Great in name, greatest together

Great Sankey High School

Knowledge Organiser

Spring Term

2023/24

Year 10

A Knowledge Rich Curriculum at Great Sankey High School

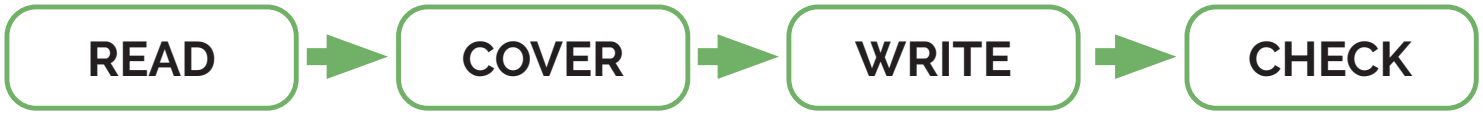
Research around memory suggests that if knowledge is studied once and not revisited or revised, it is not stored in the long-term memory. This means that after one lesson, or revising for one test, the knowledge will not be retained unless it is studied again. To ensure that knowledge is embedded in the long term memory it must be revisited frequently. Ensuring knowledge is embedded aids understanding, and in turn makes future learning more successful. To quote Daniel Willingham's learning theory,

"Thinking well requires factual knowledge that is stored in our long-term memory"

As part of home learning, students should be revising what they have been taught recently but also content they were taught previously. Therefore, as part of our strategy to embed learning over time we have developed knowledge organisers across years 7 -11. These will provide key content and knowledge allowing students to pre-learn and re-learn, a vital part of processing all the information required to be successful. This knowledge will form the back-bone of assessments in school.

How to use your knowledge organiser

Knowledge organisers will be used in subject lessons, homework activities and form time and therefore you need to bring your knowledge organiser to school every day.
Ensuring that knowledge is retained into your long-term memory and you are ready for tests takes work!



To encourage students to build good study habits, students will be assigned homework quizzes on a week A through the Google Classroom. Students will be expected to use revision strategies such as read, cover, write, check to learn key knowledge and will then complete the quizzes to demonstrate their learning. Completion of these quizzes is an essential homework activity and will be closely monitored by the pastoral team.

Other methods that you may wish to try at home are listed below:

- Create mind maps.
- Create flashcards.
- Get sticky with your learning: write out key points from the KO as you read over it on post-it notes.
- Write your own basic recall quizzing questions around the keywords, definitions and key facts that you need to know. Test yourself with these questions and then leave it overnight to answer them the next day.
- Write your own challenging questions using the following command words – explain, compare, evaluate. Then create a model answer for these questions.
- Put the key words from your KO into new sentences.
- Make mnemonics to remember the order of particular concepts.
- Draw a comic strip, storyboard or a timeline describing any series of events that have a chronological order.
- Write yourself or a partner some quiz questions. Quiz each other or swop your questions to see if you can answer each other's questions.
- Think about the big picture – why is knowing specific information important to you/other people/society/companies/science/technology? The more links that you can make, the more meaningful you make your learning and the more likely it is that you will remember it. Think about the big picture – are there any links in the content on your KO to anything that you have watched on TV, read about or heard in the news?
- Give yourself spelling tests.
- Definition tests.
- Draw diagrams of key processes or theories.
- Draw images and annotate/label them with extra information.
- Create fact files.
- Create flowcharts for descriptions or explanations that have a chronological order.
- Summarise in your own words each section.
- Get your parents/carers to test you.
- Pick out key words and write definitions.
- Pre-learning (read a section of your knowledge organiser prior to the lesson).
- Learn key quotes (if applicable). Consider what you may say about these quotes e.g. what the author is trying to make you think/feel, their choice of language, what can be inferred from it.
- Write a letter/blog/article to someone explaining a key idea or concept.
- Prepare to overcome any hurdles: write down any questions or any areas of the KO that you feel you need to speak to your teacher about.
- Use the guidance that may have been given with a specific KO to help you learn the information and use it.

"Don't practise until you get it right. Practise until you can't get it wrong."

Portable Knowledge in STEM at KS4

STEM stands for Science, Technology, Engineering and Maths, and it is important that you can see connections between each of these subjects. In the real world there are very few challenges that only require one set of skills. For example, you wouldn't be able to design a new app, video game or computer program without an understanding of all of the STEM concepts. This section of the knowledge organiser will show you how different STEM subjects have things in common, including examples of how you might use them, and how some things may actually appear slightly different from one subject to the next. As Geography is a Natural Science we can include that too.

EXAMPLE	SCIENCE	TECHNOLOGY & ENGINEERING	MATHS	GEOGRAPHY
Tally chart	Can be used to record the number of pupils in different height ranges in biology.	Can be used when choosing a final design choice from a selection of draft designs.	Can be used to record the number of pupils (usually labelled frequency) with different eye colours or what their favourite subject is.	Can be used to record the number of people visiting honeypot sites when studying tourism such as visitor numbers in Jamaica over a 5 year period.
Pie chart	Can be used to display the % of different hydrocarbons in crude oil or % of different gases in the atmosphere in chemistry.	Can be used to display results of a tally chart.	Can be used to display the proportion or % of pupils who travel to school in different way.	Can be used to record the amount of people working in different job sectors over time in the UK in comparison to other countries.
Bar chart	Can be used to display the number of people with different blood groups in biology.	Can be used to display results of a tally chart.	Can be used to display the number of pupils with a different favourite sweet.	In geography the term histogram and bar chart are interchangeable and are used to display data such as the percentage of forest lost in a range of countries. A range of different bar charts and histograms are used when writing up fieldwork.
Histogram	This is similar to a bar chart but the bars touch each other and they represent continuous data that is grouped, for example number of pupils in different height ranges in biology.	Can be used to display research data. Can also be used to represent time on a "Gant" chart.	In maths this can be used to show the distribution of a data set such as the ages within a population. In most cases, a histogram has different class widths meaning the area of each bar is the frequency for it.	
Line graph	Can be used to display the time taken for salt to dissolve at different temperatures in chemistry.	Can be used to represent trend data during research pieces.	In maths these are sometimes called scatter graphs or timeseries graphs. They can be used to display house prices and/or the trend in a data set over time.	Can be used when studying climate graphs. Line graphs are also used when analysing climate data over a period of time.
Line of best fit	In biology a line of best fit can be point to point, but in chemistry they are most often a straight line. In all 3 sciences they could be a curve depending on distribution of the points. For example the extension of a spring in physics.	x	In maths you might be asked to add a line of best fit to a scatter graph. It is always a straight line drawn with a ruler and can be used on graphs to show correlation between hours of revision and score in test. In GCSE Statistics, we use correlation coefficients and linear regression equations to analyse this in detail.	In geography lines of best fit are used to look for negative and positive correlations when comparing data usually in physical geography modules. It is always a straight line drawn with a ruler through as many points as possible.

Portable Knowledge in STEM at KS4

Hopefully this section of the knowledge organiser will help you spot where things crossover from one STEM subject to another as you move from lesson to lesson. REMEMBER some things are exactly the same, some are very similar but might be called different things, and some things are different altogether! ……..and don't forget STEM stands for **Science, Technology, Engineering and Maths**

EXAMPLE	SCIENCE	TECHNOLOGY & ENGINEERING	MATHS	GEOGRAPHY
Range	Range around a mean can be used with data for heart rate after exercise in biology, amount of hydrogen gas produced in a chemical reaction in chemistry and number of times a ball bounces in physics.	x	The range is a measure of the spread of a data set. It can be used to compare data, with a smaller range meaning it is more consistent such as comparing times athletes run 100m over 10 races.	Range is used in the geographical skills section of course. Range can be used when looking at rainfall and temperature data for different locations or when using development indicators such as literacy rate, life expectancy etc.
Mean, Median and Mode	Mean, median and mode can be used to analyse any sets of data with a range of results.	x	Mean, median and mode can be used to analyse any sets of data in conjunction with the range.	Mean, median and mode are used in the geographical skills section of the course and can be used to analyse any sets of data with a range of results.
Continuous data	These are data values that can take any value and are grouped/rounded. In biology an example would be bubbles of oxygen produced during photosynthesis.	x	These are data values that can take any value and are grouped/rounded. Data could be length, time, capacity or mass.	This is where you have any value in your data. An example would be mm of rainfall.
Discrete data	In science this is sometimes called discontinuous data. An example would be blood group or eye colour in biology.	x	These are specific data values and can be quantitative (numerical) and qualitative (word or category). Examples include type of colour, the result from rolling a dice or the number of pets people have.	Discrete data in geography includes both primary and secondary data. Fieldwork data could include rock sample sizes and how they change from the source to the mouth of a river.
Using co-ordinates	x	Used by a CNC machine to position the cutter when machining a piece of material. Marking out a series of holes from dimensions on a drawing.	4 and 6 figure grid references are used when plotting in 4 quadrants and used in transformations.	Both 4 and 6 figure references are used across all topics in geography to locate places from a map.
Taking measurements that are accurate and precise	Accurate data is close to the true value and precise data gives similar results if you repeat the measurement. In science there are far too many examples to mention!	Used when marking out materials prior to cutting and quality during checking when manufacturing a component.	Being able to read a variety of scales is a key skill for plotting and drawing graphs or measuring angles and lines. It is important in constructions and scale drawings to be within 0.1 cm or 1°	Measurements and accuracy are really important when studying map skills, especially when looking at scale and distance.

		Definition	*Contextual Sentence*
1	***simulation***	The imitation of a situation or process.	You can watch a computer simulation of the spaceflight.
2	***solely***	Not involving anyone or anything else; only.	The stage lighting in the play was solely his responsibility.
3	***somewhat***	To some degree / by a moderate amount; rather.	The town has changed somewhat over the last few years.
4	***submitted (2 definitions)***	Presented (an idea or document) to someone for consideration or judgement. Yielded to a superior force or will of another person.	She submitted her essay yesterday. He submitted himself to a search by the guards.
5	***successive***	Following on; following in order.	There has been low rainfall for two successive years.
6	***survive***	To remain alive or in existence.	Few fish survive in the polluted lake.
7	***thesis***	A statement that is discussed and debated.	The lab results prove the scientist's thesis on energy conversion.
8	***topic***	A particular subject; a matter dealt with in a text or conversation.	Her article was on the topic of school uniform.
9	***transmission***	The action or process of transmitting/ passing something on.	The radio transmission came through loud and clear.
10	***ultimately***	Finally; in the end.	A poor diet may ultimately lead to illness.
11	***unique***	Being the only one; unlike anything / anyone else.	Each person's genetic code is unique, except in the case of identical twins.
12	***visible***	Able to be seen	The dust from the volcano was visible miles away.
13	***voluntary***	Done/given without being forced to do so or working without payment.	Working on a voluntary basis, the chef cooks for the homeless.
14	***abandon***	To stop looking after; to give up completely.	The soldiers were forced to abandon their position and retreat.
15	***accompanied***	Going with something/someone.	You must be accompanied by an adult.
16	***accumulation***	A gradual increase in quantity.	There was an accumulation of lost property in the cupboard.
17	***ambiguous***	Not clear or decided; open to more than one interpretation.	The end of the film was ambiguous and confusing.
18	***appendix***	A section of extra information at the end of a book or document.	A list of artists involved was included in the appendix of the book.
19	***appreciation***	A feeling or expression of admiration or thanks.	We showed our appreciation by cheering at the end of the performance.
20	***arbitrary***	Not done for any particular reason; chosen or done at random.	Because they couldn't decide what to eat, Luke made an arbitrary choice and ordered pizza.

Tier 2 Vocabulary

21	*automatically*	Without conscious thought or attention; spontaneously.	She looked up automatically when she heard her name.
22	*bias*	Prejudice for or against one person or group.	The match report showed a bias towards the home team.
23	*chart*	A sheet of information in the form of a table, graph, map or diagram.	He recorded the temperature on a chart.
24	*clarity*	The quality or state of being clear.	There is a lack of clarity in your argument.
25	*conformity*	Compliance with standards, rules, or laws.	He rebelled against the conformity of having to wear school uniform.
26	*commodity*	A raw material or product that can be bought and sold.	Water is a precious commodity.
27	*complement*	To complete or enhance by providing something additional.	The illustrations complement the text.
28	*contemporary*	Belonging to or occurring in the present / modern.	The old bridge will be replaced by a more contemporary crossing.
29	*contradiction*	Statements, ideas, or features which are opposed to one another.	There was a contradiction between their account and video evidence.
30	*crucial*	Of great importance.	It was crucial that they won the match on Saturday.
31	*currency*	A system of money in general use in a particular country.	The yen is the official currency of Japan.
32	*denote*	To be a sign of; indicate.	Thicker blue lines on a map denote a motorway.

33	*detected*	Discovered or identified the presence or existence of.	The alarm should go off automatically as soon as smoke is detected.
34	*deviation*	Moving from an established course or accepted standard.	Even in the new house, there was little deviation from his usual routine.
35	*displacement*	The action of moving something from its place or position.	The recent famine in the area has caused the displacement of thousands of people.
36	*dramatic*	Striking in appearance or effect; theatrical.	The dog made a dramatic attempt to escape.
37	*eventually*	At an unspecified later time; in the end	She eventually completed her homework and handed it in.
38	*exhibit*	To publicly display	The winner was invited to exhibit in the local art gallery.
39	*exploitation (2 definitions)*	Treating someone unfairly in order to benefit from their work. Making use of and benefiting from resources.	Migrant workers are vulnerable to exploitation. Environmentalists are concerned about the commercial exploitation of the rainforest.
40	*fluctuations*	Variations; irregular rising and falling in numbers or amounts.	There were fluctuations in the recorded temperatures.
41	*guidelines*	General rules, principles or advice.	There are guidelines on the use of drilling machines in DT.

Macbeth

eduqas

Plot

Act 1	On the way back from battle Macbeth and Banquo meet 3 witches who give predictions that Macbeth will be Thane of Cawdor and king. King Duncan executes the current Thane of Cawdor and gives his title to Macbeth. He makes his son, Malcolm, heir. Macbeth writes a letter to his wife about the news. She plans to kill Duncan so Macbeth can become king. Duncan arrives at their castle. Lady Macbeth taunts her husband for being a coward.
Act 2	Macbeth has a hallucination of a dagger reflecting his guilty conscience - but kills Duncan and, with Lady Macbeth's help, the bloody daggers are planted on the drugged guards. Malcolm and his brother flee and Macbeth is made king.
Act 3	Banquo suspects Macbeth has murdered Duncan. Macbeth hires assassins to murder Banquo but his son Fleance escapes. Macbeth sees Banquo's ghost at his banquet – a sign of his guilty conscience.
Act 4	Macbeth visits the Witches and they give him more predictions. Macbeth orders the killing of Macduff's family. Macduff and Malcolm agree to invade Scotland.
Act 5	Lady Macbeth's mental state deteriorates and, eventually, she commits suicide. Malcolm's army invades through Burnham wood and eventually Macbeth killed by Macduff. Malcolm is proclaimed king.

Lines per character			
	Macbeth 715	Lady Macbeth 259	Malcolm 211
	Macduff 180	Ross 135	Banquo 113

Themes

Ambition	Children	Natural world
Kingship	Blood	Gender
Fate and free will	Sleep	Light/dark
Appearance and reality	Visions	Manhood

Assessment Objectives

AO1 Read, understand and respond to texts. Students should be able to:

- maintain a critical style and develop an informed personal response
- use textual references, and quotations, to support and illustrate interpretations.

AO2 Analyse the language, form and structure used by a writer to create meanings and effects, using relevant subject terminology where appropriate.

AO4 Use a range of vocabulary and sentence structures for clarity, purpose and effect, with accurate spelling and punctuation

Characters

Macbeth	A loyal warrior who becomes evil, murderous and deceptive as he becomes obsessed with the witches' prophecies of power
Lady Macbeth	Macbeth's wife who fuels his ambition in the beginning but loses her control and kills herself in despair by the end.
Banquo	Macbeth's best friend who also receives prophecies from the witches. He is murdered by Macbeth
Fleance	Banquo's son who escapes and eventually fathers a line of kings.
Duncan King of Scotland	A fair and respected leader at the start of the play. Murdered by Macbeth.
Macduff	A brave warrior who is loyal to Duncan and is consistently suspicious of Macbeth. Kills Macbeth at the end.
Malcolm	Duncan's son and next in line to the throne. Becomes the rightful king at the end.
The Three Witches	(Weird Sisters) – Supernatural forces of nature who seem to know the future. They equivocate with Macbeth.

Vocabulary

- Meter
- Blank Verse
- Rhymed Verse
- Prose
- Iambic Pentameter
- Rhyme/Rhythm
- Heroic Couplets
- Soliloquy
- Dramatic Irony
- Concealment
- Gender
- Imagery
- Tragedy
- Hamartia
- Prophecy
- Imagery
- Symbols
- Metaphor
- Regicide

Form

Shakespeare uses soliloquy to allow the characters to communicate their true thoughts to the audience.

Macbeth is one of Shakespeare's Tragedies and follows specific conventions. The climax must end in a tremendous catastrophe involving the death of the main character; the character's death is caused by their own flaw(s) (hamartia). The character has something the audience can identify with which outweighs their flaws so we care about them.

Sample Extract Question

Look at how Macbeth and Lady Macbeth speak and behave in Act 1 scene 7 from 'Pr'ythee peace!' to 'nothing but males'. How do you think an audience might respond to this part of the play? Refer closely to details from the extract to support your answer. [15]

Sample Extract Response

In this extract, Macbeth and Lady Macbeth are contemplating murdering Duncan. Macbeth says 'I dare do all that may become a man' which means that if he goes through with their scheme then he would no longer be a man. However, Lady Macbeth emasculates Macbeth by snarling, 'When you durst do it, then you were a man,'. This tells the audience that if Lady Macbeth doesn't get her way she manipulates Macbeth by belittling him despite everything he has done for her. She also backs up her statement by commenting that he would 'be more than what you were' which reinforces the idea of Lady Macbeth manipulating Macbeth to get her way. Later on in the extract she tries to persuade Macbeth by exaggerating how she would kill her own baby for him, 'plucked my nipple from his boneless gums and dashed the brains out.' The verb 'dashed' helps emphasise how brutal it would be if she killed her own child. On the other hand Macbeth is still nervous about their plan and asks 'if we should fail' but she instantly responds with 'screw your courage to the sticking place/And we'll not fail.' This metaphor emphasises how Lady Macbeth thinks if he doesn't care about his courage then they would succeed with their plan. The audience gets the impression that Lady Macbeth is the leading role in the relationship because of how she has taken control and is trying to manipulate Macbeth into going through with their plan.

Commentary

AO1 The response focuses on the task and conveys ideas with general coherence and uses a mostly appropriate register. It has a straightforward approach to the task and shows an understanding of key aspects of the text. The response is supported with apt direct reference, including quotations.

AO2 The response comments on and begins to analyse use of language with some relevant subject terminology.

Macbeth: Sample Exam Question

'Macbeth is a play about violence'. Write about how Shakespeare presents violence at different points in Macbeth [25] *5 of this question's marks are allocated for accuracy in spelling, punctuation and the use of vocabulary and sentence structures.

Exemplar response

Violence is a theme carried throughout 'Macbeth' due to the large amounts of death and war in the play.

For example, the play begins with a detailed description of how the three witches cursed a person for being rude to them. She has his 'finger' – a quite disgusting detail - which she adds to the eerie broth they are creating. This is shocking as they have no problems with inflicting suffering upon anyone they wish to, it is rather violent.

Next, we hear of the war Macbeth and Banquo fought in. Though it is described positively it is quite violent as you hear they fought as 'doubly recharged cannons' to violently kill the opposing army. Also, the death of the previous Thane of Cawdor is lightly dismissed, 'Go pronounce his present death and with his former title greet Macbeth'. The death of another man is overshadowed by Macbeth's success, which is quite shocking to me as they are taking lives so carelessly without guilt or hesitation.

Throughout the play there is some violent and vulgar imagery created by Shakespeare. For example, when Lady Macbeth describes how she would have 'dashed the brains out' of her own innocent child for Macbeth, the verb 'dashed' being violent and harsh to shock the audience.

This can also be seen when Banquo was killed. Macbeth's guilt forces him to see Banquo's ghost and exclaims 'Do not shake thy gory locks at me'. The adjective 'gory' is quite disgusting and reminds us of the violent way he has just been killed under the orders of his best friend.

Another scene that comes to mind when thinking of violence is the murder of Macduff's entire estate. After a tender scene between his wife and his son the castle is attacked. The assassins show no mercy by stabbing the young boy, to which he says 'he has killed me mother'. This is quite a heart-breaking line which makes you question the morals of those people who 'savagely slaughtered' Macduff's family, the ominous alliteration in that phrase emphasising the ruthless nature of the attack.

When Macduff kills Macbeth at the end of the play there is the violent and gruesome act of putting his head, violently cut off Macbeth's body, on to a stick and displaying it proudly at Malcolm's coronation. Although this was normal to do at those times, it is still a very disturbing act to see for modern audiences.

Commentary

AO1 – The answer is sustained and on task, and ideas are conveyed with considerable coherence. An appropriate register is used and overall the approach to the task is thoughtful. A secure understanding of key aspects of the text is shown and considerable engagement, and the response is justified by well chosen reference to the text including quotations.

AO2 – The response discussed and increasingly analyses Shakespeare's use of language, form and structure. There are thoughtful references to the meanings and effects of stylistic features used by Shakespeare. Use of subject terminology is apt.

AO4 – Technical accuracy is of a high standard.

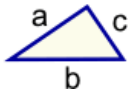
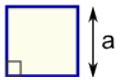
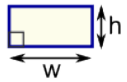
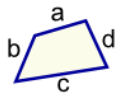
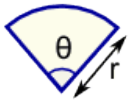
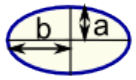
Band 4

15+5 = 20/25

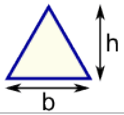
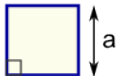
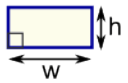
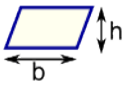
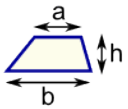
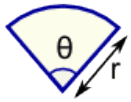
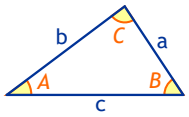
Year 10 Mathematics Knowledge Organiser	Topic	What is the plural of formula, formulas or formulae?
	Summer: Key Formulae	A formula is a mathematical relationship or rule expressed in symbols. The long-standing plural of formula is formulae, as plurals of this area come under the influence of scientific Latin. In recent years, there has been a normalisation towards the more traditional addition of "s" and so either form can be used, but it is always more enjoyable when using formulae, pronounced *for·mu·lae [fawr-myuh-lee]*

Geometry and Measures – Key Formulae (Those marked with an asterisk will be given in the exam)

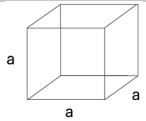
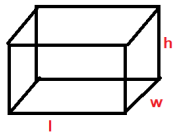
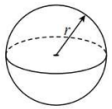
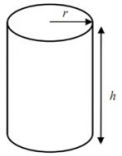
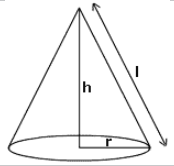
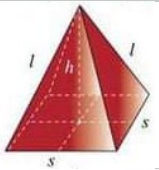
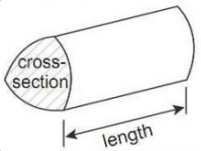
Perimeter

Diagram	Shape	Perimeter formula
	Triangle	a + b + c
	Square	4 × a
	Rectangle	2(h + w) or 2h + 2w
	Quadrilateral	a + b + c + d
	Circle	πd or 2πr
	Arc Length	$\frac{\theta}{360} \times 2\pi r$ or $\frac{\theta}{360} \times \pi d$
	Perimeter	Arc Length + 2r
	Ellipse	Pretty hard!

Area

Diagram	Shape	Area formula
	Triangle	$\frac{1}{2}bh$
	Square	a^2
	Rectangle	width × height = wh
	Parallelogram	base × height = bh
	Trapezium	$\frac{1}{2}(a+b) \times h$
	Circle	πr^2
	Sector Area	$\frac{\theta}{360} \times \pi r^2$
	Triangle	$\frac{1}{2}ab\sin C$

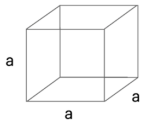
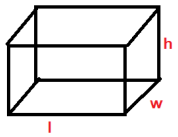
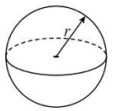
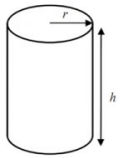
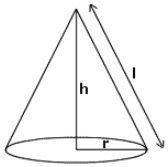
Volume

Diagram	Shape	Volume formula
	Cube	a^3
	Cuboid	length × width × height = lwh
	Sphere*	$\frac{4}{3}\pi r^3$
	Cylinder	$\pi r^2 h$
	Cone*	$\frac{1}{3}\pi r^2 h$
	Pyramid*	$\frac{1}{3} \times base\ area \times height$
	Prism	Area of cross-section × length

Year 10 Mathematics Knowledge Organiser	Topic	What is the etymology of the word **hypotenuse**?
	Summer: Key Formulae	The hypotenuse is the side of a right triangle that's opposite the 90-degree angle. It's a term specific to math, specifically geometry. Hypotenuse comes from the Greek word *hypoteinousa* which means "**stretching under**." The hypotenuse "stretches under" the right angle of a triangle, which has an angle of 90 degrees.

Geometry and Measures (cont.)

Surface Area

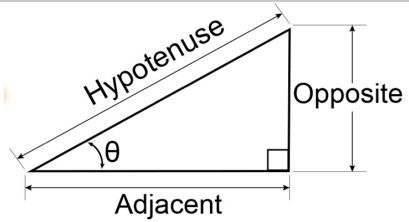
Diagram	Shape	Su. Area formula
	Cube	$6a^3$
	Cuboid	$2lw + 2wh + 2lh$ or $2(lw + wh + lh)$
	Sphere	$4\pi r^2$
	Cylinder	$2\pi r^2 + 2\pi rh$ $= 2\pi r(r + h)$
	Cone	πrl where l is the slant height of the cone

Other questions e.g. triangular prisms would involve the use of elements contained here and in the Area section

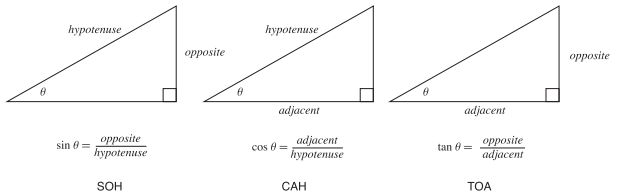
Trigonometry

Trigonometry is a branch of mathematics that studies relationships between side lengths and angles of triangles.

Right-angled Triangles

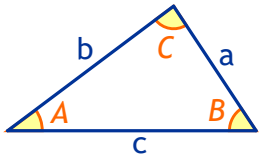


The Trigonometrical Functions



All Triangles

In any triangle ABC where a, b and c are the length of the sides:



The Sine and Cosine Rules

sine rule: $\dfrac{a}{\sin A} = \dfrac{b}{\sin B} = \dfrac{c}{\sin C}$

cosine rule: $a^2 = b^2 + c^2 - 2bc\cos A$

Algebra

Quadratic Formula

The solution of $ax^2 + bx + c = 0$ where $a \neq 0$ is

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Key Terminology

Identity

An **identity** is an equation which is always true, no matter what values are substituted.

Examples

$4(x + 3) \equiv 4x + 12$

$(x + y)(x - y) \equiv x^2 - y^2$

Algebraic Manipulation

Algebraic manipulation refers to the manipulation of algebraic expressions, often into a simpler form or a form which is more easily handled and dealt with.

Examples

Being asked to solve an equation

e.g. Solve $5x + 3 = 2x + 10$

Being asked to simplify an expression

e.g. Expand and simplify $(3x + 4)(x - 1)$

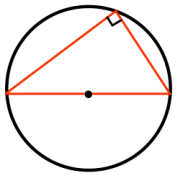
Being asked to factorise an expression

e.g. Factorise $x^2 + 5x - 24$

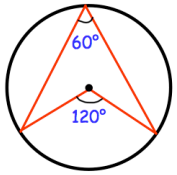
Year 10 Mathematics Knowledge Organiser	Topic	Origins and usage of the word 'tangent'
	Summer 2: Circle Theorems and Vectors	• Tangent is the Latin word for touching (hence it is the line that touches a circle at one point). • The phrase "going off at a tangent" links to the circle theorem – as the radius is at right angles to the tangent, "going off at a tangent" means to start talking about something that is only slightly or indirectly related to the original subject.

Circle Theorems

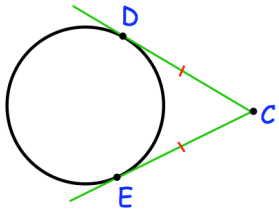
Circles have different angle properties described by different circle theorems. **Circle theorems** are used in geometric proofs and to calculate angles.



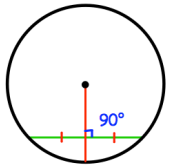
The angle in a semi-circle is 90°



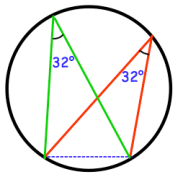
The angle at the circumference is half the angle at the centre



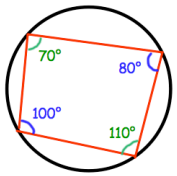
The tangents to a circle from the same point will be equal length



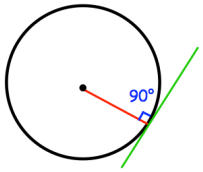
The radius through the midpoint of a chord will bisect the chord at 90°



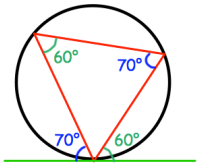
The angles in the same segment from a common chord are equal



The opposite angles in a cyclic quadrilateral always add to 180°

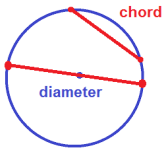
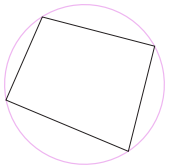
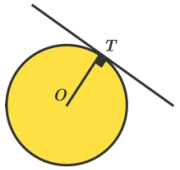
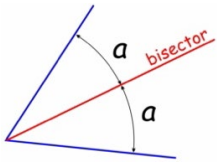
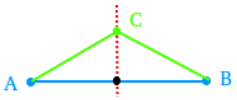


The angle between a radius and a tangent is 90°



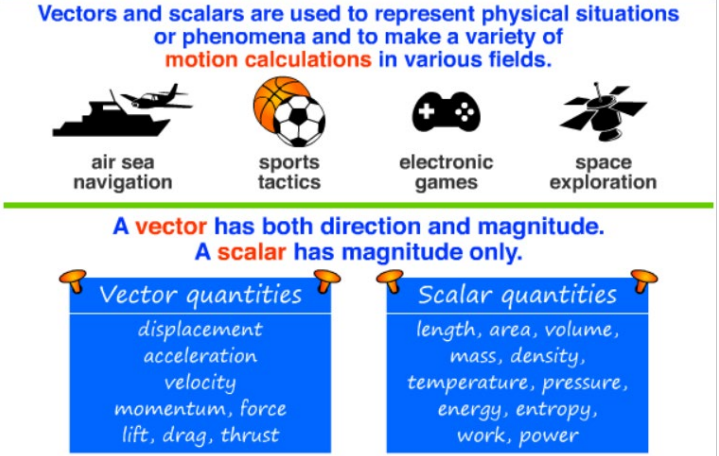
Alternate segment theorem
The angle between the chord and the tangent is equal to opposite angle inside the triangle.

Some examples of circles in real life are camera lenses, pizzas, tyres, Ferris wheels, rings, steering wheels, cakes, pies, buttons and a satellite's orbit around the Earth. Circles are simply closed curves equidistant from a fixed centre. Circles are special ellipses that have a single constant radius around a centre.

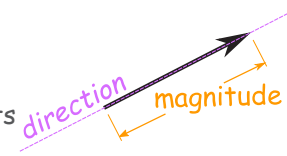
Chord	Cyclic Quadrilateral	Tangent at a point	Bisect	Equidistant
A line segment connecting two points on a curve (or circle)	A quadrilateral whose vertices all lie on a single circle	The straight line that just touches the curve at that point	Dividing a line, shape or angle into 2 exactly equal parts	A point which is at the same distance from two given points
				 C is equidistant from A and B

Vectors and Scalars

Vectors and **scalars** are mathematical quantities used to describe the motion of objects

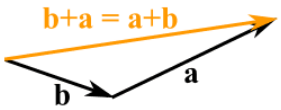


A vector has **magnitude** (size) and **direction**.
The length of the line shows its magnitude and the arrowhead points in the direction.



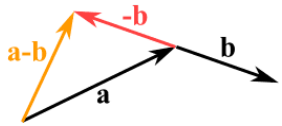
We can add two vectors by joining them head-to-tail:

And it doesn't matter which order we add them, we get the same result



We can also subtract one vector from another:

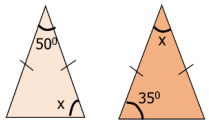
- first we reverse the direction of the vector we want to subtract,
- then add them as usual



Mathematics Command Words – Tier 2 Vocabulary

Assess	Calculate	Compare…and/to/with	Convert	Draw
Make a judgement or decision based on the information you have.	Work out, showing your method where necessary.	Work out or identify the values required and say which is smaller/larger, etc.	Change a value from one numerical form to another or a measure from one unit to another.	Give an accurate depiction of a graph, map, diagram, etc.
Example Application	**Example Application**	**Example Application**	**Example Application**	**Example Application**
Assess the statements below and decide whether they are true or false	**Calculate** the missing angles in this diagram…	**Compare** the following calculations and say which is larger. 23% of 50 or 60% of 20	**Convert** 0.74 into a fraction in its simplest form.	**Draw** the graph of $y = x^2$ or values of x from –2 to 2

Estimate	Explain	Find	Hence, or otherwise, ..	Is this correct?
After rounding given values, give an approximate answer to a calculation or measurement.	Give reasons or examples of why or how.	Figure out or work out the answer or missing piece of information	Using the answer to the previous question (the hence part), or using an alternative method, can you solve the given question	Give an argument, with reasons, whether the statement is correct or not.
Example Application	**Example Application**	**Example Application**	**Example Application**	**Example Application**
Estimate the answer to $\frac{8.62 + 22.1}{5.23}$ giving your answer to 1 significant figure.	Use the table to **explain** how you can tell the conversions cannot all be exact..	**Find** a fraction that is greater than 0.3 but less than 0.4.	**Hence, or otherwise,** solve the equation $x^2 + 6x - 16 = 0$	Jamal writes the following calculation $\frac{3}{7} - \frac{2}{5} = \frac{15}{35} - \frac{14}{35} = \frac{1}{35}$ Is he correct?

Measure	One has been done for you	Show working to support your answer	Work out	You may use… to help you
Use a ruler to measure a length or a protractor to measure an angle.	The given example shows the format in which the rest of the answers are required.	If you have made a decision, give a calculation (and wording where it helps) that shows why you made it.	One or more calculations will usually be necessary.	A diagram or table has been given that may be helpful in organising your working, but you do not have to use it.
Example Application	**Example Application**	**Example Application**	**Example Application**	**Example Application**
Measure the angle ABC correct to the nearest degree	The properties of the quadrilaterals are placed into a table. Complete the table. The first **one has been done for you**	Anya says the answer is _ Deion says the answer is __ . Who is correct? **Show working to support your answer**	**Work out** three-quarters of one-fifth of 100	Find the angle x, 

Year 10 Biology: Respiration

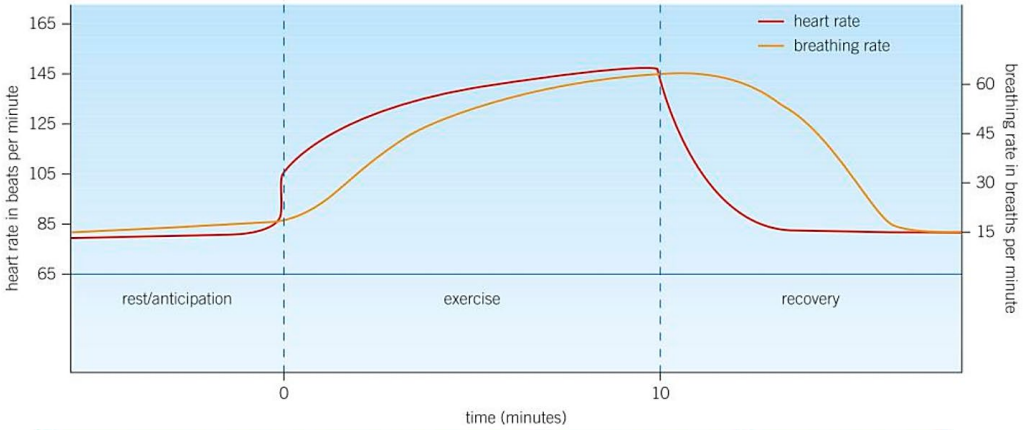
1) Aerobic respiration

During **aerobic respiration,** glucose (a sugar) reacts with oxygen. This reaction transfers energy that your cells can use. This energy is vital for everything that goes on in your body.

glucose + oxygen → carbon dioxide + water (energy transferred to the environment)

$C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$ (energy transferred to the environment)

2) The response to exercise



	Unfit person	Fit person
amount of blood pumped out of the heart during each beat at rest in cm^3	64	80
volume of the heart at rest in cm^3	120	140
resting breathing rate in breaths per min	14	12
resting pulse rate in beats per min	72	63

Body responses to exercise include:

- An increase in the **heart rate**, in **breathing rate**, and in the **breath volume.**
- **Glycogen stores** in the muscles are **converted to glucose** for cellular respiration.
- The flow of **oxygenated blood** to the muscles increases.

3) Anaerobic respiration

Sometimes the blood cannot supply oxygen to the muscles fast enough. When this happens, energy form the breakdown of glucose can still be transferred to the muscle cells. They use **anaerobic respiration**, which takes place without oxygen.

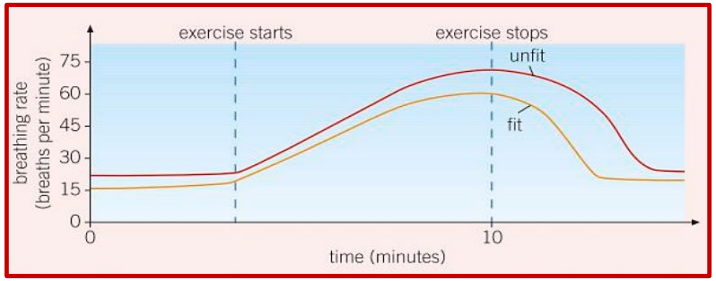
glucose → lactic acid (energy transferred to the environment)

One cause of muscle fatigue is the build-up of **lactic acid** produced by anaerobic respiration in the muscle cells. This build-up creates an **oxygen debt**.

Higher

Oxygen debt repayment:

lactic acid + oxygen → carbon dioxide + water



Anaerobic respiration in yeast is known as fermentation:

glucose → ethanol + carbon dioxide (energy transferred to the environment)

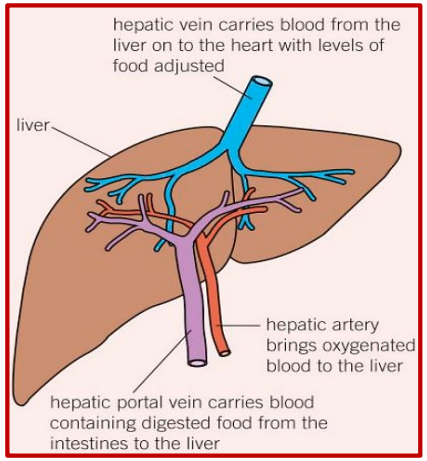
4) Metabolism and the liver

The metabolism of an organism is the sum of all of the reactions that take place in a cell or in the body.

Higher

The liver is a very active organ with many different metabolic functions:

- detoxifying poisonous substances e.g. ethanol
- passing the breakdown products into the blood
- breaking down old, worn out blood cells.



Year 10 Biology: Respiration Key Vocabulary

Key word	Definition	Contextual Sentence
aerobic respiration	An exothermic reaction in which glucose is broken down using oxygen to produce carbon dioxide and water, releasing energy for the cells.	Mitochondria are the site of **aerobic respiration** in cells.
anaerobic respiration	An exothermic reaction in which glucose is broken down in the absence of oxygen to produce lactic acid in animals and ethanol and carbon dioxide in plants and yeast. A small amount of energy is transferred for the cells.	Yeast use **anaerobic respiration** to produce ethanol and carbon dioxide. Ethanol is the basis for many alcoholic drinks.
endothermic reaction	A reaction that requires a transfer of energy from the environment.	Photosynthesis is an example of an **endothermic reaction** as it requires an input of energy in the form of light.
exothermic reaction	A reaction that transfers energy to the environment.	Respiration is an example of an **exothermic reaction**.
glycogen	Carbohydrate store in animals.	During intense exercise, stored **glycogen** in the muscles in converted into glucose to be used in respiration.
lactic acid	The end product of anaerobic respiration in animal cells.	**Lactic acid** is a substance that can cause muscle fatigue.
oxygen debt	The extra oxygen that must be taken into the body after exercise has stopped to complete the aerobic respiration of lactic acid.	Marathon runners often have a high **oxygen debt** after a race.

Year 10 Biology: Photosynthesis Key Vocabulary

Key word	Definition	Contextual Sentence
endothermic reaction	A reaction that requires a transfer of energy from the environment.	Photosynthesis is an **endothermic reaction** as it takes in light energy from its' surroundings.
glucose	A simple sugar.	Plants use carbon dioxide and water, as well as taking in light, to make **glucose** and oxygen.
limiting factors	Limit the rate of a reaction, for example photosynthesis.	Carbon dioxide is often a **limiting factor** for photosynthesis as the Earth's atmosphere is made from only 0.04% carbon dioxide.
photosynthesis	The process by which plants make food using carbon dioxide, water, and light.	The rate **photosynthesis** is greatest in bright, warm, carbon dioxide rich environments.

Year 10 Biology: The Human Nervous System

1) Principles of Homeostasis

Many of the processes that occur inside of the body aim to keep everything as constant as possible. This constant maintenance of an internal environment is called **homeostasis.**

Internal conditions that are controlled include:

- Body temperature
- Water content
- Blood glucose levels.

All controls in the body need certain key features to function:

- **Receptors:** cells that detect changes in the environment. These changes are known as **stimuli.**
- **Co-ordination centres:** areas that receive and process the information from the receptors. They send information around the body so that the body can respond.
- **Effectors:** muscles or glands that bring about changes in response to the stimuli.

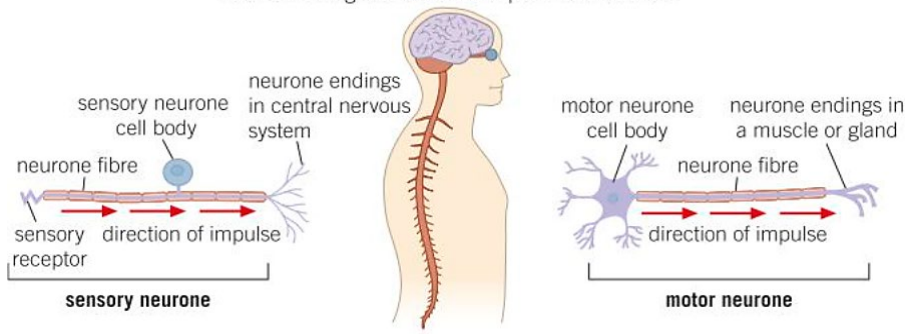
2) Structure and function of the human nervous system

Your nervous system carries **electrical impulses** that travel around the body very quickly.

The way your nervous system works can be summed up as:

stimulus → receptor → coordinator (CNS) → effector

Sensory nerves carry impulses to the CNS. the information is processed and impulses are sent out along motor nerves to produce an action.



Measuring reaction times

There are many ways to investigate how quickly nerve impulses travel in your body. Two simple methods are:

- use the ruler drop test or digital sensors to measure how quickly you react to a visual stimulus

3) Reflex actions

Some of the body's responses happen so fast that you do not think about them. These automatic responses are known as **reflexes.** Some of these reflexes help you to avoid danger or carry out basic bodily functions.

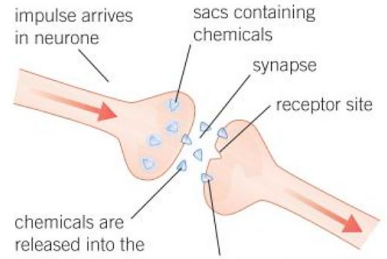
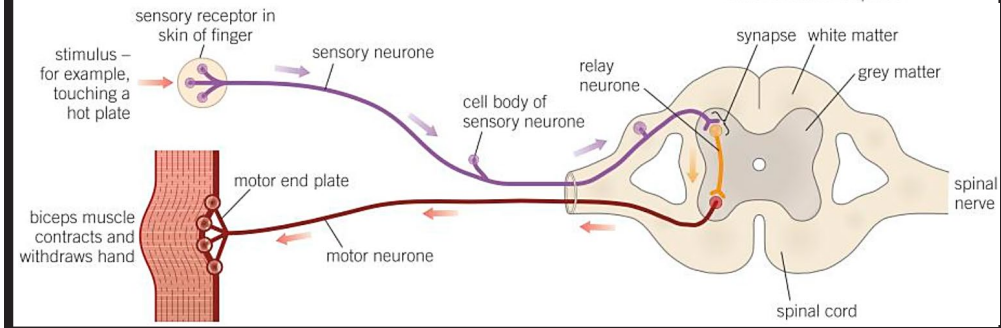


Figure 2 *When an impulse arrives at the junction between two neurones, chemicals are released that cross the synapse and arrive at receptor sites on the next neurone. This starts up a new electrical impulse in the next neurone.*



4) The Brain (separates)

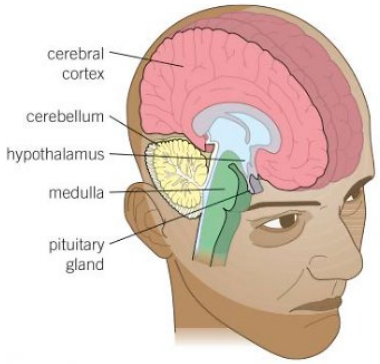


Figure 1 *The brain is very complex – it coordinates and controls much of our behaviour*

5) The Eye (separates)

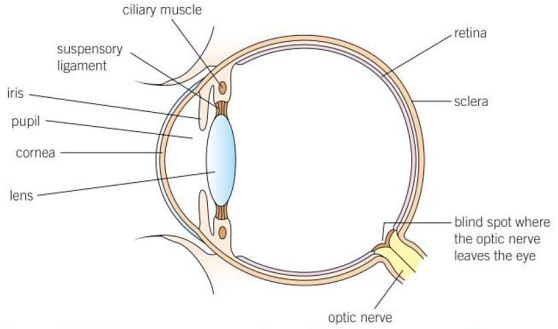


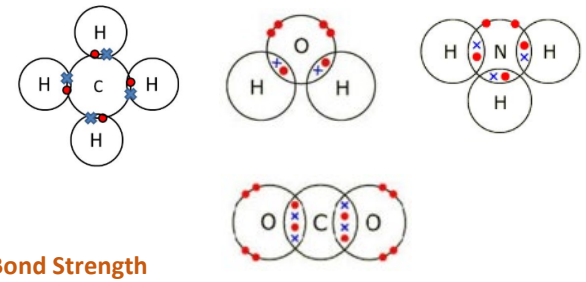
Figure 1 *The human eye is a complex and effective sense organ. Each structure is closely related to its function*

Covalent Bonding

Non-metal **atoms** can achieve a full outer shell with other non-metals **atoms** by sharing **electrons**. This is called covalent bonding.

What you need to be able to draw

The simple covalent **molecules** you need to be able to draw are hydrogen (H_2), Oxygen (O_2), Nitrogen (N_2), hydrogen chloride (HCl), water (H_2O), methane (CH_4), carbon dioxide (CO_2) ammonia (NH_3).



Bond Strength

A double bond is harder to break than a single bond and a triple bond is harder to break that a double bond.

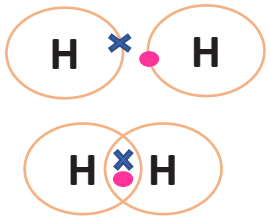
Sharing Electrons

Covalent bonds share **electrons** to form a pair of **electrons**. The positive nuclei of the **atoms** are strongly attracted to the shared pair of negative **electrons** in the covalent bond, so covalent bonds are very strong and require a lot of **energy** to break. You can have single bonds, double bonds and triple bonds. You can represent it by a dot and cross diagram and also by a displayed formula (eg: N ≡ N).

Single Bond

1 shared pair of **electrons**

H – H

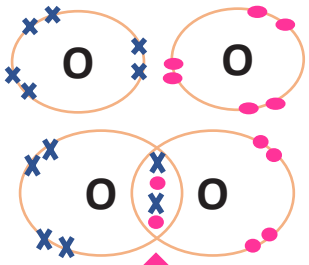


A shared pair of **electrons** given both **atoms** a stable arrangement and forms a covalent bond

Double Bond

2 shared pair of **electrons**

O = O

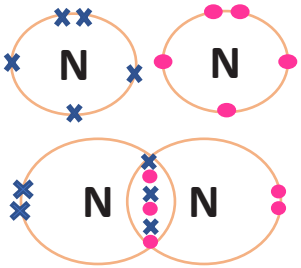


This is a double covalent bond (with two pairs of **electrons**). Only the **electrons** in the highest **energy** level (outer shell) are shown here

Triple Bond

3 shared pair of **electrons**

N ≡ N



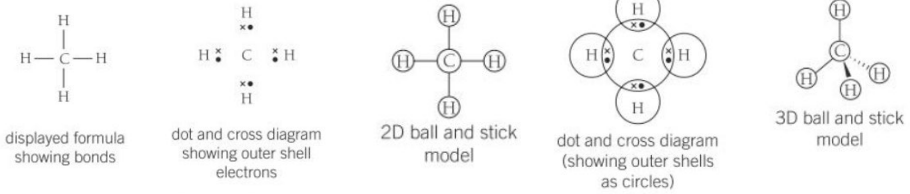
This is a triple covalent bond (with three pairs of **electrons**).

The Structure Of Simple Molecules

Small, simple **molecules** can be represented in different ways, depending on what information you need from the diagram.

Models

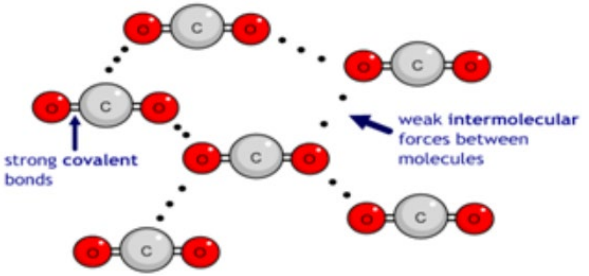
Way in which you can represent simple covalent **molecules**. Models are great to show an idea across, however, you need to consider which model you need to use as they all have advantages and disadvantages. As a scientist, you need to decide which is the best model to use.



Simple covalent molecules properties

Simple covalent **molecules** have low melting and boiling points. This is because of the weak **intermolecular forces** acting **between** the **molecules** not the breaking of the strong covalent bonds between the **atoms**.

Simple covalent **molecules** share **electrons** therefore do not have any free **electrons** or have any charges, this means that they cannot conduct electricity and they are poor conductors of heat.



Giant Covalent Structures

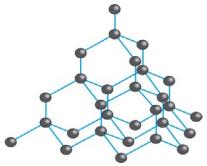
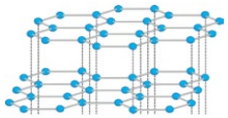
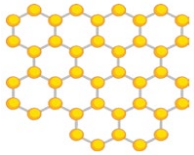
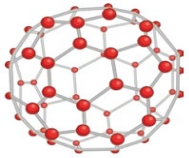
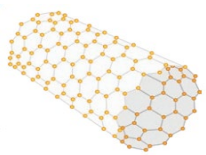
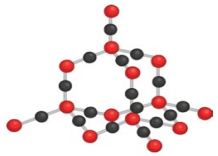
These are substances made up of thousands of **atoms** joined together by covalent bonding.

Giant covalent structures

Giant covalent structure contain lots of **atoms**, each joined to adjacent **atoms** by covalent bonds. The **atoms** are usually arranged into a regular giant lattice, that are extremely strong structures because of the many bonds involved. They are also called macromolecules.

The table shows the different allotropes (molecular structure) but the same element carbon: graphite, diamond, graphene, and Buckminster fullerenes.

In GCSE Silica (silicon dioxide) is often mentioned, to compare it to the diamond structure..

					
Diamond	**Graphite**	**Graphene**	**Fullerene**	**Nanotube**	**Silicon dioxide (silica / sand)**
Each carbon is bonded to another 4 carbons No free **electrons** Cannot conduct electricity. Very strong High melting point Used in jewellery. Used in construction as drill bits Used to cut glass	Each carbon is bonded to another 3 1 delocalised **electron** Can conduct electricity Very strong covalent bonds Arranged in layers Is soft and slippery High melting point Used as a lubricant Used in electrolysis Used in pencils. Used as brake linings Used as moulds in industry	Is one single layer of graphite. Joined to 3 other carbons, with 1 delocalised **electron** Hexagonal shape Strong Can conduct electricity due to the delocalised **electron**. Very light Used in electronics Used as an anti-corrosion coating Used to make flexible displays for electronic goods	First one discovered was C_{60} structure Hollow ball shape Arranged in hexagons (but could be also pentagons or heptagons) Large surface area. High tensile strength Used to cage other **molecules** as a drug delivery system. Used as a catalyst Used as a lubricants.	Tiny carbon cylinders. Can conduct electricity and thermal **energy**. Light High tensile strength. Uses nanotechnology. Can be used in medicine as a delivery system Can be layered Used as a composite to strengthening other materials. Used as semi-conductors	Has a similar structure to diamond. High melting point. Hard Very strong Doesn't conduct electricity. Used to make glass Used in tooth paste as an abrasive. Used in some cements

What is Crude Oil?

Crude oil is a finite resource that is formed from dead plant and animal that have been buried under the sea floor. Over time layers of silt and sand built up on it, causing the carbon-based organisms to break down under the heat and pressure.

What is crude oil made up of?

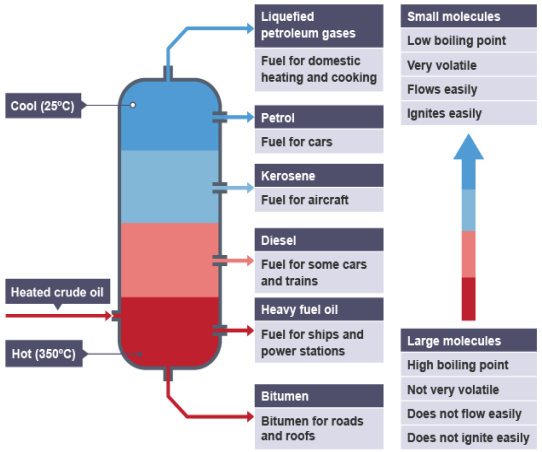
Crude oil is a mixture of different length **hydrocarbons** from the **alkane** family. A **hydrocarbon** is a compound that is made up of only carbon and hydrogen atoms.

Crude oil is fairly useless when its first taken out of the ground, however, once the mixture is separated into its different substances, known as fractions, they become useful.

Fractions & Fractional Distillation

Below is a diagram that represents **fractional distillation**. The crude oil is made up of **different length molecules**. We can separate out the different lengths **(fractions)** using the boiling points of each molecule length. The longer chains exit towards the bottom and the short chain's exit towards the top.

The diagram also shows the **properties** of the lengths of molecules. These properties allow us to use them for different things; mostly for fuels.

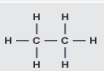
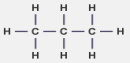
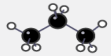
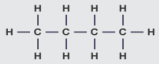
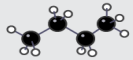


General Formula

Alkanes are a series of **hydrocarbons** which have the general formula C_nH_{2n+2}
It is called a **homologous** series, that is known as a single bonded, saturated **hydrocarbon**.

HOMOLOGOUS

Same **Relation**

Alkane	Molecular formula	Structural formula	Ball-and-stick model
Methane	CH_4		
Ethane	C_2H_6		
Propane	C_3H_8		
Butane	C_4H_{10}		

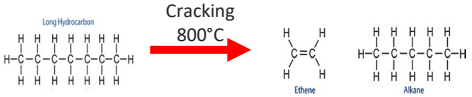
Structure and bonding of alkanes

Covalent bonds are **strong** – a lot of energy is needed to break them. Substances with covalent bonds often form **molecules** with low melting and boiling points.

Cracking and alkenes

Cracking is a reaction in which larger saturated **hydrocarbon molecules** are broken down into smaller, more useful hydrocarbon molecules. There are 2 main methods

1. **Thermal Cracking**
2. **Catalytic Cracking**



2.Catalytic Cracking
550°C + Zeolite Catalyst

What is combustion?

Combustion is a chemical reaction between fuel and oxygen. Depending on how much oxygen there is depends on the products it produces.

Complete Combustion

If there is plenty of oxygen, then it produces carbon dioxide and water. You can write this as a word equation

$Fuel_{(g)}$ + $oxygen_{(g)}$ → $carbon\ dioxide_{(g)}$ + $water_{(g)}$

Carbon dioxide increases global warming.

Incomplete Combustion

If there is a lack of oxygen, then it will produce carbon monoxide + water + carbon particulates.

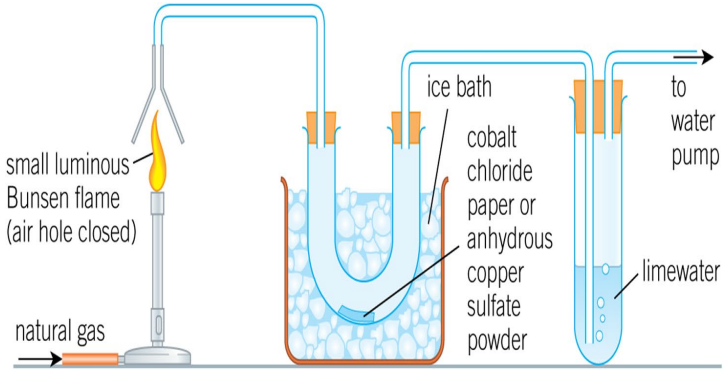
$Fuel_{(g)}$ + $oxygen_{(g)}$ → $carbon\ monoxide_{(g)}$ + $water_{(g)}$ + $carbon_{(s)}$

Carbon monoxide is toxic to humans. Carbon particulates cause global dimming and respiratory issues.

Burning Fuels

The test for **carbon dioxide** is bubbling the gas through **limewater**; if there is CO_2 present, then the **limewater** turns cloudy.

The test for H_2O and CO_2 (the products of combustion) is using the equipment below. It uses **cobalt blue paper** to test for water and **limewater** to test for CO_2



Year 10 Chemistry: The Earth's Atmosphere

This history of the Atmosphere

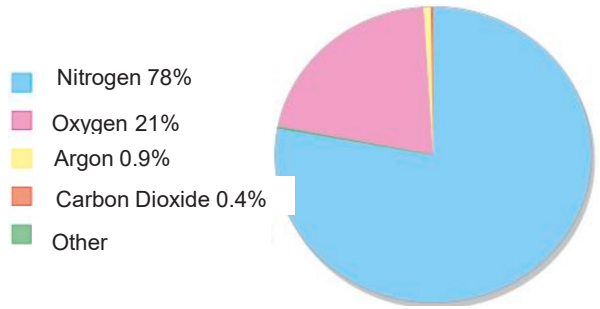
There are lots of ideas about how the Earth and atmosphere formed based on some evidence found. These are called theories. Scientists use theories when there is a lack of evidence to say what really happened. No one was around 4.6 billion years ago to take photos and write it all down!!!

One theory is that intense volcanic activity release gases, such as CO_2, CH_4, H_2O and N_2 into the atmosphere, which is similar to Mars or Venue now. It is thought that there was little/no oxygen.

From this, as the Earth started to cool down, the water vapour (H_2O) would **condense** and fall to the ground to make the oceans. It is also believed that **comets** brought more water to the Earth.

The CO_2 in the atmosphere would have **dissolved** in the oceans, this then led to carbon-based organisms forming and oxygen being produced over time, in the process of **photosynthesis.** This contributed to the **increasing the oxygen levels.**

The Current Atmosphere

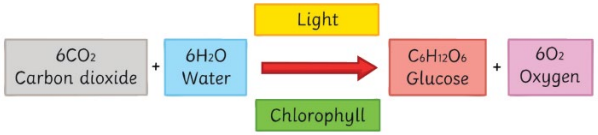


Over the last 200 million years, the proportions of gases in the Earth's atmosphere has stabilised. See the pie chart above.

Approximately four-fifths (80%) of the atmosphere is **nitrogen** and one-fifth (20%) is **oxygen.**
There are some noble gases in the atmosphere, the most abundant is argon, but there is also a small amount of neon, krypton and xenon.

How did the oxygen levels increase over time?

Around 2.7 billion years ago the first carbon-based organism formed; algae. It is believed that it first produced oxygen, through the process of **photosynthesis.** As the organisms evolved, the levels of oxygen increased. This led to more complex life forms developing.



How did the carbon dioxide levels decrease over time?

There are a few ways that carbon dioxide was reduced over time;

1. Carbon dioxide **dissolved in the water** (oceans).

2. A lot of carbon dioxide become **locked-up** in the Earth's Crust. The dissolved carbon dioxide (CO_2) produced carbonate compounds, that formed a precipitate, what we know today as limestone, a sedimentary rock. The chemical name for limestone is calcium carbonate.

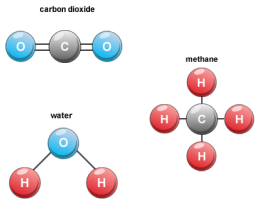
3. Plants **absorb** carbon dioxide during the process of photosynthesis. Any lifeforms that relied on plants fell to the bottom of the seabed and were trapped under layers of sand and mud, over time and under a lot of pressure and heat, and an environment where there was no oxygen, it was turned into fossil fuels.

Meet the greenhouse gases?

Greenhouse gases is a term used for a group of gases that absorb energy radiated by their surface.

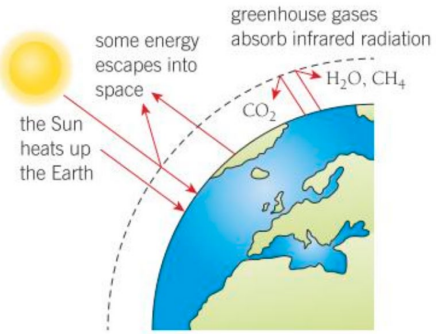
The main greenhouse gases are:
- **Carbon dioxide (CO_2)**
- **Methane (CH_4)**
- **Water Vapour (H_2O)**

Others can include (extra info)
- Chlorofluorocarbons (CFCs)
- Nitrous oxides (NOx)



Greenhouse Gases: how it warms the Earth

1. UV radiation from the Sun reaches Earth
2. Some Infra-Red re-radiated back into space
3. A portion doesn't reach space and is **absorbed** by greenhouse gases.
4. These gases re-radiate the Infra-Red radiation back to Earth.
5. This warms the Earth's surface.



Evidence of greenhouse gases

Over the last 200 years, there is an increase in the volume of CO_2 produced. This is mainly due to the advances in technology and the use of fossil fuels. CO_2 has been locked-up in fossil fuels for millions of years, but as we burn it, it releases CO_2.

Methane gets into our atmosphere from **swamps** and **rice fields**. Methane is also produced from **grazing cattle** and from **decomposing waste** (poop).

Landfill sites are another source that produces methane, from the **rotting food waste**. This has increased over the years due to the population increasing.

Scientists use "hard" evidence to link the levels of CO_2 with the climate and any changes. One source of evidence is the ice cores from Greenland, which have trapped gases over time. These can be dated and analysed for changes.

But remember it is difficult to predict with complete certainty the effects on the climate due to greenhouse gases, however, the evidence is showing trends which can be used to suggest the future effects.

Natural resources from the Earth

We rely a lot on resources from the Earth to meet our needs for food, clothing, shelter, fuel and materials. Resources are classed as **finite** and **renewable** resources.

Food: water, Fruit, vegetables, crops and meat
Shelter: Wood, limestone and sand
Fuel: Crude Oil that produces propane, petrol and diesel that we use for transport
Materials such as metal ores from the Earth's crust.

Scientists are used for developing and advancing technology to assist with agriculture and industrial processes to meet the growing population demands in a sustainable way.

Sustainability

Sustainability is about ***meeting the needs of current society, without endangering the ability of future generations to meet their needs.***

Finite resources are resources that are being used up faster than they can be replaced, so if you can carry on using them, they will run out. Fossil fuels (coal, oil and natural gas) and limestone are examples of **finite** resources.

Renewable resources are resources that can be replaced at the same rate at which that is used up. Crops, wool, silk, rubber and wood are all examples of **renewable** resources.

Water

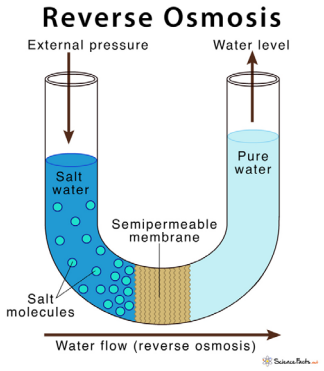
Water is a vital resource. It is used as a **raw material** for agriculture and in industry, such as solvents and coolants and its also used in washing, cleaning and for drinking. Most water supplies in the UK are source of **fresh water** (e.g. lakes, reservoirs, rivers or groundwater aquifers).
Safe drinking water is known as **potable water**. This means that it has been treated to remove any impurities from it. The impurities such as minerals (dissolved salts) or microorganisms are found naturally in the ground, and can be harmful for human consumption.

How to purify salty water

Most water in the UK is fresh water, however, there are countries that don't have any freshwater supplies. Therefore, salt water is treated using processes such as **distillation** or **desalination**. **Distillation** is expensive due to the energy costs needed therefore most countries use **desalination.**

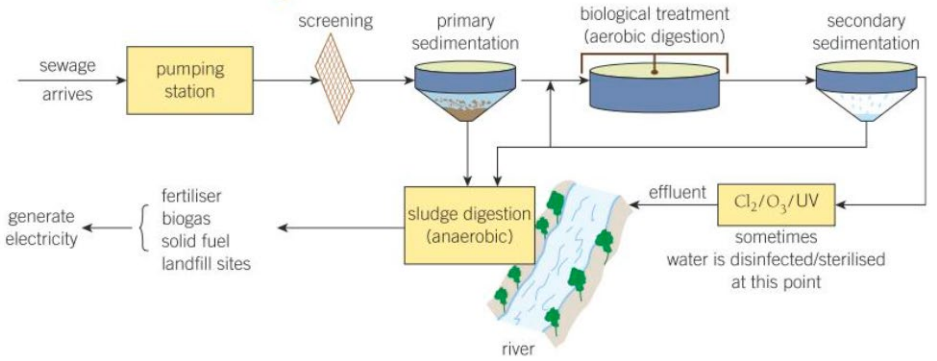
Desalination

Desalination uses reverse osmosis through a semipermeable membrane that removed the NaCl particles from the salt water.



Treating waste-water

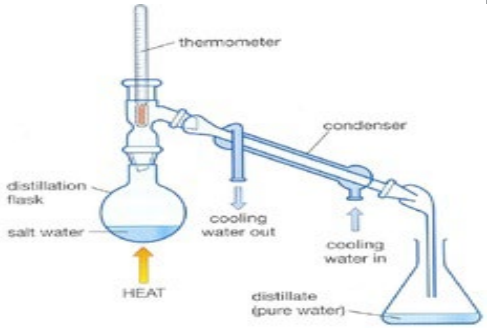
Waste water is water that has been used, normally in homes, that go down the sink/ shower/ bath/ toilet. It all enters a large sewer with waste from other houses/businesses/factories. This is named **sewage.** This waste water needs to be treated to make it safe before it can re-enter the environment. This process can be seen below:



Required Practical: Water Distillation

You can test the "**pure**" water you distil using several methods to see if it is **pure**. Remember, **pure** means that there is only one substance present.

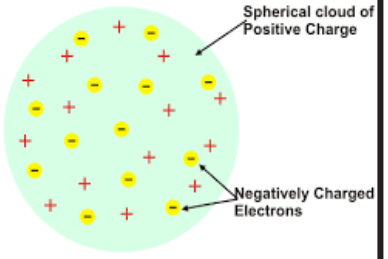
- Measure the boiling point. **Pure water** boils are 100°C
- Test the pH value
- Burn a sample in a flame. Any Sodium will produce an orange/yellow flame.



Year 10 Physics: Radioactivity Knowledge

Developing the model of the atom

This model was disproved by **Rutherford's Alpha Scattering Experiment.**



Thomson's Plum-Pudding Model

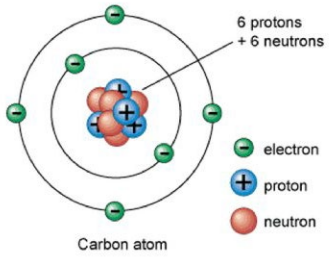
Discovery of the Nucleus

Expectations: Alpha particles would pass straight through**, undeflected.**

Results: Most passed straight through, 1 in 20,000 deflected by over 90^0

Conclusion: Nucleus is **mostly empty space**. Most **mass** is concentrated in **centre**. Nucleus is **positively charge**.

Atomic Structure



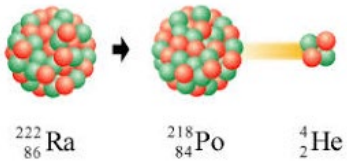
Carbon atom

Particle	Relative Charge	Relative Mass
Proton	+1	1
Neutron	0	1
Electrons	-1	1/2000th

Nucleus = $1/10{,}000^{th}$ size of atom
Atomic radius = 1×10^{-10} m

Radioactive Decay

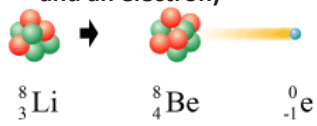
Alpha



$^{222}_{86}Ra \rightarrow {}^{218}_{84}Po + {}^{4}_{2}He$

Mass of number decreases by 4
Atomic Number decreases by 2

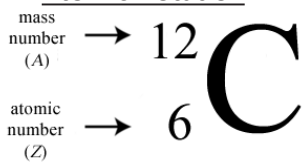
Beta
(A neutron is converted into a proton and an electron)



$^{8}_{3}Li \rightarrow {}^{8}_{4}Be + {}^{0}_{-1}e$

Mass of number remains the same
Atomic Number increases by 1

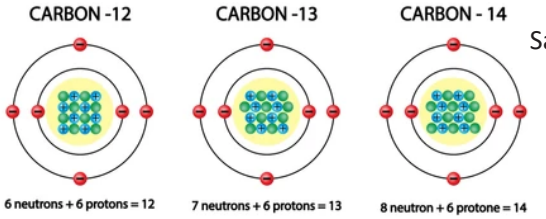
Atomic Notation



Change no/ of

Electrons= Make an **ion**
Protons = Change **Element**
Neutrons = Make **Isotope**

Isotopes



Same number of **protons**, different number of **neutrons**

Nuclear radiation	What is it?		Relative Charge	Relative Mass	Ionising Power
Alpha (α)	2 protons, 2 neutrons	$^{4}_{2}He$	2+	4	High (1 α ionises 1000 atoms)
Beta (β)	High speed electron	$^{0}_{-1}B$	-1	$\frac{1}{2000^{th}}$	Medium (1 β ionises 100 atoms)
Gamma (γ)	High energy wave	$^{0}_{0}\gamma$	0	0	Low (1 γ ionises 1 atom)

Radioactivity is …
Random- the nuclei that will decay cannot be predicted**.**
Spontaneous- it cannot be changed or forced to happen.

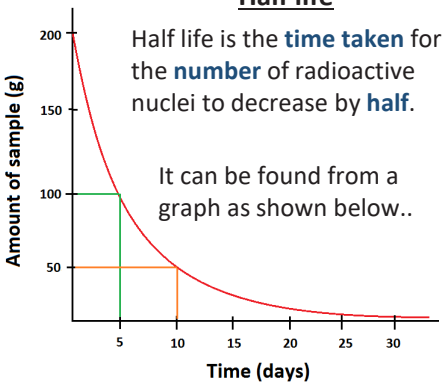
Activity is …
The rate at which a source decays
Measured in Becquerels.

1Bq = 1 decay per second

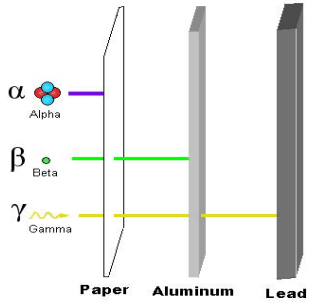
Half life

Half life is the **time taken** for the **number** of radioactive nuclei to decrease by **half**.

It can be found from a graph as shown below..



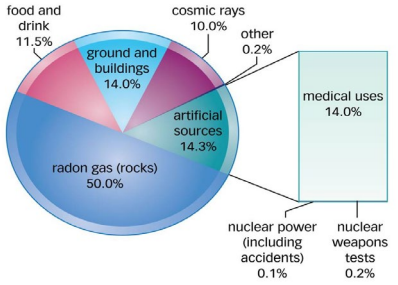
Penetrating power



Gamma radiation can pass through skin, alpha and beta can't.

Nuclear radiation is **ionising** and can cause damage to **cells** and **DNA**, possibly leading to **cancer**

Background Radiation



Exposure to radiation is called **irradiation.**
Source is outside the body

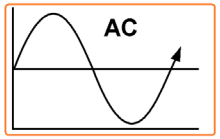
Ingesting or breathing in radiation is called **contamination.**
Source is inside the body

Year 10 Physics: Radioactivty Vocab

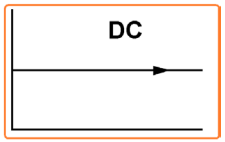
Key Vocabulary	Definition	Contextual Sentence
Activity	The number of unstable atoms that decay per second in a radioactive source	Overtime the **activity** of the isotope reduced.
Alpha radiation (α)	Alpha particles, each composed of two protons and two neutrons, emitted by unstable nuclei	The Uranium nuclei decayed and emitted an **alpha particle**
Atomic number	The number of protons (which equals the number of electrons) in an atom. It is sometimes called the proton number	During the alpha decay the **proton number** decreases by 2.
Beta radiation (β)	Beta particles that are high energy electrons created in, and emitted from, unstable nuclei	Carbon-13 nuclei decayed and emitted a **beta particle**.
Chain reaction	Reactions in which one reaction causes further reactions, which in turn cause further reactions, etc.	The uncontrolled **chain reaction** can quickly lead to an explosion.
Count rate	The number of counts per second detected by a Geiger counter	The **count rate** is the number of radiation counts per second.
Gamma radiation (γ)	Electromagnetic radiation emitted from unstable nuclei in radioactive substances	**Gamma radiation** is the least ionising of the nuclear radiations.
Half-life	Average time taken for the number of nuclei of the isotope (or mass of the isotope) in a sample to halve	The **half-life** of the isotope was 10 days.
Ionisation	Any process in which atoms become charged	The atom lost an electron through the process of **ionisation**.
Irradiated	An object that has been exposed to ionising radiation	The person was **irradiated** by the radioactive source.
Isotopes	Atoms with the same number of protons and different numbers of neutrons	Carbon 12 and carbon 13 are **isotopes** of one another.
Mass number	The number of proton and neutrons in a nucleus	The **mass number** of Carbon 12 is 12.
Moderator	Substance in a nuclear reactor that slows down fission neutrons	Water is often used as a **moderator.**
Radioactive contamination	The unwanted presence of materials containing radioactive atoms on other materials.	The air and dust was dangerous to health due to **radioactive contamination**.
Reactor core	The thick steel vessel used to contain fuel rods, control rods and the moderator in a nuclear fission reactor	The **reactor core** was made of thick lead.

Year 10 Physics: Electricity in the home Vocab

Mains Electricity



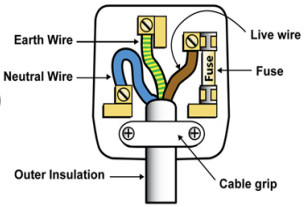
Alternating Current changes direction. Produced by a **generator.**



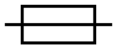
Direct Current one direction. Produced by a **cell.**

Mains PD= 230V
Mains Frequency =50Hz

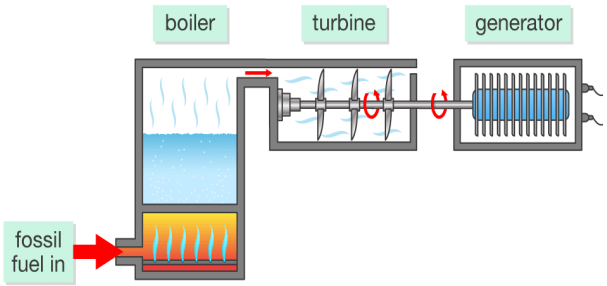
Neutral (BLUE)
Live (BROWN)
Earth (STRIPED)
LEFT
RIGHT
TOP



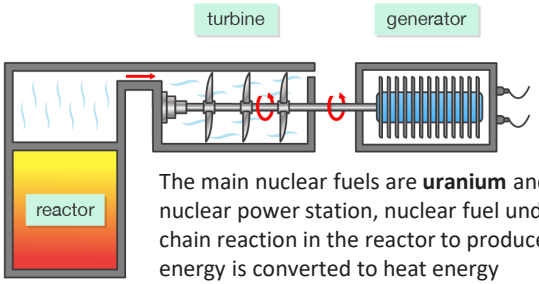
FUSE: Designed to melt and break the circuit if too much current passes through it.



Fossil fuelled power station

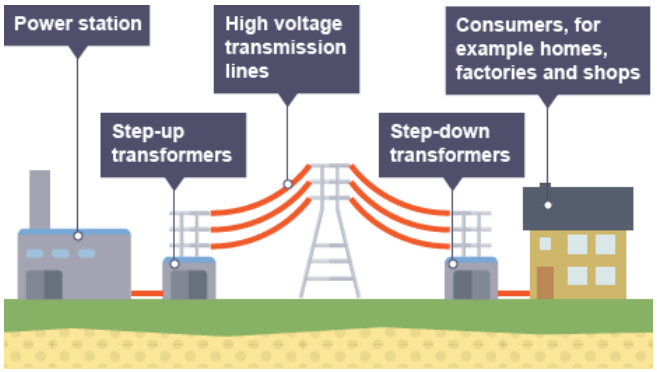


Nuclear power station



The main nuclear fuels are **uranium** and **plutonium**. In a nuclear power station, nuclear fuel undergoes a controlled chain reaction in the reactor to produce heat - nuclear energy is converted to heat energy

The National Grid



Equation	Symbol	Units
Power = Current x PD	P=IV	Power- Watt (W) Current- Amp (A) PD – volts (V)
Power = current^2 x resistance	P=I^{2}R	Power- Watt (W) Current- Amp (A) Resistance- Ohm (Ω)
Power = Energy ÷ time	E=Pt	Energy- Joule (J) Power- Watt (W) Time- Second (s)

Key Vocabulary	Definition	Contextual Sentence
Alternating Current	Electric current in a circuit that repeatedly reverses its direction.	The National Grid supplies and **alternating current** of 230V
Direct Current	Electric current in a circuit that is in one direction only.	A battery provides **direct current**
Earth Wire	The wire in a mains cable used to connect the metal case of an appliance to earth.	The **Earth Wire** is striped green and yellow
Fuse	A fuse contains a thin wire that melts and cuts the current off if too much current passes through it.	The device stopped working as the **fuse** had blown.
Transformer	Electrical device used to step-down or up the size of an alternating potential difference	A **transformer** is used to increase the PD from 230V to 230,000V
Volts	The unit of potential difference.	The UK mains potential difference is **230V**

Renewable and Non-renewable Resources

Non-renewable resources are being used up faster than they are being made.

- Oil
- Gas
- Coal
- Nuclear

Renewable resources are being made faster than they are being used.

- Wind
- Solar
- Hydroelectric
- Geothermal
- Tidal
- Wave
- Biomass

Fossil Fuel Power Stations

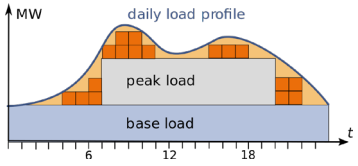
Fuel **heats** water → water turns to **steam** → steam turns a **turbine** → The turbine turns a **generator**

When **fossil fuels** are burnt they release **carbon dioxide** which is a **greenhouse gas**. This adds to **global warming** and **climate change**. They also release **sulphur dioxide** which contributes to **acid rain**.

Biofuels

A biofuel is made from a **living** thing. **Methane gas** can be collected from **manure, sewage** or **decaying rubbish** and burned. Biofuels are **renewable** because the biological material can regrow. They are also **carbon neutral** as the carbon the living thing takes in balances the amount that is released.

Supply and Demand



A constant **base load** of the electricity is required throughout the day (around 20GW). Resources such as nuclear power or coal are used to constantly produce this energy. When **demand** is greater than the **baseload**, other methods of generation are needed. Resources with a **short start up time** (gas, pumped hydroelectric) are used to produce the missing energy quickly.

Energy source	How it works	Advantages	Disadvantages
Solar cells/ panels	Cells: transfer light into electrical energy. Panels: heat water to supply a house or a generator.	Renewable. **Cheap** to run.	**Unreliable**. **Expensive** to buy. Lots are needed to generate enough power to be useful.
Geo-thermal	Radioactive material in the Earth	**Reliable** Renewable	**Limited** where it can be used.
Nuclear	Nuclear power station uses Plutonium and uranium. When the nucleus of these atoms split in two, energy is transferred and it becomes hot.	**No greenhouse gases**. **Much more energy** is transferred from each kg of fuel than fossil fuel.	Creates **radioactive waste**. Safe in normal conditions but an explosion could release radioactive waste. **Expensive** to decommission. Long start up time.
Wind	Wind turns the blades which turns the generator on top of a narrow tower.	**Renewable**. No greenhouse gases.	**Unreliable**. Some people think they are ugly. Make noise.
Wave	Waves make a floating generators move up and down. A cable delivers electricity to the shore.	**Renewable**. No greenhouse gases.	Need to withstand storms. Lots of cables and buildings are needed, this can spoil areas of coastline. Can **affect habitats.**
Hydro-electric	Reservoir water flows downhill which drives a generator.	**Renewable** No greenhouse gases. Quick Start up time	Need large area which can **flood habitats**
Tidal	Water is trapped behind a barrage at high tide. This is then released through a generator.	**Renewable** No greenhouse gases.	Can affect **river estuary and habitats**.

RELIGIOUS STUDIES

GCSE Paper 1 Religion Islam Practices
1. Five Pillars
2. Ten Obligatory Acts
3. Shahadah
4. Salah
5. Zakah
6. Sawm
7. Hajj
8. Eid
9. Ashura

Tier 3 Vocab	
Wudu	The Islamic procedure for cleansing parts of the body before prayer
Jummah Prayer	Prayers in the Mosque that take place on a Friday.
Khums	20% of any profits made my Muslims which they donate to charity to help those in need.
Pilgrimage	A special journey made for a religious reason
Holy War	A war that is declared by a religious leader in support of a religious cause.

1. The Five Pillars

The 5 most important duties for all Muslims, the key to living a good Muslim life.

Shahadah – Declaration of Faith
Salah – Prayer
Zakah – Charity
Sawm – Fasting
Hajj- pilgrimage
There are followed by both Sunni and Shia Muslims, though Shia Muslims also incorporate them into the 10 Obligatory Acts.

2. The Ten Obligatory Acts

Shia Muslims combine the five pillars with some additional duties
• Salah – Prayer
• Zakah – Charity
• Sawm – Fasting
• Khums – 20% income tax, half goes to charity, half to six Shi'a leaders
• Hajj- pilgrimage
• Jihad- Struggle to maintain the faith and defend Islam.
• Amr-bil Maruf – encouraging what is good.
• Nahi Anil Munkar – discouraging what is wrong
• Tawallah- To be loving towards the friends of God, including Muhammad and the Imams.
• Tabarra – disassociating with the enemies of God.

They include the Shahadah, but as a part of Salah.

3. Shahadah

This is a declaration of faith, a statement which all Muslims should believe in.

Sunni

• To become a Muslim, a person only has to sincerely recite the Shahadah in front of Muslim witnesses. The Shahadah is recited many times in their life – from the first words they hear to the last (where possible)
• It is the foundation of all the other pillars and the Islamic faith

Shia

• Shia Muslims Add 'and Ali is the friend of God'
• This shows that Ali is the true successor of Muhammad.
"There is no God but Allah and Muhammad is the prophet of Allah"

4. Salah

Sunnis are required to pray five times a day, from sunrise to sunset, Fajr – just before sunrise, Zuhr – just before midday, Asr – afternoon, Maghrib – just after sunset, Isha- Night
Shia Muslims pray three times a day, combining sunset and night prayers and midday and afternoon.
Ra'kah – Prayer prostrations (different movements completed during prayer)
How do they prepare?
• Muslims must be spiritually clean before they pray.
• This is achieved by a ritual washing called Wudu
Direction of prayer
• Must be facing the holy city of Mecca.
• Mosques have a Mihrab, which shows the direction of prayer.
Prayer in a mosque
• A special carpets, set out the space for prayer.
• Prayers are led by an Imam.
• Men and women pray in separate spaces.
• "Pray to me and I will hear your prayer"
Jummah: This is the prayer that is done collectively by Muslims at the Mosque on a Friday. It is generally the busiest day of prayer.
Jummah is the midday prayer on Friday. All Muslims males are supposed to attend on this day.

5. Zakah

Zakah is a charitable donation, or an alms giving, done by all Muslims. Though all Muslims pay Zakah some make additional payments as well.
Zakah: For Muslims who have savings, it is compulsory to give 2.5% of their savings to the poor.It is seen a purifying their money and showing thanks to Allah and a sign of unity and support amongst the faith.
Khums - 20% tax paid by Shi'a Muslims. It is split between religious leaders and the poor. Sadaqah: Any other donation made to charity outside of Zakah and Khums.
"Those who eat while their brother goes hungry is not one of us."

6. Sawm

Fasting from dawn until dusk during Ramadan, one of the Five Pillars of Islam. Completed 30 days. Involves no food, drink or sexual activity.
• This shows a Muslims dedication towards Allah, but also helps them to understand how others feel if they are going without food.
• During this time many Muslims pay their Zakah, as they remember those who are struggling.
• It is performed to remember the Night of Power where Muhammad received the Qur'an, and was fasting. Some Muslims are not required to fast. For example, if they are too young, old, ill or pregnant.
"Those who believe, fasting is prescribed to you."

7. Hajj

This is a pilgrimage to Makkah that all Muslims need to make once in their lives. Makkah is the holy city within Islam, and the birth place of the Prophet.
• Muslims where white outfits, known as an Ihram. This shows equality between all.
• They circle to Kaaba seven times to show harmony of all Muslims
• They walk between the hills of Safa and Marwa, and drink the holy Zam Zam water.
• They stand on Mount Arafat and pray, where Muhammad stood and gave his final sermon
• They throw pebbles at the pillars at Mina, this represents driving away the devil, as Ibrahim threw rocks at the devil.
"Pilgrimage to the house is a duty."

8. Eid

Eid-ul-Fitr: It marks the end of Ramadan, means breaking of the fast. It thanks God for the strength to complete the fast and for providing wisdom and guidance as it the Quran was revealed during this month. It is marked with a feast, normally with family and friends. Gifts of new clothes are common to represent a fresh beginning.

Eid-ul-Adha: Also known as the festival of sacrifice. It lasts for four days and remembers Ibrahim, who was willing to sacrifice his son for God. A goat is killed and its meat is split between you, your family and the poor and needy.

9. Ashura

Ashura is a festival celebrated by both Sunni and Shia Muslims, but for different reasons, and it is more important to Shia Muslims

Shia:: This is the day of remembrance for Hussein, one of the 12 Imams after Muhammad, and the Grandson of Muhammad. Hussein was captured in battle, and was executed along with all his men. He refused to bow down to save himself. Shia Muslims remember his sacrifice by re-enacting the battle, silent prayer and some even whip or hit themselves on the head with a sword, to represent the blood spilt that day. Shia Muslims in the UK often give blood as a way to spill blood but help other people.

Sunni:: This is a festival that marks the day Noah left the Ark and Musa left Egypt with the slaves. People wear black and don't play any music.

HISTORY

Year 10 History
Spring Term- Hitler's road war

Adolf Hitler is probably the most infamous man in history. For many historians he is the most important reason why the Second World war broke out in 1939. Hitler had a number of foreign policies that could have alarmed other countries. Hitler hated the Treaty of Versailles. He said that when Germany lost the First World War he had broken down and cried and that he would stop at nothing to overturn the treaty he hated. He was true to his word and as soon as he became chancellor in 1933 he started to test how much he could get away with. This set him firmly on the road to war.

Lebensraum	Hitler wanted land in the east. To get this he would have to invade countries in Eastern Europe. This would be considered an act of war and other countries might try to protect the ones being invaded.
Overturn Versailles	Hitler and the German people hated the Treaty of Versailles, they felt like they had been stabbed in the back by those that had signed the Treaty. They called them the November criminals. Hitler was determined to overturn the treaty.
Untie German speaking people (Volksdeutsche) in a Greater Germany this included Anschluss)	To build a Greater Germany Hitler planned to reclaim land that had been list in the Treaty of Versailles. He also planned to unite areas that were no longer German land but where Volksdeutsche were living as part of Germany. However, it was unlikely that other countries would give up these regions without a fight and once again Hitler was breaking international law.
Destroy Communism	The USSR had a massive army and had begun to develop better relationships with Britain and France. The USSR was also allied with many of the Eastern European countries that Hitler was targeting for Lebensraum. Hitler was provoking a powerful nation that was bound to fight back.
Rearmament	Under the Treaty of Versailles Germany's military power was severely restricted and the Rhineland had been demilitarised. Hitler wanted to introduce conscription and build a Luftwaffe (air force) to help reduce unemployment and to make Germany strong again, but this broke international law (the Treaty of Versailles) and other countries would become suspicious about why Germany needed a large army.

The reaction of Britain and France
Britain and France did not want to start another war so they let Hitler get away with breaking the Treaty of Versailles, even though it was international law. They did this because:

- They needed time to rearm; their armies were not big enough to fight and win a war.
- Many people in Britain thought that Hitler was being reasonable because the Treaty of Versailles had been too harsh.
- They were concerned about the USSR and thought that Hitler could be valuable ally against Communism.
- Countries could not afford to go to war during the Depression and their governments were preoccupied with problems at home.
- People could remember the horrors of the First World War: they did not want another war.
- The policy followed by Britain and France from 1937 is known as appeasement: they tried to give Hitler what he wanted in the hope of preventing a war.

The reaction of the USSR and the USA
Joseph Stalin, the leader of the USSR, was worried by Hitler's determination to destroy Communism and by 1935 he was willing to put aside concerns about Britain and France in order to sign a mutual assistance treaty with France. Stalin would work with the allies to protect the USSR from Hitler.

The USA followed a policy of isolationism during the Depression. In 1934, a poll said that 70% of Americans did not want to get involved if a second war in Europe broke out.

Key Word	Definition
Lebensraum	Living space in Eastern Europe.
Luftwaffe	Nazi air force.
Appeasement	Policy of giving someone what they want in hope of avoiding war.
Isolationism	A policy in which a country does not get involved in foreign affairs.
Volksdeutsche	People with German blood.

Event	Reaction
1933: Hitler leaves the disarmament conference The League of Nations held a conference encouraging all nations to disarm. When Hitler became chancellor he said he would disarm if everyone else did. If they didn't then he would disarm to the same level as France. When France refused Hitler stormed out of the conference and pulled Germany out of the League of Nations	There was very little the allies could do. Hitler claimed that he had acted in a reasonable and fair way and that it was the French who were being unreasonable.
1934: The Dollfuss Affair Fearful that Hitler would try to unite with Austria in Anschluss, the Austrian chancellor, Englebert Dollfuss banned the Nazi party in Austria. Hitler ordered Nazis to cause havoc in Austria and they murdered Dollfuss.	Mussolini moved his army to the Austrian border in support of Austria. Hitler was not ready to fight so he backed down.
13th January 1935: The Saar plebiscite Under the Treaty of Versailles, the Saar had been controlled by the League of Nations for 15 years. In 1935, a plebiscite took place to decide whether Germany or France should control the area. 90% voted for Germany and Hitler used this as propaganda.	Hitler gained valuable resources, like the coalfields of the Saar, and there was nothing anyone could do as the plebiscite was fair and legal.
March 1935: Rearmament Hitler held a rally where he announced that he had been rebuilding the German army and was reintroducing conscription. He had also started to develop the Luftwaffe – an air force.	In April 1935 Britain, France and Italy agreed that they would work together against Hitler as the Stresa Front.
June 1935: Anglo – German Naval Agreement Britain signed an agreement allowing Germany to have a navy that was 35% of the size of the British navy.	Hitler realised that Britain was allowing him to break the terms of the Treaty of Versailles.

Year 10 History
Spring Term- Hitler's road war

On the 7th March 1936 Hitler marched 22,000 soldiers into the Rhineland, the demilitarised zone of Germany bordering France. This was banned by the Treaty of Versailles, which forbade any German soldier from going into the area. The decision to send in troops was a clear violation of the treaty but also of the Locarno treaty.

Hitler had attempted to join Germany and Austria in 1934 . A strong Nazi party, loyal to Hitler, existed. One of the reasons the previous attempt had failed was because the Italian leader Mussolini stood in the way. But with the signing of the Anti - Comintern pact and the mutual support during the Spanish civil war Hitler thought he would try again.

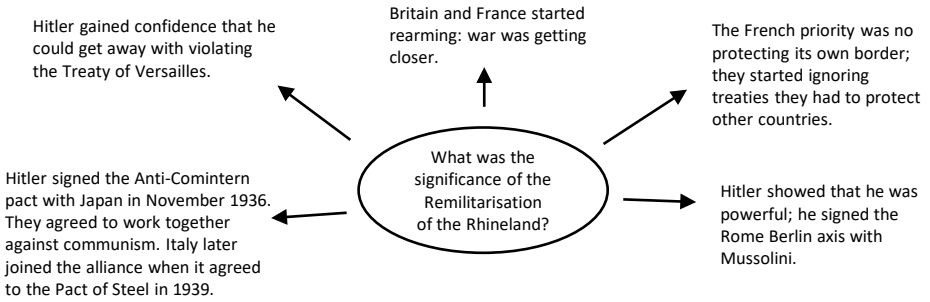
▼ SOURCE A *The location of the Rhineland, which was demilitarised in the Treaty of Versailles*

The Treaty of Versailles had forced Germany to demilitarise the area of the Rhineland on the border between Germany and France. Hitler wanted to take Lebensraum in East Europe, but to do this he would have to invade other countries. He knew France and Britain were likely to declare war if he did this, so he had to protect his western borders by remilitarising the Rhineland.

This action was a big risk for Hitler. The German generals had advised Hitler that the army was not strong enough to fight if Britain or France chose to challenge it. German financial ministers had warned Hitler that if his plan failed he would have to pay huge fines, which Germany could not afford.

1935: The Franco- Soviet pact was signed between France and the USSR. They agreed to assist each other if attacked. Hitler argues that he was in danger of attack from France in the West and the USSR in the East. Therefore he uses this as an excuse to justify moving into the Rhineland.

7th March 1936: Hitler's troops entered the Rhineland. Many rode bikes and there was no air support. Civilians greeted the troops with flowers. Germans were happy to see the Rhineland remilitarised.



Why didn't Britain stop Hitler?	Why didn't France stop Hitler?
The depression made Britain reluctant to do anything.	France were distracted by a general election
British people said there was no need to stop Hitler marching into his own back garden.	The French army was in Tunisia in case it had to intervene in the Abyssinian crisis
The Abyssinian crisis was going on at the same time.	Many believed that the German army was bigger than it actually was.

Germany had been ruled by Austria for 600 years, but in the Treaty of Versailles they were forbidden to unite.

Two of Hitler's foreign policy aims were to unite German – speaking people and to destroy the Treaty of Versailles

1934: Hitler had Austrian Nazis murder Dollfuss, the Austrian chancellor, but backed down when Mussolini moved troops to the Austrian border

1938: Austrian Nazis planned to get rid of the new chancellor Schuschnigg, but police stopped the plot. Austrian Nazis were imprisoned, but Schuschnigg felt vulnerable. He met with Hitler and agreed to give Nazis key positions in the Austrian government.

Hitlers puppet, Seyss-Inquart, was appointed as minister for the interior, with power over the police, who turned a blind eye to Nazi attacks on the Austrian government.

Schuschnigg planned a plebiscite to prove that the Austrian people did not want to be ruled by Hitler, but Hitler demanded that this be delayed and forced Schuschnigg to resign.

Hitler made Seyss-Inquart the new chancellor (Hitler controlled him). He claimed that Austria was in a state of chaos and asked Hitler to restore order. The Nazis marched into Austria on the 12th March. Austrians cheered the Nazis arrival.

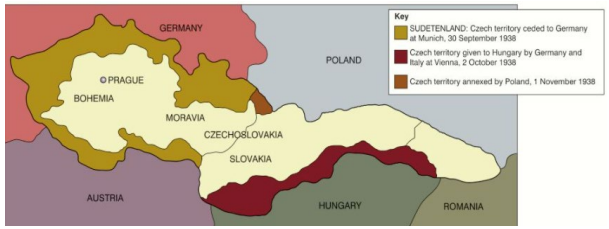
On the 10th April the plebiscite was held and the Nazis won 99% of the vote.

Country	Reaction to Anschluss
Austria	99% of people voted in favour of Anschluss, but polling stations were heavily policed by the Nazis. The yes box on the ballot paper was much larger than the no box.
Britain	Some British people had decided that the Treaty of Versailles was too harsh. They thought Germany and Austria were essentially the same country, Hitler should be able to unite the two.
France	Two days before Hitler's invasion the whole government had resigned. France was in no position to get involved.
Czechoslovakia	The Czech people feared that Hitler's policy of lebensraum meant that they would be invaded next. Britain and France agreed to protect Czechoslovakia.
Germany	Hitler used Anschluss as a great propaganda victory. The German people were delighted.

Year 10 History
Spring Term- Hitler's road war

In Hitlers quest for Lebensraum he turned his attention towards Czechoslovakia. However Czechoslovakia was a strong nation with a big army and lots of defences on the border with Germany. To take it Hitler would have to take the border area, Sudetenland first. As negotiations between Chamberlain and Hitler stalled, Mussolini suggested the leaders of Britain, Germany, Italy and France should meet over the Sudetenland. On the 29th September 1938 the four powers signed the Munich agreement.

Hitler had made no secret of his hatred of communism. Yet in 1939 Hitler and Stalin, leader of the USSR, signed the Nazi-Soviet pact. This made them allies and gave Hitler the confidence to invade Poland..



Why did Hitler want the Sudetenland?

- The Sudetenland was part of the Czechoslovakia border.
- Hitler planned to take Lebensraum
- Czechoslovakia had been created at the end of WW1. Hitler felt the invasion would be another step towards destroying the Treaty of Versailles.
- Czechoslovakia's main defences were in the Sudetenland so taking it would allow Hitler to take the whole country. There were natural resources and factories in the area that Hitler could use.
- About 20% of the Sudeten population was German. In May 1938 the Nazis claimed that they were being persecuted and used this to justify an attack.

15th September 1938: Chamberlain flew to meet Hitler. Chamberlain was trying to appease Hitler to avoid war. He agreed that Hitler could take the Sudetenland as long as his actions were peaceful. Chamberlain then went to meet the Czechs and forced them to agree.

→

22nd September 1938: Chamberlain meets with Hitler again. This time Hitler changes his demands. Now he wants the Sudetenland to be handed to him by the 1st October and Hungary and Poland should be given Czech land

↓

29th September 1938: Chamberlain, Hitler, Mussolini and Daladier meet at the Munich conference. They accepted Hitler's demands. The Czechs and the USSR were not consulted. This made Stalin think Britain and France could not be trusted. Chamberlain said he had prevented war, as Hitler had promised to take any more land.

←

10th October 1938: Troops marched in, but unlike the Rhineland and Austria, the Czechs saw this as an invasion. This was the first time Hitler had invaded a country that had not been united with Germany. Hitler completes his invasion of Czechoslovakia in 1939. He had broken the promise made at the Munich agreement. Appeasement had failed.

Hitler now wanted Poland. Taking Poland meant he could defy the Treaty of Versailles and take Lebensraum at the same time. However the USSR considered Poland important. If Hitler invaded he faced a war on two fronts. War with Britain and France in the west and war with the USSR in the east. On the 23rd August 1939 Hitler and Stalin signed the Nazi- Soviet pact. This allowed Hitler to invade Poland.

Why did Germany sign the pact?

- Hitler could now invade Poland without facing a war on two fronts. Britain and France had promised to protect Poland. Hitler believed that, with the pact, he could defeat Britian and France in the west first before turning his attention to the USSR in the east.
- Britain and France would have to go to war without the USSR as an ally.
- The USSR had a large army, they would not be a threat to Germany.

Why did the USSR sign the pact?

- Stalin felt he couldn't trust Britain and France as they left him out of the Munich conference. He thought it was weak to appease Hitler. Stalin didn't trust them to help protect the USSR if they were invaded.
- Britain and France had sent minor diplomats that had little authority to meet with Stalin. Hitler had sent a senior Nazi. This made Hitler look like he had more respect.
- Hitler had promised Stalin Polish territory. Stalin wouldn't even have to send troops.
- The pact bought Stalin time to prepare for a potential war. The USSR had not been ready to fight if invaded.
- Land in Poland could be a buffer zone if Hitler decided to invade the USSR.

Hitler was confident to invade Poland. He knew he wouldn't have to fight a war on two fronts. On the 1st September 1939 the German army and Luftwaffe decended on Poland. On the 3rd September 1939 the British sent an ultimatum. If Hitler didn't leave Poland by 11am Britain would declare war. Hitler sent no reply so Britain, followed by France declared war.

▼ **SOURCE A** *'Strange Bedfellows' by British Cartoonist, Bert Thomas, published in a British newspaper, 18 September 1939*

▼ **SOURCE B** *An American cartoon from 1939. The caption says 'Wonder how long the honeymoon will last?'*

Year 10 History
Spring Term- Power and the people in Medieval times

Magna Carta 1215

Summary

1. Barons are fed up with the King
- The Barons put an army together.
- If King John wanted to gather an army, he would need the barons' support.

2. 19 June 1215, Runnymede, near Windsor
- King John met the Barons.
- They would negotiate how the country should be governed.

3. The Magna Carta
- 63 promises
- Would change kings power/ give Barons more control.

4. Main clauses of the Magna Carta
- Barons heir shall inherit lands on payment of £100 to the king.
- No scutage shall be imposed on the barons.
- No freemen shall we arrested or imprisoned without a trial.
- The English Church make its own appointments.
- A group of 25 barons to monitor the King and ensure he commits to Magna Carta.

5. Aftermath
- John had no intention of sticking to the promises he made.
- He only agreed so the war would end and barons back on side.
- Many people consider it a failure in the short term, because John quickly backed out of the agreement, saying he had been forced to sign it.

Key factors
War
Religion
Government
Role of the Individual

Key People

King John: King of England.

Robert Fitzwalter: Leader of the Barons

Stephen Langton: worked with the barons on the Magna Carta and resent it to the King.

Prince Louis of France

Key Facts/ Context
- King John crowned 1199.
- His Father and previous King Henry II had been popular.
- Medieval society was built on the Feudal System.
- John had a disagreement with the Pope over who should be Archbishop.
- The Pope retaliated by banning church services which frightened people.
- Barons were worried this could lead to an invasion from a foreign King.
- Poor relations was caused high taxes paid by Barons called scutage.

Simon de Montfort 1265

Key factors
Religion
Chance
Ideas
Role of the individual

Key People

Simon de Montfort: leading member of the Montfort family, Norman aristocratic family who came to England after the 1066.

Henry III: King of England at the time.

Summary
- The barons tried to stop King Henry III from ruling unjustly.
- King Henry re-issued Magna Carta, reaffirming the rights of the barons, on several occasions during his rule.
- Simon de Montfort was involved in attempts to force the King to rule justly. He rebelled against the King and ruled the country for several months.
- Simon invited the Commons to join Parliament.
- After his death Simon's changes were removed.

Provisions of Oxford
- Foreign members of the royal household banished.
- Gave the barons power over decision making than the King as it made the King accountable for his actions.
- The barons were divided, so the King refused to sign.
- Simon de Montfort to lead an army against the King which he won. King Henry III and his son were captured after the Battle of Lewes

Parliament
- January 1265: Simon invited representatives of the Commons to Parliament.
- Representatives were allowed to air their problems in return of being taxed by the government.
- The first time that commoners were consulted.
- Due to Simon's actions he is regarded as the 'Father of Parliament'.
- Simon did this without consulting the other barons who were furious.

Key Facts/Context
- Henry made the same mistakes made by John and was short of money
- He lost two major wars in France and only listened to a few advisers
- Henry allowed a lot of foreigners to help him govern the country
- Simon had a difficult relationship with Henry III.
- Henry put Simon on trial for his actions, but he was found innocent

The Peasants Revolt 1381

Key People

Richard II: King of England

Wat Tyler: Leader of the Revolt

John Ball: Kent Priest

John Bampton: Tax Collector

Key factors
- Equality, Democracy, Representation
- Economy
- Role of the individual

Key Facts/Context
- King Richard II was young and inexperienced.
- Many peasants were returning from the 100 Years War.
- They were forced to their old lives, but paying more tax.
- Peasants were inspired by Ball.
- The King was worried Ball would turn people against the feudal system.
- People were not angry at the King but the system.

Summary

1. 30 May, Fobbing
- Peasants refuse to pay poll tax to Bampton and threaten his life.
- Bampton flees back to London
- Peasants hide in the woods worried they will be punished.

2. 2 June, Brentwood
- Rebels join forces.
- Chief Justice is sent to collect taxes and peasants refuse and threaten death.
- Begin to set fire to the houses of Bampton's supporters.

3. 7 June, Maidstone
- Peasants in Kent march to Maidstone.
- Wat Tyler is made leader.
- Free John Ball from prison.
- Kill Archbishop Canterbury
- Destroy tax records.

4. 12 June, Bishopgate
- King attempts to meet peasants but kings men do not allow off the boat due to peasants hostility.

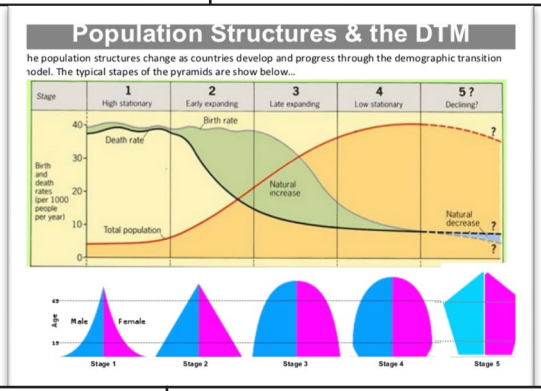
5. 13 June, City of London
- Some rebels enter and kill Kings supporters.
- Tyler had given orders to be peaceful.

6. 14 June, Mile End
- Tyler meets King, outlines demands.
- King to give pardon and all villeins to be made freemen, King agrees.

7. 15 June, Smithfield
- King meets rebels again, Tyler demands change to law – church land given to people and get rid of all bishops but one.
- King agrees but one of his men kills Tyler.
- Peasants are ready to fight, King shouts 'Will you kill your King?'.
- Peasants follow king out London, revolt is over.

There are global variations in economic development and quality of life

Classification of countries	
LIC – Low Income Countries	US $1045 or less GNP 30 countries
NEE – Newly Emerging Economy	80 countries. Number increasing due to globalisation
HIC – High Income Country	US$ 12,736 or more 80 countries



Indicator	Limitations
LICs	Not higher death rate as have younger population
Birth rate	Useful except where government policies
Infant Mortality Rate	Decreasing in HICs. Increasing in LICs. Close link to wealth, access to services. Data can be inaccurate
Life Expectancy	Rising in HICs though may decrease due to obesity
Gross National Income	Blunt tool. No measure of how much $1 will buy. Hides variations
HDI	Most useful indicator. Economic and social element. Data can be unreliable. Does not account for subsistence economy, corrupt governments etc.

Causes of uneven development		
Physical	Climate Poor farming land Extreme weather	Few raw materials Lack of safe water Natural hazards
Economic	Poor trade links Debt Lack of education quality	Primary economy Corrupt government Poor health and water
Historical	Colonialisation	Conflict

Various strategies exist for reducing the global development gap

Strategy for reducing the development gap	
Investment	Governments, organisations of companies invest in big projects. Provides employment and income leading to development. TNCs from NEEs and HICs inject FDI leading to multiplier effect
Industrial development and tourism	HEP helps economic growth in Africa and Asia. Brings employment, income and opportunities. Investment occurs in housing, education and infrastructure Move from primary products as issues with overproduction and import taxes. Manufacturing goods lead to more profit Tourism leads to investment and more income. Vulnerable to recession.
Aid	Gift (not repaid). Can be funding for development e.g. infrastructure which boosts economy and leads to an increase in quality of life. From countries / IMF / World Bank UK spends 0.7% GDP on aid
Intermediate technology	Comines sophisticated ideas with cheap readily available materials. Local knowledge and tools used eg. Afridev handpump, solar ovens
Fair Trade	Prevents exploitation with realistic prices and better working conditions. Increases standard of living, health care and education.
Debt relief	Writing off debts / making repayments lower and terms longer IMF / World Bank Highly Indebted Poor Countries Initiative helped 41 countries (mainly in Africa) control their finances, show no government corruption and agree to spend saved money on education, healthcare and decreasing poverty. Tanzania now has free education and Uganda has safe water for 2 million people African countries are over US$300 billion in debt
Microfinance loans	Provided by investors in HICs to entrepreneurs in NEEs and LICs. Many borrowers are women e.g. Glameen Bank in Bangladesh. Vital cash to escape cycle of poverty
EG of how tourism in a LIC can reduce the development gap	Case Study : Tunisia
Reasons for tourism	Climate History and Culture Cheap package holiday Links with Europe Landscape
How has it helped?	Multiplier effects helped souks and farmers. Jobs and income Now one of wealthiest African countries with increasing life expectancy, literacy rates, jobs and gender equality
Concerns	Pollution of the environment Terrorism in 2015 Leakage of profits

The Changing Economic World & Urban Issues & Challenges

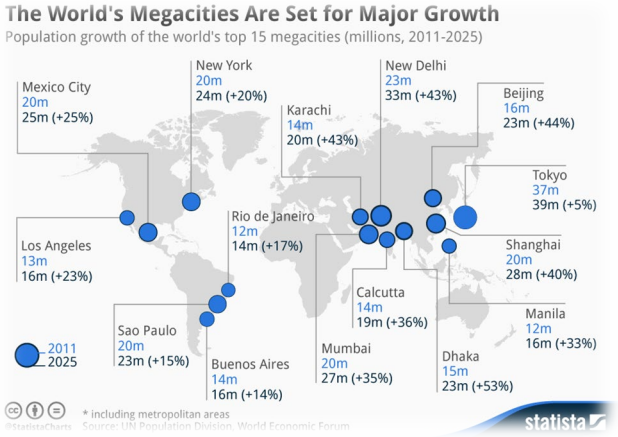
Role of TNCs in relation to industrial development	• Niger delta – oil. Royal Dutch Shell, Exxon Mobil, Chevron, Total and Agip • Platforms and pipelines installed. Oil shipped to Europe and USA to be refined. Most profit leaked • Nigerian National Petroleum Corporation – joint ventures with TNCS • 40 TNCS – mostly UK, Europe and USA • Damage to wetland and coastal ecosystems which people rely on
TNC Examples	UNILEVER • Anglo Dutch company – food, drinks and home items • Since 1923 been making palm oil based soap and employs 1500 people • High standards of employment and environmental stewardship • Promoted improvements in health care, education and water supply SHELL OIL • Anglo Dutch company. • Huge investment • 65000 directly employed and 250,000 indirectly employed • 91% of contracts with Nigerian companies • Issues – oil spills, oil flares (toxic fumes), militant groups disrupting supplies, oil theft and sabotage
Changing political and trading relationships within the wider world	• Part of OPEC, African Union, UN, OCOWAS(Economic Community of West African States) and CEN-SAD (Community of Sahel Saharan States) • Trading relationship with UK for over 300 years. • Exports : oil, gas, rubber, cocoa and cotton • Imports : machinery, chemicals, transport equipment, phones, rice and wheat • Main imports from China and there is growing Chinese investment in Nigeria • China Railway Construction Corporation building US$12 billion 1200km railway • China invested US$10 billion in exploration and drilling a new oil field • South Africa investing in business and banking • American companies investing and operating here too – GE, Walmart, Microsoft

Consequences of uneven development	
Disparities in wealth and health	HICs – higher income, better health care, higher life expectancy, lower IMR NEE – wealth not evenly distributed LICs depend on HICs for aud. Borrow from world bank causing debt North America 35% of global wealth, Africa 1%
International migration	Migration to countries with higher development e.g. Mexico to USA Depends on push and pull factors. Money sent home

African Union

International Aid – types and impacts on the receiving country	• ODA – Official Development Assistance – can be multilateral (World Bank / IMF) or bilateral (from one country) • Voluntary aid – can be short term emergency relief or long term development assistance • 2009 – 2013 : 60 million mosquito nets distributed • UK gives US$300 million year of aid • Receives 4% of aid given to Africa • Most successful projects are community based • Problems include government corruption, government diverting money, donors have political influence, promoting commercial self interest
Environmental impacts on economic development	• Oil pollution • Air pollution • Water pollution • Loss of habitats • Destruction of forests • Chemical waste • Desertification • Traffic congestions • Squatter settlements • Waste disposal
Effects of economic development on quality of life for the population	• Rated 152/187 countries in terms of HDI. Improving and is increasing quickly • New jobs mean more income and increased quality of life • Large differences between north and south; rural and urban; educated and uneducated • Lack of access to safe water, sanitation and reliable electricity supply • Oil wealth not used effectively. • Overdependence on oil may become an issue as oil prices fall and new technology such as fracking develop • Key challenges include continuing stable government, pollution of the Niger delta, tsetse fly affecting commercial livestock, desertification, religious conflict between north and south, Boko Harem extremist group

A growing percentage of the world's population lives in urban areas	
Global pattern of urban change	• More than 50% of world's population live in urban areas • By 2030 it is expected to be more than 60% • By 2050 expected to be more than 70% • In 1950 there were 4 megacities • Now there are more than 20
Urban trends worldwide	• Highest rate of urbanisation in LICs due to rural to urban migration and high rates of natural increase (birth rate much higher than death rate) • Lower rates in HICs as already urbanised and have aging population • Some NEEs in South America following HICs pattern • Largest increase in India, China and Nigeria – by 2050 urban areas will have grown by 37%
Emergence of megacities	• Asia – huge population. Massive rural to urban migration. Rates fluctuate • China – Pearl River Delta – 120 million people as merging Hong Kong, Shenzhen and Guangzhou • Most megacities will be in China and India



	Opportunities created by urban growth in Lagos
Social – access to services, health and education	• More schools and universities • Growing industry – fashion, finance and film (Nollywood) • Healthcare available • 68% have secondary education (40% of people in rural areas don't get a primary education) • Above average healthcare, education and employment – 9 years education, 53 years life expectancy
Access to resources, water and energy	• 2 power stations planned. • Wealthy houses and businesses have generators • Rich have pipes water • Rest use public taps, boreholes or buy from vendors
Economic – how urban industrial areas can be a stimulus for economic activity	• More jobs in Lagos in both the formal and informal economy • Eco Atlantic – new financial hub – 150, 000 jobs • Nollywood film industry – 3rd largest in world

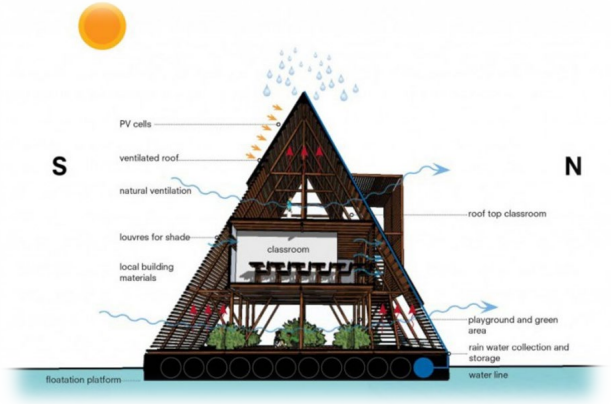
Urban growth creates opportunities and challenges for cities in LICs and NEEs	
Case study : LAGOS	Urban growth creates opportunities and challenges for cities in LICs/NEEs
Location and importance regionally, nationally and internationally	• SW Nigeria, Gulf of Guinea • Capital in early 20th century until 1991 (Abuja now the capital) • 80% of Nigerian industry in Lagos • Main finance centre in West Africa • International airport and port • Increasing population (15 million at present and increasing by 15,000 a year) • Expanded north and west of Lagos lagoon)
Causes of growth	• Natural increase – youthful population and most migrants are young • Rural to urban migration. Push factors – low wages, changing climate, poor services, land shortages, degraded land, political unrest e.g. Boko Haram. Pull factors – well paid jobs, urban lifestyle, higher standard of living, friends and family, education, medical care

Case study : Lagos	Challenges of urban growth
Management of the growth of slums / squatter settlements	• 60% live in slums • Most in Lagoon area e.g. Makoko • Lack basic facilities, communal toilets, waste put into the lagoon causing disease. 3km to communal water point • Crime in the slums an issue • Eco Atlantic – New city of 250, 000
Providing clean water, sanitation systems and energy	• 2 new power stations planned • Plans to harness methane from rubbish dumps • 2012 Lagos state water Regulatory Commission ensures safe water and fair prices. Responsible for water treatment plant and monitors boreholes • Water bought from vendors • Lack of sewage system • High risk of flooding as low lying
Providing access to services – health and education	• Most in informal areas live on less than $1.25 a day • Healthcare free in government clinics though often long queues
Reducing unemployment and crime	• 3 helicopters for police • 9.9% unemployment • Grants via the Trust Fund Bill have helped people become self employed • 30% of new jobs in the informal economy
Managing environmental issues – waste disposal, air and water pollution, traffic congestion	• Only 40% waste collected • Waste recycling industry e.g. Olyssun dump • Fatal accident rate 28 per 100, 000 (x3 HICs) • Air pollution 5 x recommended level • 2003 Lagos Metropolitan Area set up a bus rapid transport system • Plans for integrated transport, ferry network, bus lanes, new airport, walking and cycling facilities as well as better urban planning to reduce journey times

Lagos State Bus Rapid System Master plan

Lagos Water Transport Master plan

Case Study : Makoko floating school	An example of urban planning that is improving the quality of life for urban poor
When?	2014
Problems in Lagos	• Growing population • Increasing population density • Rising sea levels • Poor water supply • Unreliable power supplies
Design of the school	• Solar panels • Natural ventilation • Playground / green area • Floating platform • Local building material • Collects rainwater and stores it
Hopes for the future	Hoped this design could be applied to houses in the Lagoon. Hit a snag in 2016 when the school collapsed in heavy rain – yet to see what happens next

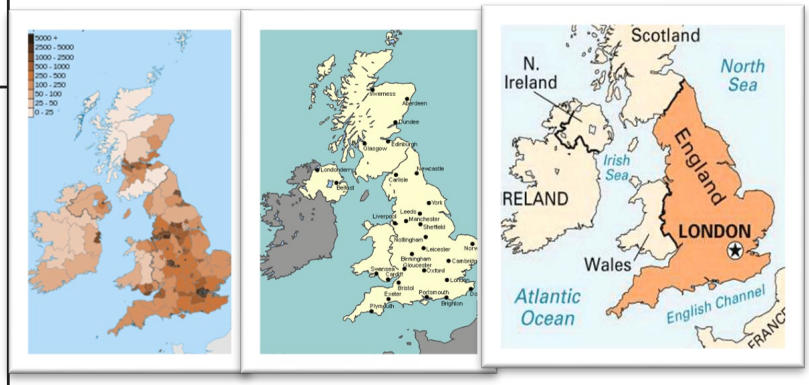


Some LICS and NEEs are experiencing rapid economic development which leads to significant social, environmental and cultural change

NIGERIA CASE STUDY	
Location and Importance of the country regionally and globally	• West Africa, North of the Equator • Largest population of Africa – 184 million • NEE – 3rd largest manufacturing economy in Africa • Largest economy in Africa • By 2020 should be one of the top economies • Youthful educated population – skilled workforce for manufacturing and services
Wider political, social, cultural and environmental context	• 1960 Gained independence from the UK • 1967 – 1970 Civil war followed by 28 years of military government. • 1998 - Now stable democratic government • 500 ethnic groups – South is Christian (Igbo and Yuroba), North is Muslim (Hausa). Some ethnic boundaries broken by rapid urbanisation • South is Tropical Rainforest (Cocoa and oil palm crops) and North is Savanna (Peanuts grown) • Issues in the north with extremist group Boko Haram – want Sharia law and own government. 17,000 dead.
Changing industrial structure. Balance between different sectors of the economy	• 60% live on less than US$1.25 a day. Growing inequality • GDP 2006 – US$110 billion, GDP 2015 US$560 billion • Money earned from Services 52%, Manufacturing 7%, Oil and gas 14%, Agriculture 22%, Other 5% • Nollywood – 3rd largest film industry in the world • 70% employed in agriculture • Rapid increase in telecommunications and retail • Manufacturing increasing – processed food, leather, textiles, soap, detergents
How manufacturing can simulate economic development	• Oil found in 1950s. 14% GDP, 95% export earnings • Produces 2.7% of world's oil which is higher quality than oil from the Middle East • Overdependence on oil -- prices fell in 2015 • Oil processing led to chemical by products leading to growth in chemical industries such as soaps, detergents and plastics • Dangote Cement (Nigerian company) has expanded into 13 countries in Africa • All led to increased standard of living, FDI, jobs, taxes, multiplier effect, manufactured goods. • Less imports needed and Nigerian TNCs have more influence in the region
Advantages and Disadvantages of TNCs	• Advantages : investment, jobs, expertise / skills, international links, new technology, multiplier effects, export revenues • Disadvantages : leakage of profits, lower wage levels, environmental damage, can withdraw investment, exert political influences, poor working conditions, management jobs go to foreigners

Urban change in cities in the UK leads to a variety of social, economic and environmental opportunities and challenges

	Overview of the UK population and major cities in the UK
Population	260 per km² on average 5000 per km² in London and less than 10 per km² in North of Scotland Most in low lying flat areas especially by coasts and rivers
Cities	Fastest growing are in south east. London the fastest growing Sunderland is the only city with a decreasing population



Case study : Liverpool	Urban change in cities in the UK leads to a variety of social, economic and environmental challenges and opportunities
Location and importance of city in UK and wider world	• North West of England • Major ports & access to trade links • Hub for transport networks • Wealthy city • House prices and earnings increasing • Headquarters of TNCs • Universities, research, tourism, culture, media, communications
Impacts of national and international migration on the growth and character of the city	• Young population in 20s and 30s moving for work. Also pushing up the rate of natural increase • Migrants from worldwide • Multicultural – current influx from Eastern Europe • White British 46%, White other 15%, South Asian 18%, Black 13%, Mixed 5% and other 3%

Urban sustainability requires management of resources and transport

How urban transport strategies are used to reduce traffic congestion
• HS2 • Cross rail • Southwest super highway

Major changes in the economy of the UK have affected, and will continue to affect, employment patterns and regional growth	
Causes of economic change	
Deindustrialisation and decline of traditional industrial base	• Less manufacturing, more services and quaternary industries • Machines and technology replaced people • Lack of investment, high labour costs and outdated machinery means UK goods expensive • 1800 : Primary 75%, Secondary 15% and Tertiary 10% • Now : Primary 2%, Secondary 16%, Tertiary 73%, Quaternary 9%
Globalisation	• Made possible by improvements in transport, communications and internet • 60, 000 TNCS worldwide • UK characteristics : economic growth, cheaper goods and services, foreign investment, high value production, migration, less manufacturing, outsources jobs
Government policies	• 1945 – 1979 : state run industries propped up by government money • 1979 – 2010 : Privatisation and redevelopment of old areas • 2010 - : rebalancing of economy – improvement of infrastructure, investment in manufacturing, easier access to finance and encouraging global firms to locate in the UK
Movement to a post industrial economy	
Development of ICT	• IT manufacture of hardware and design • 1.3 million jobs • One of world's leading digital economies
Finance	• Banking, insurance, securities, dealing and finance • 10% GDP, 2 million jobs, 29% exports • 50.5% based in London
Research	• Quaternary sector • 60,000 jobs and £3 billion income • Research in universities, private companies and government bodies
Science and business parks	• Science park : Group of scientific and knowledge based businesses based on one site e.g. Cambridge Science Park • More than 100 in the UK providing 75, 000 jobs • Business park : Cluster of businesses on the edge of towns e.g. M4 corridor

	Place of the UK in the rider world
Trade	• Most with EU. USA important too. • Increasing trade with China • £250 billion of exports per year
Culture	• TV and media exports - £1.28 billion (USA 47%, Australia and New Zealand, China 40%) • Migrants bought own culture – food, music, fashion, films, festivals
Transport	• Heathrow one of world's busiest airports • Channel Tunnel and ferries to Europe • Southampton – cruise hub
Electronic communication	• Focus on submarine cables – 99% internet traffic uses these • Vital part of global economy • Arctic Fibre project 2016 : UK to Tokyo – 15000km • 90% UK population use internet – emails / social media

Impacts of industry on the physical environment	• Negative visual impact • Air and water pollution • Soil degradation • Landfill • Impacts of roads
EG of how modern industry can be more environmentally sustainable	CAR INDUSTRY • Nissan – less electricity and water used. More electric and hybrid cars build, less CO^2 emissions, 7% of energy used is from windfarms • Jaguar – maximise natural cooling and natural light to decrease energy use; solar panels produce 30% energy used; most waste recycled

	Improvements and new developments in transport
Road	• 2014 - £15 billion road investment strategy – 100 new roads by 2020, 1300 miles added to roads and extra lanes on motorways, Smart motorways • A303 Superhighway - £2 billion road widening converting road to dual carriageway
Rail	• Electrification of Trans Pennine Express and Midland Mainline • HS2 - £50 billion : London to Sheffield, Leeds and Manchester • London's crossrail 2018 - £14.8 billion, 32km • Channel Tunnel – 346 million people in 20 years, 1.4 million trucks, 2.5 million cars, 58, 500 people a day
Airport capacity	• 3.6% GDP • 300,000 jobs • 750,000 international and 420,000 domestic flights • Recommended 3rd runway for Heathrow
Port capacity	• 2014 – Biggest were Grimsby, Tilbury, Milford Haven and Southhampton. • Investing : Belfast, Avonmouth, Felixstowe, Harwich • 37000 jobs. More through multipler effect • 2013 London Gateway opened for bigger ships closer to London

	The North South Divide
North v South	Cultural and regional differences • North : deindustrialisation, more unemployment, decreasing / slow growing population. Falling house prices. Lower wages, poorer health, poorer education • South : higher standard of living, better quality of life, more income, more congestion, increasing house prices
Strategies used to decrease regional differences	• Deindustrialisation in the north meant financial support from the government • Foreign investment encouraged in north e.g. Nissan, Mitsubishi • EU regional funding to decrease regional disparities • In 2011 24 Enterprise zones were established to encourage new businesses with decreasing rates, superfast broadband and simple planning regulations • 2015 : Northern Powerhouse strategy aimed to develop economies of major cities in North. Tourism, food and energy to be developed in rural areas • Power given to individual cities on how to raise and spend money

	Economic and political links
EU	• Migration • Financial support for farmers • Single market (trade) • European Structural and Investment funds for disadvantaged regions • Laws and controls • Pay more to support poorer countries
Commonwealth	• 53 countries – most former colonies • 2.2 billion people – 60% less than 30 years old • Advice on human rights, social and economic development and youth empowerment • Trading, cultural and sporting links • Many UK residents live in Commonwealth countries and vice versa • Most use English

Tier 3 Vocab	Definition	Contextual Sentence
Mega cities	Urban area with population in excess of 10 million people.	Tokyo is a megacity in Japan with a population of almost 14 million.
Migration	When people move from one area to another.	A variety of push and pull factors can influence migration.
Natural increase	Birth rate minus death rate.	A population grows as a result of natural increase.
Urbanisation	The process by which an increasing percentage of the country's population comes to live in towns and cities.	Urbanisation has led to the increase of health issues in urban areas.
Brownfield site	Land that has been used, abandoned and now awaits some new use.	The Olympic Park was build on a brownfield site.
Dereliction	Abandoned buildings and wasteland.	Derelict buildings were a result of urban decline in Liverpool.
Greenfield site	A plot of land that has not yet been subject to any building development.	Greenfield sites offer many opportunities to a developer.
Inequalities	Differences between poverty and wealth as well as in peoples' wellbeing and access to services.	NEE's bear a variety of social and economic inequalities.
Integrated transport systems	When different transport systems connect making journeys smoother and public transport more appealing.	London boasts a range of integrated transport systems.
Rural urban fringe	Zone of transition between the built up area and the countryside.	Commuters from the rural urban fringe face traffic congestion.
Social deprivation	The degree to which an individual or an area is deprived of services, housing, income and local employment.	Post-industrial Liverpool faced great social deprivation.
Urban greening	The process of increasing and preserving open space such as public parks and gardens.	Urban greening brings many social and health benefits to the local population.
Urban regeneration	The revival of old parts of the built up area by renewal or redevelopment.	Liverpool's Albert Dock has undergone a huge urban regeneration scheme.
Urban sprawl	Unplanned growth of urban areas into the surrounding countryside	Urban sprawl is responsible for loss of habitats and wild spaces.
Economic opportunities	Chances for people to improve their standard of living through employment	Education greatly improves a person's economic opportunities.
Sanitation	Measures designed to protect public health e.g. clean water	The slum lacked basic sanitation.
Social opportunities	Chances for people to improve their quality of life	Social opportunities were offered to those who followed the laws.
Squatter settlement	An area of poor quality housing lacking in amenities which develops spontaneously and illegally	Makoko is a squatter settlement in Lagos, Nigeria.
Traffic congestion	Occurs when there is too great a quantity of traffic for roads to cope with	Lagos has experiences huge levels of traffic congestion due to rural to urban migration.
Birth rate	Number of live births in a year per 1000 of the population	The birth rate decreased due to the introduction of family planning facilities.
Death rate	Number of deaths in a year per 1000 of the population	The death rate increased due to an ageing population.
Demographic Transition Model	A model showing how populations change over time in terms of their birth rates, death rates and total population	The Demographic Transition Model (DTM) has 5 stages.
Development	The progress of a country in terms of economic growth, technology and welfare	We can track a country's development using a range of indicators.
Gross National Income (GNI)	The total amount of money earned by a nation's people and businesses.	Gross National Income is a trusted economic measure of development.
Gross National Income per capita	The total amount of money earned by a nation's people and businesses, divided by the size of the population	Gross National Income per capita shows the average person's income.
Human Development Index (HDI)	Development measure using GDP per capita, life expectancy and adult literacy. Given as an index figure	Human Development Index is an accurate measure of development as it combines 3 indicators.
Infant mortality	Average number of deaths of infants under 1 year of age per 1000 live births per year	The infant mortality rate was high due to unsanitary conditions.
Life expectancy	Average number of years a person might be expected to live	A woman's life expectancy is usually slightly higher than a mans.

UNIT OF WORK 3: Technology

Technology in Everyday Life: GCSE Foundation Tier Spanish Knowledge Organiser

Key Ideas

- Las diferentes tecnologías.
- Comparar las tecnologías.
- Las ventajas y los inconvenientes de Internet.
- Mis tecnologías preferidas – opiniones.
- Lo que harías sin tecnologías.

Key Vocabulary

Los sustantivos

el archivo	file
arroba	@
el buzón	mailbox
el correo basura	spam
el correo electrónico	email
el disco duro	hard drive
el mensaje (de texto)	text (message)
el muro	wall
el ordenador	computer
la pantalla	screen
el periódico (digital)	(digital) newspaper
el (ordenador) portátil	laptop
punto	dot, full stop
puntocom	.com
el ratón	mouse
la red	network, internet
la red social	social network
la revista (digital)	(digital) magazine, (e-magazine)
el riesgo	risk
la sala de chat	chat room
el teclado	keyboard
el videojuego	videogame

Los adjetivos

lento/a	slow
peligroso/a	dangerous
práctico/a	practical
rápido/a	fast
útil	useful

Los verbos

acceder	to access
borrar	to erase, to delete
cargar	to load
colgar	to put (photos on social media, etc.)
crear	to create
descargar	to download
enviar	to send
funcionar	to work, to function
grabar	to record, to burn (a disc)
guardar	to save
hablar	to speak, to talk
mandar	to send
navegar	to surf
publicar	to publish
recibir	to receive

Key Verbs

Infinitivo	Presente	Pasado (Pretérito)	Futuro	Condicional
hacer - to do	yo hago ; él/ella hace ; nosotros/as hacemos	yo hice ; él/ella hizo ; nosotros/as hicimos	yo haré ; él/ella hará ; nosotros/as haremos	yo haría ; él/ella haría ; nosotros/as haríamos
ser - to be	yo soy ; él/ella es ; nosotros/as somos	yo fui ; él/ella fue ; nosotros/as fuimos	yo seré ; él/ella será ; nosotros/as seremos	yo sería ; él/ella sería ; nosotros/as seríamos
estar - to be	yo estoy ; él/ella está ; nosotros/as estamos	yo estuve ; él/ella estuvo ; nosotros/as estuvimos	yo estaré ; él/ella estará ; nosotros/as estaremos	yo estaría ; él/ella estaría ; nosotros/as estaríamos
tener - to have	yo tengo ; él/ella tiene ; nosotros/as tenemos	yo tuve ; él/ella tuvo ; nosotros/as tuvimos	yo tendré ; él/ella tendrá ; nosotros/as tendremos	yo tendría ; él/ella tendría ; nosotros/as tendríamos
usar - to use	yo uso ; él/ella usa ; nosotros/as usamos	yo usé ; él/ella usó ; nosotros/as usamos	yo usaré; él/ella usará; nosotros/as usaremos	yo usaría; él/ella usaría; nosotros/as usaríamos
navegar - to surf	yo navego ; él/ella navega ; nosotros/as navegamos	Yo navegué ; él/ella navegó ; nosotros/as navegamos	yo navegaré; él/ella navegará; nosotros/as navegaremos	yo navegaría; él/ella navegaría; nosotros/as navegaríamos

Technology in Everyday Life: GCSE Foundation Tier Spanish Knowledge Organiser

Key Phrases

Ir de compras	go shopping
En cualquier momento/A cualquier hora	whenever/at whatever time

Useful Grammatical Structures

- Use **modifiers** to modify an adjective. Examples include: bastante (quite); un poco (a bit).
- Use **intensifiers** to intensify an adjective. Examples include: realmente (really); muy (very); particularmente (particularly); totalmente (totally); completamente (completely).
- Use **connectives and conjunctions** to make longer sentences. Examples include: porque (because); ya que (as/because); pero (but); sin embargo (however); cuando (when), although (aunque).

Tricky Pronunciation: Practise these with your teacher!

el archivo	file
crear	to create

False Friends

lento/a	slow

Tricky spellings

práctico/a	practical	Check the accent on the 'a'.
el (ordenador) portátil	laptop	Check the accent on the 'a'.
rápido/a	fast	Check the accent on the 'a'.
útil	useful	Check the accent on the 'u'.

Key Questions

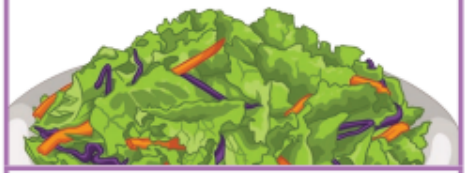
1. **¿Cuál es tu opinión sobre la tecnología?** What is your opinion of technology?
2. **¿Cómo usas las tecnologías?** How do you use technology?
3. **¿Cuáles son las ventajas y desventajas de Internet?** What are the advantages and disadvantages of the internet?
4. **¿Qué tecnologías usas?** What technologies do you use?
5. **¿Usas Internet para hacer tus deberes?** Do you use the internet for your homework?
6. **¿Qué tecnologías prefieres?** Which technologies do you prefer?
7. **¿Tienes un teléfono móvil?** Do you have a mobile phone?
8. **¿Qué piensas de los teléfonos inteligentes?** What do you think of smartphones?
9. **¿Qué harías sin tu teléfono móvil?** What would you do without your mobile phone?
10. **¿Has hecho compras en línea?** Have you done some online shopping?

UNIT OF WORK 3: Healthy and unhealthy living

Social Issues: GCSE Foundation Tier Spanish Knowledge Organiser

Key Ideas

- Descripción de una dieta sana/malsana.
- Los peligros de fumar/beber alcohol.
- La importancia del deporte para la salud.
- Los sin techos en tu ciudad.
- Una organización benéfica que conoces.



Useful Grammatical Structures

- Use **modifiers** to modify an adjective. Examples: bastante (quite); un poco (a bit).
- Use **intensifiers** to intensify an adjective. Examples: realmente (really); muy (very); totalmente (totally); tan (so).
- Use **comparatives** to compare 2 or more items. Examples: más/menos+ adjective que... (more/less + adjective than...); tan + adjective como... (as + adjective as...).
- Use **connectives and conjunctions** to make longer sentences. Examples: porque (because); pero (but); sin embargo (however); cuando (when).
- Use a range of **negatives**. Examples: No como carne (I don't eat meat); Ya no como chocolate (I no longer eat chocolate); Nunca bebo coca cola (I never drink coke).
- Use the **perfect tense** to describe past events. Examples: fui (I went); comí (I ate); hice (I did); bebí (I drank); trabajé (I worked); ayudé (I helped).
- Use the **future tense** to describe future intentions. Example: voy a comer menos patatas fritas (I'm going to eat less crisps).

Key Vocabulary

Los nombres

el cigarillo	cigarette
el corazón	heart
el cuerpo	body
el dolor	pain, ache
la droga (blanda/dura)	(soft/hard) drug
el ejercicio (físico)	physical exercise
la enfermedad	illness
el entrenamiento	training
el estrés	stress
el fumador (pasivo)	(passive) smoker
el humo	smoke
la necesidad	need
la obra/organización benéfica	charity
el olor	smell
la participación	participation, taking part
la posibilidad	possibility
el propósito	aim, purpose, objective
los pulmones	lungs
la residencia (para ancianos)	old people's home
la salud	health
el sida	AIDS
la tentación	temptation
la tienda con fines benéficos	charity shop
la vida	life
el voluntario	volunteer

Los adjetivos

activo/a	active
borracho/a	drunk
cansado/a	tired
enfermo/a	ill
equilibrado/a	balanced
estresante	stressful
malsano/a	unhealthy
muerto/a	dead
saludable	healthy
sano/a	healthy/wholesome
vivo/a	alive
voluntario/a	voluntary

Los verbos

acostarse	to go to bed
caer(se)	to fall down
cansar(se)	to get tired
contribuir	to contribute
despertarse	to wake up
doler	to hurt
dormir(se)	to sleep/fall asleep
drogarse	to take drugs
emborracharse	to get drunk
encontrarse bien/mal	to feel well/ill
entrenar(se)	to train
estar bien/mal	to be well/ill
estar en forma	to be fit
evitar	to avoid
formar parte	to be part of
fumar	to smoke
levantarse	to get up
mantenerse en forma	to keep fit/in shape
mejorar(se)	to get better
morir	to die
oler	to smell
organizar	to organize
respirar	to breathe
tener dolor (de)...	to have a pain (in)...
tener sueño	to feel sleepy

Social Issues: GCSE Foundation Tier Spanish Knowledge Organiser

Key Phrases

- **Normalmente para el desayuno/el almuerzo/la cena, tomo...**
  For breakfast/lunch/dinner, usually, I have...
- **Es bueno/malo para la salud** - It's good/bad for your health
- **Contiene mucho(s)/mucha(s)/demasiado(s)/demasiada(s)...**
  It contains a lot of/too much...
- **Para mantenerse en forma, hay que hacer/comer/beber/evitar...** To keep fit, you have to do/eat/drink/avoid...
- **Fumar/El alcohol causa...** Tobacco/Alcohol causes...
- **...causa la obesidad/ la pérdida de peso/ el aumento de peso**
  ...causes obesity/weight loss/weight gain
- **Mi tío dejó de fumar hace seis meses**
  My uncle quit smoking six months ago.
- **Hay que hacer ejercicio a menudo para relajarse**
  You must do sports regularly to relax.
- **Hay muchos sin techo en mi ciudad**
  There are many homeless people in my town.
- **Soy miembro de una organización benéfica que se llama...**
  I am a member of a charity called...

Tricky Pronunciation: Practise these with your teacher!

el cigarillo	cigarette
el ejercicio	exercise
mejorar(se)	to get better

False Friends

lento/a	slow

Tricky Spellings

el ejercicio físico	exercise	'f' instead of 'ph' in 'físico'.
emborracharse	to get drunk	Double 'r'.

Key Questions

1. **¿Qué hay que hacer para mantenerse en forma?**
   What do you have to do to stay in shape?
2. **¿Tienes una dieta sana? ¿Por qué (no)?**
   Do you have a healthy diet? Why (not)?
3. **¿Fumas? ¿Por qué (no)?** Do you smoke ? Why (not) ?
4. **¿Cuáles son los peligros de fumar/beber alcohol?**
   What are the dangers of smoking/drinking alcohol?
5. **¿En tu opinión, por qué es importante hacer ejercicio regularmente?**
   In your opinión, why is it important to exercise regularly?
6. **¿Qué opinas de la situación de los sin techo?**
   What do you think about the situation of the homeless?
7. **¿Conoces alguna organización benéfica?**
   Do you know any charities ?

Key Verbs

Infinitivo	Presente	Pretérito	Futuro (Remember, you can also use the near future: Verb IR in the present tense + a + Infinitive)
Ir	voy, va, vamos	fui, fue, fuimos	iré, irá, iremos
Hacer	hago, hace, hacemos	hice, hizo, hicimos	haré, hará, haremos
Tener	tengo, tiene, tenemos	tuve, tuvó, tuvimos	tendré, tendrá, tendremos
Fumar	fumo, fuma, fumamos	fumé, fumó, fumamos	fumaré, fumará, fumaremos
Comer	como, come, comemos	comí, comió, comimos	comeré, comerá, comeremos
Beber	bebo, bebe , bebemos	bebí, bebió, bebimos	beberé, beberá, beberemos
Acostarse	me acuesto, se acuesta, nos acostamos	me acosté, se acostó, nos acostamos	me acostaré, se acostará, nos acostaremos

Jobs, Career Choices and Ambitions: GCSE Foundation Tier French Knowledge Organiser

Key Ideas

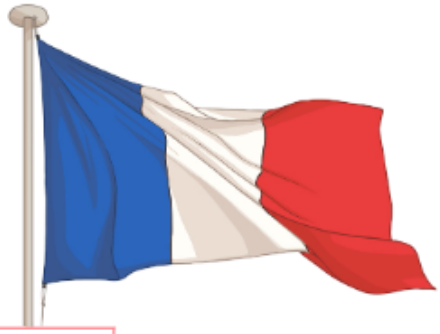
- Ton stage en entreprise
- Ton petit boulot
- Ce que tu vas faire après le collège
- Les emplois de tes parents
- Les emplois qui t'intéressent et pourquoi
- Les emplois qui ne t'intéressent pas et pourquoi
- Ton métier idéal et pourquoi

Key Vocabulary

Les noms	
l'avenir (m)	future
le bureau	office
la carrièr	career
le commerc	business
l'étudiant (m)	male student
l'étudiante (f)	female student
le facteur/la factrice	postman/postwoman
la femme/l'homme (m) au foyer	housewife/househusband
l'instituteur (m)/l'institutrice (f)	primary school teacher
le/la mannequin	model
la mode	fashion
le patron / la patronne	boss
le permis de conduire	driving licence
le stage work	placement
le travail	work
l'usine (f)	factory
le vendeur/la vendeuse	shop assistant

Les verbes	
devenir	to become
gagner	to earn
nettoyer	to clean
quitter	to leave
rêver	to dream
travailler	to work

Les adjectifs	
agréable	pleasant
bien organisé(e)	well-organised
bruyant(e)	noisy
ennuyeux/ennuyeuse	boring
fatigant(e)	tiring
responsable	responsible
utile	useful
varié(e)	varied



Key Phrases	
J'ai décidé que je voudrais être...	I've decided that I would like to be...
Je voudrais devenir/travailler comme...	I'd like to become/to work as...
Je m'entends bien avec...	I get along well with...
Mon père est/Ma mère est...	My dad is/My mum is...
Avant, il/elle rêvait d'être...	Before, he/she used to dream of becoming...
en plein air	in the fresh air
à l'intérieur/à l'extérieur	inside/outside
à l'étranger	abroad
Les heures sont longues	The hours are long
Il est/Elle est au chômage	He/she is unemployed
J'aime soigner les malades	I like to look after patients/ill people
J'aime travailler avec les enfants/les animaux	I like to work with children/animals
Je serais/Le travail serait...	I would be/The work would be...
L'avantage de ce métier, c'est que c'est bien payé	The advantage of this profession is that it is well paid
L'inconvénient de ce métier, c'est que c'est mal payé	The disadvantage of this profession is that it is badly paid

Key Verbs

Infinitif	Présent	Passé	Futur
aller – to go	je vais ; il / elle va ; nous allons	je suis allé(e) ; il est allé; elle est allée ; nous sommes allé(e)s	j'irai; il / elle ira ; nous irons
devenir – to become	je deviens ; il / elle devient ; nous devenons	je suis devenu(e) ; il est devenu ; elle est devenue ; nous sommes devenu(e)s	je deviendrai ; il / elle deviendra ; nous deviendrons
être – to be	je suis ; il / elle est ; nous sommes	j'ai été ; il / elle a été ; nous avons été	je serai ; il / elle sera ; nous serons
faire – to do	je fais ; il / elle fait ; nous faisons	j'ai fait ; il / elle a fait ; nous avons fait	je ferai ; il / elle fera ; nous ferons
travailler – to work	je travaille ; il / elle travaille ; nous travaillons	j'ai travaillé ; il / elle a travaillé ; nous avons travaillé	je travaillerai ; il / elle travaillera ; nous travaillerons

Key Questions	
Tu as fait un stage en entreprise ?	Have you done work experience?
Tu as un petit boulot ?	Do you have a part-time job?
Tu as déjà travaillé ?	Have you already worked?
Décris les emplois de tes parents.	Describe your parents' jobs.
Quel est ton emploi idéal ?	What is your ideal job?
Tu voudrais travailler à l'étranger ?	Would you like to work abroad?
Que voudrais-tu faire à l'avenir ?	Pourquoi ? What would you like to do in the future and why?

False Friends	
la mode	fashion
le stage	work experience
le travail	work
travailler	to work

Tricky Pronunciation	
Practise these with your teacher!	
bruyant(e)	noisy
est/c'est	is/it is
travailler	to work
l'emploi (m)	job
soigner	to look after

Useful Grammatical Structures

- **Personalise** the opinions of other people, e.g. **selon lui/elle** (according to him/her); **il/elle pense que** (he/she thinks that); **à son avis** (in his/her opinion).
- **Omit the article** when saying which job you do, e.g. **mon père est serveur** (my dad is a waiter); **je voudrais devenir actrice** (I would like to become an actress).
- Be clear on the differences between **male and female jobs**, e.g. **acteur/actrice** ; **musician/musicienne** ; **boucher/bouchère** ; **coiffeur/coiffeuse**.
- Use **the future tense** to express future plans. Use the immediate future (aller + infinitive), e.g. **je vais jouer**, **il va jouer**, **elle va jouer**, **nous allons jouer**, **ils/elles vont jouer** ; or form the future tense by using the infinitive of the verb plus the following endings: je jouer**ai**, il jouer**a**, elle jouer**a**, nous jouer**ons**, ils/elles jouer**ont**.
- Use **comparatives**, e.g. **plus que** (more than); **moins que** (less than); **aussi ... que** (as ... as).

Key Phrases		
à l'étranger	abroad	Check the accents/apostrophes.
déjà	already	Check the accents.
les emplois (m)	jobs	Check the word doesn't become anglicised.
je deviendrai	I will become	Check the vowels.
il/elle rêvait d'être	he/she used to dream of being	Check the accents/apostrophes.

Social Issues GCSE Foundation Tier French Knowledge Organiser

Key Ideas

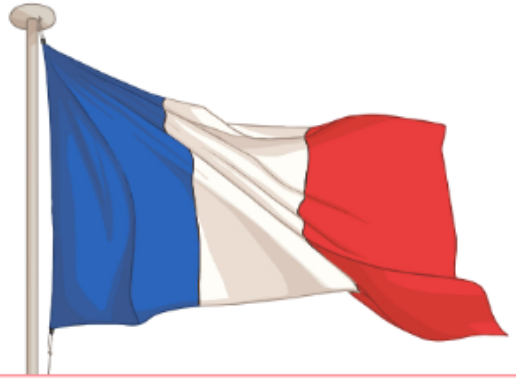
- Description d'une alimentation saine/malsaine
- Les dangers de la cigarette/de l'alcool
- L'importance du sport pour la santé
- Les sans-abris dans ta ville
- Une association caritative que tu connais

Les noms	
l'alcool (m)	alcohol
l'alimentation (f)	food
l'association caritative (f)	charity
le bonheur	happiness
la drogue	drugs
l'égalité	equality
la forme	fitness
la maladie	illness
les matières grasses (f)	fats
l'obésité (f)	obesity
l'odeur (f)	smell
le repas	meal
la santé	health
les sans-abris (m)	homeless people
le sommeil	sleep
le tabac	tobacco
le travail bénévole	voluntary work

Key Vocabulary

Les adjectifs	
équilibré(e)	balanced
fatigué(e)	tired
gras(se)	fatty
malade	ill
malsain(e)	unhealthy
sain(e)	healthy
sucré(e)	sugary
varié(e)	varied

Les verbes	
(s)arrêter	to stop
combattre	to combat
se détendre	to relax
dormir	to sleep
se droguer	to take drugs
éviter	to avoid
faire un régime	to be on a diet
fumer	to smoke
rester	to stay
se sentir	to feel
tuer	to kill



Key Phrases	
Pour le petit-déjeuner/le déjeuner/le dîner, d'habitude, je prends...	For breakfast/lunch/dinner, I usually have...
C'est bon/mauvais pour la santé	It's good/bad for your health
Ça contient beaucoup/trop de...	It contains a lot of/too much...
Pour garder la forme, il faut faire/manger/boire/éviter...	To keep fit, you have to do/eat/drink/avoid...
Le tabac/L'alcool cause...	Tobacco/Alcohol causes...
Il provoque l'obésité/une perte de poids/un gain de poids	It causes obesity/weight loss/weight gain
Mon oncle a arrêté de fumer il y a six mois	My uncle quit smoking six months ago
Il faut faire du sport régulièrement pour se détendre	You must play sport regularly to relax
Il y a beaucoup de sans-abris dans ma ville	There are many homeless people in my town
Je suis membre d'une association caritative qui s'appelle...	I am a member of a charity called...

Key Verbs

Infinitif	Présent	Passé	Futur
faire – to do	je fais; il/elle fait; nous faisons	j'ai fait; il/elle a fait; nous avons fait	je ferai; il/elle fera; nous ferons
être – to be	je suis; il/elle est; nous sommes	j'ai été; il/elle a été; nous avons été	je serai; il/elle sera; nous serons
avoir – to have	j'ai; il/elle a; nous avons	j'ai eu; il/elle a eu; nous avons eu	j'aurai; il/elle aura; nous aurons
manger – to eat	je mange; il/elle mange; nous mangeons	j'ai mangé; il/elle a mangé; nous avons mangé	je mangerai; il/elle mangera; nous mangerons
aller – to go	je vais; il/elle va; nous allons	je suis allé(e); il/elle est allé(e); nous sommes allé(e)(s)	j'irai; il/elle ira; nous irons
fumer – to smoke	je fume; il/elle fume; nous fumons	j'ai fumé; il a fumé; elle a fumé; nous avons fumé	je fumerai; il/elle fumera; nous fumerons
dormir – to sleep	je dors; il/elle dort; nous dormons	j'ai dormi; il a dormi; elle a dormi; nous avons dormi	je dormirai; il/elle dormira; nous dormirons

Key Questions
Que faut-il faire pour garder la forme ?
As-tu une alimentation saine ? Pourquoi (pas) ?
Est-ce que tu fumes ? Pourquoi (pas) ?
Quels sont les dangers de la cigarette/de l'alcool ?
Selon toi, pourquoi est-ce que c'est important de faire du sport ?
Que penses-tu de la situation des sans-abris ?
Est-ce que tu connais des associations caritatives ?

False Friends	
la fumée	smoke
le médecin	doctor
le travail	work
garder	to keep
rester	to stay

Tricky Pronunciation	
Practise these with your teacher!	
l'alcool	alcohol
l'alimentation	food
l'association caritative	charity
le sommeil	sleep
le tabac	tobacco
le travail bénévole	voluntary work
équilibré(e)	balanced
fumer	to smoke
trop	too (much/many)

Useful Grammatical Structures

- Use **modifiers** to modify an adjective.
  Examples include: assez **(quite)**; plutôt **(rather)**; un peu **(a bit)**.
- Use **intensifiers** to intensify an adjective.
  Examples include: vraiment **(really)**; très **(very)**; particulièrement **(particularly)**; totalement **(totally)**; complètement **(completely)**; si **(so)**.
- Use **comparatives** to compare two or more items.
  Examples include: plus/moins/aussi sain que... **(more/less/as healthy as...)**
- Use **connectives and conjunctions** to make longer sentences.
  Examples include: parce que **(because)**; car **(as/because)**; mais **(but)**; cependant **(however)**; quand **(when)**.
- Use a range of **negatives**.
  Examples: je ne mange pas de viande **(I don't eat meat)**; je ne mange plus de chocolat **(I no longer eat chocolate)**; je ne bois jamais de coca **(I never drink coke)**.
- Use the **perfect tense with avoir or être** to describe past events.
  Examples include: je suis allé(e) **(I went)**; j'ai mangé **(I ate)**; j'ai fait **(I did)**; j'ai travaillé **(I worked)**; j'ai bu **(I drank)**; j'ai aidé **(I helped)**.
- Use the **future tense** to describe future intentions.
  Examples include: je mangerai moins de chocolat **(I will eat less chocolate)**.

Tricky Spellings		
l'alcool	alcohol	No 'h'
équilibré(e)	balanced	Check the accents
nous mangeons	we eat	Remember to add 'e' before the ending

Unit of work 3: Berufswahl

3.1 Berufswahl

das Abi(Abitur)	A-level equivalent
die Armut	poverty
der Berufsberater(-)	careers adviser (m)
die Berufsberaterin (-nen)	careers adviser (f)
bestimmt	definitely
besuchen	visit
ein bisschen	a little, a bit
das Büro(-s)	office
(sich) entscheiden	to decide
ganz	quite, whole, complete
meinen	to think, to have an opinión
die Note(-n)	grade, mark
schaffen	to manage, to cope, to créate
schwierig	difficult
verdienen	to earn
der Verkäufer(-)	shop assistant (m)
die Verkäuferin(-nen)	shop assistant (f)
verlassen	to leave
der Vorteil(-e)	advantage
wählen	to choose
ein Wenig	a Little
ziemlich	fairly
zu	to, too
die Zukunft	the future

3.2 Welcher Beruf oder welches Studium?

das Alter	age
aufstehen	to stand up, to get up
die Ausbildung(-en)	(job) training, education
das Ausland	abroad
der Azubi(-s)/	
die (Ausbildende)	apprentice, trainee
der Bauarbeiter(-)	construction worker (m)
die Bauarbeiterin(-nen)	construction worker (f)
der Beruf(-e)	job, profesión
die Berufsschule(-n)	vocational training school
die Bewerbung(-en)	application
der Führerschein(-e)	driving licence
die Ganztagsschule(-n)	school that lasts all day
gehören (zu)	to belong to
der Grund(ünde)	reason
der LKW-Fahrer(-)	lorry driver (m)
die LKW-Fahrerin(-nen)	lorry driver (f)
der Mindestlohn(-öhne)	minimum wage
pünktlich	punctual
der Studientplatz(-ätze)	university place
das Studium (Studien)	studies
zufällig	by chance

3.3 Was möchtest du werden?

deprimiert	depressed
eigen	own
gefallen	to like, to pleas
genießen	to enjoy
der Koch(öche)	cook (m)
die Köchin(-nen)	cook (f)
sich langweilen	to be bored
der Metzger(-)	butcher (m)
die Metzgerin(-nen)	butcher (f)
selbstständig	self-employed, independent
zufrieden	content, happy

3.4 Welchen Beruf willst du machen?

funktionieren	to work, to function
hochladen	to upload
im Freien	outside, in the open air
der Kassierer(-)	cashier, bank clerk(m)
die Kassiererin(-nen)	cashier, bank clerk(f)
der Klempner(-)	plumber (m)
die Klempnerin(-nen)	plumber (f)
der Koch(öche)	cook (m)
die Kochin(-nen)	cook (f)
die Nachricht(-en)	news, message
der Schauspieler(-)	actor

3.1H Universität oder gleich Karriere?

die Arbeitserfahrung.	work experience
bedienen.	to serve
behandeln	to treat/handle
Berufsberater.	careers advisor
der Buchhandlung.	bookshop

3.4 H Mein idealer Job

das Arbeitspratikum.	work experience
die Atempause	pause for breath
eröffnet	opened
der Gärtner	gardener
die Gelegenheit	opportunity

3.1H Universität oder gleich Karriere? contd…

der Büroangestellte.	office worker
eher	rather
entscheiden	to decide
auf keinen Fall	no chance/not at all
herstellen	to make/produce
die Karriere	career
lehren	to teach
der Mechaniker	mechanic
der Pfleger	care worker
die Stelle	job
unbedingt	definitely
der Verkäufer	shop assistant
zustellen	to deliver

3.4 H Mein idealer Job contd…

der Ingenieur	engineer
lächerlich	ridiculous ,laughable
der Lohn	wage
mies	rotten, lousy
der Radiomoderator.	radio presenter
der Traumjob	dream job
unglaublich	unbelievable
die Unterstützung.	support/help

Future Tense

	werden	TMP	infinitive
Ich - I	werde	Time Manner Place	-en infinitive verb at the end
Du - you	wirst		
Er/sie – he/she	wird		
wir - we	werden		
Sie - they	werden		

Unit of Work 3 Sentence Starters

Ich möchte (+Beruf) werden	*I would like to be + job*
Ich muss gute Noten in… haben	I must have good grades in…
Man muss… + infinitive Man muss nicht … + infinitive	*You must + verb* *You must not + verb*
Ich will/möchte gute Noten in… bekommen	*I want/ would like good marks in…*
Ich möchte auf die Uni gehen/ich werde einen guten Job bekommen/eine Lehrer machen	*I would like to go to uni/ I will get a job/ I will do an apprenticeship.*

Unit of work 4: Healthy living

Year 10 German Knowledge Organiser: Half-Term 1

4.1 Ich will in Form sein

der Alkohol	*alcohol*
die Chips	*crisps*
die Droge	*drugs*
elektronisch	*electronic*
in Form sein	*to be fit*
das Gemüse	*vegetables*
gesund	healthy
die Gesundheit	health
krank	ill
der Kuchen	cake
das Medikament	medicine
nehmen	to take
das Obst	fruit
rauchen	to smoke
sagen	to say
schmecken	to taste
süchtig	addictive/addicted
die Zigarette	cigarette

4.2 Damals war ich fit

abnehmen	to lose weight
aufgeben	to give up
aufhören	to stop
außerdem	furthermore
daher	that is why
damals	back then
deshalb	therefore
deswegen	therefore
die Diät	diet
dick	fat
enthalten	to contain
die Faulheit	laziness
fettleibig	obese
heutzutage	nowadays
die Kalorie	calories
konsumieren	consume
Krankenhaus	hospital
der Krebs	cancer
der Lebensstil	lifestyle
die Leber	liver
leider	unfortunately
Mannschaft	team
die Sache	thing/stuff
schädlich	harmful
sparen	to save
sterben	to die
der Stubenhocker	couch potato
der Tabak	tobacco
verbessern	to improve
weder…noch	neither…nor

Higher Level Vocabulary

4.2H Lebst du gesund oder ungesund?

abhängig sein von.	to be dependant
anbieten	to offer
anstatt	instead of
ausreichend	sufficient(ly)
betrunken	drunk
die Bewegung	movement
bewusstlos	unconscious
brechen	to be sick
darüber hinaus	furthermore
die Drogenberatungsstelle	advice centre
die Entziehungskur	rehab
sich erbrechen	to be sick
erleiden	to suffer
die Ernährung	nourishment
der Erwachsene	adult
fettleibig	obese
die Feuerwehr	fire service
der Führerschein	driving licence
das Gehirn	brain
der Magen	stomach
magersüchtig	anorexic
der Rettungsdienst	emergency service
riechen nach	to smell of
schaden	to damage
…schmerzen haben	to have …ache
sonst	otherwise
die Sucht	addiction
die Überdosis	overdose

4.2H Lebst du gesund oder ungesund contd.

der Vegetarier	vegetarian (n)
vegetarisch	vegetarian (adj)
zur Verfügung stehen	to be available
der Verkehrsunfall	traffic accident
die Verletzung	injury
verschwenden	to waste
zunehmen	to put on weight

UNIT OF WORK 4: SENTENCE STARTERS	
ich bin abhängig von Zigaretten	I am addicted to cigarettes.
Ich habe viel zugenommen	I have put on a lot of weight.
damals habe ich viel Obst gegessen	back then, I used to eat a lot of fruit.
Ich esse zu viel Kuchen und das ist ungesund	I eat too much cake and that's unhealthy.
Ich habe Bauchschmerzen	I have stomach ache.
Das ist schädlich für die Gesundheit	That is harmful for your health.
als ich jünger war habe ich viel Wasser getrunken	When I was younger, I used to drink a lot of water.
Ich war im Krankenhaus als ich sehr jung war	I was in hospital when I was really young.
Was machst du, um fit zu bleiben?	What do you do, in order to stay fit?
Um fit zu bleiben, spiele ich Tennis	In order to stay fit, I play tennis.