Year 10 Core Subjects

Knowledge Organiser

April - July 2026

AMBITION, CONFIDENCE, CREATIVITY,
RESPECT, DETERMINATION

Proud to be part of the GREENSHAW LEARNING TRUST

FIVE ACRES HIGH SCHOOL

Why do we have knowledge organisers?
Knowledge organisers are a collation of the basic essential knowledge for success in each subject area that will underpin your learning for the term.

They are designed to provide the information you will need to be committing to your long term memory through recall exercises in Low Stakes Quizzing.

How do we use knowledge organisers?
You should be using these KOs to create your homework quizzes so that you are practising retrieving information.

1. You can do this by testing yourself on the definition of key terms (both recalling the key term and then swapping to recall the definition), practice labelling diagrams, retrieves reasons and justifications for the main learning points.
2. They can also be used for 'memory dumps' where you try to recall as much of the information about a topic as possible and then use the KP to fill in the gaps.
3. They can also be used in class to assist with retrieval of the core knowledge needed for each subject.

You should have these with you at all times in school and out on your desk in all lessons.

If you lose your KO or it becomes too dishevelled, please purchase a new one from the Head of Year or the School Office.

Contents

KS4 AQA Modern Text Lit Paper 2 Lord of the flies KO

Key characters:

Ralph: Becomes leader, represents democracy, is hunted by the end.
Jack: Leader of the choir and hunters, represents totalitarianism.
Piggy: Supports Ralph, represents intellectualism, tries to create
civilised island.
Simon: A visionary, he represents religion and is killed when others
mistake him for the beast.
Samneric: Twins who lose their individuality, ending by following the
masses .
Roger: One of the choir/hunters, represents sadism.
Littluns: The mass, they follow whoever they think is strongest.

Key Text Vocabulary

Civilisation: A law-abiding society
Democracy: A government where the leader is voted in
Totalitarianism: A government with one leader with absolute power
Dictatorship: A form of government that has total control
Savagery: Being untamed and ferocious
Microcosm: A small version of the wider world
Sadistic Obtains pleasure from inflicting pain – (Marquis de Sade, who wrote about the pleasure of inflicting pain on others)
Tyrant: An absolute ruler who is cruel and uses force to maintain power.
Oppressive: Cruel and unfair
Furtive: Stealthy, sly, secretive, underhand
Devolution: becoming less rather than more developed
Taboo: Banned on grounds of morality or taste

Context

William Golding

Part of the British Navy during WWII, Golding was the captain of a ship that assisted the D-Day landings. He said 'before the second World War I believed in the perfectibility of man...after the war I did not because I was unable to. After the war he felt that the breakdown of civilization was inevitable as all 'men' have the capacity for evil.

WWII

Golding had seen the effects of totalitarianism in the form of Hitler and others like him. In the 1950s the world became aware of the ways in which the Soviet Union treated political dissenters. This novel responds to a world that had been destroyed by powerful people through coercion and fear. After WW2, ordinary people had been proved capable of great evil through events such as the Holocaust.

Nuclear War

The first use of an atomic weapon in Hiroshima and Nagasaki in 1945. The threat of nuclear war in the Cold War of 1949 showed the world the that civilization could be entirely destroyed by a single conflict. The island is destroyed by the end of the novel, showing how conflicts escalate quickly and can destroy completely.

Charles Darwin/Evolution

Darwin's Theory of Evolution states man evolved from animals. Golding presents the idea that we are all ultimately animals. The only thing that separates us from this is civilization, rules and laws. Take these away and we quickly devolve into our animal states.

Context continued:

Religion

The island can be thought of as the Garden of Eden. Once man gives in to temptation, it is quickly destroyed. Simon is portrayed as a Christ-like figure. He sees the beauty of the island, understands the evil of men and is then destroyed by man. Lord of the Flies translates into Beelzebub in Hebrew, another name for the devil.

The Coral Island/adventure story genre

Lord of the Flies is a parody of The Coral Island. The Coral Island (R.M. Ballantyne 1857) tells the story of 3 boys marooned on a pacific island. They encounter different types of evil, yet their friendship, courage, and determination aid their survival. Golding was unsatisfied with how it 'espoused myths' and sought to invert its meanings. (The evil is instead within the boys).

Robinson Crusoe/adventure story genre

A popular nineteenth century genre, taking its name from Defoe's 'Robinson Crusoe', a tale of a shipwrecked sailor who survives for several years before returning to England. Many writers decided to write about sea-faring adventures that pitted man against the elements. Golding subverts the heroic qualities explored in these novels to show the reality of human nature.

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Key vocabulary and terminology

Assonance – repetition of a vowel sound of emphasis
Atmosphere- mood or feeling
Couplet – 2 lines of rhyming poetry
Caesura- punctuation in the middle of a line for emphasis
Dramatic monologue- narrative told only from the narrator's viewpoint
Enjambement- overlapping sentence into the following the line.
Extended metaphor – metaphor running through the poem rather than singular reference
Form- the shape of a poem
Free verse- poem that does not have a regular rhyme structure
Half rhyme- partial rhyme scheme
Iambic pentameter – 10 syllables with 5 stressed syllables
Narrative- account of events
Oxymoron – contradictory placement of words – eg bitter sweet
Prose- any writing not in verse form
Rhyme scheme – pattern of rhyming eg ABAB
Simile – comparison to enhance understanding using like or as
Sonnet form- 14 lines in iambic pentameter. Either **Italian/Petrarchan** or **English/Shakespearean**
Octet – 8 lined stanza (posing the problem or question in a Patrarchan sonnet.
Sestet –(6 lines stanza, often presenting the answer or question to the octet)
Cinquain/quintet – 5 line stanza
Quatrain/quartet – 4 line stanza
Tercet- 3 line stanza
Volta- turning point of a sonnet between the octet and the sestet (Line 9)
Natural imagery – imagery inspired by nature

Love and Relationships Anthology

Poetry Knowledge organiser KS4

Love and Relationships Anthology key themes

- Love
- Loss
- Separation
- Parent/child
- Nature
- Distance
- Closeness
- Changing relationships
- Reconciliation/renewal
- Death of a relationship
- Parting
- Differences between generations

Structuring your response:

Your thesis statement introduction introduces your main argument and how each poem relates to the theme of the question.

3 points of comparison, where each point adds something new to your argument about the theme in the question and the poems are similar or different in this respect. Use what, how, why to develop your response

Conclusion which sums up your ideas about both poems and what the author is telling you about the them.

Language of comparison:

- Similarly, likewise, in the same vein.
- However, although, conversely.

The poems and suggested links between poems:

'When We Two Parted': compares well with Neutral Tones, Love's Philosophy, Sonnet 29
'Love's Philosophy': compares well with Neutral Tones, When We Two Parted, Singh Song, Sonnet 29
Porphyria's Lover: compares well with The Farmer's Bride, Love's Philosophy, Sonnet 29
Sonnet 29: compares well with Love's Philosophy, Porphyria's Lover, Neutral Tones
Neutral Tones: compares well with Winter Swans, When We Two Parted, Sonnet 29
The Farmer's Bride: compares well with Porphyria's Lover, Neutral Tones, Sonnet 29
Walking Away: compares well with Mother, any Distance, Follower
Letters From Yorkshire:
Eden Rock: Compares well with When We Two Parted, Walking Away, Follower
Follower: Compares well with Walking Away, Mother, any distance, Before You Were Mine
Mother, any Distance: compares well with Before You Were Mine, Follower, Walking Away
Before You Were Mine: compares well with Follower, Walking Away
Winter Swans: compares well with Neutral Tones, Sonnet 29, When We Two Parted
Singh Song!: compares well with When We Two Parted, Love's Philosophy, Sonnet 29
Climbing My Grandfather: compares well with Before You Were Mine, Mother Any Distance, Follower, Walking Away

A Christmas Carol Literature Paper 1

Key characters

- **Ebeneezer Scrooge** Transforms from misanthropist to philanthropist
- **Bob Cratchit** Represents the noble poor, challenges perceptions of the poor
- **Ghost of Christmas Past** Shows us Scrooge was not always hard and cold, importance of memory
- **Ghost of Christmas Present** Shows Scrooge what Christmas spirit really is. Introduces Ignorance and Want to teach Scrooge the error of his ways
- **Ghost of Christmas Yet to Come** Shows Scrooge his dire fate unless he changes
- **Tiny Tim** Represents Christian values and is a symbol for the most vulnerable in society. He is a key character in Scrooge's transformation
- **Jacob Marley** Scrooge's dead business partner, the catalyst for Scrooge's transformation.
- **The Portly Gentlemen** An example of those members of society who were socially responsible.
- **Fezziwig** A shining example of how a boss could practice philanthropy

Key Themes

- **Redemption** Dickens shows Victorians it is possible to change their ways through the transformation of Scrooge
- **Family** Offers warmth and love – complete contrast to Scrooge's chosen life
- **Christmas** A time of love, hope, charity and kindness to show Dickens' moral message
- **Social Injustice** Dickens highlights the social injustice of Victorian England to bring about reform
- **Threat of Time** Scrooge needs to act quickly or he will walk in purgatory for all time.
- **Social responsibility** Dickens uses the novella to demonstrate the importance of generosity.
- **Generosity** The need to share and fulfil Christian obligations
- **Philanthropy** those characters who share this trait are much happier as a result of their behavioural choice.
- **Supernatural** A fashionable 1843 theme which is used to teach Scrooge how to change.

Key Vocabulary

- **Misanthropy** Dislike of humankind (Greek miso – hating Greek - Anthropos – man)
- **Philanthropy** Desire to help others, usually through charity (Greek – philanthopos – man-loving)
- **Stave** The parallel lines music is written on (English – staff, support)
- **Novella** A short novel (Italian – novel)
- **Avarice** Greed (Latin – avarus – greedy)
- **Penitence** Sorrow for committing sin (Latin – paenitent – repenting)
- **Industrial** Related to industry and factories (French – industriel – resulting from labour)
- **Revolution** A great change (Latin – revolve – turn, roll back)
- **Apparition** Supernatural appearance (Latin – appartionem – an appearance)
- **Benevolent** Wishing to do well, kindly (Latin – benevolentum – wishing someone well)
- **Covetous** Desiring to obtain and own (French – coveitos – desire, eagerness, ambition)
- **Ominous** An indication of coming evil (Latin – ominosis – full of foreboding)
- **Redemption** -saved from sin

Top Tips for an extract question:

- ✓ Work through the novella chronologically – beginning, middle and end. Fit the extract into your plan and make sure you reference the whole novella
- ✓ Remember to explore the language in each quotation using appropriate subject terminology
- ✓ Identify the writer's purpose- Dickens wanted to change middle class attitudes towards poverty and make them more generous.
- ✓ Include a thesis statement to introduce your argument

Devices used

Omniscient Narrator Dickens makes use of a narrator that is not a direct part of the story. They provide us with an overview of the story but focuses specifically on Scrooge and his responses to what is happening. They do not offer a sympathetic portrait, often the style is one of mockery. It is clear we are meant to detest Scrooge at the beginning but the gradual unfolding of his story allows us to like him by the end.

Pathetic Fallacy A technique that links human emotion to the weather. Throughout the novella warmth is linked to community and love and coldness is linked to hard-heartedness and a lack of love. This is further emphasized with Scrooge when we find out that 'no warmth could warm, no wintry weather chill him.' Scrooge is the most extreme version of the effects of self-interested capitalism.

Antithesis The opposite of someone or something, antithesis is used throughout the novella to show that there is a better way. Fezziwig's form of business is an antithesis to Scrooge's, the first stave is the antithesis of the final stave, Bob is the antithesis of Scrooge...

Allegory A story that teaches a moral lesson, using the characters as symbols. In ACC Scrooge represents the Victorian businessmen that take advantage of the poor. Fred represents the ideal of the middle class. The Cratchits represent the noble poor. Tiny Tim represents children and their vulnerability. Fezziwig represents an alternative way of doing business.

Parallel **Stave** (1 and 5) Basically, the end is the reverse of the beginning- everything that Scrooge fails to do in Stave 1 is reversed in Stave 2 to symbolise his transformation.

Symbolism As an allegorical story, much of what is presented by Dickens is a device used to explore his message of generosity and benevolence.

4

Useful terminology
Satire- use of humour or ridicule to criticise
Asyndeton- list without conjunctions
Polysyndeton- list with conjunctions (and)
Simile- comparing using 'like' or 'as'
Metaphor- saying one thing is another
Personification- make object human
Pathetic fallacy- weather to create mood
Pathos- language to evoke pity
Allusion- reference to another literary work
Hyperbole- exaggerated statement
Connotation- associated meaning of word
Characterisation- built up description of character in text
Semantic field- words related in meaning
Imagery- visually descriptive language

Writer's purpose: social reform

Dickens is writing to influence the reader at a time when the middle classes took little social responsibility for the effects of the industrial revolution on the working classes. Workers were kept in servitude due to appalling pay and conditions. They were powerless to alter their situation until the middle classes, like Scrooge, chose to improve their situation.

Structure and form
Conflict- problem faced by characters
Resolution- point where conflict is resolved
Foreshadowing- clue about something later
Foreboding- sense that something will occur
Juxtaposition- two contrasted ideas
Backstory- insight into character's past
Exposition- revelation of something
Poetic justice- good rewarded bad punished
Melodrama- exaggerated characters/events
Motif- repeated image or symbol
Antithesis- contrast of ideas in same grammatical structure
Authorial intrusion- where author pauses to speak directly to reader
Allegory- characters/events represent ideas about religion, morals or politics
Polemic- a moral lecture versus novella- short novel
Parallel stave- many elements in the first stave is inverted in the final stave.

Malthusian economics – Reformation of the Poor Laws in 1834 left the poor destitute and reliant on workhouses. Malthusian economists supported the idea that the unproductive poor should work their way out of poverty and charity should not be given to those who were 'undeserving'. Scrooge is a supporter of Malthus- "If they would rather die they had better do it and decrease the surplus population." Dickens challenges these ideas continually through the novella.

Plot summary:

STAVE 1: • Christmas Eve and Scrooge is at work in his counting house. Despite the cold, he refuses to spend money on coals for the fire for himself or Bob Cratchit. Scrooge is miserable and alone. • Scrooge is visited by the Ghost of Marley, his dead business partner. Marley tells Scrooge because of his sinful, greedy life, he has to wander the Earth wearing heavy chains. Marley tries to stop Scrooge from doing the same. He tells Scrooge that three spirits will visit him during the next three nights. Scrooge falls asleep.

STAVE 2: • The Ghost of Christmas Past takes Scrooge into the past. Scrooge revisits: his childhood school days, his apprenticeship with Fezziwig, and his engagement to Belle, who leaves Scrooge as he loves money too much to love another human being. Scrooge sheds tears of regret before being returned to his bed.

STAVE 3 • The Ghost of Christmas Present. Scrooge watches the Cratchit family eat, enjoy and be thankful for a tiny meal in their little home. He sees Bob Cratchit's crippled son, Tiny Tim, whose kindness and humility warm Scrooge's heart. The spectre shows Scrooge his nephew's Christmas party. Scrooge asks the spirit to stay until the very end. At the end of the stave, the ghost reveals two starved children, Ignorance and Want.

STAVE 4 • The Ghost of Christmas Yet to Come takes Scrooge through a sequence of scenes linked to an unnamed man's death. Scrooge, is keen to learn the lesson. Scrooge learns the dead man is himself and is desperate to change his fate and promises to change his ways. He suddenly finds himself safely tucked in his bed.

STAVE 5 • Scrooge is a changed man. He rushes out onto the street hoping to share his newfound Christmas spirit. He sends a turkey to the Cratchit house and goes to Fred's party, As the years go by, he continues to celebrate Christmas with all his heart. He treats Tiny Tim as if he were his own child, gives gifts for the poor and is kind, generous and warm

KS4 English Language Paper 2 Section A KO

Question 1: identify 4 true statements from a possible 8. 4 marks, 5 minutes

Skill: identify specific information.

- Read the statements carefully
- Skim and scan through the text, looking for one thing at a time.
- Only shade in the box once you have established all the correct answers.
- Take care for misleading statements!

Question 2; Write a summary of the differences or similarities in a text. 8 marks, 12 minutes

Skills: to synthesise two texts but also to make details inferences, which is not clear form the question.

- Make sure that you refer to both texts
- Need to use inference
- Read the question closely – similarities or differences?
- Use comparative connectives
- Use quotations to support
- Keep quotations short
- Use key words for the question
- Aim for 2-3 similarities/differences
- 1-2 sides of the answer booklet

Language of inference:

- Suggests
- Implies
- Demonstrates
- Insinuates
- Conveys
- Indicates
- Hints
- Signifies
- Represents

Language of comparison, used for both question 2 and 4:

- On the other hand
- In contrast
- Contrastingly
- In opposition
- Differs
- Alternatively
- Elsewhere
- On the contrary
- Whereas
- However
- Likewise
- Also
- In addition
- Additionally
- Moreover
- Furthermore
- Accordingly
- Indeed
- Equally
- Similarly

Question 3: comment on the writer's use of language. 12 marks 15-18 minutes

SKILLS: identify and comment on specific language choices and methods used by the writer. Very similar to language paper 1, except it is worth more marks and may find some persuasive techniques as well as literary ones.

• Uses the whole text

•Consider the connotations of the language.

•What do you find out? How is this achieved by the writer? Why does the writer show you this?

•Look for patterns or a semantic field in the language and explore the effect.

•Aim to include 3-4 developed responses to quotations. (2-3 sides)

Other useful techniques in addition those on Paper 1 to look for might include:

- Hyperbole
- Facts and statistics
- Opinions
- Expert opinion
- Rule of three
- Anecdotal evidence
- Emotive language
- Pronouns

Helpful sentence starters:

- The writer implies, indicates ...
- The reader interprets...
- The use of... suggests...
- What is emphasised is...
- One interpretation may be...
- The effect on the reader is...
- The reader is invited to feel...
- The author is trying to...
- The use of... is indicative of...

Question 4: compare the writers thoughts and feelings and the methods they use. 16 marks, approximately 20 minutes

Skill: to be able to compare the key components of a text and identify what the writer's opinion is by making inferences and referencing subject terminology.

- Use both texts and includes quotations from both texts.
- Starts with a thesis statement which is then proved through the body of the essay.
- Needs to include inferences about what the writer thinks or feels about the topic.
- Uses comparative connectives and discourse markers
- Keep quotations short to show confident handling of the text.
- A high proportion of the response will be inference about what the writer thinks or feels.
- Should be 3-4 sides of an answer booklet
- Clear focus on the effects of the language and techniques and what they reveal about the writer's opinion.

Useful phrases, as well as language of comparison and inference might included:

- The writer seems to suggest...
- The writer her is indicating that they think...
- The writer is implying...
- The writer seeks to convey the impression that...
- The writer is clearly demonstrating that...
- The writer is of the opinion that...

KS4 English Language Paper 2 Section B KO

Question 5: persuasive writing.
40 marks, 45 minutes writing time
24 marks for content, 16 marks for technical accuracy.
Skill: to write a structured argument using a variety of rhetorical techniques.
You are given a statement.
From this statement, you are asked to create either a newspaper article, letter speech, blog or magazine article outlining your opinion on the topic.
DO NOT ATTEMPT UNTIL YOU HAVE PLANNED!!!

- An adjustment to the format to show you are writing a letter, article, report or speech.
- A clear introduction which includes an opinion AND DOES NOT REFER TO THE STATEMENT!
- A structured argument which moves through the problems, solutions and benefits associated with the topic and your opinion.
- You should aim to say 3 things about each point to develop what you say and create a sustained response.
- You need to include a range of rhetorical devices throughout your response which may include literary techniques but in addition AFORESTD/RASH.
- Clear paragraphs
- Accurate and varied spelling and punctuation
- End with a clear conclusion with your final word- we recommend beginning with the adverb Ultimately,..

Punctuation should be accurate a varied and you need to be able to use the following your writing:

- . to mark the end of a sentence that is a complete statement
- , use in lists, in direct speech, to separate clauses, with however.
- ; indicating a pause, typically between two main clauses, takes the place of a co-ordinating conjunction (and, but, or, so).
- : used to precede a list of items, a quotation, or an expansion or explanation.
- A versatile punctuation mark that creates a short pause and emphasise an embedded clause.
- ( ) used to enclose words or figures so as to separate them from the context.
- ... inserted into a sentence to indicate a pause or silence.
- ' ' Inverted commas are used for quotations or can sometimes be used to create a sarcastic tone.
- " " Used to show direct speech.
- ? Used at the end of questions
- ! Used to add impact. DO NOT use more than one at a time!

Sentence types:

- Simple sentence: one main clause with a subject and a verb
- Compound sentence: 2 or more main clauses on the same topic joined by a co-ordinating conjunction or semi colon.
- Complex sentence : has one subordinate clause which needs the main clause to make sense.
- Embedded clause : subordinate clause inserted into a main clause to add information
- Fragmented clause: doesn't follow the rules for a main. If used, use very sparingly!
- Vary sentence starters- -ly, double adjective, similes, verbs and prepositions.

Key Techniques to include:

- Anaphora, epistrophe, repetition, tripling, emotive language, expert opinion, juxtaposition (They say; we say) and clever use of pronouns will all help to add weight to your argument.
- Paragraphs: your work **must** have cohesive paragraphs. Problems, solution and benefits help you to create a structured argument, rather

Key definitions:
Formats:
A letter will usually start with Dear Sir, Dear Editor, Dear Prime minister or the name of the person you are writing to.
A speech will normally begin with a salutation such as Good evening, ladies and gentlemen (Or whoever you are addressing.)
A Newspaper article will start with a headline whilst **a magazine article** will need a title. Similarly **a blog** will start with a headline/title.
Report: uses a heading and subheadings
Techniques to use
Anaphora: Repetitive of a word at the beginning of successive clauses
Antithesis: Contrast of ideas by creating parallel structures
Epistrophe: Repetition of a word at the end of sentences
Epizeuxis: repetition of a word in the middle of clause
Euphemism: A politer/more pleasant way of saying something that is less pleasant or socially acceptable
Hyperbole: Deliberate exaggeration
Hypophora: When a writer poses a question and then immediately answers.
Metaphor: A figure of speech that includes a direct comparison between two things
Onomatopoeia: Words that directly represent sounds
Oxymoron: Two words together with opposing meanings
Pronouns: I, you, we, they, us, them are used to create unification or division
Simile: A comparison using 'like' or 'as'
Tripling: repeating a word or phrase or idea three times.

A: Sequences

Topics

- Position-to-term rules for arithmetic sequences (U498)
- Position-to-term rules for sequences of patterns (U978)
- Position-to-term rules for geometric sequences (U958)

Building Blocks

- Term-to-term rules (U213)
- Substituting into position-to-term rules (U530)

Keywords

Arithmetic sequence - a set of numbers that increase or decrease by the same numbers using addition and subtraction.
Geometric sequence - a set of numbers that increase or decrease by the same numbers using multiplication and division.
Term - one number in a set of a sequence.

P & S: Handling Data

Topics

- Sampling and bias (U162)

Building Blocks

- Solving direct proportion word problems (U721)

Keywords

Sampling: a selection of data from a larger group of data.
Bias: statistics that don't provide an accurate representation of the population.

R & P: Proportion

Topics

- Interpreting direct proportion equations (U640)
- Interpreting inverse proportion equations (U364)
- Graphs of direct and inverse proportion (U238)

Building Blocks

- Solving direct proportion word problems (U721)
- Solving inverse proportion word problems (U357)
- Graphs of reciprocal functions (U593)

Keywords

Inverse proportion: A relation between two quantities such that if one increases the other decreases.
Direct proportion: A relation between two quantities such that if one increases the other increases as well. The same counts for decrease.

G: Transformations

Topics

- Combining transformations (U766)

Building Blocks

- Translation (U196)
- Reflection (U799)
- Rotation (U696)
- Enlargement by a positive scale factor (U519)

Keywords

Transformations - movement of 2D shapes, this includes translation, reflection, rotation and enlargement.
Translation - shifting of a 2D shape by a vector.
Reflection - flipping of a 2D shape along a mirror line.
Rotation - turning of a 2D shape by a given angle around a centre of rotation.
Enlargement - changing the size of a shape using a scale factor and centre of enlargement.

N: Rounding

Topics

- Finding error intervals (U657)
- Finding error intervals for truncated numbers (U301)

Building Blocks

- Rounding integers (U480)
- Rounding decimals (U298)
- Rounding integers using significant figures (U731)
- Rounding decimals using significant figures (U965)
- Truncating decimals (U108)

Keywords

Bounds - the lower bound is the smallest value that would round up to the estimated value. The upper bound is the smallest value that would round up to the next estimated value.
Error intervals - inequality using the lower and upper bound.
Truncating - cutting short of a number.

N: Indices

Topics

- Index rules with positive indices (U235)
- Index rules with negative indices (U694)
- Simplifying expressions using index laws (U662)

Building Blocks

- Calculating with roots and powers (U851)
- Simplifying fractions (U646)

Keywords

Index (indices) - powers or numbers or algebraic variables or terms.

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A: Brackets

Topics

- Expanding double brackets (U768)
- Factorising quadratic expressions of the form x^2+bx+c (U178)
- Factorising the difference of two squares (U963)
- Factorising to solve quadratic equations of the form $x^2+bx+c=0$ (U228)

Building Blocks

- Using algebraic notation (U613)
- Simplifying expressions by collecting like terms (U105)
- Finding the highest common factor (U529)
- Expanding single brackets (U179)
- Factorising into one bracket (U365)

Keywords

Expanding - multiplying to get rid of brackets.
Factorising - opposite of expanding, putting brackets back in.
Quadratic - expression with a term with an index of 2.
Expressions - algebraic calculations, no equal symbol.
Equations - algebraic expression equals another or a number.

P & S: Grouped Data

Topics

- Interpreting frequency tables with grouped data (U312)
- Finding averages from grouped data (U877)

Building Blocks

- Interpreting frequency tables and two-way tables (U981)
- Finding averages from frequency tables (U569)

Keywords

Frequency - amount.
Grouped data - data given in so many different amounts that is being grouped, groups are usually written as inequalities.
Averages - mean, median, mode and range.

P & S: Drawing and interpreting statistical diagrams

Topics

- Drawing stem-and-leaf diagrams (U200)
- Interpreting stem-and-leaf diagrams (U909)
- Drawing line graphs (U590)
- Interpreting line graphs (U193)
- Drawing and interpreting frequency polygons (U840)

Building Blocks

- Reading and plotting coordinates (U789)
- Drawing bar charts (U363)
- Interpreting bar charts (U557)

Keywords

Stem-and-leaf diagram - a table where each data value is split into a leaf (usually the last digit) and a stem (the other previous digits).
Frequency polygon - a line graph of class frequency plotted against class midpoint.

A: Sequences

Topics

- Position-to-term rules for quadratic sequences (U206)
- Position-to-term rules for geometric sequences (U958)
- Special sequences (U680)

Building Blocks

- Term-to-term rules (U213)
- Substituting into position-to-term rules (U530)
- Position-to-term rules for arithmetic sequences (U498)
- Position-to-term rules for sequences of patterns (U978)

Keywords

Quadratic sequence - sequences that include a squared term and are consistently increasing or decreasing.
Fibonacci sequence - a sequence in which each number is the sum of the previous two terms.
Triangular sequence - the representation of the numbers in the form of equilateral triangles.

P & S: Handling data

Topics

- Sampling and bias (U162)
- Capture-recapture (U328)

Building Blocks

- Solving direct proportion word problems (U721)

Keywords

Sampling - a selection of data from a larger group of data.
Bias - statistics that do not provide an accurate representation of the population.
Capture recapture - sampling technique used to estimate population size.

R & P: Proportion

Topics

- Constructing direct proportion equations (U407)
- Constructing inverse proportion equations (U138)
- Graphs of direct and inverse proportion (U238)

Building Blocks

- Solving direct proportion word problems (U721)
- Solving inverse proportion word problems (U357)
- Currency conversion (U610)
- Constructing and solving equations (U599)
- Graphs of reciprocal functions (U593)

Keywords

Inverse proportion - a relation between two quantities such that if one increases the other decreases.
Direct proportion - a relation between two quantities. such that if one increases the other increases as well. The same counts for decrease.

G: Transformations

Topics

- Enlargement by a positive or negative scale factor (U134)
- Combining transformations (U766)

Building Blocks

- Translation (U196)
- Reflection (U799)
- Rotation (U696)

Keywords

Enlargement - changing the size of a shape using a scale factor and centre of enlargement.
Scale factor - number that each side length gets multiplied by to change the size of the shape in an enlargement.

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N: Rounding

Topics

- Finding bounds for calculations (U587)

Building Blocks

- Finding error intervals (U657)
- Finding error intervals for truncated numbers (U301)

Keywords

Bounds - the lower bound is the smallest value that would round up to the estimated value. The upper bound is the smallest value that would round up to the next estimated value.

N: Indices

Topics

- Estimating roots and powers (U299)
- Indices of the form $1/a$ (U985)
- Indices of the form a/b (U772)

Building Blocks

- Calculating with roots and powers (U851)
- Index rules with positive indices (U235)
- Index rules with negative indices (U694)

Keywords

Index (indices) - powers.
Estimating - giving an educated guess, here: based on our knowledge of square numbers.

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N: Recurring decimals

Topics

- Converting fractions to recurring decimals (U550)
- Converting recurring decimals to fractions (U689)

Building Blocks

- Using a written method to divide with decimals (U868)
- Solving equations with two or more steps (U325)

Keywords

Recurring - a recurring decimal is a decimal were marked decimal values keep repeating itself.

A: Brackets

Topics

- Expanding triple brackets (U606)
- Completing the square (U397)
- Factorising quadratic expressions of the form ax^2+bx+c (U858)
- Factorising to solve quadratic equations of the form $ax^2+bx+c=0$ (U960)

Building Blocks

- Expanding double brackets(U768)
- Factorising quadratic expressions of the form x^2+bx+c (U178)
- Factorising the difference of two squares (U963)
- Factorising to solve quadratic equations of the form x^2+bx+c (U228)

Keywords

Expanding - multiplying to get rid of brackets.
Factorising - opposite of expanding, putting brackets back in.
Quadratic - expression with a term with an index of 2.

P & S: Cumulative frequency graphs

Topics

- Drawing cumulative frequency graphs (U182)
- Interpreting cumulative frequency graphs (U642)

Building Blocks

- Interpreting frequency tables with grouped data (U312)

Keywords

Frequency - amount.
Cumulative - added up step by step per group.

P & S: Box plots

Topics

- Drawing box plots (U879)
- Interpreting box plots (U837)
- Comparing populations using box plots and cumulative frequency graphs (U507)

Building Blocks

- Calculating the median (U456)
- Finding the mode (U260)

Keywords

Box Plot - diagram to represent the median, upper/lower quartile as well as maximum and minimum.
Median - middle point of ordered data, 50% mark.
Upper/lower quartile - 75%/25% mark of data.
Maximum - highest value.
Minimum - lowest value.

GCSE Maths Memory Mat

Important words, formulae and techniques you need to know!

Number

BIDMAS

Operations must be completed in a certain order, starting from the top of the list.

Brackets	( )
Indices	^{2}
Division	÷
Multiplication	×
Addition	+
Subtraction	−

Standard form

$5.6 \times 10^3 = 5600$

A number greater than or equal to 1 but less than 10.

10 to a power. Positive powers → large numbers. Negative powers → small numbers.

Rounding

To place values

27.06

- To the nearest 10 → 30
- To the nearest whole number → 27
- To 1 decimal place → 27.1

To significant figures

The first significant figure is the highest place value that is NOT a zero.

27.06

- To 1 significant figure → 30
- To two significant figures → 27
- To three significant figures → 27.1

Estimation

When asked to estimate, you must round all numbers to 1 significant figure then calculate.

Example

$$\frac{19.8 \times 5.1}{0.5}$$

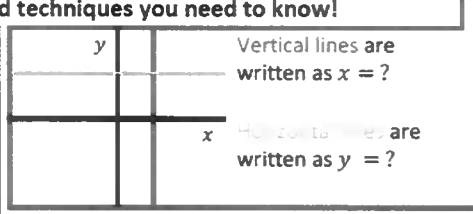
$$\frac{20 \times 5}{1} = 100$$

Keywords

Word	Meaning	Example
Sum	Add the numbers together.	1 + 2 + 3 = 6
Difference	Biggest number subtract smallest number.	3 − 2 = 1
Product	Multiply the numbers.	2 × 3 = 6
Even	A number that divides by 2 without leaving a remainder.	2, 4, 6, 8
Odd	A number that WILL NOT divide by 2 without leaving a remainder.	1, 3, 5, 7, 9
Multiple	The result of multiplying by a whole number.	Multiples of 3 3, 6, 9, 12, 15
Factor	A whole number that will divide another number without leaving a remainder.	Factors of 6 1, 2, 3 and 6
Square	The result of multiplying a number by itself.	$3^2 = 3 \times 3 = 9$
Cube	The result of multiplying a number by itself twice.	$3^3 = 3 \times 3 \times 3 = 27$
Root	A number that multiplies by itself a given number of times to make the number in the root.	$\sqrt{9} = 3$ $\sqrt[3]{27} = 3$
Prime	A number with only 2 factors, 1 and itself.	2, 3, 5, 7, 11
Integer	A whole number.	1

Algebra

Straight line graphs



Vertical lines are written as $x = ?$

Horizontal lines are written as $y = ?$

$y = mx + c$

Gradient

y-intercept (where the line crosses the y-axis)

Example

The line $y = 2x + 3$, has a gradient of 2 and crosses the y-axis at +3.

Keywords

Word	Meaning	Example
Simplify	Write in a more simple way.	$2x - 3y + 4x + 5y = 6x + 2y$
Expand	Multiply what is inside the brackets by the number and/or letter on the outside.	$2(3a + 4) = 6a + 8$
Factorise	Put into brackets.	$10z^2 - 15z = 5z(2z - 3)$
Solve	Work out the value of the letter.	$2b - 1 = 5$ $2b = 6$ $b = 3$
Substitute	Replace the letter(s) with the number(s) provided.	Work out the value of $2x + 3y$ when $x = 6$ and $y = 7$ $2 \times 6 + 3 \times 7 = 33$

Laws of Indices

Multiplication

$a^2 \times a^3 = a^{2+3} = a^6$

$5y^4 \times 3y = 5 \times 3y^{4+1} = 15y^5$

Division

$x^7 \div x^3 = x^{7-3} = x^4$

$12c^9 \div 3c^4 = 12 \div 3c^{9-4} = 4c^5$

Brackets

$(b^2)^5 = b^{10}$

$(2z^4)^3 = 2^{1\times3}z^{4\times3} = 8z^{12}$

Zero Law: $x^0 = 1$

Ratio, Proportion & Rates of Change

Fraction	Decimal	Percentage
$\frac{1}{2}$	0.5	50%
$\frac{1}{3}$	$0.\dot{3}$	$33.\dot{3}\%$
$\frac{1}{4}$	0.25	25%
$\frac{1}{5}$	0.2	20%
$\frac{1}{8}$	0.125	12.5%

Compound Measures

Speed	Density	Pressure
		
S = Speed D = Distance T = Time	D = Density M = Mass V = Volume	P = Pressure F = Force A = Area

GCSE Maths Memory Mat

Important words, formulae and techniques you need to know!

Geometry & Measures

Quadrilaterals

Square
- 4 equal length sides.
- 2 pairs of opposite parallel sides.
- 4 right angles.

Rectangle
- 2 pairs of opposite parallel sides of equal length.
- 4 right angles.

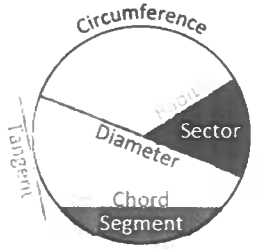
Rhombus
- 4 equal length sides.
- 2 pairs of opposite parallel sides.
- 2 pairs of opposite equal angles.

Parallelogram
- 2 pairs of opposite parallel sides
- 2 pairs of opposite equal angles.

Trapezium
- 1 pair of opposite parallel sides.

Kite
- 2 pairs of adjacent sides of equal length.
- 2 equal opposite angles.

Circles

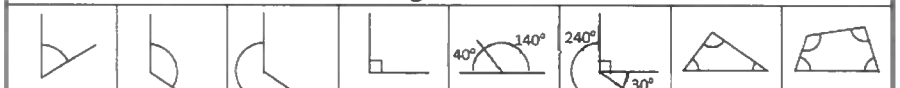


Circumference = $\pi \times$ diameter

Area = $\pi \times$ [illegible]^2

Angles facts

Acute	Obtuse	Reflex	Right-angle	Angles on a straight line	Angles round a point	Angles in a triangle	Angles in a quadrilateral
Less than 90°	Greater than 90° less than 180°	Greater than 180°	90°	Add up to 180°	Add up to 360°	Add up to 180°	Add up to 360°



Keywords

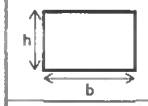
Perimeter	The distance around the outside of a shape.
Area	The amount of space contained within a 2D shape.
Volume	The amount of space contained within a 3D shape
Face	A flat surface on a 3D shape.
Edge	The line where 2 faces meet
Vertex	The point where two or more edges meet.

Pythagoras' Theorem

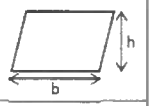
$a^2 + b^2 = c^2$

Area

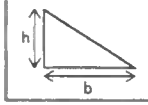
Rectangle $A = b \times h$



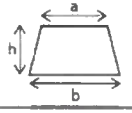
Parallelogram $A = b \times h$



Triangle $A = b \times h \div 2$



Trapezium $A = b \times (a + b) \div 2$



Trigonometry

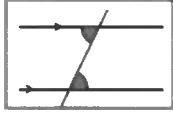
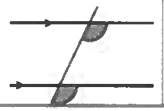
Hypotenuse – opposite the right angle.
Opposite – opposite the angle.
Adjacent – between the angle and right angle.

$\sin\theta = \frac{O}{H}$

$\cos\theta = \frac{A}{H}$

$\tan\theta = \frac{O}{A}$

Angles on parallel lines

Alternate	Corresponding	Vertically Opposite
		

Triangles

Equilateral
- All sides of equal length.
- All angles equal.

Isosceles
- 2 sides of equal length.
- 2 equal base angles.

Scalene
- NO equal sides.
- NO equal angles.

Right angled
- 1 right angle

Statistics

Keywords

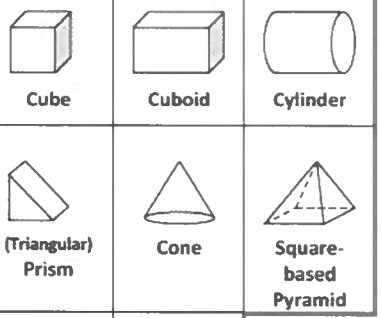
Mode	The value that appears the most.
Median	The middle value in an ordered list.
Mean	Add up all the values, divide by how many there are.
Range	Highest value minus the lowest value

Converting Units

Length	1km	1000m
	1m	100cm
	1cm	10mm
Mass	1 ton	1000kg
	1kg	1000g
Volume	1L	1000ml
	1cl	10ml

1 mile = 1.6 kilometres

3D Shapes



Cube | Cuboid | Cylinder

(Triangular) Prism | Cone | Square-based Pyramid

Triangular-based Pyramid | Sphere

Year 10 Biology Knowledge Organiser – Infection and Response

Key Terms	Definitions
Fever	Disease symptom linked to raised body temperature.
Symptoms	Signs of a disease
Discharge	An abnormal flow of liquid from the body.

Box 4 - Viral diseases are all caused by viruses

Measles - Caused by a virus.

- Spread through droplets from an infected person's sneeze or cough.
- Symptoms include **fever** (raised temperature) and a **red rash on the skin**.
- Measles is a serious disease – it can even be **fatal** if there are complications. Most young children in the UK are vaccinated against measles.

HIV is a virus

- Spread by sexual contact or exchange of body fluids such as blood which occurs when drug users share needles.
- Symptoms - Infection with HIV initially causes flu-like symptoms first. Unless successfully controlled with **antiretroviral drugs,** the virus attacks the body's immune cells. Late stage HIV infection, or AIDS, occurs when the body's immune system becomes so damaged it can no longer deal with other infections or cancers.

Tobacco mosaic virus (TMV) – caused by a virus

- Widespread plant pathogen affecting many species of plants including tomatoes.
- It gives a distinctive mosaic pattern of discolouration on the leaves which affects the growth of the plant die to lack of photosynthesis.

Box 5 - Bacterial diseases are all caused by bacteria

***Salmonella* food poisoning**

- Spread by bacteria ingested in food, or food prepared in unhygienic conditions. Inside the body, the bacteria reproduce and produce **toxins.**
- **Symptoms** of *Salmonella* food poisoning include fever, abdominal cramps, vomiting and diarrhoea.
- The bacteria can be found in poultry (e.g. chickens), so in the UK chickens are **vaccinated** against *Salmonella* to reduce the spread of the pathogen.

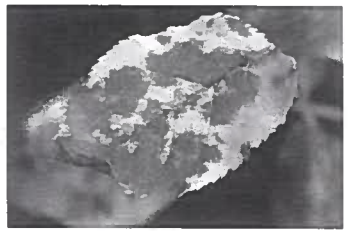
Gonorrhoea

- **Sexually transmitted disease** (STD) caused by a type of bacteria.
- Symptoms of a thick yellow or green discharge from the vagina or penis and pain on urinating.
- It used to be easily treated with the antibiotic penicillin until many resistant strains appeared.
- The spread can be controlled by treatment with antibiotics or the use of a **barrier method of contraception** such as a **condom**.

Box 6 - Fungal diseases are all caused by fungi

Rose black spot is a fungal disease that affects plants.

- Spread in the environment by water or wind.
- Symptoms - It causes purple or black spots to develop on leaves, which often turn yellow and drop early, i.e. before autumn
- It affects the growth of the plant as photosynthesis is reduced.
- Rose black spot can be treated by using a **fungicide** (a chemical that kills fungi) and/or removing and destroying the affected leaves.



Box 7 - Protist diseases are all caused by protists

Malaria is a disease caused by a protist.

- It is spread via mosquito bites. The mosquito acts as a **vector**.
- The malarial protist has a life cycle that requires it to live inside a **mosquito** for some of the life cycle, and in the body of a mammal.
- Symptoms include recurrent (repeating) **fever** and malaria can be **fatal**.
- We can attempt to reduce transmission by targeting the mosquitos: preventing them breeding and avoiding bites using **mosquito nets**.

Year 10 Biology Knowledge Organiser – Infection and Response

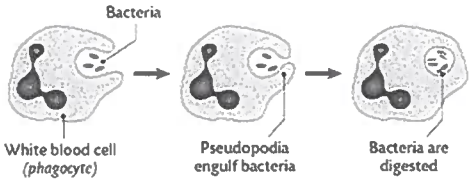
Box 8 - Human defence systems

Non-specific defences (barriers to prevent infection):

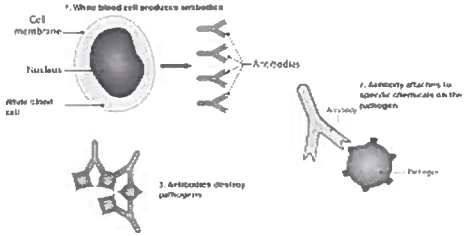
- **Skin** - a physical barrier to prevent pathogen entry. The **nose** has hairs and mucus to trap particles that could contain microorganisms.
- **Stomach** produces hydrochloric acid which kills most microorganisms that are swallowed.
- **Trachea** (windpipe) and **bronchi** secrete mucus. They also are lined with **cilia** which move mucus and trapped microorganisms up towards the back of the throat where it is swallowed.

The immune system responds if pathogens enter the body. The most important cells in the immune system are the white blood cells. They help defend against pathogens by:

- **Phagocytosis**. This is the *engulfing* and *digesting* of pathogens by white blood cells, destroying the pathogens.



- **Antitoxin production**. Some pathogens, especially bacteria, produce poisonous toxins. These are neutralised by antitoxins produced by the white blood cells.
- **Antibody production**. Pathogens have unique surface chemicals called **antigens.** White blood cells make proteins called **antibodies** that bind to antigens on the pathogens causing them to be found and killed by other types of white blood cells. These are ***specific***, meaning only one particular antibody will bind to one particular antigen on the surface of the particular pathogen.

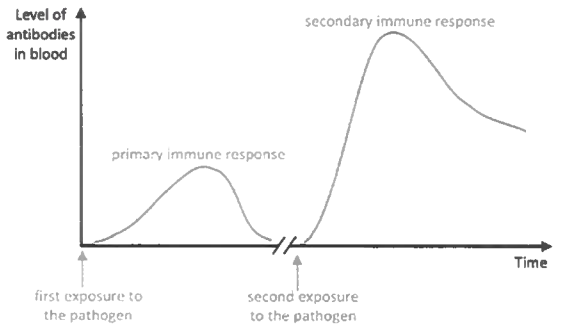


If a person is infected with the same pathogen again, the white blood cells will **rapidly** produce the correct antibodies to kill it. The person has **immunity** to that pathogen and won't get ill. Immunity can be gained by infection with a pathogen or by vaccination – see graph in vaccination box.

Key Terms	Definitions
Mucus	A sticky substance produced by many epithelial (surface-covering) tissues inside the body, to trap dust particles and microorganisms so they can't enter the bloodstream.
Cilia	Small hair like projections on epithelial cells that line the nasal passages and trachea.
Antibody	Chemical produced by white blood cells that binds to specific pathogens enabling them to be destroyed.
Antitoxin	Chemical produced by white blood cells that neutralises specific toxins.
Immunity	The ability of the white blood cells to respond quickly to a pathogen by making a large quantity of the correct antibody quickly.

Box 9 - Vaccination

1. Vaccination (usually an injection) introduces a small amounts of **dead or inactive** forms of a pathogen into the body. They carry **antigens** which stimulate the white blood cells.
2. White blood cells produce **antibodies** to destroy the pathogen.
3. If the **same (but active) pathogen** re-enters the body, the white blood cells respond **quickly** to produce the **correct antibodies**, in **large amounts,** preventing infection and illness.



Year 10 Biology Knowledge Organiser – Infection and Response

Box 10 - Treating disease with drugs

We can still get sick due to communicable diseases. Drugs (medical, not recreational) have been developed to kill the pathogens that cause infectious disease and treat the symptoms to make ill people feel better.

Antibiotics

- Antibiotics, such as penicillin, are medicines (drugs) that help cure bacterial disease by killing bacteria inside the body.
- Specific bacteria should be treated using specific antibiotics.
- The use of antibiotics has greatly reduced deaths from infectious bacterial diseases BUT the emergence of bacterial strains **resistant** to antibiotics is of great concern e.g. MRSA bacteria
- Antibiotics CANNOT kill viruses, so cannot treat viral diseases. Since viruses live *inside* host cells, it is very difficult to develop drugs to kill viruses without also damaging the body's tissues.

Painkillers

- Painkillers and other medicines are examples of medical drugs that treat the **symptoms** of disease. They do not kill pathogens.

Box 11 - Discovering new drugs

Traditionally drugs were extracted from plants and microorganisms:

- The heart drug digitalis originates from foxgloves (a native plant in the UK)
- The painkiller aspirin originates from the bark of the willow tree.
- Penicillin (antibiotic) was discovered by Alexander Fleming in 1928 from the *Penicillium* mould.
- Most new drugs are synthesised by chemists in the pharmaceutical industry, but the starting point may still be a chemical extracted from a plant.

New Drugs

- Must be tested and trialled before being used to check that they are **safe** and **effective.**
- Are extensively tested for **toxicity, efficacy** and **dose.**
- Testing before giving the drug to humans is 'preclinical testing' and testing where humans receive the drugs is 'clinical trials'.

Key Terms	Definitions
Antibiotic	A drug used to treat diseases caused by bacteria
Painkiller	A drug that only treats the symptoms of disease, rather than killing pathogens.
Toxicity	How harmful a drug is to healthy body tissues.
Efficacy	Whether a drug works or not and produces the desired effect
Dose	How much of a drug is given to a patient to be effective
Optimum dose	The dose of a drug that is most effective and has few side effects.
Clinical trials	A set of drug tests on human volunteers
Placebo	A substance that is like the drug being tested but is completely ineffective (doesn't work). Used to allow comparison in results.
Double-blind trial	A clinical trial where neither the doctors nor the patients know who has received the drug and who has received the placebo until all the results have been gathered. Avoids bias and ensures that effects due to people's expectations can be ruled out.

Box 12 - Development and testing of new drugs

The new drug must pass each stage before it can proceed to the next stage.

1. Preclinical testing on human cells and tissues

- Takes place in the lab
- The drug is tested on cells and tissues grown for drug testing

2. Preclinical testing on live animals

- Takes place in the lab and on animals like rats bred for drug testing
- Tests for **efficacy, toxicity and dosage.**

3. Clinical trials on human volunteers

- New drug is given in very low doses to healthy volunteers, to check for toxicity and side effects.
- Then clinical trials using people with the disease take place. These are **double-blind trials** and test how well the drug works for the disease and identifies the optimum dose.

Year 10 Chemistry Knowledge Organiser – Chemical Changes 2

Box 1 - Electrolysis

- When an ionic compound is melted or dissolved in water, the ions **are free to** move about within the liquid or solution.
- These liquids and solutions are **able to conduct electricity** and are called **electrolytes.**
- If an electric current is passed through this solution the ions will move to the electrodes.

Remember: ions are attracted to the electrode with the opposite charge (opposites attract)

- **The positive ions will be attracted and move to the negative electrode.**
- **The negative ions be attracted and move to the positive electrode.**
- **The ions are then discharged at the electrodes to form elements.**

Box 2 - Electrolysis of molten ionic compounds

Ionic compounds can be heated so that they melt and become a liquid – **molten** ionic compounds are ionic compounds that have been melted to a liquid.

- When this is carried out using inert (unreactive) electrodes, a metal is formed at the negative electrode and a non-metal is formed at the positive electrode.
- For example in the electrolysis of molten lead bromide, Lead (Pb^{2+}) ions move to the negative electrode, forming molten lead (Pb) and bromide ions (Br^-) move to the positive electrode, forming bromine (Br_2).

Box 3 - Rules for Aqueous Solutions

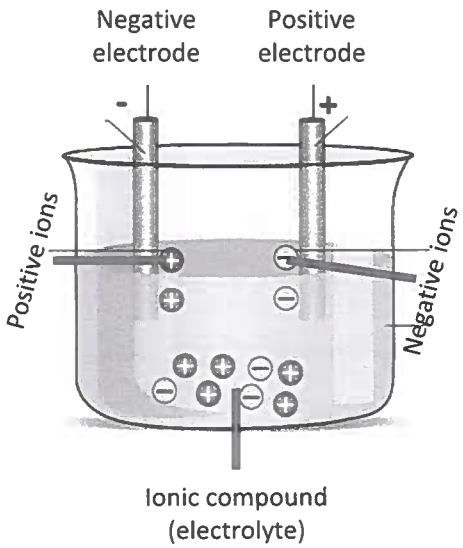
Electrolysis of aqueous (dissolved in water) solutions can change the products due to the presence of the ions from the water in the solution (H^+ and OH^-).

At the negative electrode:

- If the positive ion is less reactive than hydrogen (for example copper) the metal will form.
- If the positive ion is more reactive than hydrogen (for example sodium) then hydrogen will form.

At the positive electrode:

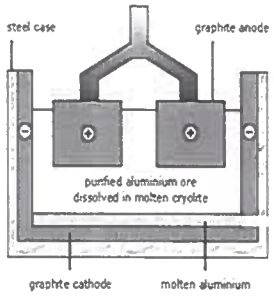
- Oxygen gas (O_2) will always form (due to the movement of hydroxide ions) unless there is a halide ion (the ion of a halogen) present (F^-,Cl^-, Br^-, I^-), in which case the halogen molecule will be produced, for example chlorine gas (Cl_2).



Key Terms	Definitions
Electrolysis	The breaking down of a substance using electricity
Electrolyte	The solution which is being broken down during electrolysis
Anode	The positive electrode
Cathode	The negative electrode

Box 5 - Extracting aluminium using electrolysis

- Aluminium oxide has a high melting point, so it is dissolved in molten cryolite, which reduces the melting point of aluminium oxide - the process requires less energy.
- Aluminium ions (Al^{3+}) are attracted to the negative electrode where they form aluminium atoms (Al).
- Oxide ions (O^{2-}) are attracted to the positive electrode where they form oxygen gas (O_2), but because it is so hot the oxygen gas reacts with electrode (made from carbon) to make carbon dioxide (CO_2). This electrode needs to be replaced constantly.



Half equations – Higher tier only

Negative electrode: Aluminium ions are reduced

$Al^{3+} + 3e^- \rightarrow Al$

Positive electrode: Oxide ions are oxidised

$2O^{2-} \rightarrow O_2 + 4e^-$

Overall equation:

$2Al_2O_3 \rightarrow 4Al + 3O_2$

Box 4 - Electrolysis of an aqueous solution e.g. sodium chloride solution

The electrolysis of brine (salt water) is electrolysis of a solution of sodium chloride (see box 3). The ions present are:

- **Na^+ and Cl^-** from sodium chloride
- **H^+ and OH^-** from the water in the solution

Positive ions: sodium (Na^+) and hydrogen (H^+)

Negative ions: chlorine (Cl^-) and hydroxide (OH^-)

Hydrogen is **less reactive** than sodium, so hydrogen gas (H_2) is produced at the negative electrode.

$2H^+ + 2e^- \rightarrow H_2$

Chlorine gas (Cl_2) is produced at the positive electrode.

$2Cl^- \rightarrow Cl_2 + 2e^-$

Sodium hydroxide is produced from the ions that remain in solution.

$Na^+ + OH^- \rightarrow NaOH$

Year 10 Chemistry Knowledge Organiser – Chemical Changes 2

Box 6 - Electrolysis and oxidation or reduction and half equations - Higher tier only

- When a positive ion reaches the negative electrode, it gains electrons. This is a **reduction** reaction.
- When a negative ion reaches the positive electrode, it loses electrons, this is an **oxidation** reaction.

We can use half equations to represent the reactions at each electrode

Half equations show electrons (e^-) and how ions become atoms.

E.g. The electrolysis of copper chloride

1. Write down the ion and atom
2. Adjust the number of ions (if needed)
3. Add electrons to balance the charges if required

Half equation for the formation of copper at the cathode

$$Cu^{2+} + 2e^- \rightarrow Cu$$

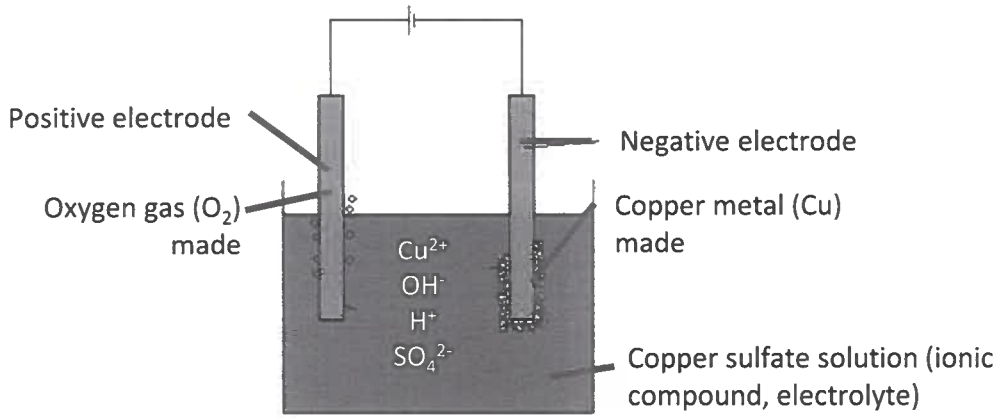
1. Write down the ion and atom: $Cu^{2+} \rightarrow Cu$
2. Adjust the number of ions (if needed): $Cu^{2+} \rightarrow Cu$ (no change here)
3. Add electrons to balance the charges if required $Cu^{2+} + 2e^- \rightarrow Cu$

Half equation for the formation of copper at the cathode

$$2Cl^- \rightarrow Cl_2 + 2e^-$$

1. Write down the ion and atom: $Cl^- \rightarrow Cl_2$
2. Adjust the number of ions (if needed): $2Cl^- \rightarrow Cl_2$ (two Cl^- needed to make Cl_2)
3. Add electrons to balance the charges if required: $2Cl^- \rightarrow Cl_2 + 2e^-$

Remember that non-metal ions will typically form diatomic molecules (molecules with two atoms – Cl_2, Br_2, O_2, etc).



Box 7 - Half equations for the electrolysis of aqueous solutions - Higher tier only

Positive ions are reduced (electrons added) at the negative electrode:

If the positive ion is less reactive than hydrogen (for example copper) the metal will form:

$$Cu^{2+}_{(aq)} + 2e^- \rightarrow Cu_{(s)}$$

If the positive ion is more reactive than hydrogen (for example sodium) then hydrogen will form:

$$2H^+_{(aq)} + 2e^- \rightarrow H_{2(g)}$$

Negative ions are oxidized (electrons lost) at the positive electrode:

Oxygen gas (O_2) will always form (due to the movement of hydroxide ions):

$$4OH^-_{(aq)} \rightarrow O_{2(g)} + 2H_2O_{(l)} + 4e^-$$

Unless there is a halide ion (the ion of a halogen) present (F^-,Cl^-, Br^-, I^-), in which case the halogen molecule will be produced, for example chlorine gas (Cl_2):

$$2Cl^-_{(aq)} - 2e^- \rightarrow Cl_2(g)$$

Box 8 - Electrolysis of copper sulfate ($CuSO_4$) (Required Practical)

- Which elements form at which electrode depends on the **reactivity** of the elements involved.
- In the electrolysis of aqueous copper sulfate the ions present are:
- **Cu^{2+} and SO_4^{2-}** from copper sulfate
- **H^+ and OH^-** from the water in the solution

Positive ions: copper (Cu^{2+}) and hydrogen (H^+)

Negative ions: sulfate (SO_4^{2-}) and hydroxide (OH^-)

Copper is **less reactive** than hydrogen, so copper (Cu) is produced at the negative electrode.

Higher tier only

The half equation at the negative electrode is:

$$Cu^{2+} + 2e^- \rightarrow Cu$$

The copper ions are **reduced** because they gain electrons.

There is no halide ion present, so oxygen is formed at the positive electrode.

$$4OH^- \rightarrow O_2 + 2H_2O + 4e^-$$

The hydroxide ions are **oxidised** because they lose electrons.

Y10 Biology Knowledge Organiser - Ecology 1

Box 1 - Interdependence and competition

Ecology is the study of organisms and their interactions with the environment around them.
All the organisms in the ecosystem depend on each other for survival. This is called **interdependence**.
Ecosystems are made up of communities. These are all of the living organisms within that ecosystem. The community is made up of populations. These are groups of organisms of a particular species within that ecosystem.

Organisms will compete with each other for resources within an environment. They will compete with organisms of the same species and organisms of different species.

Animals will compete for:
- Space (territory)
- Food
- Water
- Mates

Plants will compete for:
- Light
- Space
- Water
- Mineral ions

A stable community is one where all the species and the environmental factors are in balance; as a result, population sizes stay relatively constant.

Box 2 - Adaptations

ALL organisms are adapted to survive their natural environment. Adaptations can be:
- **Structural**: adaptations in terms of body form and shape. This would include examples like: streamlined shape for speed; long stem
- **Behavioural**: adaptations of behaviour – for instance, hunting behaviours.
- **Functional**: adaptations in terms of how the body works. For instance: being able to digest a certain food.

Some organisms are adapted to live in extreme environments – for instance, very high temperatures, high pressures, high salt concentration. The organisms that can survive in these kinds of conditions are called **extremophiles**. Bacteria that live in deep sea hydrothermal vents are extremophiles.

Key Terms	Definitions
Ecosystem	Interaction of a community of living organisms (biotic parts) with the non living parts of their environment (abiotic parts).
Community	All of the populations of different species living within a habitat or ecosystem.
Habitat	The place where an organism is adapted to live.
Population	The organisms of one species living in a habitat or ecosystem.
Interdependence	All organisms in a community rely on one another for food, shelter, pollination, seed dispersal, nutrient recycling
Biotic factors	Living factors affecting a community.
Abiotic factors	Non-living factors affecting a community.

Box 3 - Biotic and abiotic factors affecting organisms

These factors may affect the distribution of organisms (i.e. how they are spread out in the environment), their population size, their growth, behaviour or anything else really.

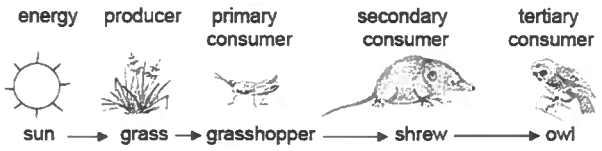
Abiotic factors – non living factors	Biotic factors – living factors
light intensity	food availability
temperature;	new predators arriving
moisture levels	new pathogens
soil pH and mineral content	competition between species
wind intensity and direction	
carbon dioxide level for plants	
oxygen levels dissolved in water for aquatic animals.	

Y10 Biology Knowledge Organiser - Ecology I

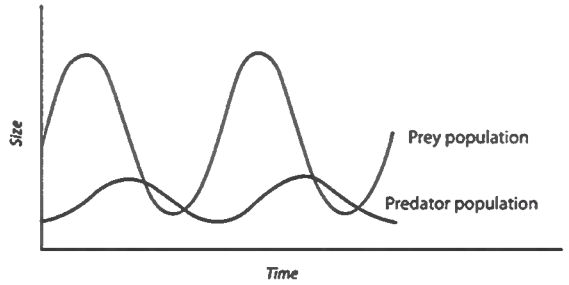
Box 4 – Food chains

Apart from some ecosystems in deep sea vents, ALL biomass on Earth is produced by **photosynthetic** organisms (plants and algae) so these organisms are called **producers**. **Food chains and food webs** represent the feeding relationships in a community..

The producers are eaten by **primary consumers**, which might be eaten by **secondary consumers**.
The secondary consumers may be eaten by **tertiary consumers**.

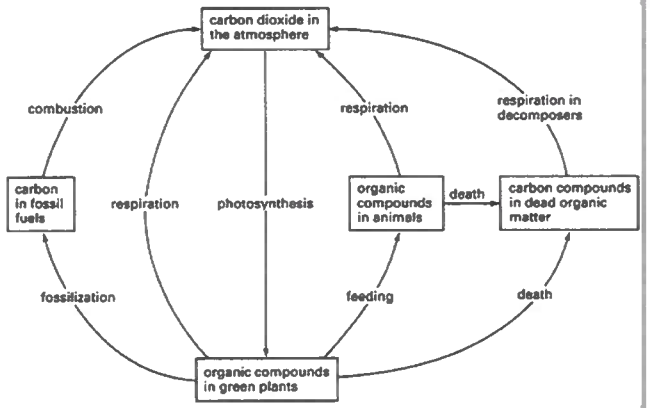


Predators are consumers that kill and eat other animals.
The animals eaten by predators are their **prey**.
In a *stable* community, the population size of predators and their prey rise and fall in Cycles.



Box 5 - Cycling of materials and the carbon cycle

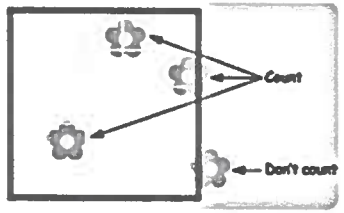
All materials have to be cycled Through the biotic and abiotic components of the ecosystem – e.g. water, carbon, minerals. Microorganisms (bacteria and fungi) play a key role in cycling materials by returning carbon to the atmosphere and mineral Ions to the soil.
Carbon is found in the carbohydrates, Lipids and proteins that living Organisms are built from. Carbon is cycled by the processes below:



- **Photosynthesis** – takes carbon from the atmosphere (in the form of CO_2) and converts it to biomass
- **Respiration** – all living organisms, including plants and microorganisms, respire, which returns carbon dioxide to the atmosphere. While decay is taking place, carried out by microorganisms, they respire, which releases CO_2.
- **Feeding** – when consumers eat other organisms, the carbon in the other organism's biomass is transferred to the consumer.

Key Terms	Definitions
Biomass	The materials that living things are made from: proteins, carbohydrates and lipids.
Distribution	How organisms are spread through an ecosystem.
Quadrat	A square frame of known area used for sampling in an ecosystem.
Transect	Sampling method along a line. This is used to measure the change in distribution of organisms.

Box 6 - Measurements of ecosystems



Sampling techniques are used to measure the population size or distribution of organisms in an ecosystem..

Estimating population size – Quadrat survey

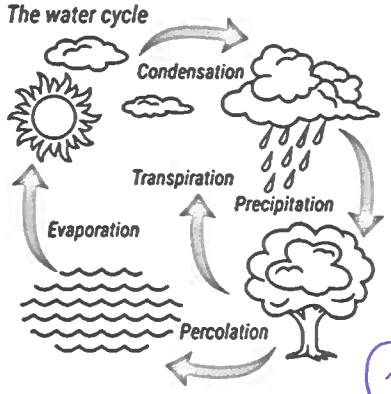
- Measure area being sampled.
- Place quadrat at a number of random positions in the area being sampled. Organisms within the quadrat are counted.
- A mean number organisms is then calculated and then multiplied up by the area being sampled..

Measuring distribution – Transect survey

- A long tape measure is laid down across the area being surveyed.
- A quadrat is laid at regular intervals along the line and the number of organisms being sampled counted each time.
- Other factors (e.g. light intensity) can be measured along the transect line to look for correlation.

Box 7 - The water cycle

Water is constantly cycled in ecosystems.
Water is released in aerobic respiration by all organisms. Water is constantly evaporated from the surface of land and water and from Plants (transpiration) Water vapour then condenses and precipitates (rain). Water precipitated provides fresh water for organisms on land before draining into the sea.



Y10 Biology Knowledge Organiser - Ecology II

Key Terms	Definitions
Biodiversity	The variety of all the different species of organisms on earth, or within an ecosystem.

Box 1 - Biodiversity

Biodiversity, the variety of all the species of organisms on Earth or within an ecosystem.

A great/high biodiversity increases the stability of ecosystems, because it reduces the dependence of one species on another, for instance for food. So, for example, if a species has only one food source (e.g. pandas and bamboo shoots), it may be easily threatened by environmental changes.

Our future as a species on Earth depends totally on maintenance of a good level of biodiversity. Many human activities threaten biodiversity. Indeed, in many ecosystems, we have already significantly reduced biodiversity and we have only recently taken measure to try and stop this reduction

Box 2 - Land use

Humans reduce the amount of land available for other organisms, which reduces biodiversity as habitats and food sources are removed. They do this by:

- Building
- Quarrying
- Farming
- Dumping waste (e.g. landfill).

Peat Bogs

Peat bogs are made of peat, a type of fossil fuel formed from the very slow dead plants.
Peat can be used as a fuel and is used to produce garden compost, so peat bogs are being destroyed.

Destruction of pest bogs reduced biodiversity.
Using peat as a fuel produces CO_2, so contributing to global warming

There is conflict between our need for cheap, available compost and the need to conserve peat bogs and peatlands for biodiversity and to reduce carbon dioxide emissions.

Box 3 - Waste management

The human population is growing at a rapid rate and people's living standards are going up.
This means humans are using more and more resources and producing more and more waste. Our waste causes pollution, which can occur:

- In water, thanks to sewage, fertilisers running off farmland, or toxic chemicals used in industry. Fertilisers cause algae populations to grow rapidly. This blocks light and causes the death of algae and plants. The subsequent decay of these dead organisms causes the oxygen levels in the water to drop. This causes the death of fish and other freshwater invertebrates and biodiversity decreases.
- In the air, from smoke, waste gases and acidic gases (e.g. sulphur dioxide)
- On land, from landfill (rubbish dumps) and from toxic chemicals.

Pollution kills living organisms so therefore it can reduce biodiversity.

Box 4 - Deforestation

Deforestation is the removal of large areas of forest, particularly in tropical areas.

Large scale deforestation happens in tropical areas to:

- to provide land for raising cattle
- to provide land for rice fields
- to grow crops that can be made into biofuels.

Deforestation significantly reduces biodiversity

Deforestation contributes to global warming because:

- It increases the carbon dioxide released into the atmosphere as trees are burnt to clear the land.
- Micro-organisms break down dead plant material and release carbon dioxide when they respire.
- Less carbon dioxide is taken in, as when there are fewer trees, less photosynthesis occurs.

Y10 Biology Knowledge Organiser - Ecology II

Box 5 - Global warming

Since the industrial revolution, human activities (burning fossil fuels, deforestation) have dramatically increased the levels of greenhouse gases in the atmosphere. The main greenhouse gases are carbon dioxide and methane.
The molecules of these gases absorb infrared (heat) radiation and re-radiate it. More of these molecules means more infrared radiation absorbed and re-radiated. This is causing gradual but measurable increases the atmospheres, and therefore Earth's, temperature.

Global warming as caused by humans used to be controversial; now, thousands of peer-reviewed publications later, the global scientific consensus is that humans are causing global warming and climate change .

The consequences of global warming are:
- Rising sea level leading to habitat loss.
- Changes in the distribution of organisms.
- Changes to migration patterns of organisms.
- Reduction in biodiversity.

Key Terms	Definitions
Breeding programme	Producing offspring, especially of endangered species to protect their population.
Field margin	The area around the edge of a field between the crop and the barrier (fence/hedge/wall.)
Hedgerow	The barrier at an edge of a field made of growing plants, as opposed to a fence or wall.

Box 7 - Conflicting pressures

The following factors are conflicting pressures that make global action to tackle problems difficult:
- Costs
- Political agreement
- Need for food and resources for increasing populations and living standards.
- Complex actions needed.

Box 6 - Maintaining biodiversity

As the scale of our negative influence has become more and more apparent, scientists and concerned citizens have brought in programmes to try to reduce our negative impacts on ecosystems and biodiversity.
Examples include;
- **Breeding programmes** for endangered species. For instance, tigers and pandas are bred in captivity to ensure they do not become extinct.
- **Protection** and **regeneration** of rare habitats. This includes passing laws to ensure people leave certain areas alone (e.g. parts of the Great Barrier Reef). Regeneration means activity trying to bring a habitat back to its more former state, which is usually more diverse.
- **Reintroduction of field margins** and **hedgerows** in agricultural areas where farmers only grow one kind of crop. Field margins and hedgerows provide habitats and food sources for more biodiversity in plant and animal life.
- **Reduction of deforestation and carbon dioxide emissions** by some governments. There have been numerous attempts, not always totally successful, to get governments of countries around the world to agree to specific targets for how much carbon dioxide they emit. e.g. Paris Climate agreement.
- **Recycling** resources rather than dumping in landfill.

Field margin, and hedgerow on the left and crop on the right.

Year 10 Chemistry Knowledge Organiser
Organic Chemistry page 1

Box 1 - Crude Oil

Crude oils is a mixture of chemicals called hydrocarbons.

- These are compounds that contain **hydrogen and carbon atoms only. It is made from ancient sea creatures, mainly plankton.**
- Crude oil straight out of the ground is not much use.
- Crude oil is a mixture of different hydrocarbons, called **fractions**.
- Crude oil is separated into the different fractions that each has its own use.
- The process of separating crude oil into fractions is called fractional distillation, which is possible because the different hydrocarbons (fractions) in crude oil each have **different boiling points**.

How does fractional distillation work?

- Crude oil is heated so it vaporises/boils/turns to a gas.
- The vapours rise up the column, which is cooler towards the top.
- The vapours gradually cool as they rise and condense at their boiling points.
- Hydrocarbons with different size molecules condense at different levels/temperatures.
- The crude oil is separated into a series of fractions with similar numbers of carbon atoms and boiling points. These are called fractions.

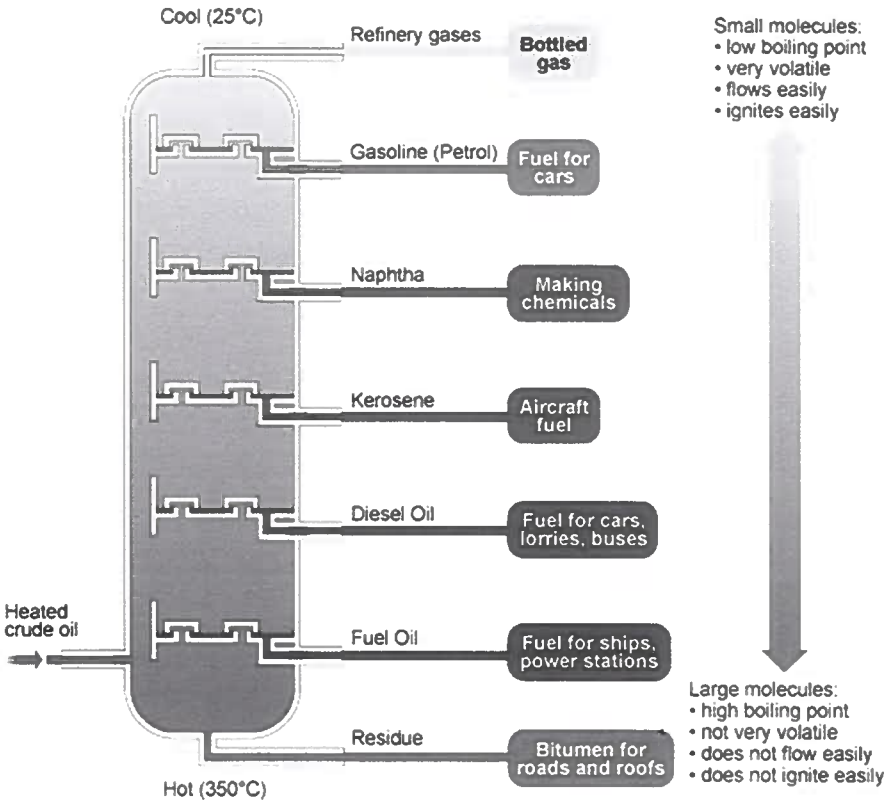
As the number of carbon atoms increases:

- The chains become longer
- Boiling point increases
- Flammability decreases (catches fire less easily)
- Viscosity increases (liquid becomes thicker)

Key Terms	Definitions
Hydrocarbon	A compound which contains only hydrogen and carbon (covalently bonded)
Fractional Distillation	The process where crude oil is separated into different compounds through evaporation
Viscosity	The ability of a liquid to flow

Box 2 - Fractional Distillation Column

Below is a diagram of a fractionating column; you need to know the uses but not the names of each fraction:



Year 10 Chemistry Knowledge Organiser
Organic Chemistry page 2

Box 3 - Alkanes

Crude oil is largely made up of a family of hydrocarbons called alkanes

- Alkanes are saturated hydrocarbons - these contain only a single covalent carbon to carbon bonds.
- General formula for an alkane - C_nH_{2n+2}
- you can either represent alkanes with a **molecular formula**:

CH_4 C_2H_6 C_3H_8 C_4H_{10}

or a **displayed formula**:

Methane Ethane Propane Butane

C – carbon, H – hydrogen, the lines indicate covalent bonds

Box 4 - Cracking

- Shorter hydrocarbons are useful as fuels, however crude oil contains fewer of these molecules than is needed. Longer chain hydrocarbons have uses, but crude oil contains more of these longer chain hydrocarbons than is needed.
- The solution to this **supply and demand** issue is to break longer chain hydrocarbons down into short ones using a process called **cracking.**
- **Cracking** is a thermal decomposition reaction that uses heat to break down the longer chain hydrocarbons.

How Cracking Occurs

EITHER: Long chain hydrocarbons are **heated**, turned into a vapour and passed over a hot catalyst in catalytic cracking

OR: Long chain hydrocarbons are mixed with **steam** and heated to very high temperatures

Cracking produces two products:

1. Shorter alkane(useful as a fuel) 2. An alkene (used to make polymers).

Summary

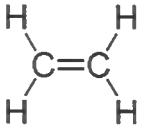
Long Chain Alkane → Short Chain Alkane + Alkene

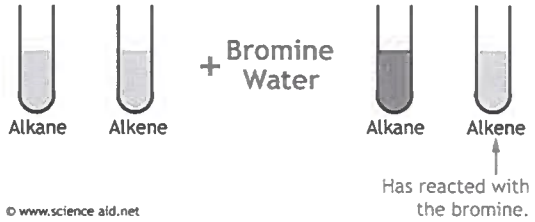
$C_{10}H_{22}$ → C_8H_{18} + C_2H_4

Key Terms	Definitions
Alkane	A hydrocarbon that contains only carbon to carbon single bonds
Cracking	A process where longer chain hydrocarbons are broken down into smaller more useful ones. There are 2 ways - by catalytic cracking or steam cracking.
Alkene	A hydrocarbon that contains at least one carbon to carbon double bond.

Box 5 - Alkenes

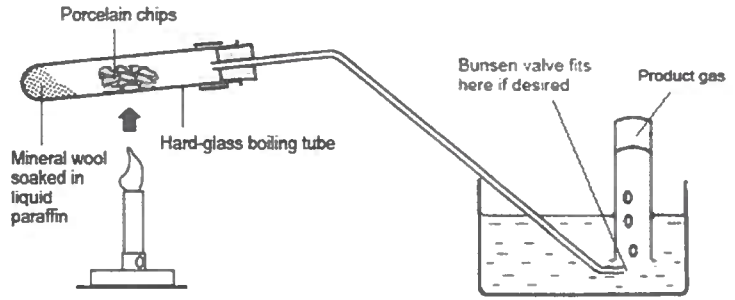
- Alkenes are unsaturated hydrocarbons have at least one double bonds between the carbon atoms.
- General formula for alkenes is C_nH_{2n}
- Alkenes are **more reactive** than alkanes.
- They react with bromine water and make it go from orange to colourless.
- Alkanes do not have a double bond so the bromine water stays orange.





Box 4 - Cracking Reaction Diagram

Experimental set up for catalytic cracking:



PCSHE – Year 10 Topic 5 – Addressing Extremism and Radicalisation

KPI1: Key Terms

- **Extremism**: Beliefs or actions that promote violence, hatred, or the overthrow of democratic institutions.
- **Violent Extremism**: Acts of violence that are justified by, or associated with, an extreme religious, social or political ideology
- **Radicalisation**: A process by which s person comes to support terrorism and extremist ideologies
- **Terrorism**: The unlawful use of violence or threat of violence and intimidation to bring about political, religious or ideological change.
- **Propaganda**: Information, especially of a biased or misleading nature, used to promote a political point.
- **Discrimination**: he unjust or prejudicial treatment of different categories of people, especially on the grounds of race, age, sex, or disability.
- **Alienation**: The feeling that you have no connection with the people around you or that you are not part of a group
- **Hate Speech**: Hate speech is any form of expression through which speakers intend to vilify *(show them in an evil way),* humiliate, or incite (*create)* hatred against a group of people based on race, religion, skin color sexual identity, gender identity, ethnicity, disability, or national origin.
- **Democracy:** A culture built upon freedom and equality, where everyone is aware of their rights and responsibilities.
- **Rule of Law:** The need for rules to make a happy, safe and secure environment to live and work.
- **Respect and Tolerance:** Understanding that we all don't share the same beliefs and values. Respecting the values, ideas and beliefs of others whilst not imposing our own others.
- **Individual Liberty:** Protection of your rights and the right of others you work with.
- **Hate Crime**: This is when someone commits a crime against you because of your disability, gender identity, race, sexual orientation, religion, or any other perceived difference.

Section 2: What is extremism?

Extremism: Beliefs or actions that promote violence, hatred, or the overthrow of democratic institutions.

Extremism goes against the British Values which include:

1. Democracy
2. Mutual Respect
3. Individual Liberty
4. Rule of Law
5. Tolerance of different faiths and beliefs.

There are different types of extremism including:

There are different types of extremism:

1. **Political Extremism:** This is having extreme ideas about how a country should be run.
    a. **Far-right extremism:** This can include racism or hating immigrants. People may believe their group is better than everyone else.
    b. **Far-left extremism:** This involves wanting to overthrow the government to create a new system, like socialism or communism.
2. **Religious Extremism:** This is using religion to justify violence or forcing strict religious rules on others. These groups often believe their way is the only right way and attack those who disagree. (Example: ISIS).
3. **Social Extremism:** This is taking extreme actions regarding social issues, such as gender, the environment, or LGBTQ+ rights. These extremists may use protests, break laws, or use violence to force changes in society.

Section 3: How are people drawn into extremist groups?

Three parts of radicalisation:

1. A radical ideology – ideas.
2. A radicaliser/groomer – Someone who influences that idea
3. Vulnerabilities and local factors e.g. family situation, a lack of sense of belonging.

Push factors: A situation that pushes them away from mainstream society and causes them to be more likely to be radicalised e.g. a sense of not fitting in, poverty, unemployment, fear.
Pull factors: Something that draws someone towards extremism e.g. someone to blame, a sense of purpose, appeal of charismatic leaders, influence of online networks.

It is important to think critically by:

1. Check your emotions
2. Be aware of your biases
3. Determine the motive
4. Consider the message
5. Gather more information
6. Go deeper into the source

PCSHE – Year 10 Topic 5 – Addressing Extremism and Radicalisation

Section 4: Extremism and Hate Crimes

Extremism: The vocal or active opposition to fundamental British values, including democracy, the rule of law, individual liberty and mutual respect and tolerance of different faiths and beliefs. We also include in our definition of extremism calls for the death of members of our armed forces". (2011, Prevent Strategy)

The law recognises five types of hate crime on the basis of: Race, Religion, Disability, Sexual orientation, Transgender identity.

Any crime can be prosecuted as a hate crime if the offender has either:

- demonstrated hostility based on race, religion, disability, sexual orientation or transgender identity

Or

- been motivated by hostility based on race, religion, disability, sexual orientation or transgender identity

Section 5: Incels and Misogyny

Misogyny: Feelings of hating women, or the belief that men are much better than women.

Incel (involuntary celibate): A member of an online group for people who are unable to find sexual or romantic partners despite wanting them, and who express hate towards people whom they blame for this.

What do Incels believe?

1. Genetic factors influence their physical appearance and/or cognitive and social abilities to the extent that they are unattractive to women.
2. Prior to women gaining financial autonomy, a woman's freedom to choose their partner was restricted because of their reliance on a husband
3. With the advancement of women's rights, independence, and sexual freedoms, women now select sexual relationships with a small group of desirable men.
4. Their situation and what happens to them is outside of their own control, as a result some blame others (including women, attractive men and society).

For further support...

- Safeguarding team – Mr Ogden, Mrs Jones, Mrs Loveridge.
- Pastoral Team – Mr Burke, Mrs Brookes, Tutor
- Teacher
- Parents/Carers
- Friend

Outside Organisations

- True Vision — provides more information about hate speech and a place to report it. http://report-it.org.uk/reporting_internet_hate_crime
- Inappropriate content can also be reported at: https://www.gov.uk/report-terrorism
- www.actearly.uk - An informative website providing guidance and support for anyone who is concerned that someone they know may be at risk of radicalisation or extremism.
- Childline can provide further support (0800 1111). If students have concerns about someone's behaviour, they can contact Childline 0800 1111 or their local police station (by calling 101), who can refer the case to specialists or the correct authorities.

Knowledge Organiser - Year 10, Spring Term - **Buddhist Beliefs** - GCSE Short Course RE

The Life of the Buddha:

- **Siddhartha Gautama -** The founder of Buddhism, later known as the Buddha
- **Buddha -** Means 'enlightened one' or 'awakened one.'
- **Enlightenment -** The gaining of true knowledge about the nature of reality; freedom from the cycle of rebirth
- **Ascetic -** A person who lives a simple, strict life of self-denial for spiritual reasons.
- **Middle Way -** The Buddha's teaching that avoids the extremes of luxury and asceticism.
- **Four Sights -** Old age, sickness, death, and a holy man — what inspired Siddhartha to seek enlightenment.
- **Mara -** The demon who tried to tempt Siddhartha during his meditation before enlightenment.
- **Dukkha -** Suffering or unsatisfactoriness — a central concept in Buddhism.

The Three Marks of Existence :

- **Anicca -** Impermanence — the idea that all things are constantly changing.
- **Anatta -** the belief that humans do not have a fixed or permanent soul.
- **Dukkha -** Suffering — life is unsatisfactory because it always involves change and loss.
- **Viparinama-dukkha -** Suffering caused by change.
- **Sankhara-dukkha -** Suffering caused by attachment and craving.
- **Dukkha-dukkha -** Ordinary physical and emotional pain.

The Three Jewels/ Refuges :

- **Three Jewels -** The three sources of guidance for Buddhists
- **The Buddha -** The teacher/ enlightened one
- **The Dhamma -** The teachings of the Buddha after his enlightenment
- **The Sangha -** The Buddhist Community

The Four Noble Truths

- **The Four Noble Truths -** The Buddha's main teaching explaining the cause of suffering and how to end it.

1. **Dukkha -** Life involves suffering.
2. **Samudaya -** The cause of suffering is craving (tanha).
3. **Nirodha -** Suffering can end if craving and attachment stop.
4. **Magga -** The way to end suffering is by following the Eightfold Path.

- **Tanha -** Craving or desire; wanting things leads to suffering.
- **Nirvana -** A state of perfect peace and liberation from the cycle of rebirth (samsara). (After enlightenment)

The Eightfold Path:

- **The Eightfold Path (Magga) -** The practical path to end suffering and reach enlightenment. It includes:

1. Right View
2. Right intention
3. Right Speech
4. Right Action
5. Right Livelihood
6. Right Effort
7. Right Mindfulness
8. Right Concentration

Samsara:

- **Samsara -** The cycle of birth, death, and rebirth.
- **Karma -** The law of cause and effect — actions have consequences.
- **Rebirth -** The continuation of a being's consciousness into a new form after death.
- **Nirvana (Nibbana) -** The end of suffering and rebirth; ultimate goal of Buddhism.
- **Dependent Arising (Paticcasamuppada) -** Everything exists because of other things; all things are interconnected.

Knowledge Organiser - Year 10, Spring Term - **Buddhist Beliefs** - GCSE Short Course RE

The Five Aggregates/ Skandhas:

- **Aggregates/Skandhas -** The five things that make up all people:

1. Form (Rupa) - Your body
2. Sensations (Vedana) - Your senses e.g. taste
3. Perception (samjna) - Your understanding of different objects/things
4. Mental Formations (Samskara) - Your opinions and thoughts
5. Consciousness (Vijnana) - Your general awareness of yourself as an individual in the world

Religious texts in Buddhism:

- **Dhamma (Dharma) -** The Buddha's teachings after his enlightenment
- **Jataka Tales -** Stories and moral lessons from Buddha's previous life and life before enlightenment
- **Tipitaka (Pali Canon) -** The earliest Buddhist scriptures which rules and teachings for Monks and Nuns.
- **Mahayana Sutras -** Teachings on compassion, emptiness and enlightenment.

Types of Buddhism:

- **Theravada Buddhism -** 'The way of the elders.' - Traditional form commonly found in Sri Lanka and Southeast Asia. Focuses on the Pali Canon.
- **Mahayana Buddhism -** 'The Great Vehicle' - includes Zen and Pure Land; found in China, Japan and Tibet.
- **Bodhisattva -** Someone who has found enlightenment and then stays to help others achieve the same. Aim for all Buddhist's in Mahayana Buddhism
- **Arhat -** Someone who has achieved enlightenment and broke free from the wheel of Samsara
- **Sunyata -** Emptiness. The belief that nothing has an independent permanent existence
- **Pure Land Buddhism -** Form of Mahayana Buddhism that focuses on the Amitabha Buddha and being reborn in the Pure Land
- **Amitabha Buddha -** The Buddha of infinite light; central figure in Pure Land Buddhism

Key Concepts:

- **Metta -** Loving Kindness; showing goodwill to all beings
- **Karuna -** Compassion; feeling concern for the suffering of others
- **Mindfulness -** Awareness of your thoughts, feelings and actions in the present moment.
- **Tanha -** Craving
- **Dana -** Generosity or giving