products	Diarrhoea, vomiting, fever & headache, abdominal pain
Listeria	Pasteurised and raw milk, cheese, soft ice cream, raw vegetables, raw meat	Flu like symptoms, nausea, vomiting, diarrhoea, may cause abortion, still birth, meningitis, septicemia.
Staphylococcus Aureus	Meat, meat products, poultry, nose and throat of humans	Vomiting, abdominal pain, diarrhoea
E-Coli	Sewage, soft cheese, minced beef and chicken	Diarrhoea, abdominal pain, nausea
Campylobacter	Meat, poultry, raw milk, untreated water, chickens	Diarrhoea, flu like symptoms, headache, fever, abdominal pain
Bacillus Cereus	Rice, cereal products and starchy foods i.e. potatoes.	Diarrhoea, abdominal pain, nausea



Enzymatic Browning

When fruits containing polyphenol oxidase are exposed to oxygen they go brown. This includes fruits like apples and bananas. This is enzymatic browning. Grating or bruising the fruit speeds this up and adding acid like lemon juice or blanching the food slows it down.

How to write a hypothesis

- ✓ A hypothesis is what you think you will prove e.g. I think that the best sauce will be contain plain flour.
- ✓ It is clear and to the point
- ✓ No more than two sentences

How to conduct a fair test

- ✓ Always have a control to compare the samples to
- ✓ Only change one thing in each sample so you know what is effecting the sample
- ✓ Always use sample codes to prevent bias
- ✓ Use a variety of testers

Why do we choose the foods we eat?

- ✓ Cost
- ✓ Culture/religion
- ✓ Seasons
- ✓ Medical issues
- ✓ Marketing/advertising
- ✓ Ethics



Seasonal food

- ✓ Reduces food miles and environmental impact
- ✓ Costs less
- ✓ Supports local producers
- ✓ Taste and looks better/fresher

Organic food

- ✓ Can be of a higher quality
- ✓ Can taste better
- ✓ More ethical
- ✓ Less environmental impact
- ✓ More sustainable
- ✓ Can be expensive



Fairtrade - Supports farmers in developing countries by offering better prices and better working conditions. Products such as: bananas,

How to save money when buying food

- ✓ Compare prices
- ✓ Buy food seasonally/locally
- ✓ Use coupons or offers
- ✓ Plan your meals
- ✓ Only buy what you need



APPEARANCE	FLAVOUR	TEXTURE	AROMA
Attractive	Acidic	Brittle	Acid
Appetising	Aftertaste	Bubbly	Aromatic
Bright	Balanced	Chewy	Burnt
Burnt	Bitter	Clammy	Cheesy
Colourful	Bland	Close	Fishy
Colourless	Buttery	Creamy	Floral
Crumblly	Cheesy	Crisp	Fragrant
Crystalline	Citrus	Crumblly	Fruity
Cuboid	Cool	Crunchy	Light
Dark	Delicate	Dry	Meaty
Dull	Delicious	Flaky	Musty
Evenly baked	Fizzy	Fluffy	Perfume
Firm	Greasy	Greasy	Pungent
Fizzy	Herby	Gritty	Rancid
Flaky	Hot	Hard	Roasted
Flat	Light	Juicy	Rotten
Fragile	Mature	Lumpy	Savoury
Glossy	Mild	Moist	Scented
Golden	Peppery	Mushy	Sour
Golden brown	Refreshing	Open	Spicy
Greyish	Rich	Rubbery	Strong
Heavy	Salty	Runny	Zesty
Interesting	Savoury	Sandy	
Light	Scrumptious	Short	



Nutrients

Macronutrients - needed in large amounts e.g. fat, protein and carbohydrate
Micronutrients - Needed in small amounts e.g. vitamins and minerals
Food groups - Starchy foods, meat, fish and alternatives, dairy foods, oils and spreads, fruit and vegetables.

Year 7 Mood Light

Design and technology – MoodLight

circuit	electronic circuit is composed of individual electronic components, such as resistors, transistors, capacitors and diodes, connected by conductive wires through which electrical current can flow.	Specialist materials	M.D.F – medium density fibreboard Plywood	This is manufactured board that is made from wood dust and glue it is cheap but breaks easily when cutting. Used to make the insert for the lid. Manufactured board made from multiple layers of thin wood veneer rotated by 90 degrees to each other, cross grain reduces warping.
Isometric drawing	Isometric drawing , also called isometric projection , method of graphic representation of three-dimensional objects, used by engineers, technical illustrators, and, occasionally, architects.	Specialist equipment		Uses
Millimetre	Unit of measurement (metric). There are ten millimetres in a centimetre.	Tenon saw		Tenon saws are commonly used to make the Tenon's used in mortise and Tenon joints. The saw has a short straight blade.
Environment	Can you recycle the product, is it environmentally friendly. Which environment will your product be used or be displayed	Bench Hook		A bench hook is a workbench appliance used in woodworking to hold a workpiece in place while crosscutting with a hand saw.
Safety	How will you ensure that your product will be safe to use for everyone including children?	Cross File		To reduce the surface imperfections and remove waste material
parallel	Parallel definition, extending in the same direction, equidistant at all points, and never converging or diverging; parallel rows of trees.	Vice		to hold the material whilst it is being worked on
right angle	When two straight lines intersect each other at 90° or are perpendicular to each other at the intersection, they form the right angle	Power drill		Power drill to make the holes in wood metal and polymers for the keyring
soldering	Soldering is a joining process used to join different types of metals together by melting solder. Solder is a metal alloy usually made of tin and lead which is melted using a hot iron.	Strip Heater		Method of shaping plastic materials like acrylic. Used to heat and fold (bend) in a line to different angles.
softwood	Softwood refers to Timber that has been cut from a coniferous or an evergreen tree. Softwood trees are fast growing due to not losing their leaves.	Belt sander End Grain sander		A belt sander is designed for high speed sanding, quickly stripping a piece of wood with powerful force, with a rotating abrasive surface.
hardwood	Hardwood is wood from deciduous trees. These are usually found in broad-leaved temperate and tropical forests	Materials		Meaning
manufacture specification	A specification which contains all the information that is needed to make the product. It describes the stages of manufacture and the materials needed.	P.V.A		PVA is a water-insoluble resin which is typically white at the point of application, but dries colourless and has a high bonding strength. Gluing woods to woods.
finishes	Finishes are added to a product's surface after production to improve its functionality and/or aesthetic. Such as: Change the colour of a product, Improving appearance/make the product look more attractive, Change the look and feel of a product Wood stains to enhance the colour of timber. Other finishes for wood are – Varnish, wax, paint or Danish oil.	Acrylic		Tough but brittle polymer. Used for car lights, displays stands & textiles. Poly-methyl Methacrylate PMMA
Input/ output	The input-process-output (IPO) model, or input-process-output pattern, is a widely used approach in systems analysis and software engineering for describing the structure of an information processing program or other process.	Working Properties Working properties relate to how a material responds to external forces and/or conditions.		
L.E.D- Light Emitting Diode	Low voltage light output component used in electronic circuits.	Strength	The ability of a material to withstand force without breaking. Examples of forces include pressure, tension, compression, shear and torsion. Materials may be strong in one force but weak in another (e.g. concrete is strong in compression but weak in tension).	
Marking – out;	Used to measure materials for cutting or joining.	Hardness	The ability of a material to resist wear, abrasion, scratching or denting. Diamond is the hardest naturally occurring substance found on Earth.	
Wood joint	Joints are used to build strength into products made from wood. They should fit accurately.	Toughness	The ability of a material to absorb energy without fracturing	
		Malleability	The ability of a material to be bent and shaped without breaking	
		Ductility	The ability of a material to be stretched or pulled into a strand without breaking	
		Elasticity	The ability of a material to return to its original shape after being stretched, bent or compressed	

Year 7 Mood Light

NATURAL TIMBERS

Hardwoods

Hardwood is from a **deciduous** tree, usually a broad-leaved variety that drops its leaves in the winter.

Ash

Properties: Flexible, tough, and shock resistant
Laminates well, pale brown
Uses: sports equipment & tool handles.

Mahogany

Properties: Easily worked, durable & finishes well.
Reddish brown.
Uses: high end furniture and joinery, veneers.

Oak

Properties: Tough, hard and durable, high quality finish possible. Light brown.
Uses: flooring, furniture, railway sleepers, veneers.

Beech

Properties: Fine finish, tough & durable. Beige with pink hue.
Uses: Children's toys and models, furniture, veneers.

Balsa

Properties: very soft and spongy, good strength to weight ratio, Pale cream/white.
Uses: prototyping and modelling.

1. Give **two** differences between hardwood and softwood. (2)

Hardwood comes from *deciduous trees* (1)
Softwood comes from *coniferous trees* (1)
Deciduous trees are usually slower growing which makes the wood denser (1)

Softwoods

Softwood is from a **coniferous** tree, one that usually bears needles and has cones.

Pine

Properties: Lightweight, easy to work, can split and be resinous near knots. Pale yellowish brown.
Uses: Interior construction and furniture.

Spruce

Properties: easily worked, high stiffness to weight ratio. Creamy white colour.
Uses: Construction, furniture and musical instruments.

Larch

Properties: durable, tough, good water resistance, good surface finish. Pale reddish brown Reddish brown.

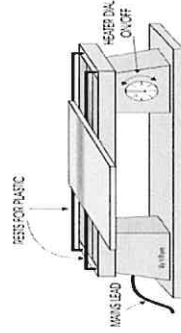
Uses: exterior cladding, decking, machined mouldings, furniture and joinery, railway sleeper and veneers.

Design and Technology – Moodlight

Bending

Line bending enables thermoplastics to be loaded. Acrylic sheets are suitable for this process.

A line bender heats a sheet of thermoplastic over a strip heater until it is soft. It can then be bent to a chosen angle. When the plastic cools, it retains the shape.



Strip Heater

Tenon saw

Uses: Cutting shallow lines into small pieces of wood
Wood joints

For: Timber

Tri – Square

Uses: to mark out line perpendicular to the edge of work piece.
Check 90 degree angles

Bench Hook

Uses: enables a piece of wood to be held firmly in position on a workbench while it is cut through.

MANUFACTURED TIMBERS

Manufactured boards are usually sheets of processed natural timber waste products or veneers combined with adhesives. They are made from waste wood, low-grade timber and recycled timber.

Chipboard

Properties: Good compressive strength, not water resistant unless treated, good value but prone to chipping on edges and corners.

Uses: Flooring, low-end furniture, kitchen units and worktops.

Medium density fibreboard (MDF)

Properties: Rigid and stable, with a smooth, easy to finish surface. Very absorbent so not good in high humidity or damp areas.

Uses: Good value, flat pack furniture, toys, kitchen units and internal construction.

Plywood

Properties: Very stable in all directions due to alternating layers at 90 degrees, with outside layers running in the same direction.

Uses: Furniture, shelving, toys and construction interior, exterior and marine grades available for greater water resistant.

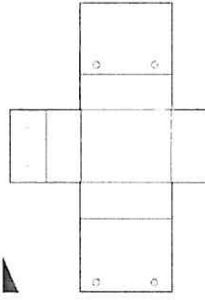
Year 7 Mood Light

Positive and negative impact - ecological footprint

How does sourcing our materials affect the environment?

Mining Digging the ground or dredging rivers The removal of minerals from the earth
Mainly metal based - aluminium ore, gold, silver, iron ore. Mining land - digging huge holes and removing the sediment with huge holes causing stagnant ponds.

Deforestation cutting down of trees for land or to use for timber / paper The act of cutting down trees in forests. Trees can be 'farmed' just like any other crop, planting the trees specifically to cut down for materials.
Sometimes, deforestation is not responsible and trees are not replanted, animals are not re-homed.



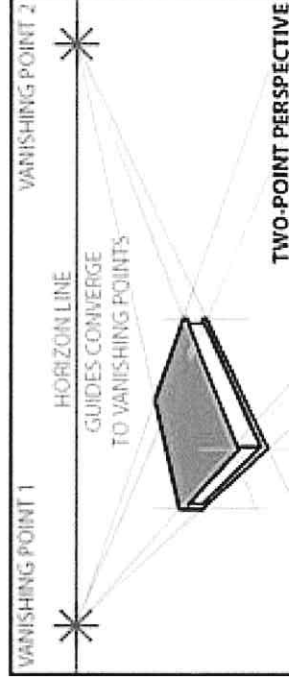
A net is a 2D plan for making a 3D object. You can use CAD to design a net and then use a machine to cut it out.

Mathematical modelling is another way to model. These models use data and information regarding variables to show how an object will behave in reality.



Two point perspective

Perspective Drawing tries to show what something actually looks like in 3D- smaller in the distance. Larger closer up. It does this by using lines that appear to meet at points called vanishing points.



Advantages of CAD	Disadvantages of CAD
Ideas can be drawn and developed quickly	Expensive to set up
Designs can be viewed from all angles and with a range of materials	Needs a skilled workforce

KEYWORDS

1. Techsoft - A computer program used for drawing.
2. Laser Cutter-CAM machine for cutting accurate shapes .
3. Deformation Changing the shape of plastics / metals.
4. Line bender- A line bender has a heated element that provides heat, concentrated to just a few millimetres wide, along the length of the long machine. These are used to heat polymers along this line so that they can be bent. Once the polymer softens, it will bend easily into shape around a former before being left to cool.
5. Two point perspective - Perspective Drawing tries to show what something actually looks like in 3D- smaller in the distance. Larger closer up. It does this by using lines that appear to meet at points called vanishing points.
6. Orthographic They show a 3D object in a set of 2D drawings viewed from different angles, - A front view plan view and end view.
7. Laser cutting ; Laser cutting uses a high-power laser to cut through materials like plywood, it is controlled through CAD which is then sent to the CAM (the laser cutter)
8. CAD - Computer Aided Design
9. CAM - Computer Aided Manufacture

Advantages of CAM	Disadvantages of CAM
Fast and accurate production	Expensive to set up
Machines can run constantly on repetitive tasks	Needs a skilled workforce of engineers

1. Task Analysis
2. Design Brief
3. Primary Research
4. Secondary Research
5. Anthropometrics
6. Ergonomics
7. Design Fixation
8. User Centred Design
9. Iterative Design
10. Tie Dye
11. Resist Dye
12. Risk assessment
13. Sustainable
14. Organic
15. Natural fibre
16. Smart Material
17. Production Aid
18. Ferrous
19. Non Ferrous
20. Alloy
21. Mould
22. Casting
23. Pewter
24. Hack saw
25. Files
26. Abrading
27. Abrasive papers
28. Metal polish



PRACTICAL SKILLS

Cotton
Poppers
Tacking thread
Dye
Embroidery thread
Pewter

- Marking out
- Adapting a pattern
- Pinning and tacking
- Threading a needle
- Setting up a sewing machine
- Using a sewing machine
- Embroidery stitching
- Application of colour
- Filing
- Sawing
- Polishing
- Sanding
- Drilling

Tools and Equipment

Paper Scissors- Used for cutting out paper patterns.

Iron-

Unpicker- Unpickers are also known as seam-rippers, quick-unpicks. You insert the unpicker between the stitches and pull up so the threads are cut by the small blade.

Dressmaking scissors- Also called fabric shears to cut fabric. These have long very sharp blades.

Pins- Hold the fabric together before stitching together. **Needles**- for hand stitching- there are several sizes for thickness of the thread/ beads being used.

Measuring Tape- flexible so it can follow curves

Tailors Chalk- for drawing on fabric

Sewing Machine- Strong stitches. Speeds up manufacture.

Research

Task Analysis- The designer should pick out all the key points in the brief- one way of doing this is through a spider diagram called a task analysis. It's a way of analysing the brief and deciding what research is needed. This helps the designer get ideas; checks people actually want the product; finds out what the target market likes/ dislikes about existing products; find out about materials, components, techniques, manufacturing processes and costs.

Design Brief

The starting point for any design is the design brief. The brief outlines what problem a design will solve. It should be referred to throughout the project to make sure what you are working on will solve this problem. The client gives the designer a design brief. It should include: What kind of product is needed, how the product will be used, who the product is for.

Primary Research

Primary research is one that involves the gathering of fresh data, i.e. when data about a particular subject is collected for the first time. Primary research is any type of research that you collect yourself. Examples include surveys, interviews and observations.

Secondary Research

Secondary research involves the summary, collation and/or synthesis of existing research. When conducting secondary research, authors may draw data from published academic papers, government documents, statistical databases, and historical records.

Questionnaire- Primary research. You can find out about your target markets and the information will help you design a suitable product to meet their needs.

Anthropometrics-human body measurement data.

Ergonomics- A product that is easy and comfortable for people to use.

Design Fixation- It is when a designer fails to break new ground, but follows existing solutions. It is when the designer follows conventional ideas.

User Centred design - Asking A sample of the target market for input in the design process. The aim is gain feedback from potential users on your designs and make improvements so its more appealing to your target market

Iterative design- a design strategy that involves constantly evaluating and improving a products design.



Cotton- Comes from a plant. It is grown and the cotton is taken from the cotton boll.

Sustainable- A sustainable process or material is one that can be used without causing permanent damage to the environment or using up finite resources

Organic- production without the use of chemical fertilizers, pesticides, or other artificial chemicals

Positive and negative impact of the use of cotton.

ORGANIC

On the farm

NON-ORGANIC

Farmers are free to save seeds and choose what they grow

Soil is nurtured, making it viable for the long term

Organic cotton is grown alongside food which feeds the farmers

95% of cotton seed market is controlled by GM giant Monsanto

Farmers are locked into costly contracts and have little control

Cotton is usually grown as a monocrop, destroying soil quality

Hazardous pesticides are banned in organic cotton production, making it safer for growers

Less energy and water use

Farming methods lock CO₂ into the soil

Growing organic cotton produces up to 94% less greenhouse gas emissions

16% of the world's insecticides, and 10% of total pesticides, are used, poisoning people and the environment

17 million cotton workers suffer poisoning from pesticides each year

83% of manufactured nitrogen fertilisers used on crops end up in the environment

Higher levels of CO₂ are released into the atmosphere

High energy and water use

Natural and Synthetic Fibres

Natural fibre A type of fibre that is harvested from natural sources e.g. plants and animals.

Natural fibres: cotton, wool, silk

Synthetic fibres: polyester, polyamide (nylon), elastane (lycra)

Natural fibres can come from plant or animal sources

	Origins	Example	Properties	Uses
Cotton	Cotton comes from the fine hairs on the seed pod of a cotton plant.		Soft and strong, absorbent, cool to wear and easily washable. Cotton fabrics can be given a brushed finish to increase their thermal properties	Most clothing, especially shirts, underwear and denim can be made from cotton. Also used for towels and bedsheets

Manufacturing Process- Tie Dye

Is typically brightly coloured, patterned textile or clothing which is made from ordinary cloth, usually cotton, through a resist dyeing process known as tie-dyeing. Methods are used to "resist" or prevent the dye from reaching all the cloth, thereby creating a pattern. Elastic bands resist the dye. A mordant fixes the dye and stops it from running. Salt is a mordant.

Scale of Production

One Off Production (Also known as: bespoke, made to measure, custom made.) A single product or unit is made.

Mass Production Large numbers of identical products are manufactured over a long period of time. Used for products constantly in demand.

Continuous Production differs from mass production as it runs non-stop, 24 hours a day, 7 days a week, manufacturing products to meet a constant demand

Batch Production A specific quantity of a product is made; this is called a batch. Batches can be repeated as many times as necessary.

Health and Safety of the Sewing Machine

Dangers when using an industrial sewing machine. - E.g. stitching fingers, electrocution, and inhalation of textile dust. Two dangers related to use of industrial sewing machines. You can reduce the dangers of using a sewing machine by - Training of staff, regular safety and maintenance checks, emergency stop buttons, regular breaks so concentration is not lost. One person per machine, tidy areas. Keep fingers away from the needle.

Risk Assessment

Is used to identify and minimise any risks when working. Think about the hazard and the precaution that could be taken to minimise the risk.

Hazard	Precaution
Clothing could get caught in the sanding machine.	Tuck clothes in and wear an apron.
Fine dust created when using a sanding machine.	Wear a mask and use a dust extractor

Profit and Costing

When considering costings, you must consider- how many products you are making, the cost of materials, machinery and overheads.

Bulk buying

Raw materials can be bought in bulk because your buying so much it allows you to negotiate a discount with the supplier.

Metals.

1. **What is Ferrous metal?**
Ferrous metal contains Iron & is magnetic. Example ; Steel.
2. **What is Non - Ferrous metal?**
Non ferrous does not contain iron & is not magnetic. Examples : aluminium, copper.
3. **What does Alloy mean?**
A metal made by combining two or more metallic elements, especially to give greater strength or resistance to corrosion. Examples : Brass, Bronze.

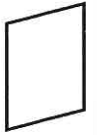
Positive and negative impact - ecological footprint

How does sourcing our materials affect the environment?

Mining Digging the ground or dredging rivers The removal of minerals from the earth Mainly metal based - aluminium ore, gold, silver, iron ore. Mining land - digging huge holes and removing the sediment with huge holes causing stagnant ponds.

Flowchart

It is beneficial as; The order of making is logical, to helps meet schedules/deadlines. It simply/ clearly communicates instructions for making so all the pieces are made in the same way.
Flowcharts have inputs which is equipment, machinery material and components needed. A flowchart must include quality control Check points, these are decisions. Feedback is used as a form of quality control and should form a yes or no answer
A flowchart is a type of diagram that represents a workflow or process. These symbols represent stages in the flow.

	All flowcharts begin and end with the start/ finish symbol. This shape is called a terminator .
	A process box is used when there is an instruction that must be carried out.
	A diamond box is used when a decision needs to be made. The outcome of the decision must be either yes or no.
	Inputs to the system are represented by a parallelogram box

Commercial Process Casting

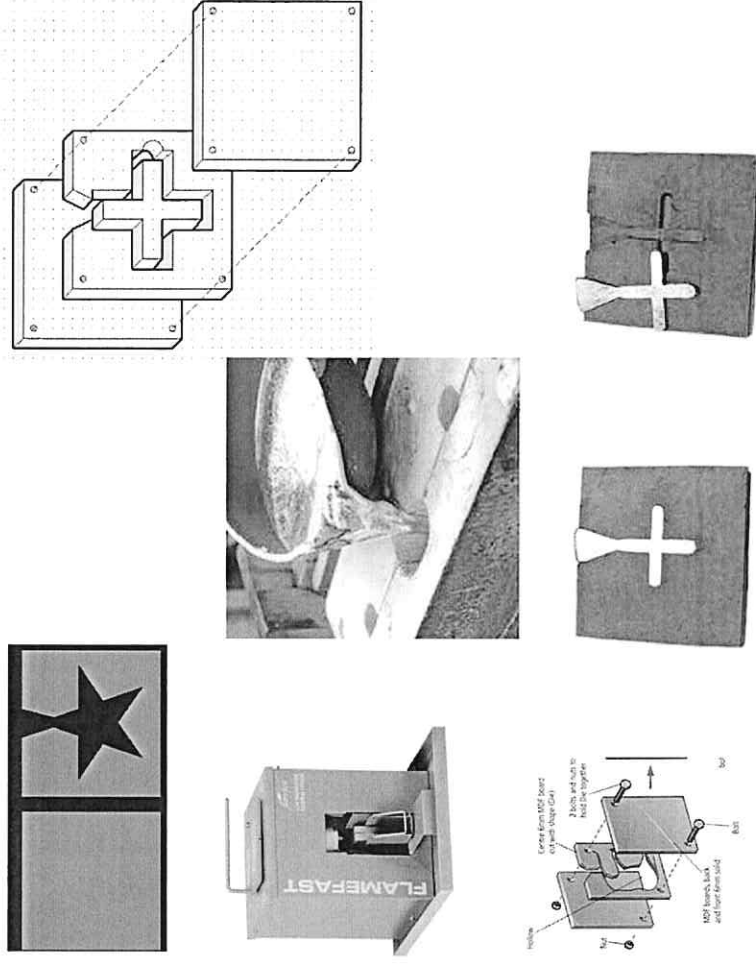
A mould can be made from any material , it is used to pour molten metal into, to create a shape we are using it to pour molten pewter into it.

Explain what is meant by casting.

When you heat metals (or polymers) and pour them into a mould this is called casting.

What is a sprue?

The funnel for pouring the pewter into.



Smart Materials

That materials can have one or more properties that can be significantly changed in a controlled fashion by external stimuli, such as stress, temperature, moisture, or PH e.g. shape memory alloys, thermochromic pigments and photochromic pigments

Thermochromic paints can be added to any surface like these mugs or a textiles or card based product to react to heat.

