

ESSENTIAL KNOWLEDGE BOOK

Name:

Form:

Year 9 Booklet One

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P- Write in pen- black ink, in legible handwriting.

R- Use a ruler to draw all straight lines and rule off finished work.

O- Oops! Draw a neat line through mistakes with a ruler.

U- Underline the title and full date.

D- Draw in pencil.

BE P.R.O.U.D OF YOUR WORK!

SPaG for Life

1	Use capital letters correctly; at the start of sentences and for proper nouns.
2	Use punctuation accurately. For example: full stops, question marks and exclamation marks.
3	Spell common words correctly.
4	Use homophones correctly. For example: there/their/they're.
5	Use paragraphs to structure your writing.



My Timetable

Username/Password Information

Platform	Username	Password Reminder
School email		
School PC logon		
Class Charts		
GCSE Pod		
Carousel		
Sparx		
Educake		
Isaac Physics		

Todmorden High School learning DNA



Silent retrieval

You enter lessons in silence and complete a retrieval activity independently, using your knowledge organiser. You put all your equipment on your desk.



Ambitious content

You work through an ambitious and broad curriculum across all of your subjects. You have high expectations of yourself and you do your best in lessons. Teachers direct your activities and outline whether tasks are collaborative and with discussion or silent independent work.



Assessment and Feedback

Your understanding is checked and teachers' planning is based on assessment of your work. Teachers regularly look at your work. All assessments are carefully planned to support your progress.



SkilFul questioning

Teachers use "no hands" strategies to check your understanding and learning. You answer questions to the best of your ability so that teachers have an accurate picture of your understanding.



Oracy and literacy

Your oral responses use formal vocabulary and ambitious academic language. Teachers will do this too. You project your voice so all can hear you. You have high standards of written English, you use SPaG for Life codes to identify errors and proof read your work. You are polite and respectful to staff who are here to help you make progress.



Self-regulated ARCH learners

You watch demonstrations from teachers so you have a clear understanding of what is being taught. Over time you effectively **plan, monitor and evaluate** your work. You understand thinking involves effort. You value and use the feedback teachers give you. You complete home learning because it is a key tool used to support long-term learning.



Responsive teaching

You are honest when answering questions so that teachers can adapt their teaching to help you understand or be more ambitious. You sit in seating plans specifically designed by your teachers to support your learning.



ARCH learners and ARCH teachers

In order to promote our core values of ARCH, your actions and words match the values of Ambition, Respect, Care and Honesty. This will support you to unlock your unique potential.



Orderly dismissal

You stand silently behind your desks and, when dismissed, leave in an orderly fashion. Corridors are calm.



ATL score	Criteria	ATL score	Criteria
1	Attitude to learning is exemplary because: - You have very high expectations of yourself and do your best in lessons. - Your oral responses use formal vocabulary and ambitious academic language. - You make every effort to achieve the highest standard of written English by using the SPaG for Life codes to identify errors and proof read your work. - Over time you effectively plan, monitor and evaluate your work. You understand thinking involves effort. - You value and use the feedback teachers give you. - You complete home learning because it is a key tool used to support long-term learning. You use the ARCH values to support your learning.	2	Attitude to learning meets expectations most of the time: - You have high expectations of yourself and do your best in lessons. - Your oral responses use formal vocabulary and ambitious academic language. - You make every effort to have high standards of written English by using the SPaG for Life codes to identify errors and proof read your work. - Over time you effectively plan, monitor and evaluate your work. You understand thinking involves effort. - You value and use the feedback teachers give you. - You complete home learning because it is a key tool used to support long-term learning. Where a teacher needs to discuss one of the above you make changes quickly and supportively.
ATL score	Criteria	ATL score	Criteria
3	Attitude to learning is below expectations: - Your expectations of yourself are not yet high enough and you do not always try your best in lessons. - You may not be silent in retrieval or you avoid thinking to answer questions, often waiting to be given answers. - Your oral responses need to be more developed and need to use subject language when answering questions. - Your standards of written English or presentation need to be improved, in particular using SPaG for Life codes to identify errors and proof read your work. - Thinking involves effort and you need to be more willing to try before asking for help or giving up. - You need to use the feedback teachers give you to help you improve your work. - You do not complete your home learning often enough. Sometimes when a teacher needs to discuss one of the above you do not respond, or you argue with them. Your teacher regularly puts negatives on Class Charts.	4	Attitude to learning is below expectations: - Your expectations of yourself are not yet high enough and you do not always try your best in lessons. - You often miss silent retrieval due to being late to lesson or you avoid completing it. - You are not ready to learn and are often missing key equipment for this subject. - Your oral responses need to be longer, and you need to be more willing to answer questions. - You need to complete more work in lesson and focus on working to a higher standard. - Thinking involves effort and you need to be more resilient, being willing to try before asking for help or giving up. - You need to use the feedback teachers give you to help you improve your work. - You need to complete your home learning for this subject. Sometimes when a teacher needs to discuss one of the above, you do not respond, or you argue with them. Your teacher regularly puts negatives on Class Charts, and you are sometimes removed from lessons in this subject.

Attitude to Learning

Attendance and Punctuality 2024-25							
Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15	Week 16
Week 17	Week 18	Week 19	Week 20	Week 21	Week 22	Week 23	Week 24
Week 25	Week 26	Week 27	Week 28	Week 29	Week 30	Week 31	Week 32
Week 33	Week 34	Week 35	Week 36	Week 37	Week 38	Week 39	My Target

British Values	
Democracy Democracy is the foundation of the UK's political system. This British value is based on the idea that everyone should have an equal say in how their country is run, and that the government should be accountable to the people. All things voting, elections and referendums come in to play here. 	The Rule of Law Respect for the rule of law means that everyone in society is treated equally and fairly, and that everyone follows the same rules and laws. This value promotes a sense of order and stability in society and helps to prevent crime and other harmful behaviours. The UK justice system is a large part of this, including laws, police officers and courts. 
Individual Liberty Individual liberty allows people to pursue their own goals and interests, providing they do not harm others. This British value is based on the idea that people should be free to make their own decisions and choices within the bounds of the law, of course. 	Mutual Respect and Tolerance The fourth British Value, which is often split into two: (1) Mutual respect and (2) tolerance of different faiths and beliefs. They both promote understanding and acceptance of people from different backgrounds and with different beliefs and help to create a more inclusive and diverse society. 

Consonant sounds

f	l	m	n	r	s	v	z	sh	th	ng
ff	ll	mm	nn	rr	ss	ve	zz	ti		nk
ph	le	mb	kn	wr	se		s	ci		
					c		se			
					ce					

b	c	d	g	h	j	p	qu	t	w	x	y	ch
bb	k	dd	gg		g	pp		tt	wh			tch
	ck				ge							
	ch				dge							

Vowel sounds

a	e	i	o	u	ay	ee	igh	ow
	ea				a-e	e-e	i-e	o-e
						y	ie	oa
						ea	i	o
						e	y	

oo	oo	ar	or	air	ir	ou	oy	ire	ear	ure
u-e			oor	are	ur	ow	oi			
ue			ore		er					
ew			aw							
			au							

A guide to your Knowledge Organiser

What is a knowledge organiser?

A knowledge organiser is a place where your teachers have put all the **core knowledge** that you need to know for a particular topic. They are designed to support you to become self-regulated learners.

It is your first point of reference in lessons to check your understanding. You can use your knowledge organiser to:

- Check your understanding of key vocabulary in a lesson.
- Check your knowledge of a particular topic.
- Self-check quizzing and revision.

A knowledge organiser is **not** everything you are going to learn about a topic; this information will come from your lessons.

How to use your knowledge organiser

In lesson



Unless told otherwise, have your knowledge organiser on the desk, open at the subject you are currently in. This will make it simpler for you to check your understanding of key vocabulary.

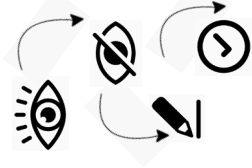


If you are struggling with a knowledge question, refer to your knowledge organiser before asking your teacher. This will also develop your research skills.



When planning your written answers in lessons, refer to your knowledge organiser for that subject to ensure you have correct and detailed knowledge.

As revision



Look-Cover-Write-Check

1. Choose one section of your knowledge organiser.
2. Study it carefully. I find that reading it out works to embed it into memory.
3. Cover the section with a paper, or turn the KO over.
4. Write the sentence/information out from memory.
5. Check it against your KO.

Timeline/diagrams

Use the information from your knowledge organiser and transform it into something else. This can be a timeline, storyboard or diagram.



Self-quizzing

Choose a section of the knowledge organiser you want to learn.

Create a set of questions to test yourself with. These can be on flashcards, or even Quizlet. Use the sections of your KO to chunk the knowledge together and make it manageable.



Context:

- **Jew:** a person whose religion is **Judaism**. Also, a person who traces their origins back to the ancient Hebrew people of Israel, the **Israelites**.
- **The Holocaust:** the most infamous (well known) genocide in history. A **genocide** is a mass murder. It almost wiped out the population of Jews in Europe and also affected other groups of people (disabled people, intellectuals, homosexuals, and more).
- **The Nazi Party:** Political party led by Hitler. Ruled Germany from 1933 – 45.
- **Anti-Semitism:** being **prejudiced** (having negative thoughts about being unfair to) Jews. The Nazi Party started making anti-Semitic laws that robbed Jewish people of basic rights. They took away their property and made them move to **ghettos** (a place they were forced to live in cramped conditions). (Research **Kristallnacht** and the **Nuremberg Laws** for more information).
- **Concentration camp:** The Nazi Party's anti-Semitic persecution grew worse; concentration camps were hard labour and death camps where Jewish people (and others who displeased the Nazis) were sent.
- **Kindertransport:** a programme which helped children escape persecution in Nazi Germany and other parts of Europe under Nazi control. 10,000 children left their families behind and travelled to Britain.

Judaism:

The Exodus: The Exodus was when the Israelites were freed from slavery (by God) and left Egypt.

Passover: festival in Spring that celebrates and remembers the freeing of the Israelites from Egypt. It lasts for around 7 days.

Seder: a ritual feast held at the beginning of Passover.

Haggadah: the book that is used during the Seder on Passover. The word Haggadah means "telling" it comes from the verse, "And you shall tell to your son on that day." When the Jewish people were freed from slavery, Moses instructed the Jewish people to recount the events of this day to their children, so that the story would be passed on from generation to generation. This ritual forms an important part of Passover.

Historical Information:

The Treaty of Versailles: a peace treaty signed in 1919, ending the state of war between Germany and the Allied Forces

**Universal Themes to look out for when reading this text:**

Displacement: How does the text explore how people react when displaced (removed) from their home/society? Within this theme, explore:

Identity
Family
Memory

Society: How is society presented? Is it a fair society? Within this theme, consider: **Social class**
Survival

Desire: What do characters desire?
Freedom? Safety? Belonging?

Order and disorder: Does the text's structure explore a change from order to disorder or vice versa?

Subject Terminology:

Allusion: is a brief and indirect reference to a person, place, thing or idea of historical, cultural, literary or political significance.

Contrast: highlighting the differences between two people/places/situations.

Connotation: associated meaning of word

Extended metaphor: where a metaphor is referenced more than once in a text.

Didactic: a text which intends to teach a moral message

Symbolism: using an object, character, moment or action to means something more than its literal meaning.

Motif: a recurrent image, object, sound, action, or other figure that has a **symbolic** significance, and contributes toward the development of a theme

Theme: central ideas or concepts that a piece of literature explores

Archetypal characters

Types of characters that appear in literature over time and reflect universal personality traits.

- **Villain or antagonist:** The 'baddy'; makes life difficult for the **protagonist** ('goody')

- **Victim:** a character who is mistreated or disadvantaged, often evoking sympathy.

Key Tier 2 Vocabulary

Word	Meaning
Arduous (adj)	Hard work; difficult. The refugees made the arduous journey on foot.
Discrimination (n)	Treating a group of people differently (usually worse), due to their race, religion, gender, or other factors. When Lisa's boss told her that no women could apply for the promotion, she knew he was discriminating (v) against her. He admitted he was guilty of discrimination (n) and apologised. He didn't repeat this discriminatory (adj) behaviour again.
Diverse (adj)	Different and wide-ranging. We try to celebrate diversity (n) by teaching you about texts from a diverse (adj) range of cultures.
Estrangement (n)	A period of time when you're separated or apart from someone. His estrangement (n) from his mother came to an end and he ran to hug her. She received a letter from her estranged (adj) husband and sighed.
Exodus (n)	A mass departure of people. This comes from the story of <u>The Exodus</u> of Israelites from Egypt (see context section). When the school bell rang, the exodus began.
Humanitarian (adj)	Connected to improving people's lives and reducing suffering. Humanitarian volunteers help children when they arrive at the refugee camp.
Generation (n)	All of the people of roughly the same age within a family (or society). Four generations (n) of the family came together to celebrate Passover.
Genocide (n)	The murder of a whole group of people (a whole race, or religious group, or nation, for example). The Holocaust is an example of a genocide (n).
Gratitude (n)	The feeling of being thankful/ grateful (adj). Sara was grateful (adj) for the advice her mother had given her. She showed her gratitude (n) by behaving well for a whole week. She didn't want to be accused of being ungrateful (adj, opposite of grateful)
Migrant (n)	A person who travels to another country to live. Tim migrated (v) to Australia. As a migrant (n), he was only allowed to work in certain jobs.

Word	Meaning
Optimistic (adj)	Positive; always sees the 'glass as half full'. His optimistic (adj) outlook on life was encouraging. His optimism (n) couldn't be quelled. Optimistically (adv), he open the test paper and began. He is an optimist (n).
Persecution (n)	Unfair or cruel treatment over a long period of time because of religion, race or political beliefs. The refugees fled persecution (n). They were sure they would be persecuted (v) if they stayed.
Precarious (adj)	Uncertain, insecure, dangerous. She was in a precarious (adj) position; at any moment she could be found out and asked to leave. She lived precariously, always wondering if she'd be found out.
Refugee (n)	A person who leaves their country to find safety. The refugees walked for miles, looking for refuge (n = a safe place).
Repress (v)	To keep under control; to push painful memories or feelings to the back of your mind. She repressed (v) her memories and refused to even think about them. This repression (n) of feelings only delays the pain.
Retribution (n)	Deserved (therefore just/fair) Punishment. He ran away because he feared retribution for his crime.
Sacrifice (n/v)	Giving something valuable up to help someone else. Eva's mother made a huge sacrifice (n) when she sent Eva away. She sacrificed (v) her chance of a close relationship with her daughter in order to keep her safe.
Simultaneous (adj)	Happening at the same time. There were several simultaneous (adj) protests happening around the world. The two students answered the teacher's question simultaneously (adv).
Vengeance (n)	Punishment intended to get back at someone for their wrongdoing. He swore vengeance (n) on those who had wronged him. She is a vengeful (adj) person, and never lets anyone get away with crossing her brother.
Vibrant (adj)	Energetic, enthusiastic, exciting. There is a vibrant (adj) art scene in this town. The vibrancy (n) of this character is striking!

n = noun: a person, place, object or idea**v** = verb: an action or state**adj** = adjective: describes a noun**adv** = adverb: describes how an action happens

Debate	Useful Formal Debate Phrases	Speak Up
A structured argument where two sides speak alternately for and against a particular contention.	Opening the debate: <i>Ladies and Gentlemen, welcome to this debate. Welcome from this side of the house... The motion for debate today is: ... defining the motion:</i>	When you take a stand and say what you choose, Without hesitation, or being confused, Not holding a fear of what others may say, But to say what you mean in everyway.
The side which agrees with the title of the debate.	<i>Now we as today's proposition/opposition strongly believe that this is true/not true.</i>	5 It liberates your soul, by setting you free, No longer a prisoner of insecurity, But a teacher to others who sometimes hold back, By seeing in you the strength that they lack, Releases their fears and doubts that they hold, And helps them now see its ok to speak bold, Just do it with dignity, kindness and love, Give all of your fears to our friends up above.
The side which disagrees with the title of the debate.	Presenting the team-line <i>I, as the first speaker, will be talking about ... Our second speaker, ..., will elaborate on the fact that ...</i>	10
When you give a statement or evidence against an argument raised by the other side.	Introducing arguments <i>My first/... argument is: The first/... reason why we're prop/opposing this motion is: There are many examples for this/for ..., for instance. In fact, you can find many examples for this in real life. Just think of... And there are similar cases, such as..., ... So in this simple example we can clearly see the effect of ... Now because of this ..., we have to support this motion.</i>	15
Word for word.		Don't compromise yourself to collude with the rest, Speak truth in your words and remain at your best, If others don't like the control that they lack, Because of your strength to speak truth and talk back.
What you actually say in your speech. This will include facts, opinions, evidence and anecdote.		Let that be their issue, don't lose who you are, Keep making that stand and you're sure to go far. We all have the right to express our beliefs, Our ideas, opinions, happiness and grief.
Being clear in the points you are making. Expressing the complex issues so they make sense and are focused on the argument you are making.	Summarising and ending your speech <i>So ladies and gentlemen, what have I told you today? And for all of these reasons, the motion must stand/fall. And for all these reasons, I beg you to prop/oppose</i>	20
The start of any formal debate title. The title will always take a side so the proposition and opposition know which side they are on.		But we must allow others to do just the same, Respect them and their wishes without drama and pain. So keep trying hard to find that strength deep within, And let old habits go, so new ones can begin.
This house believes ...		

BIDMAS	What we use to do a calculation its called the priority of operations.
Not equal sign	The not equal to sign is an equal sign with a line through it.
Function	A rule that changes an input to an output
Inverse Function	The rule that changes the number back again (reverses the function)
Roots	Square root is the inverse of squaring Cube root is the inverse of cubing.
Decimal places (d.p.)	To round to 1 d.p. look at the 2nd d.p. To round to 2 d.p. look at the 3rd d.p.
Dividing by a decimal	Write as a fraction then multiply both numbers by (10, 100,...) until you have a whole number to divide by.
Converting units	1m=100cm, 1km=1000m etc.....
Significant figures (s.f.)	Digits that carry meaningful contributions To round to 3 s.f. look at the 4 th s.f. etc...
Estimating	Rounding before doing the calculation.
Dealing with a fraction in BIDMAS	For $\frac{\textit{calculation 1}}{\textit{calculation 2}}$ work out (calculation 1)÷(calculation 2) using the priority of operations (BIDMAS).
Prime Number	Prime has only two factors, 1 and itself.
Highest Common Factor	HCF — the largest number that is a factor of both numbers.
Lowest Common Multiple	LCM — the smallest number that is a multiple of both numbers.
Surd	A number that still has a square root in, its an exact value – its not been rounded.
Base number	This is the number that is being multiplied by itself.
Index (Power)	The small number written above the base
Multiplying powers	Add the indices if base numbers the same
Dividing powers	Subtract the indices
Prefix	Some powers of 10 have a prefix – e.g. 1000 is kilo
Prime factor decomposition	All numbers can be written as a product of prime factors.

Place Value – what the digits represent in a number

Decimal places – the digits after the decimal point

Multiplying by 10 – all digits move one place to the left

Dividing by 10 – all digits move one place to the right

Multiplying by 100 – all digits move two places to the left

Dividing by 100 – all digits move two place to the right

Rounding – making the number simpler but keeping it close to what it was.

Eg) 34 + 29, 89 – 23,
82 x 21 and 114 ÷ 6

The 4 Operations – These are +, -, x and ÷. You can answer questions involving **whole** numbers and these four operations.

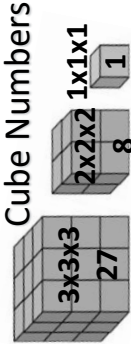
- Even Number – Can be divided exactly by 2. They end in **2, 4, 6, 8, 0**.
- Odd Numbers – Can not be divided exactly by 2. They end in **1, 3, 5, 7, 9**.

- Factors – Numbers that divide into a number exactly.
- Multiples – Extended times tables

Square Numbers – A number has been multiplied by itself.

Cube Numbers – A number has been multiplied by itself three times.

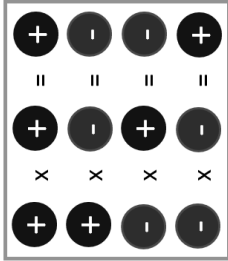
Midpoint – You need to be able to find the midpoint value between two numbers.



Integer – a whole number can be positive or negative ... -4, -3, -2, -1, 0, 1, 2, 3, 4 ...

Negative number: a real **number** that is less than zero.

Negatives: multiplying and dividing:
1. When the signs are different the answer is **negative**.
2. When the signs are the same the answer is positive.



BIDMAS – The order in which we do calculations.
Brackets first then **indices**. **Division and multiplication** same time left to right.
Finally **Addition and subtraction** same time left to right.

Highest Common Factor (HCF): the biggest factor in both lists.

Lowest Common Multiple (LCM): the smallest number in both lists.

Square Numbers – when an integer has been multiplied by itself.

Expand brackets: multiply each term inside the bracket by the term outside.

Simplify algebraic expressions: collect like terms (terms with the same variable)

Factorise: divide each term by the highest common factor, writing the HCF outside the bracket.

Substitution: Swapping an algebraic letter for its value.

Variable	The letters used in algebraic expressions to stand for numbers. Called a variable because they vary.
Multiplying powers	Add the indices if base numbers the same
Dividing powers	Subtract the indices if base numbers the same
Anything to the power zero	Is one
Substitution	Swapping an algebraic letter for its value.
Expanding a Single Bracket	Multiply each term inside the bracket by the term outside.
Factors	Numbers or letters that divide into a term exactly.
Common Factors	A factor of two or more terms.
Identity $\equiv$	Two expressions are equal for all values of the variable.
Not equal $\neq$	Used to show that two expressions are not equal.
Multiply Algebraic Terms	Multiply the numbers first and then the letters.
Divide Algebraic Terms	Divide the numbers first and then the letters.
Simplifying Terms	• Write numbers before letters (for coefficients). • Write letters in alphabetical order. • Write higher power terms first.

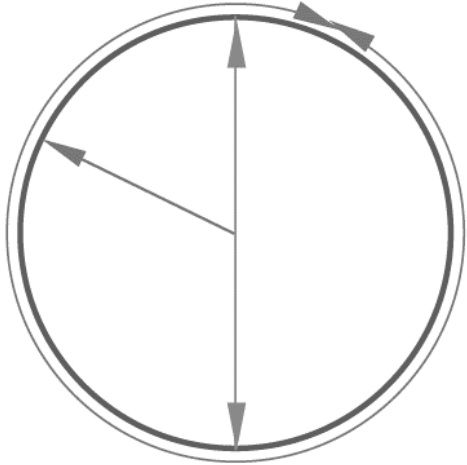
Midpoint of two numbers: add the two values and divide the result by 2.

$$M = \frac{x_1 + x_2}{2}$$



A tally chart should have titles on columns and clearly drawn tallies.

A bar chart should have a title, titles on both axes, equal scale on the y axis and gaps between the bars.



Discrete Data	Only take particular values. You can write groups such as 1-5, 6-10.
Continuous Data	Measured, can have any value. Write inequalities for the groups with no gaps between them.
Data Collection Sheet	A table to record data as you collect it.
Distance Chart	Show the distance between several places.
Line Graph	Useful for identifying trends.
Trend	The general direction of change.
Histogram	Type of frequency diagram used for grouped continuous data. There are no gaps between the bars.
Stem and Leaf Diagram	Numerical data split into “stems” and “leaves”. The numbers are placed in order.
Outlier	A value that does not fit the pattern of the data. You can ignore an outlier if it due to a measuring or recording error.
Back-to-back stem and leaf diagram	Compares two sets of data. Needs to have two keys.
Frequency Polygon	Plot the midpoint against the frequency using straight lines.
Correlation	Shows that there may be a link/relationship between two events. Correlation does not show causation (does not show that one event caused the other).

1000 grams = 1 kilogram

To add or subtract fractions, they must have the same denominators. Use the LCM to find equivalent fractions with the same denominator.

1 million = 1,000,000

To simplify a fraction, divide the numerator and denominator by the greatest common factor.

Percentage of a quantity:
Find 1% by dividing by 100, then multiply by required percentage.
OR Use combinations of 10% (divide by 10) and 1% (divide by 100) to find required amount.

Comparing Fractions	To compare fractions, write them with the same denominator then compare numerators.
Multiply Fractions	Multiply the numerators and multiply the denominators.
Add or Subtract Fractions	Write them with a common denominator then add or subtract the numerators.
Fraction of an Amount	Divide by the denominator, multiply by the numerator.
Unit Fraction	A unit fraction has a numerator of 1.
Reciprocal	The reciprocal of a fraction is the “upside down” fraction.
Decimal to a fraction	The denominator is the smallest place value.
Fraction to a percentage	Convert the fraction to one with the denominator of 100, then the numerator is the percentage.
Deposit	First payment towards the cost of something.
Balance	The remaining amount which is owing after a deposit.
Increase by a percentage	Work out the increase and add to the original number.
Decrease by a percentage	Work out the decrease and subtract from the original number.
VAT (Value Added Tax)	VAT is tax charged at 20% on most goods and services.

Inverse operations are opposite **operations**. They are the **operation** that reverses the effect of another **operation**.

To solve a single step equation, use the inverse operation and a balancing method.

Substitution means putting numbers in place of letters to calculate the value of an expression.

To work out the **term to term rule**, give the starting number of the sequence and then describe the pattern of the numbers.

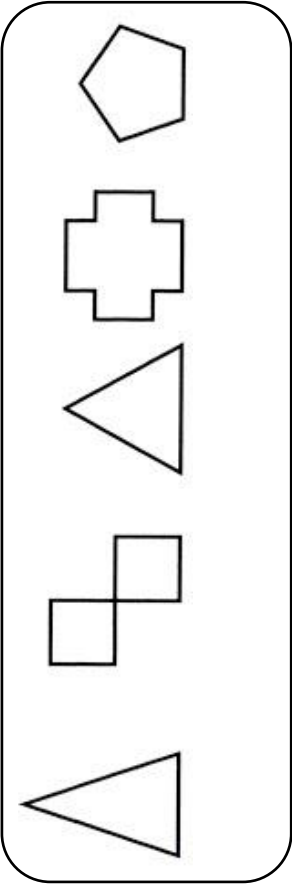
Arithmetic sequences are where terms increase (or decrease) by a fixed number (common difference).

Expand brackets: multiply each term inside the bracket by the term outside.

Simplify algebraic expressions: collect like terms (terms with the same variable).

Subject	^The subject of a formula is the letter on its own on one side of the equals sign.
Equation	Contains an unknown number (a letter) and an = sign.
Solve an equation	Work out the value of the unknown number by using inverse operations.
Solve an inequality	Solve in the same way as a linear equation: use inverse operations to work out the unknown value.
Substitution	Replace values in a formula to solve the resulting equation.
Formula	Shows the relationship between two or more variables (letters).
Sequence	Pattern of numbers or shapes that follows a rule.
Term	The numbers in a sequence.
Term-to-term rule	Describes how to get from one term to the next.
Arithmetic Sequence	Goes up or down in equal steps of a common difference. Term-to-term rule is add or subtract.
Geometric Sequence	The term-to-term rule is multiply or divide by a number.

An object's degree of **rotational symmetry** is the number of distinct orientations in which it looks exactly the same for each **rotation**.



An **Interior Angle** is an angle inside a shape.

The **Exterior Angle** is the angle between any side of a shape, and a line extended from the next side.

Congruent Shapes	Exact same shape and size, but reflected, rotated or translated.
Similar Shapes	Same shape but enlarged (bigger or smaller). Sides are in the same ratios.
Polygon	2-dimensional shape bound by straight sides.
Regular Polygon	All equal side lengths and all equal angles.
Irregular Polygon	Unequal side lengths and unequal angles.
Tessellation	Shapes fitting together. For shapes to tessellate, all angles at the point where the shapes meet must add to 360°.
Angle sum	Sum of the interior angles of a polygon.
Interior Angle	An Interior Angle is an angle inside a shape.
Exterior Angle	The Exterior Angle is the angle between any side of a shape, and a line extended from the next side.
Straight Line	Angles on a straight line add up to 180°.

Angles in a triangle add to 180°.

Angles in a quadrilateral add to 360°.

Midpoint of two numbers: add the two values and divide the result by 2.

$$M = \frac{x_1 + x_2}{2}$$



A tally chart should have titles on columns and clearly drawn tallies.

A **year** – contains 12 months
A **quarter** – refers to a 3 month period.

Increase – the values are going up.
Decrease – the values are going down.
Constant rate – going up or down by the same value each time.

Frequency – The amount of times something occurs

Stem and Leaf Diagram – Splits values by place value. Shows spread. Needs a key.

A bar chart should have a title, titles on both axes, equal scale on the y axis and gaps between the bars.

Mean	Total of the values divided by the number of values.
Frequency	The total number of values.
Median	Middle value when the n data is written in order. When n data values are written in order, the median is (n+1)/2 th value.
Outlier	An extreme value that doesn't fit the overall pattern.
Modal class	Class with the highest frequency.
Mode	Data value with the highest frequency.
Sample	A selection taken from a larger group that will, hopefully, let you find out things about the larger group.
Population	The whole group that is being studied.
Bias	A sample is biased if individuals or groups from the population are not represented in the sample.
Ratings	Number of people who watched a programme.
Appreciation Figure	The percentage of viewers who describe it as “good” or “excellent”.
Range	Shows the spread of the data. The difference between the largest and smallest value.

Maths Year 9 Foundation – Unit 8 – Perimeter, Area and Volume 1

Dimensions	Rectangle: length and width. Cuboid: length, width and height.
Prism	A 3D solid that has the same cross-section all through its length.
Volume	Volume of a 3D solid is the amount of space inside it. Measure in cubic units, mm ³ , cm ³ , m ³ .
Volume of a cuboid	Length x width x height lwh
Volume of a prism	Area of cross-section x length
Surface Area	Surface Area of a 3D solid is the total area of all its faces. Sketch the net and work out all the face.
Capacity	The amount of liquid a 3D object can hold.. It is measure in litres and ml.
Compound Shape	Made up of simple shapes. To find the area, split it into simple shapes like rectangles and triangles, find the areas and add them together.

If a shape has two dimensions, it means there are 2 ways it can be measured in space.

A 3D shape can be defined as a solid figure or an object or shape that has three dimensions – length, width and height. Unlike two-dimensional shapes, 3D shapes have thickness or depth.

Perimeter is the distance around the outside of a shape. **Area** measures the space inside a shape.

A **vertex** is a corner. An **edge** is a line segment between faces. A **face** is a single flat surface.

To convert centimetres to millimetres, multiply by 10 , centimetres x 10 = millimetres.

1 Square centimetre is equal to 100 square millimetres.

To find the **area** of any **trapezium**, add together the parallel sides and multiply by the height. Then halve your answer.

A **power of 10** is any of the integer **powers** of the number **ten**; in other words, **ten** multiplied by itself a certain number of times (when the **power** is a positive integer).

Substitution is the name given to the process of swapping an algebraic letter for its value.

Coordinates are numbers which determine the position of a point or a shape in a particular space (a map or a graph).
Points are marked by how far along they are on the x axis (the horizontal axis) and how far up they are on the y axis (the vertical axis).

A **linear equation** is an equation that describes a straight line on a graph. You can remember this by the "line" part of the name **linear equation**.

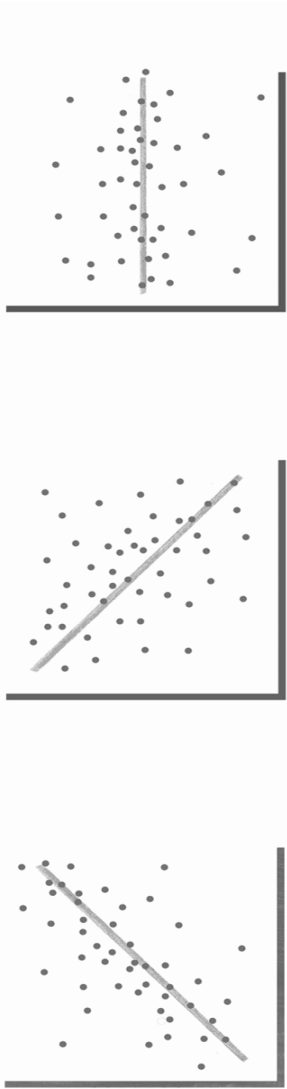
The **gradient** tells us how steep a **line** is, therefore the bigger the **gradient** the steeper the **line** is.

A positive **gradient** is a **straight line** which slopes up to the right.
A negative **gradient** is a **straight line** which slopes down to the right.

Lines are parallel if they are always the same distance apart (called "equidistant").

Distance = speed x time

Correlation is used to **describe** the linear relationship between two continuous variables (e.g., height and weight).



Gradient	The steepness of a graph.
Linear Equation	Produces a straight line graph.
Average Speed	$\frac{\text{distance travelled}}{\text{time taken}}$
Line Segment	Has a start and end point.
Midpoint	Exactly in the middle of a line segment.
Rate of Change	Describes how a quantity changes over time.
Velocity	Speed in a particular direction.
Y-intercept	Where the graph crosses the y-axis.
Parallel Lines	Same distance apart and will never cross each other. They have the same gradient.
Line of best fit	Refers to a line through a scatter plot of data points that best expresses the relationship between those points.
Trend	A pattern in a set of results displayed in a graph.
Correlation	Refers to the degree of correspondence or relationship between two variables.

Maths Year 9 Foundation – Unit 10 – Transformations

There are 4 types of transformations: reflection, rotation, enlargement and translation.

Perpendicular lines cross each other at right angles.

Coordinates can be plotted in all four quadrants.

Rotations require an angle and centre. Aside from 180° (1/2 turn), they should also have a direction – clockwise or anticlockwise.

When completing a reflection, make sure each vertex of the image is the same distance from the mirror line as its corresponding vertex on the object.

You can **simplify** a **fraction** if the numerator (top number) and denominator (bottom number) can both be divided by the same number.

As long as you know that the two shapes are similar, you can use one dimension on both figures to calculate the **scale factor**.

Transformation	A transformation is a way of changing the size or position of a shape.
Enlargement	An increase or decrease in size. Multiply all the side lengths by the same number (scale factor).
Scale Factor	Describes the size of an enlargement or reduction.
Translation	Slide/move – all the points on the shape move the same distance in the same direction.
Column Vector	Used to describe a translation. Gives direction and magnitude.
Congruent	Two figures or objects are congruent if they have the same shape and size, or if one has the same shape and size as the mirror image of the other.
Similar	When two figures are similar, the ratios of the lengths of their corresponding sides are equal.
Object	An original shape.
Image	When the object is transformed, the resulting shape is the image.
Describing an enlargement	State it is an enlargement and give the scale factor and coordinates of the centre of enlargement.
Describing a reflection	State it is a reflection and include the mirror the line. The mirror line may require an equation.
Describing a rotation	State it is a rotation and give the coordinate of the centre of rotation, and the angle and direction.

Maths Year 9 Higher – Unit 1 - Number

Integer – a whole number can be positive or negative

Terminating Decimal – a decimal that ends

Recurring Decimal – the digits after the point continue for ever in some way (sequence or not in a sequence)

Significant figures – the digits that carry meaningful contributions

Decimal places – the digits after the point

Multiplying with Decimal places – ignore the decimal places, do the multiplication then put decimal places back

Dividing with decimal places – write as fraction then multiply top and bottom by 10, 100, 1000 until you get whole numbers – then divide

5 > 3 3 < 5 2.01 < 2.1 etc.....

You can use the > and < signs to show which number is bigger

Factors – Numbers that divide into a number exactly.

Multiples – Extended times tables

..... -4, -3, -2, -1, 0, 1, 2, 3, 4,

0.5, 1.2, 1.245, 1.689

0.333^o3, 0.345[●], π, √2

Decimal places

3.2x2.4 do 32x24=768 put decimals back in 3.2x2.4=7.68

6 ÷ 0.5 = $\frac{6}{0.5} = \frac{60}{5} = 12$

Number of ways of doing two tasks	m ways of doing one task and n ways of doing a second task, the total number of ways of doing the first task then the second task is m x n.
Dealing with a fraction in BIDMAS	For $\frac{\textit{calculation 1}}{\textit{calculation 2}}$ treat as brackets work out (calculation 1) then (calculation 2) using the priority of operations (BIDMAS) before dividing.
Cube Root	Cube root is the inverse of cubing. "What number was multiplied by itself, then again to get this?
Base numbers	This is the number that is too the power
Multiplying powers	Add the indices if base numbers the same
Dividing powers	Subtract the indices if base numbers the same
Power to a power	Multiply the indices
Negative in a power	Means 1 over
Anything to the power zero	Is one
A unit fraction in a power (e.g. ½)	Means a root. A ½ means the square root, 1/3 means the cube root etc...
A fraction in the power (e.g. 2/3)	Use the denominator for the root, and then the numerator is a power. E.g. for 2/3 do the cube root and then square it.
Prefix	Some powers of 10 have a prefix – e.g. 1000 is kilo
Standard form	Used to write big numbers quickly or small numbers quickly.
Not equal sign	The not equal to sign is an equal sign with a line through it.
Surd	A number written as a root.
Rational number	It can be written as a fraction
Rationalising the denominator	Multiply by the denominator over the denominator (in other words by 1)

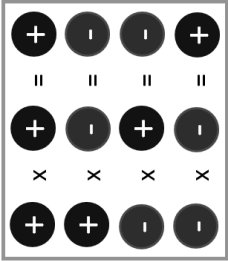
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Integer – a whole number can be positive or negative

... -4, -3, -2, -1, 0, 1, 2, 3, 4 ...

Negative number: a real **number** that is less than zero.

Negatives: multiplying and dividing:
1. When the signs are different the answer is **negative**.
2. When the signs are the same the answer is positive.



BIDMAS – The order in which we do calculations.
Brackets first then **indices**. **Division and multiplication** same time left to right. Finally **Addition and subtraction** same time left to right.

Square root – Finding a number that times itself to given that number. You can have positive and negative square roots.

To simplify a fraction, divide the top and bottom by the highest common factor.

The nth term of an arithmetic sequence is common difference x n + zero term.

Expand brackets: multiply each term inside the bracket by the term outside.

Factorise: divide each term by the highest common factor, writing the HCF outside the bracket.

Order of Operations	BIDMAS – The order in which we do calculations. Brackets first then indices. Division and multiplication same time left to right. Finally Addition and subtraction same time left to right.
Base numbers	This is the number that is too the power
Multiplying powers	Add the indices if base numbers the same
Dividing powers	Subtract the indices if base numbers the same
Negative in a power	Means 1 over
Anything to the power zero	Is one
A unit fraction in a power (e.g. ½)	Means a root. A ½ means the square root, 1/3 means the cube root etc...
A fraction in the power (e.g. 2/3)	Use the denominator for the root, and then the numerator is a power. E.g. for 2/3 do the cube root and then square it.
Expanding double brackets	Multiply each term in the first bracket by each term in the second.
Consecutive Integers	One after the other.
Even Integers	Any even integer is ibn the 2 times table and can be written as 2n.
Substitution	Swapping an algebraic letter for its value.
Standard Form	Used to write big numbers quickly or small numbers quickly.
Linear Sequence	A list of numbers that increases or decreases by the same amount each time.
Geometric Sequence	Terms increase (or decrease) by a constant multiplier.
Arithmetic Sequence	Terms increase (or decrease) by a fixed number (common difference).

Midpoint of two numbers: add the two values and divide the result by 2.

A tally chart should have titles on columns and clearly drawn tallies.

A **year** – contains 12 months
A **quarter** – refers to a 3 month period.

Increase – the values are going up.
Decrease – the values are going down.
Constant rate – going up or down by the same value each time.



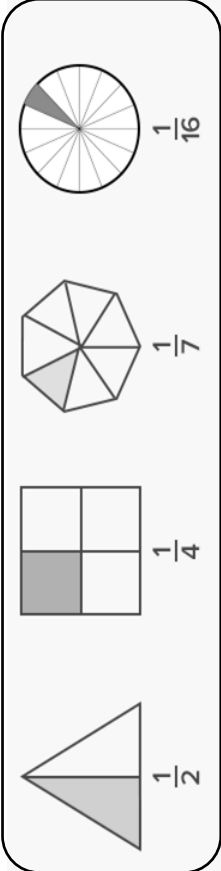
Frequency – The amount of times something occurs

Stem and Leaf Diagram – Splits values by place value. Shows spread. Needs a key.

A bar chart should have a title, titles on both axes, equal scale on the y axis and gaps between the bars.

Mean	Total of the set of values divided by the number of values.
Median	When n data values are written in order, the median is the $\frac{n+1}{2}th$ value.
Line Graphs	Useful for tracking changes over time.
Pie Charts	Useful when comparing parts of a whole.
Bar Charts	Used to compare the frequencies of two sets of data.
Frequency Polygon	You can join the midpoints of the tops of the bars in a frequency diagram with straight lines. OR plot the midpoint for each class against the frequency.
Two Way Table	Divides data into groups in rows across the table and in columns down the table.
Outliers	Individual points which are outside the overall pattern of a scatter graph. If they are likely to be from incorrect readings you can ignore them.
Correlation	A scatter graphs shows a relationship (correlation) between variables.
Positive Correlation	As one value increases, so does the other.
Negative Correlation	As one value increases, the other decreases.
No (or zero) Correlation	No linear relationship between x and y.

A **unit fraction** is a rational number written as a **fraction** where the numerator is one and the denominator is a positive integer.



To get the **reciprocal** of a number, we divide 1 by the number.

The **multiplier** is the **single** decimal value used to multiply the amount you are working with. Firstly, consider what the overall percentage would be after the figure has had its percentage increase or decrease added or subtracted. Then convert this amount to a decimal, before finally multiplying by the number in question.

Ratios can be fully **simplified** just like fractions. To **simplify** a **ratio**, divide all of the numbers in the **ratio** by the highest common factor.

Two **ratios** that have the same value are called **equivalent ratios**. To find an **equivalent ratio**, multiply or divide both quantities by the same number.

Reciprocal	The reciprocal of a number is 1 divided by the number.
Unit Ratios	One part of the ratio is 1. Unit ratios make them easier to compare.
Appreciate	In financial terms means to gain value.
Depreciate	In financial terms means to lose value.
VAT (Value Added Tax)	VAT is tax charged at 20% on most goods and services.
Ratio	A comparison of two or more quantities.
Simplifying Ratios	Divide all of the numbers in the ratio by the highest common factor.
Equivalent Ratios	Multiply or divide both quantities by the same number.
Recurring Decimals	A decimal representation of a number whose digits are periodic (repeating its values at regular intervals).
Direct Proportion	As one amount increases, another amount increases at the same rate.
Inverse Operations	They are the operation that reverses the effect of another operation.
Per Annum	Each year.

Angles in a triangle add to 180°.

Angles in a quadrilateral add to 360°.

An **Interior Angle** is an angle inside a shape.

The **Exterior Angle** is the angle between any side of a shape, and a line extended from the next side.

Sum of Interior Angles	Total sum of angles inside a polygon (n is the number of sides)
Tessellation	Shapes fit together. The angles where the shapes meet must add up to 360°.
Interior Angle	An angle inside a shape.
Exterior Angle	The angle between any side of a shape, and a line extended from the next side.
Pythagoras’ Theorem	Used to find missing lengths in a right-angled triangle. The square of the hypotenuse is equal to the sum of the squares of the other two sides.
Angle of Depression	Angle measured downwards from the horizontal.
Angle of Elevation	Angle measured upwards from the horizontal.
Hypotenuse	The side opposite the right angle.
Opposite	The side opposite the angle θ .
Adjacent	The side next to the angle θ .
Sine	Ratio of the opposite side to the hypotenuse.
Cosine	Ratio of the adjacent side to the hypotenuse.
Tangent	Ratio of the opposite side to the adjacent side.
Sin^{-1}	Inverse sine function, used to find missing angles.
Cos^{-1}	Inverse cosine function, used to find missing angles.
Tan^{-1}	Inverse tangent function, used to find missing angles.

The equation of a straight line is given by $y=mx+c$.
Horizontal lines have the equation $y=$ ____
Vertical lines have the equation $x=$ _____

A quadratic expression is an **expression** that has a variable that's squared and no variables with powers higher than 2 in any of the terms.

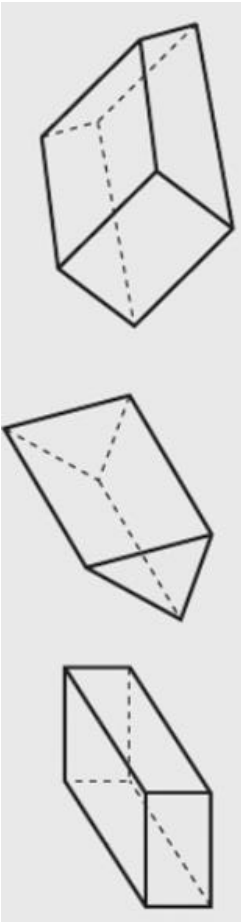
A table of values is used to calculate the y value by substituting the x value into the equation.

Linear Equation	Generates a straight-line (linear) graph. The equation for a straight line graph is written as $y=mx+c$.
Linear Function	Has a graph that is a straight line,
Velocity	Speed in a particular direction.
Velocity-Time Graph	Shows how velocity changes over time.
Line Segment	Section of a line.
Midpoint of a line segment	The point exactly in the middle.
Perpendicular	Lines which cross at 90° The product of the two gradients is -1. When a graph has gradient m, the perpendicular gradient is $-1/m$
Quadratic Equation	Contains a term in x^2 but no higher or negative power of x. The graph is a curve called a parabola.
Quadratic Function	Has a graph which is a parabola.
Minimum / maximum point	A quadratic graph has a point where the graph turns.
Solutions	A quadratic equation can have 0, 1 or 2 solutions. A cubic equation can have 1, 2 or 3 solutions.
Cubic Function	Contains a term in x^3 but no higher power of x. It can also have terms in x^2 and x, and number terms.
Reciprocal Function	In the form k/x (where k is a number). The x and y axes are asymptotes to the curve.
Asymptote	A line that the graph gets very close to but never actually touches.
Equation of a circle	With a centre (0,0)(and radius r, the equation of a circle is $x^2 + y^2 = r^2$

1 Hectare	The area of a square 100m by 100m. 1 ha = 100m x 100m = 10000m ² Areas of land are measured in hectares.
Truncate	To truncate, remove the other digits without rounding.
Error Interval	A measurement could be 10% larger or smaller than the one given.
Dimensions	Length, width, height. Measurements of the object.
Surface area	The total area of all the faces of a 3D solid.
Capacity	The amount of liquid 3D object can hold. Measure in millilitres and litres.
Arc	Part of the circumference of a circle.
Sector	A slice of a circle, between an arc and two radii.
Area conversion	1m = 100 cm 1m x 1m = 1m ² 100cm x 100 cm = 10000cm ² To convert cm ² to m ² , divide by 10000.
Isosceles Trapezium	A trapezium in which the non-parallel sides are equal in measure. The bases are parallel and the non-parallel sides are equal in length.
Spheres	Volume of a sphere = $\frac{4}{3}\pi r^3$

A prism is a 3D solid that has the same cross-section all through its length.

Volume is measured in mm³, cm³ or m³.
Volume of a prism = area of cross-section x length.



The **circumference** of a circle is its perimeter.

Angles around a point add up to 360°.

The net of a cylinder is made up of 2 circles and a rectangle.

Pythagoras’ Theorem:
 $a^2 + b^2 = c^2$ where c is the longest side in a right-angled triangle.

BIDMAS – The order in which we do calculations.
Brackets first then **indices**. **Division and multiplication** same time left to right. Finally **Addition and subtraction** same time left to right.

A **graph quadrant** is one of **four** sections on a Cartesian plane. Each of the **four** sections has a specific combination of negative and positive values for x and y.

An **arc** is any smooth curve joining two points.

Parallel lines are always the same distance apart for their entire length. **Perpendicular lines** cross each other at right angles.

The graph of a relation of the form $x = 5$ is a line parallel to the y -axis because the x value never changes. A line parallel to the y -axis is called a **vertical line**.

In **geometry**, bisection is the division of something into two equal or congruent parts, usually by a line, which is then called a **bisector**.

Isometric drawing is way of presenting designs/**drawings** in three dimensions.

The graph of a relation of the form $y = 5$ is a line parallel to the x -axis because the y value never changes. A line parallel to the x -axis is called a **horizontal line**.

Transformation	Move a shape to a different position.
Enlargement	A transformation where all the side lengths of a shape are multiplied by the same scale factor.
Scale factor	Describes the size of an enlargement or reduction.
Fractional Scale Factor	Multiply all the side lengths by the scale factor.
Locus/Loci	A locus is a set of points that all obey a certain rule. Often a locus is a continuous path.
Centre of Enlargement	The position of the enlarged shape is described by the centre of enlargement.
Reflection	A reflection can be thought of as folding or "flipping" an object over the line of reflection.
Rotation	Rotation turns a shape around a fixed point called the centre of rotation.
Object	An original shape.
Image	When the object is transformed, the resulting shape is the image.
Resultant Vector	The vector that moves the original shape to its final position after a number of translations.
Invariant Point	Invariant point on a line or shape is a point that does not vary/move under a single transformation or combined transformation.
Describing an enlargement	State it is an enlargement and give the scale factor and coordinates of the centre of enlargement.
Describing a reflection	State it is a reflection and include the mirror line. The mirror line may require an equation.
Describing a rotation	State it is a rotation, give the coordinate of the centre of rotation, and the angle and direction.

Solving an equation or inequality	Means find the values for the unknown that fit
Roots of a function	Solution when it is equal to zero.
Quadratic expression	In the form ax^2+bx+c , where a, b and c are numbers.
Quadratic formula	Can be used to find solutions to a quadratic equation $ax^2+bx+c = 0$
Perfect Squares	A number made by squaring a whole number.
Simultaneous Equations	When there are two unknowns, you need two equations to find their values.
Elimination	Solving simultaneous equations – making the coefficients of one variable the same in both equations, and then adding or subtracting to eliminate this variable.
Substitution	Solving simultaneous equations – substituting an expression for x or u from on equation into the other equation.
Surd	When we can't simplify a number to remove a square root (or cube root) then it is a surd.

Factors are numbers that divide exactly into another number.

Inequalities are the relationships between two expressions which are not equal to one another.

When a value is square rooted, the answer can be positive or negative.

Factorising is the reverse of expanding bracket. The first step of factorising an expression is to 'take out' any common factors which the terms have.

Solve a quadratic by factorising:

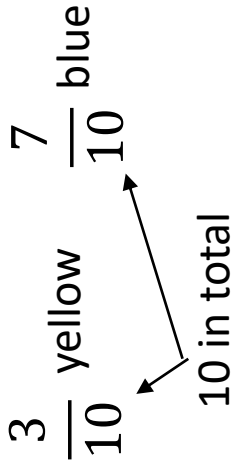
- Step 1:** Rearrange the given quadratic so that it is **equal to zero**
- Step 2:** Factorise the quadratic
- Step 3:** Form two linear equations and solve each.

Substitution is the name given to the process of swapping an algebraic letter for its value.

A bracket squared means the bracket times the bracket, and then expand it as you normally word for two brackets.

A **ratio** says how much of one thing there is compared to another thing.

To write a **ratio** as **fractions**, add the total parts in the **ratio** to find the denominators and write each part of the **ratio** as the individual numerators.



You can simplify a fraction if the numerator (top number) and denominator (bottom number) can both be divided by the same number.

To add fractions there are **Three Simple Steps**: Make sure the bottom numbers (the denominators) are the same. **Add** the top numbers (the numerators), put that answer over the denominator. Simplify the **fraction** (if needed)

Probabilities can be written as fractions, decimals or percentages on a **scale** from 0 to 1.

To **multiply decimals**, first **multiply** as if there is no **decimal**. Next, count the number of digits after the **decimal** in each factor. Finally, put the same number of digits behind the **decimal** in the product.

A **Venn diagram** shows the relationship between a group of different things (a set) in a visual way.

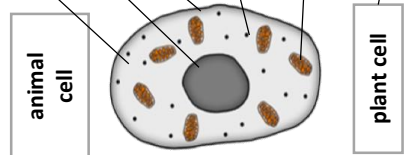
Probability	$\frac{\text{successful outcomes}}{\text{total possible outcomes}}$
Sample Space Diagram	Shows all possible outcomes of two events.
Mutually Exclusive	Two events which cannot happen at the same time.
Experimental Probability	$\frac{\text{frequency of outcome}}{\text{total number of trials}}$
Theoretical Probability	The number of ways the event can occur (favorable outcomes) divided by the number of total outcomes.
Expected Outcomes	Number of trials x probability
Frequency Tree	Shows two or more events and the number of times they occur.
Probability Tree Diagram	Shows two or ore events and their probabilities.
Dependent Events	If one event depends upon the outcome of another.
Conditional Probability	The probability of a dependent even. The probability of the second outcome depends on what has already happened in the first outcome.



Y9 Science – Biology – Topic 1 Key Concepts

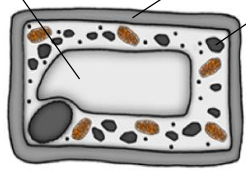
Eukaryotes complex organisms

cytoplasm	<i>Site of chemical reactions in the cell.</i>	Gel-like substance containing enzymes to catalyse the reactions.
nucleus	<i>Contains genetic material.</i>	Controls the activities of the cell and codes for proteins.
cell membrane	<i>Semi-permeable.</i>	Controls the movement of substances in and out of the cell.
ribosome	<i>Site of protein synthesis.</i>	mRNA is translated to an amino acid chain.
mitochondrion	<i>Site of respiration.</i>	Where energy is released for the cell to function.



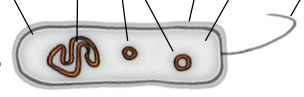
contains all the parts of animal cells plus:

permanent vacuole	Keeps cell turgid, contains sugars and salts in solution.
cell wall	Made of cellulose. Supports and strengthens the cell.
chloroplast	Site of photosynthesis. Contains chlorophyll, absorbs light energy.



Prokaryotes

cell membrane	<i>Semi-permeable.</i>	Controls the movement of substances in and out of the cell.
chromosomal DNA	<i>Not in nucleus. Floats in the cytoplasm.</i>	Controls the function of the cell. Can be found as chromosomal DNA and plasmid DNA (small rings).
cell wall	<i>NOT made of cellulose.</i>	Supports and strengthens the cell.
cytoplasm	<i>Site of chemical reactions in the cell.</i>	Gel-like substance containing enzymes to catalyse the reactions
flagella	<i>Whip-like tail.</i>	Allows the bacterial cell to move.
ribosome	<i>Site of protein synthesis.</i>	mRNA is translated to an amino acid chain.



Enzymes catalyse (increase the rate of) specific reactions.

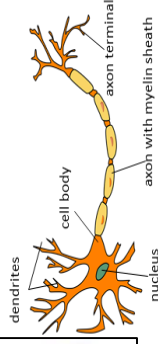
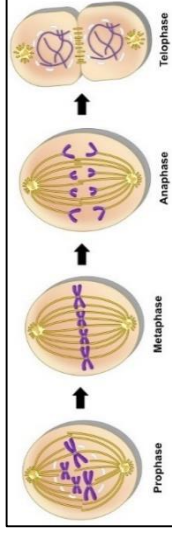
The activity of enzymes is affected by changes in temperature, pH and substrate concentration.

Enzymes activity has an optimum temperature.	Enzyme activity has an optimum pH.	Increasing substrate concentration increases rate (limited by number of active sites).
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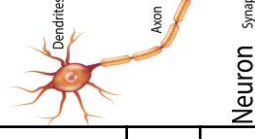


Y9 Science Biology Topic 2 – Cells and Control

Mitosis



Stage 1	Interphase (not part of mitosis)	Before mitosis: Increase the number of sub-cellular structures e.g. ribosomes, mitochondria. DNA replication makes copies of chromosomes.
Stage 2	Prophase	Nucleus breaks down and spindle fibres appear.
Stage 3	Metaphase	Chromosomes are lined up on spindle fibres on the equator (middle) of the cell.
Stage 4	Anaphase	Chromosome copies are separated and pulled to opposite ends of the cell.
Stage 5	Telophase	A new nuclear membrane forms around each set of chromosomes.
Stage 6	Cytokinesis	Cell surface membrane forms to separate the cells (+new cell wall in plants).



Neuron

Key Terms / Words	Definition
asexual reproduction	Producing new organisms from one parent only. These organisms are genetically identical to the parent.
cancer cell	Cell that divides uncontrollably.
cell cycle	A sequence of growth and division that happens in cells. It includes interphase and mitosis and leads to the production of two daughter cells that are genetically identical to the parent cell.
interphase	The stage when the cell prepares itself for the process of cell division, and DNA replication takes place. The cell also makes more of its sub-cellular structures.
mitosis	The process of cells dividing to produce two daughter cells that are genetically identical to the parent cell.
differentiation	When a group of similar things, such as cells, become different in form from each other.
meristem	A small area of undifferentiated cells in a plant, near the shoot tips and root tips, where cells are dividing rapidly by mitosis.
sensory neurone	Neurone that carries impulses from receptor cells, towards the central nervous system.
motor neurone	Neurone that carries impulses to effectors.

Information from receptors passes along cells (neurones) as electrical impulses to the central nervous system (CNS)	
The CNS is the brain and the spinal cord.	
Reflex actions are automatic and rapid.	
Stimulus	Tough hot object
Receptor	Cells in skin
Sensory neurone	CNS
Relay neurone in CNS	CNS
Motor Neurone	CNS
Effector	Muscles connected to arm
Response	Hand moves

1	2	Key										3	4	5	6	7	0	
1	H hydrogen 1											11	12	14	16	19	4 He helium 2	
7	Li lithium 3	9 Be beryllium 4	relative atomic mass atomic symbol name atomic (proton) number										11	12	14	16	19	20 Ne neon 10
23	Na sodium 11	24 Mg magnesium 12											27	28	31	32	35.5	40 Ar argon 18
39	K potassium 19	40 Ca calcium 20	45 Sc scandium 21	48 Ti titanium 22	51 V vanadium 23	52 Cr chromium 24	55 Mn manganese 25	56 Fe iron 26	59 Co cobalt 27	59 Ni nickel 28	63.5 Cu copper 29	65 Zn zinc 30	70 Ga gallium 31	73 Ge germanium 32	75 As arsenic 33	79 Se selenium 34	80 Br bromine 35	84 Kr krypton 36
85	Rb rubidium 37	88 Sr strontium 38	89 Y yttrium 39	91 Zr zirconium 40	93 Nb niobium 41	96 Mo molybdenum 42	[98] Tc technetium 43	101 Ru ruthenium 44	103 Rh rhodium 45	106 Pd palladium 46	108 Ag silver 47	112 Cd cadmium 48	115 In indium 49	119 Sn tin 50	122 Sb antimony 51	128 Te tellurium 52	127 I iodine 53	131 Xe xenon 54
133	Cs caesium 55	137 Ba barium 56	139 La* lanthanum 57	178 Hf hafnium 72	181 Ta tantalum 73	184 W tungsten 74	186 Re rhenium 75	190 Os osmium 76	192 Ir iridium 77	195 Pt platinum 78	197 Au gold 79	201 Hg mercury 80	204 Tl thallium 81	207 Pb lead 82	209 Bi bismuth 83	[209] Po polonium 84	[210] At astatine 85	[222] Rn radon 86
[223] Fr francium 87	[226] Ra radium 88	[227] Ac* actinium 89	[261] Rf rutherfordium 104	[262] Db dubnium 105	[266] Sg seaborgium 106	[264] Bh bohrium 107	[277] Hs hassium 108	[268] Mt meitnerium 109	[271] Ds darmstadtium 110	[272] Rg roentgenium 111	Elements with atomic numbers 112-116 have been reported but not fully authenticated							

The relative atomic masses of copper and chlorine have not been rounded to the nearest whole number.

Y9 Science – Chemistry – Topic 1 – Key concepts in chemistry – Atomic structure and periodic table

Key information	
atom	Made up of a nucleus containing protons and neutrons, surrounded by electrons. They have neutral charge.
nucleus	Very small central region of an atom containing protons and neutrons. Most of the atom's mass is found in the nucleus.
proton	Found in the nucleus. Have a relative charge of +1 and a relative mass of 1. Elements of the same type have the same number of protons in their nuclei.
neutron	Found in the nucleus. Relative charge of 0 and a relative mass of 1.
electron	Found on shells around the nucleus. Have a relative charge of -1 and a relative mass of 1/1835 (negligible)
All atoms have a neutral charge	Atoms contain equal numbers of positively charged protons and negatively charged electrons. This gives them a neutral charge or charge equal to zero.
mass number (A)	Represents the total number of protons and neutrons in the nucleus of an atom (symbol A). Also known as the nucleon number.
atomic number (Z)	Represents the number of protons in the nucleus of an atom (symbol Z). Also known as the proton number. This number is unique to the element e.g. only oxygen atoms have an atomic number of 8.
isotope	Atoms of the same element that have the same numbers of protons but different numbers of neutrons (in their nuclei)
electronic configuration	Refers to the number of electrons found on each electron shell of an atom and is related to the position of atoms in the periodic table.
Relative atomic mass (Ar)	The mean relative mass of the atoms of different isotopes in an element. It is the number of times heavier an atom is than 1/12 of a carbon-12 atom. e.g. relative mass of magnesium atom is 24. This means it is 24 times heavier than 1/12 of a Carbon-12 atom.

Calculating protons, neutrons and electrons in
Protons = atomic number
Electrons = protons
Neutrons = mass number – atomic number

mass number (A)
(protons + neutrons)

23
11

Na

atomic number (Z)
(protons only)

Protons = atomic number = 11
Electrons = protons = 11
Neutrons = mass number – atomic number = 23 – 11 = 12

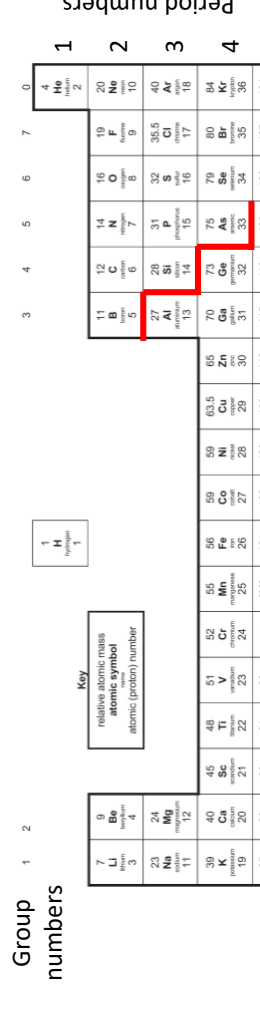
Relative atomic mass
Chlorine appears to have a mass number of 35.5 however, this **does not mean it has half a neutron**. Instead, it represent the mean mass of all the chlorine atoms in the universe. Scientists discovered that 75% of all Cl atoms had a relative ass of 35 and the remaining 25% a relative mass of 37 (the percentage is referred to as the abundance). **The mean mass can be calculated and is referred to as the relative atomic mass**. See the calculation of relative atomic mass to the right →

The periodic table

Series	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
1	H 1							
2	Li 3	Be 4	B 5	C 6	N 7	O 8	F 9	
3	Na 11	Mg 12	Al 13	Si 14	P 15	S 16	Cl 17	Ar 18
4	K 19	Ca 20	Sc 21	Ti 22	V 23	Cr 24	Mn 25	Fe 26 Co 27 Ni 28 Cu 29
5	Rb 37	Sr 38	Y 39	Zr 40	Nb 41	Mo 42	Tc 43	Ru 44 Rh 45 Pd 46 Ag 47
6	Cs 55	Ba 56	La 57	Ce 58	Pr 59	Nd 60	Pm 61	Sm 62 Eu 63 Gd 64 Tb 65 Dy 66 Ho 67 Er 68 Tm 69 Yb 70
7	Fr 87	Ra 88	Ac 89	Th 90	Pa 91	U 92	Np 93	Pu 94 Am 95 Cm 96 Bk 97 Cf 98 Es 99 Fm 100
8								
9								
10								
11	Au 79	Hg 80	Tl 81	Pb 82	Bi 83	Po 84	At 85	
12								

Modern periodic table

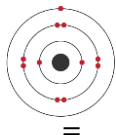
- Elements are arranged in order of increasing atomic number (number of protons), in rows which are called periods.
- Elements with similar properties are found in the same vertical columns which are known as groups.
- The group number tells us the number of electrons in the outer shell of the element e.g. Lithium is in group 1 so it has 1 electron in its outer shell.
- The period number tells us the number of electron shells. occupied e.g. Aluminium is in period 3 so has electrons occupying three electron shells.
- 'steps' - left of steps are metals and to the right of the steps are non-metals



Electron configuration (elements 1-20 ONLY)

The electron arrangement of an atom can be worked out from its atomic number. For example, the atomic number of sodium is 11. Sodium atoms have 11 protons and so 11 electrons.

Shell	Max. number of electrons
First	2
Second	8
Third	8



Relative atomic mass

Chlorine appears to have a mass number of 35.5 however, this **does not mean it has half a neutron**. Instead, it represent the mean mass of all the chlorine atoms in the universe. Scientists discovered that 75% of all Cl atoms had a relative ass of 35 and the remaining 25% a relative mass of 37 (the percentage is referred to as the abundance). **The mean mass can be calculated and is referred to as the relative atomic mass**. See the calculation of relative atomic mass to the right →

So, for chlorine:

$$\text{Relative atomic mass} = \frac{(75 \times 35) + (25 \times 37)}{100} = 35.5$$

$$(\text{abundance of isotope 1} \times \text{mass of isotope 1}) + (\text{abundance of isotope 2} \times \text{mass of isotope 2})$$

Y9 Science – Chemistry – Topic 2 - States of matter and separation

Changes of state (physical changes)

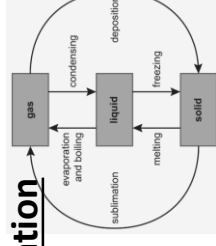
Evaporation, melting and sublimation all require energy to be transferred from the surroundings to the particles.

Condensing, freezing and deposition require energy to be *transferred from the particles to the surroundings*.

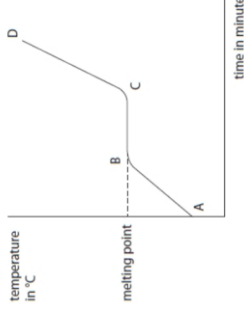
A to B – Solid phase
Particles held in a fixed position, begin to vibrate more as temperature increases.

B to C – Melting point
Energy is used to overcome forces of attraction between particles. Particles become randomly arranged.

C to D – Liquid phase
Particles can move past each other and are moving more rapidly.



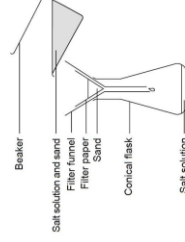
Heating curve



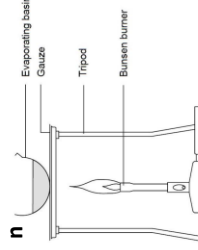
Particle arrangement and movement

State	Particle diagram	Arrangement of particles	Movement of particles
Gas		random far apart	fast in all directions
Liquid		random close together	move around each other
Solid		regular close together	vibrate about fixed positions

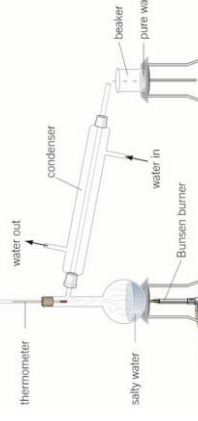
Filtration



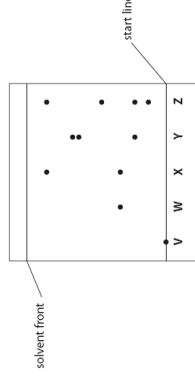
Crystallisation



Simple distillation



Core practical - Chromatography



The chromatography paper is placed in a solvent, the solvent has to be below the start line (drawn in pencil) as the solvent (mobile phase) is absorbed through the paper (stationary phase) the mixture of colour compounds separate at different rates. More soluble substances travel further up the paper.

Drinking water and water treatment

Waste water can be used to produce potable drinking water.

The processes used include:

1. Sedimentation – where impurities settle to the bottom of the container
2. Filtration – to remove insoluble substances
3. Chlorination – Chlorine added to kill microorganism

Key information	
States of matter	Solid, liquid and gases are the three states of matter.
Physical change	A reversible process that does not result in the formation of a new substance e.g. melting
Chemical change	Difficult to reverse (irreversible) result in the formation of new substance e.g. chemical reactions result in chemical changes.
melting point	Temperature at which a substance changes from the solid state to the liquid state when heated; or from the liquid state to the solid state when cooled.
boiling point	Temperature at which a substance changes from the liquid state to the gas state when heated; or from the gas state to the liquid state when cooled.
Solute	Substance dissolved in a solvent to form a solution.
Solvent	Liquid used to dissolve a solute to form a solution.
Solution	Formed when a solute dissolves into a solvent
Soluble	A substance that can dissolve (in a given solvent) e.g. salt in water
Insoluble	A substance that cannot dissolve (in a given solvent) e.g. sand in water
Pure substance	A single element or compound that has a fixed composition.
Mixture	Mixtures contain two or more different elements and/or compounds that are not chemically bonded together. Mixtures can be separated relatively easily.
Potable	Used to describe water that is suitable for drinking.

Separation method	Description of mixture separated
Filtration	Used to separate an insoluble substance from a liquid.
Crystallisation	Used to separate a soluble substance from a solution.
Paper chromatography	Used to identify the different coloured compounds in a mixture
Simple distillation	Used to separate (the dissolving liquid) a solvent from a solution. OR... Separate two liquids with different boiling points.
Fractional distillation	Used to separate a mixture of two or more liquids with different boiling points.

Example of mixture

- Sand and water
- Salt and water
- separate the different colours of dye found in in.
- Separate water from salt water
- Separate water and ink
- Separate crude oil

Y9 Science Physics Topic 1 Key concepts

Total Energy in = Useful Energy out + Wasted Energy



distance travelled = average speed x time	
acceleration = change in velocity ÷ time taken	$a = \frac{(v-u)}{t}$
force = mass x acceleration	$F = m \times a$
weight = mass x gravitational field strength	$W = m \times g$

(final velocity) ² – (initial velocity) ² = 2 x acceleration x distance	$v^2 - u^2 = 2 \times a \times x$
---	-----------------------------------

power = work done ÷ time taken	$P = \frac{E}{t}$
--------------------------------	-------------------

change in gravitational potential energy = mass x gravitational field strength x change in vertical height	$\Delta GPE = m \times g \times \Delta h$
kinetic energy = 1/2 x mass x (speed) ²	$KE = \frac{1}{2} \times m \times v^2$
efficiency = $\frac{(\text{useful energy transferred by the device})}{(\text{total energy supplied to the device})}$	
wave speed = frequency x wavelength	$v = f \times \lambda$
wave speed = distance ÷ time	$v = \frac{x}{t}$
work done = force x distance moved in the direction of the force	$E = F \times d$

power = energy transferred ÷ time taken	$P = \frac{E}{t}$
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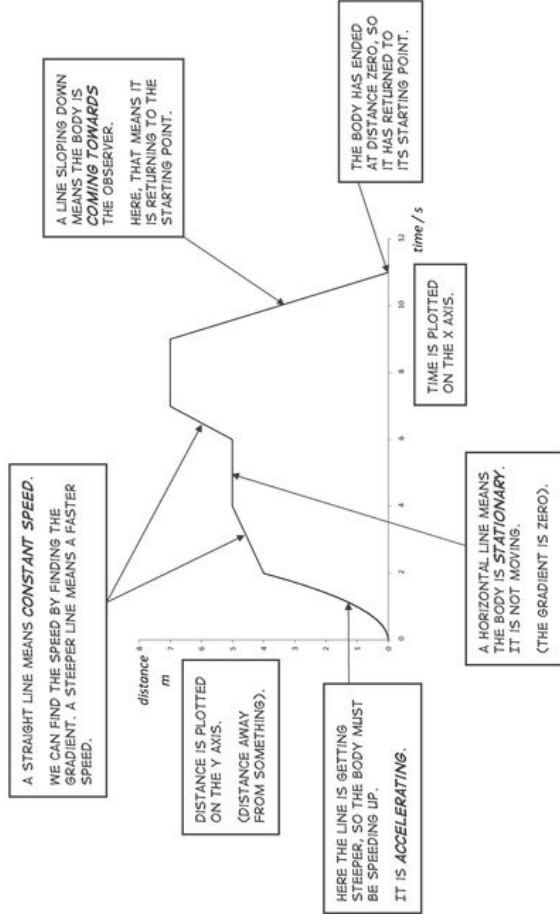
Useful prefixes (but always remember kg is the exception to the rule!)

tera	giga	mega	kilo	Standard unit	centi	milli	micro	nano	pico
T	G	M	k		c	m	μ	n	p
X10 ¹²	X10 ⁹	X10 ⁶	X10 ³		X10 ⁻²	X10 ⁻³	X10 ⁻⁶	X10 ⁻⁹	X10 ⁻¹²

Y9 Science Physics Topic 2 Motion and Forces

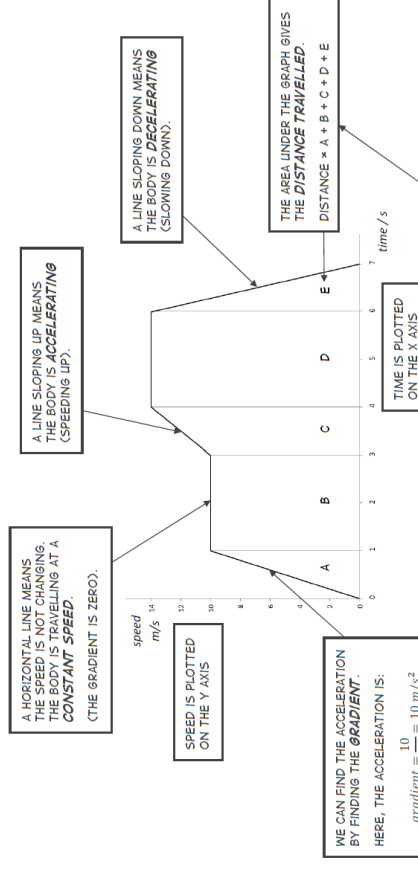


THE ANATOMY OF A DISTANCE-TIME GRAPH



Key Term	Definition
Vector quantities	Have magnitude and direction e.g. force, velocity, displacement, and weight
Scalar quantities	Have magnitude only e.g. distance, speed, mass and energy
velocity	Speed in a stated direction. (m/s)
Weight	$W = mg$ W, weight (N) m, mass (kg) g, gravitational field strength (N/kg)
Average speed	Speed = distance travelled / time taken

THE ANATOMY OF A SPEED-TIME GRAPH



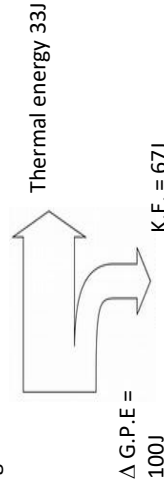
Key Term	Definition
Resultant force	The overall force acting on an object, i.e. the vector sum of all the forces acting on an object.
Acceleration	$a = \frac{v - u}{t}$ a, acceleration (m/s ²) v, final velocity (m/s) u initial velocity (m/s) t, time taken (s)
Suvat equation	$v^2 - u^2 = 2ax$ x is the displacement of the object. NB this equation only apply for constant acceleration.
Resultant force	$F = ma$ F, force (N) M, mass (kg) a, acceleration (m/s ²)

Y9 Physics Topic 3 Conservation of Energy.

The Key Ideas

Key Term	Definition
Law of conservation of energy	Energy cannot be created or destroyed, but it can be transferred between stores. No energy transfer is 100% efficient, some energy is always wasted.
Thermal conductivity	The rate at which heat is transferred through a substance. Low thermal conductivity materials are good insulators.
Main energy stores	Kinetic, thermal, gravitational, nuclear, elastic electrostatic and magnetic energy stores.
Energy pathways	Are the ways in which energy is transferred i.e.: * Mechanically (when a force does work on an object) * Electrically when a force does work on an electric charge * Radiantly, when a wave (e.g. light or sound) transfers energy from one place to another. * Thermally, when a difference in temperature between objects causes a change in temperature of the objects.
dissipated	When energy is transferred to the surroundings and is less concentrate and so less useful.
Efficiency definition	The ratio of useful energy out to total energy in.
Efficiency equation	$Efficiency = \frac{\text{useful energy out}}{\text{total energy in}}$
Closed system (a group of objects)	has no energy transfers in or out of the system so there is no net energy change for the system.

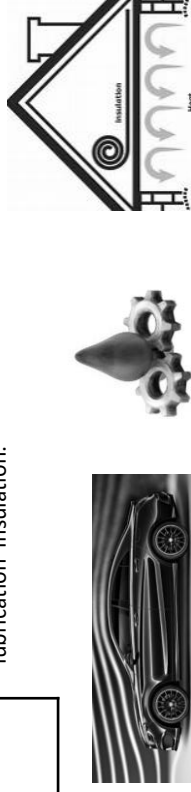
Sankey Diagrams show energy transfers e.g.



Energy is an accounting system.
Energy is measured in joules (J).
Work done = energy transferred.

Key term	Equation
Law of conservation equation	Total energy in = useful energy out + wasted energy out
Efficiency equation	$Eff = \frac{\text{useful energy out}}{\text{total energy in}}$ Efficiency is always a decimal less than 1.00 It's only a % when multiplied by 100.
Change in gravitational potential energy store	$\Delta G.P.E = m \times g \times \Delta h$ ΔGPE : change in gravitational potential energy (J) m, mass (kg) g, gravitational field strength (N/kg) Δh , change in vertical height above ground. (m)
Kinetic Energy Store	$K.E. = 0.5 \times m \times (v)^2$ K.E. Kinetic energy store (J) m, mass (kg) v, speed or velocity (m/s)
Work done (energy transferred)	$E = F \times d$ E, energy or work done (J or NM) F, force (N) d, distance moved in the direction of the force (me)

Unwanted energy losses are reduced by, streamlining, lubrication insulation.



Practical

Explaining the energy changes of a can of soup rolling down a ramp.



At the top of the ramp the can has no K.E. but some G.P.E.

At the bottom of the ramp G.P.E. store has decreased. Energy has been transferred **mechanically** to the K.E. store of the can and the thermal energy store in the can and surroundings.

The loss of GPE is calculated using

$$\Delta G.P.E = m \times g \times \Delta h$$

The KE at the bottom of the ramp is calculated using :

$$K.E. = 0.5 \times m \times (v)^2$$

The speed at the bottom of the ramp has to be determined by measuring distance and time and using the equation speed = distance / time.

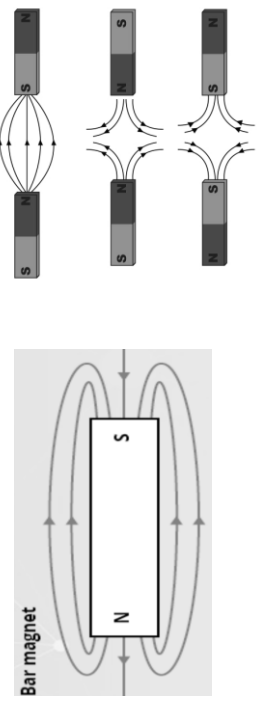
Light gates and a data logger could be used to do this.

The difference between ΔGPE and KE will be the energy lost to the thermal energy store.



Key term	Definition
Permanent magnets	Produce a magnetic field around them which exerts a non-contact force on a magnetic material (or a moving electrical charge).
Induced Magnet	A material which can be made temporarily magnetic. An electromagnet is an example of this.
Magnetic materials	Can be attracted by permanent magnets. Not all metals are magnetic. Iron, nickel and cobalt are the three magnetic metals.
Magnetic field lines.	These are not real but represent the strength and direction of the magnetic force on a North pole of a magnet, they always point from N to S.
Independent Variable	The closer the lines the stronger the magnetic field.
Dependent Variable	The variable that is changed in an experiment.
Control Variable	The variable that is measured in an experiment. Variables that are controlled in an experiment to ensure a fair test.

Magnetic field lines run from north to south.



Magnetism is a non-contact force. All magnets have a north and a south pole.

Like poles repel. This means that the two poles will push away from each other.

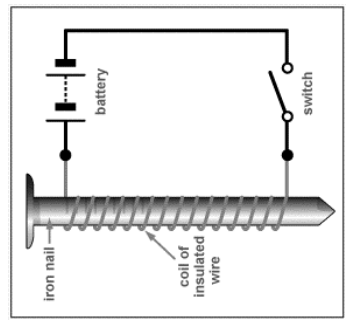
Opposite poles attract. This means that the invisible magnetic force between the magnets will force the poles together.

The Earth has a magnetic inner core made of iron.

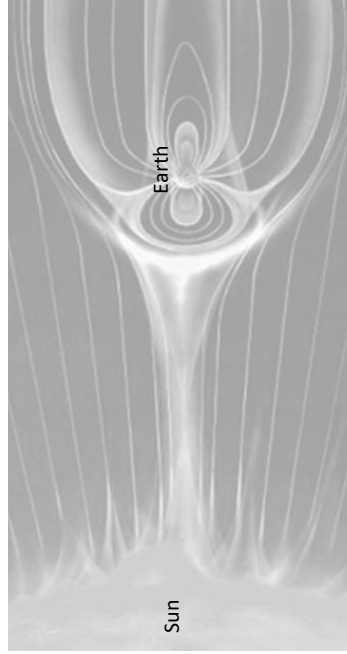
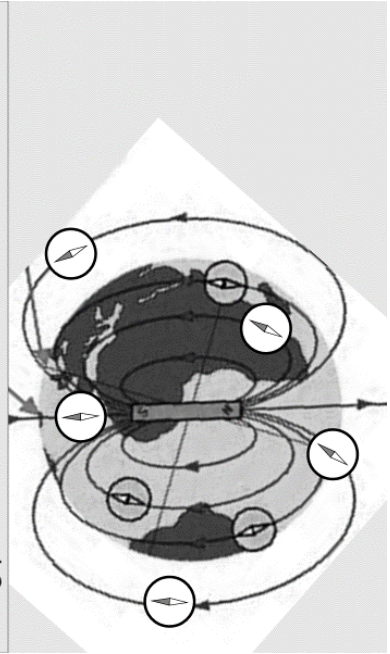
Electromagnets

The magnetic field strength of the electromagnet can be increased by,

- Increasing the current.
- Increasing the number of turns in the coil.
- Using a thicker iron core.



The needle of the compass aligns with the magnetic field, point in the direction of North Magnetic Pole telling you which direction is North.



Earth's **magnetic field** deflects most of the solar wind, whose charged particles would otherwise strip away the ozone layer that protects the Earth from harmful ultraviolet radiation.

A circular diagram with five segments. Clockwise from the top, the segments are labeled: Honesty, Care, Ambition, Respect, and Todmorden High School (with a logo). The segments are colored in shades of blue and green.

Rocks are made of **grains**. Each grain is made of a naturally occurring compound called a **mineral**. The **texture** of a rock is a description of the size and shape of the grains.

The higher layers squish the lower layers, squeezing out the water from the gaps between the grains of sediment (**compaction**). Dissolved minerals in the water can crystallise in the gaps, forming a 'glue' that sticks the grains together (**cementation**). This process forms **sedimentary rocks**.

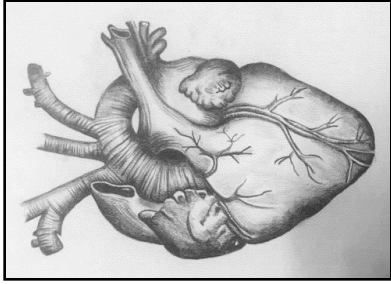
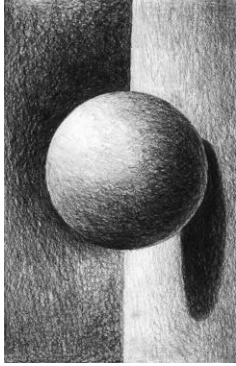
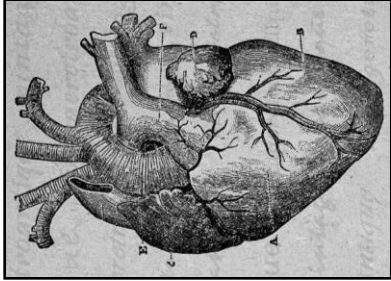
This is why we get
41 seasons.

Key term	Definition
eruption	When lava or ash comes out of a volcano.
cement	A building material made using limestone and other materials. It also means 'to stick things together'.
porous	Porous rocks have tiny holes in them. They are permeable and let water soak through them.
igneous rock	Rock made from interlocking crystals that are not in layers. Formed when magma or lava cooled down and solidified.
sedimentary rock	A rock formed from grains stuck together. The grains are often rounded.
metamorphic rock	A rock formed from interlocking crystals that are often lined up in layers. It is formed when existing rocks are heated or compressed.
extrusive	Igneous rocks formed when lava freezes above the ground.
intrusive	Igneous rocks formed when magma freezes underground.
weathering	When rocks are broken up by physical, chemical or biological processes.
orbit	The path that a planet takes around a star, or the path that a moon or satellite takes around a planet.
planet	A large object orbiting a star. The Earth is a planet.
Solar System	A star with planets and other objects orbiting around it.
elliptical	oval-shaped
moon	A natural satellite of a planet.
phases of the Moon	The different shapes the Moon seems to have at different times.
northern hemisphere	The half of the Earth with the North Pole in it. The UK is in the northern hemisphere.

Year 9 Art- Term 1- Anatomy

Keyword		Meaning
Anatomy	Anatomy is the study of the structure of the bodies of people or animals.	
Anatomical	Anatomical relates to the structure of the bodies of people and animals.	
Medical Illustration	Medical illustrators produce photographs, videos and graphical images for use in healthcare.	
Observation	Closely looking at something or someone.	
Annotation	An annotation is a note that is added to a text or diagram, often to explain it.	
Proportion	Proportion refers to the dimensions of a drawing and relationships between height, width and depth.	
Primary Source	A primary source is one that you study directly from first-hand experience. Primary sources can be natural objects, artefacts, places, people or events.	
Secondary Source	A photograph or an image of something that is real.	
Form	Form refers to three dimensional objects. While shapes have two dimensions (height and width), forms have three dimensions (height, width and depth).	
Mixed Media	The use of different media, such as watercolours, pencil and pen, in the same piece of artwork.	

Leonardo da Vinci (born April 15, 1452, Italy—died May 2, 1519, France) was an Italian painter, draftsman, sculptor, architect, scientist and engineer. His *’Last Supper’* (1495–98) and *’Mona Lisa’* (1503–19) are among the most widely popular and influential paintings of the Renaissance. His notebooks reveal a spirit of scientific inquiry and a mechanical inventiveness that were centuries ahead of their time. One special feature that makes Leonardo’s notes and sketches unusual is his use of mirror writing. Leonardo was left-handed, so mirror writing came easily and naturally to him.

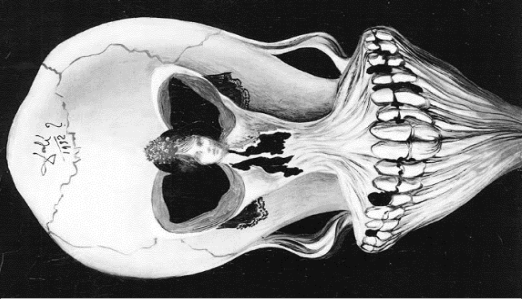


Kaitlin Walsh is an independent artist specialising in abstract anatomical watercolour and oil paintings. From a young age, she exhibited an immense fascination with both art and medicine. She focused her studies on both disciplines, eventually receiving a graduate degree in Biomedical Visualisation at the University of Illinois at Chicago, where she took a combination of fine art and med school courses. Her passion is to portray the beauty and complexity of the human body through painting.

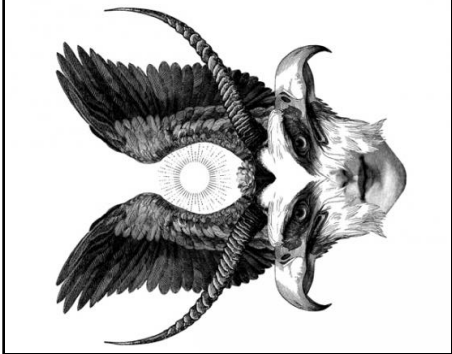
Water Colour Techniques

- Wet on Wet
- Colour Blending
- Underpainting
- Layer
- Lifting Off
- Scumbling
- Stippling
- Watercolour Blooms

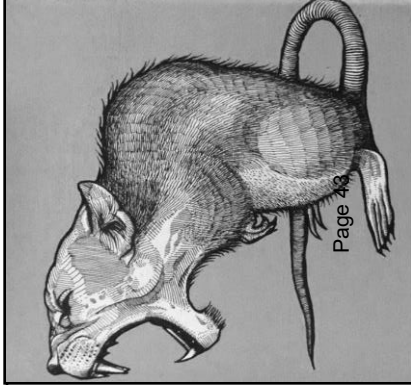
Year 9 Art- Term 2- Surreal Hybrids	
Keyword	Meaning
Surrealism	A 20th-century art and literature movement which sought to release the creative potential of the unconscious mind
Hybrid	Something made by combining two different elements.
Amalgamation	The action, process, or result of combining or merging things together.
Observation	The action or process of closely looking at or monitoring something or someone.
Mark Making	Describes the way artists produce different lines, dots, marks, patterns and textures. Mark making can be creative and experimental - it can be done with any materials and tools.
Contemporary	Existing or happening now, and therefore seeming modern
Inspiration	Someone or something that gives you ideas to work in new ways.
Collage	A work of art in which pieces of paper, photographs, fabric and other materials are arranged and stuck down onto a supporting surface
Photomontage	When multiple photos are cut up and combined. It was first used as a technique by the dadaists in 1915
Automatism	In art, automatism refers to creating art without conscious thought, accessing material from the unconscious mind as part of the creative process
The Uncanny	A concept in art associated with psychologist Sigmund Freud which describes a strange and anxious feeling sometimes created by familiar objects in unfamiliar contexts



Salvador Dali (11 May 1904 – 23 January 1989), was a Spanish surrealist artist renowned for his technical skill, precise draftsmanship, and the striking and bizarre images in his work. He joined the Surrealist group in 1929, soon becoming one of its leading exponents. His best-known work, *The Persistence of Memory*, was completed in August 1931, and is one of the most famous Surrealist paintings. Dalí was a painter, sculptor, film maker, and photographer. Major themes in his work include dreams, the subconscious, religion, science and personal relationships.



Daniel “Dan” Andrew Hillier (10 January 1973 – 8 February 2024), was a master of collage, crafting unsettlingly beautiful works from Victorian source materials, merging human, animal, and arcane elements. His art reflected his deep connection to the natural world and his rich spiritual life, which he described as “an expression of love for nature, archetypes, relationships, and the ever-unfolding nature of being alive in this unknowable mystery.”



Painter and muralist **Alexis Diaz** (born 1982, Puerto Rico), also known as La Pandilla, creates striking large-scale depictions of animals, plants, and symbols. Diaz frequently paints his murals against the backdrop of cities throughout Florida, where he now lives and works, using street corners and the walls of buildings as his canvas in order to ensure that his art is accessible to everyone.

KEY VOCABULARY	
IDE	A piece of software used to help a programmer develop programs (e.g., MU).
Algorithm	A step-by-step set of rules or instructions to complete a task.
Pseudocode	An algorithm written in the style of a programming language but using plain English.
Syntax	The rules/grammar of a programming language.
Variable	Is a memory location to hold a value in a program (eg, Score = 1).
Iteration	A programming statement which makes the program repeat a set of instructions.
Selection	A programming statement which cause the program to make a choice and flow in a given direction.
String	A data type to store text.
Integer	A whole number which can be either positive or negative
List (Arrays)	Lists are used to store multiple items in a single variable.
Mathematical Operators	Are symbols used in programming to carry out calculations (eg, / * + DIV MOD).
Boolean Operators	A logical system using AND, OR and NOT. Takes one or two inputs resulting in a TRUE or FALSE output.

Programming Concepts (Term 1)

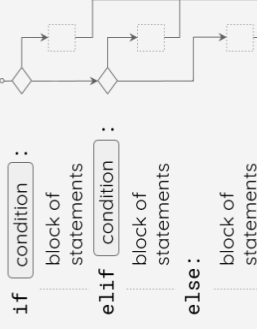
Knowledge

Lists:

```
1 days = ["Monday", "Tuesday",
2       "Wednesday", "Thursday",
3       "Friday", "Saturday",
4       "Sunday"]
5 print(days[0])
```

Lists store multiple items in one variable. Each item in a list is accessed using an index 0,1,2 etc.... Indexing always starts at (Zero). So in the above example, line 5 will print out Monday – which is the first item in the list called days[]

Selection:



Conditional Loops (Iteration)

For

```
1 shopping = ["Pasta", "Tomatoes",
2            "Onions", "Basil",
3            "Parmesan"]
4 print("Buy:")
5 for item in shopping:
6     print(item)
```

A **for** loop will repeat a section of code for a set number of times. In the example above the program will print out each (item) **for** every item in the list (i.e. 5 times)

While

```
password = input("Please Enter Password")
while password != "Dave":
    password = input("Please Enter Password")
```

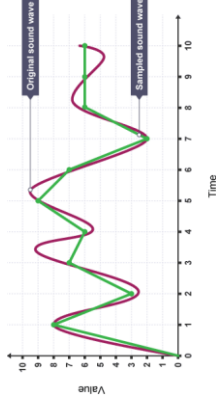
A **while** loop will repeat a section of code until a condition is met. In the example above the user is asked to enter a password. Then until the user enters the password "Dave" it will continue to ask the user for their password.

Data Representation II (Term 2)

Knowledge

Audio

Sampling is the process of taking measurements of an analogue sound wave at regular intervals. These measurements can then be stored as a series of binary digits (Bits)



Source:

<https://bam.files.bbci.co.uk/bam/live/content/zyg72hv/large>

If these measurements are taken more frequently, this will result in a more accurate representation of the original analogue sound wave. However, this will also lead to larger file sizes as more bits will need to be stored.

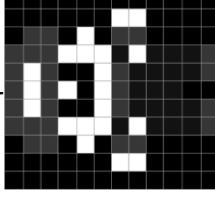
Bit Rate is a measure of how much data is processed for each second of sound.

Bit Rates for **MP3** files range from 16 kilobytes per second (kbps) to 320 kbps.

Visual

Representing images in digital format

Digital pictures are formed out of individual pixels (*picture elements*), just like the Greek and Roman mosaics are formed out of individual pieces of glass or stone. However, unlike their ancient counterparts, the elements in digital pictures are aligned in rows and columns, with the colour of each element represented as a sequence of binary digits.



Resolution

Is the number of pixels displayed on a screen. The more pixels that can be displayed, the better the picture quality. **4K resolution**, at least the way most TV companies define it, is 3840 x 2160 pixels, or 2160p. That means the screen will have approx. 8 million pixels.

KEY VOCABULARY

Audio

Analogue	Continuous data that can have a range of values.
Digital	Information that can be stored as discrete numbers (e.g. Binary 0s and 1s).
Sample	Digital representation of an analogue signal.
Sample rate	How many samples are taken per second.
Bit rate	The number of bits stored per second.
Compression	Reducing the size of a file.

Visual

Bit	Smallest amount of data a computer can store.
Pixel	Short for Picture Element. Is the smallest individual square that can be displayed on a screen.
Resolution	The number of pixels that can be displayed in a given area of the screen.
Meta Tag (Data)	Extra information that is contained in the image file. e.g. the date the photo was taken.
Colour Depth	The number of colours used in an image.
RGB	Short for Red, Green and Brown. The main colour palette used in digital images.
Hexadecimal	Number system used to store pixel colour data.

HARDWOODS

They are deciduous trees which means that in winter, they lose their leaves.

These trees are broadleaved, bushy and slow growing. Overall they tend to be harder to work with and more expensive than other types of timbers. They are less porous and denser cell structure which makes them harder wearing and less prone to rotting.



TYPES:

Name	Characteristics	Uses
Ash	Flexible, tough and shock resistant, laminates well. Pale brown/cream.	Sports equipment and tool handles.
Beec	Fine finish, tough and durable. Dense close grain with an	Children's toys, models and furniture.
Mahog	Easily worked, durable and finishes well. Rich reddish brown in	High end furniture and joinery.
Oak	Tough, hard and durable, high quality finish possible. Light brown with variable grain.	Flooring, furniture, and railway sleepers.

SOFTWOODS

They are coniferous trees which means that they keep their leaves in winter = evergreen.

These trees are tall and 'Christmas tree' tree shaped. Overall they tend to be easier to work with and less expensive than other types of timbers. They are more porous (holes) and if unprotected will rot. They have cones for leaves and grow quickly.



TYPES:

Name	Characteristics	Uses
Pine	Lightweight, easy to work but can split.	Interior construction, cheaper furniture and decking.
Spruce	Easy to work, high stiffness to weight ratio.	Construction, furniture and musical instruments.
Redwood	Easy to work and machines well, some rot resistance.	Outdoor furniture, beams, posts and decking.
Cedar	Easy to work, can blunt tools, finishes well and naturally resistant to rot.	Outdoor furniture, fences and cladding for buildings.



2. Branches are cut off and the logs are stored until they are transported to a sawmill.



3. When at the sawmill, machines such as **band saws** and **circular saws** are used to create boards/planks.

SOURCE/ORIGIN

Timber comes from **trees** - this is known as the source or origin of the material. This is how we change into timber.



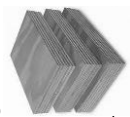
1. When trees are cut down, this is known as **felling**. This can be through machine or chain saws, just like the image.

MANUFACTURED BOARDS

They are sheets of processed natural timber and adhesives - so they are human made boards

These are usually made from waste wood, low-grade and recycled timber.

Can be covered by thin slices of high quality wood known as veneer to make it look aesthetically pleasing. Cheaper than natural timber. They come in boards and have no grain.



TYPES:

Name	Characteristics	Uses
MDF	Rigid and stable, good value with a smooth easy to finish surface.	Flat pack furniture, toys and kitchen units.
Plywood	Stable in all directions as alternating layers. Flexible versions available.	Furniture, shelving, toys, interior and exterior construction.
Chipboard	Good compressive strength, not water resistant and prone to chipping on edges.	Flooring, low end kitchen units and worktops.
Block board	Stable, tough and heavy. Finishes well.	Furniture, doors, shelving and indoor construction.
Hardboard	Flexible, even strength and easily damaged by water.	Furniture and photo frame backing.

ENVIRONMENTAL IMPACT

Wood is considered a **sustainable resource** as new trees can be grown to replace those felled. Here are some **issues and positives** surrounding the impact that wood is having on the environment:

- In many places, wood is being used at a greater rate which means it is unsustainable.
- Illegal felling is leading to deforestation as people aren't replanting trees.
- Deforestation helps with global warming.
- To make sure you are buying sustainable timber, you need to make sure it is approved by the **Forest Stewardship Council** or the **Endorsement of Forests**



Databases

Data types		
Type	Description	Example
Number	Can be positive, negative and decimals.	2.56 (Average number of thefts)
Currency	Number including monetary values.	£2.00 (Price)
Boolean	Value that can either be true or false.	Yes (Do you have food allergies)
Auto number	Generates a unique number.	14526 (Student ID Number)
Date and time	Date and times in different formats.	05/06/10 (Student Date of Birth)

Type	Description	Example
Number	Can be positive, negative and decimals.	2.56 (Average number of thefts)
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Advantages and disadvantages of computerised databases

Advantages:

- Easy to make backup copies.
- Changes are updated automatically.
- Easy to sort data into order eg, alphabetically
- Search thousands of records quickly

Disadvantages:

- Can be difficult to set up and you may have to get a professional to make it.
- Can be accessed and changed illegally (hacked)
- You need to have a computer.

Real world examples

Patient Records

Pupil Data

Online product list



Police database

Page 47

KEY VOCABULARY	
Database	Large collection of data. Can be paper or computerised
Field	Single piece of data about a person or an object.
Record	All of the data about a person or an object.
Table	Contains a set of database records.
Query	A search result based on specific criteria.
Form	User-friendly way to enter data into a database.
Validation	Check to see what has been entered is allowable.
Data Type	Tells the database how you want the data to be stored.
Primary Key	Field within a database which enables every record to be uniquely identified.

Drama – year 8

Features of

Kneehigh’s work:

Visual storytelling.
Adaptation.
Archetypical characters.
Chorus.
Inventive use of props.
Physical theatre.
Puppetry.
Dance.
Song/music.
Audience interaction.
Pre-show.
Multi-role.
Comedy.

Kneehigh’s Beliefs:

The script is only a starting point.
The work should be playful.
Everyone contributes to rehearsals.
Use the skills and talents of your company.
Produce work for non theatre-goers.
The work should be relevant to modern issues.

Greek Theatre:

Performed in amphitheatres.
Only male actors.
Originally, plays were just a Chorus – a group of 50 speakers who recited a story in verse.
Traditional drama really began when an actor named Thespis had the idea for one person to break away from the chorus and reply to what they said.
The Chorus would narrate the drama and comment on what was happening. They would be asking the questions the audience would want to ask.
Masks helped to amplify actors’ voices, communicate the main emotion and gender of the character.

Performance fundamentals:

- Be safe
- Be seen
- Be heard

Stage positions are from the performer’s point of view.

Job title	Responsibilities
Puppeteer	Manipulates the puppets so that they look like they are alive.
Director	Has the overall vision for the production. Auditions and casts production. Tells the cast what to do vocally and physically (blocks the scenes). Runs rehearsals and gives notes to actors. Liaises with designers.
Playwright	Writes the play, including characters, plot and stage directions.
Musical Director	Leads the orchestra. In charge of all music in the production.
Actor	Auditions. Learns lines/songs/dances and attends all rehearsals. Performs the show.

Key terms

Dharma	The teaching of the Buddha
Dukkha	Suffering
Anicca	Impermanence (things don't last)
Anatta	No permanent soul
Jataka	Book containing stories about the life of Buddha
Buddha	An enlightened being
Ascetic	Harming your body to free your mind- IE starving yourself
Enlightenment	Finding out & understanding the truth about the universe and existence
Siddharta Gautama	The birth name of the Buddha
Mahayana	A branch of Buddhism associated with Tibet and China
Therevada	The 'original' Buddhism that starter in India
Paticca Samuppada	Dependent origination- each life/ origin depends on the one before
Meditation	Focussing deeply
The 4 Sights	Old man, sick man, dead man and holy man
Tanha	Craving
Nirvana	Escape from the cycle of rebirth and dukkha
Rebirth	After you die, your karma will begin another person's life
Buddha-nature	The idea that we all have what it takes to be a Buddha!
Samsara	The trap of rebirth (shown visually by the wheel)
Arhat	The final life where you become a Buddha in Therevada
Bodhisattva	Where you choose to 'reincarnate' and return to Samsara instead of going to Nirvana in order to help others.

Key teachings

The 8 Fold Path

8 things that must be done 'right' to gain good karma to get to Nirvana. Buddha called it a 'raft' to escape Samsara (UT-SAL-EMC)

The 4 Noble Truths

The first thing Buddha taught to the ascetics who became the first converts. Dukka (suffering), Tanha (craving),

Nirvana (non-existence), Magga (The 8 Fold Path) DTNM

The 5 Skandhas

The 5 parts that make up a person. When we die, these piles fall apart and the next life starts as we have no soul and do not carry on (anatta). The Skandhas are taught using the chariot analogy from Nagasena II. Mental Form (thoughts), Consciousness (awareness), Physical Form (your body), Sensations (the 5 senses), Perception (recognition) MC PSP

The 3 Marks of Existence

Three things that harm us simply because we exist.

Dukkha (suffering is inevitable such as getting old, sick and dying), Anicca (things are impermanent like relationships and possessions) and anatta (we have no soul- we cease when our skandhas fall apart) DAA

The 5 Precepts of the Laity

Vows of regular Buddhists- No killing, no stealing, no sexual misconduct, no substances that cloud the mind, no false speech (lies).

The 5 Precepts of the Sangha (monks)

Vows of monks (bikkhus) Own nothing, no sex, no high bed, no self-beautification, no eating after mid-day.

The 6 Realms of Existence

The 6 Realms (mindsets) you can be born into including the Hungry Ghosts, Animals, Angry Gods, Gods, Hell and Humans. You can only reach enlightenment from the Human Realm on the Wheel of Dependent Origination.

The 12 Niddanas

12 images on the outside of the Wheel of Dependent Origination that show how dukkha is caused (eg, the monkey eating fruit is craving).

The 3 Poisons

Shown in he middle of the wheel, hatred (snake), green (board and arrogance/ ignorance (cockere!) need extinguishing to escape rebirth.

Key Quotes

Walpola Rahula

Nirvana is 'cool water that calms the fever'

Do no engage in 'foolish babble and gossip'

Escape the 'round of rebirth'

Buddha

Nirvana is 'the end'

The 8 Fold Path is a 'raft' from Samsara to Nirvana.

Meditation 'frees us from Mara's fetter'

Nagasena II

The Chariot Analogy

The Candle Analogy

The turtle Analogy'

Ninian Smart

Nirvana is 'the end'

Jataka

Siddhartha has '3 mansions'

His 'legs were like bamboo, his back was like a rope'



Key terms	
Aims of Punishment	The reasons we punish criminals (RRPD)
Community service	Completing free work in the community as a punishment. It helps the criminal to reform and benefits society.
Corporal punishment	Physical punishment- e.g. The Cane, physical beatings.
Crime	Breaking the law. It can be committed against a person (e.g. assault), property (e.g. arson) or the state (e.g. terrorism).
Capital punishment	The death penalty/ execution.
Deterrence	To deter/ put off a 'would be' criminal.
Evil intention	Morally wrong thinking- planning to do something to harm others.
Forgiveness	Letting go of anger towards someone who has wronged you.
Hate crime	A crime committed because of prejudice- e.g. beating up a person because they are homosexual. This can double your sentence in the UK.
Law	The rules which a government has to keep up safe.
Reformation	Where the punishment aims to change/reform the criminal.
Retribution	Where the punishment aims to make the criminal suffer. This also includes getting justice for the victims.
Protection	Where the punishment helps to protect society.
Greed	Wanting to possess goods or items of value that you don't need
Mental illness	A medical condition that affects a person's feelings, emotions, mood or ability to relate to others.
Addiction	Dependency on a substance which is difficult to overcome
Free will	The ability to make decisions freely.

Key teachings

Purpose of the law

The point and purpose of having laws is to ensure a society works well to benefit its citizens. For example, we need laws on tax to fund the NHS and Education. We need laws on traffic to prevent crashes (such as stopping for a red light) and we need laws to protect life such as murder being illegal.

Purpose of punishment

Punishments exist to make sure people follow the law for the benefit of society. It also helps them develop and understanding of right and wrong through experiencing the rewards of good behaviour or the consequences of negative behaviour.

Moral agency

As humans, we are 'moral agents.' This means we are individuals (agents), who are capable of making good or wicked choices (morality). As we grow and develop, we gain a better understanding of right and wrong and aim to become 'fully moral agents.' some people are more morally developed than others (a less morally developed agent). Some people may never become 'fully moral agents' as they don't have a common sense of morals- EG a serial killer.

Corporal Punishment

Physical punishment uses the 'pain vs pleasure' principal to humiliate and cause pain to deter 'would be' wrong doers. Punishments could include whipping, birching, beating and caning (the cane/rod was used in English schools until 1986 for state schools and 1999 for religious ones).

Capital Punishment

Known as the 'ultimate punishment.' It is only used for the most serious criminals. Methods could include gas chambers, hanging, beheading, the firing squad and lethal injection as well as the electric chair. In England, it was banned in 1965 (with the exception of treason- banned 1998). Around half of the world still allows its use.

Forgiveness

In order to keep harmony in a society and support people emotionally (including mental health), we need forgiveness. We need to let go of our anger otherwise it drains us and makes us bitter/ resentful. Corrie Ten Boom (A Holocaust Survivor) says 'forgiveness is setting the prisoner free only to find out the prisoner was me.' Often, we try make the other person suffer, but we suffer too.

Hate Crimes

A hate crime is committed against an individual or group because of who they are (their protected characteristics). Crime that is considered a 'hate crime' is given a higher sentence/ penalty. Protected characteristics include a person's religion, sex, sexual orientation/preferences, race, age, disability or gender reassignment.

Key Quotes

General quotations

'An unjust law is no law at all' **Thomas Aquinas**
 'It is out duty to break and unjust law' **Martin Luther King**

The conscience is the voice of God and must be obeyed according to the **Bible and Church**

'Right not to be discriminated against' **UN Declaration of Human Rights**

The punishment should fit the crime' **Cicero**
 God will 'reward the good and punish the wicked'

Psalms

'Those who spare the rod hate their Children' **Old Testament**
 'Give to Caesar' **Jesus**

Capital Punishment

'By killing a murdered you do not decrease the amount of murderers' **Churchill**
 'The Death Penalty has a 100% non-reoffending rate'

Donald Trump

We have the 'right to live' and the 'right to not be tortured' UN Declaration of Human Rights

Testament

'An eye for an eye' **Old Testament**

'Thou shalt not kill' **Ten Commandments**

Forgiveness

'Let he who has no sin cast the first stone' **Jesus**
 'Forgive 70x7' **Jesus**
 'An eye for an eye makes the whole world blind' **Paganini**

Food Poisoning

Main bacteria:

Salmonella, E-Coli, Campylobacter, Staphylococcus Aurous, Clostridium Botulinum.

Key symptoms

Nausea, vomiting, diarrhoea, stomach pain, fever, tiredness, loss of appetite.

Onset time

From consumption to first symptom. Different for each bacteria - can range from a few hours to a few days.

Vulnerable groups (risk of serious illness)

Elderly, young children, pregnant women, immune compromised individuals.

Terminology

Food poisoning

Contamination

Religious diets

Factory

farming

Food poverty

Food bank

Halal

Kosher

Free Range

Organic

Bacteria

Onset time

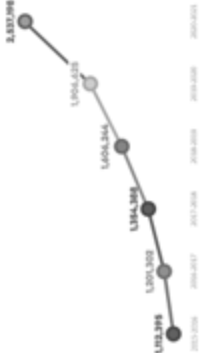
Religious dietary rules

Islam	Meat must be halal. Fast during Ramadan. No pork or alcohol allowed.
Judaism	Abide by Kosher rules and slaughter. Meat and dairy must be avoided together.
Buddhism	Mainly vegetarian. Avoids alcohol. Some fast between noon and sunrise of the following day.
Sikhism	Mainly vegetarian. Do not overindulge – eat only what is required. Not allowed other religiously slaughtered meat.
Christianity	No strict rules – some denominations are stricter. Lot of symbolism with food – blood (wine) and body (bread) of Christ.

Types of factory farming

Battery Farming	Large barns, no natural light, short life span, crowded conditions. Increased incidence of death and disease. Cheaper meat.
RSPCA Assured	Large barns, less crowded, access to better food, access to stimulation, less disease and death. Slightly longer lifespan.
Free Range	Access to outside, medical care, better food, far less crowded, longer life span, more expensive.
Free Range Organic	Same as free range but not given antibiotics for health range given organic food.

Food bank usage over the last 5 years



Food Poverty

Where an individual is unable to obtain or buy food and maintain good health.

Year 9 Geography - Natural Hazards



NATURAL HAZARDS

Natural Hazard	Natural occurrence that threatens people or property.
Tectonic Hazard	Earthquakes, tsunamis and volcanoes.
Risk	The chance of a hazard becoming a disaster, based on people's vulnerability, capacity to cope and nature of hazard.
Natural Disaster	A hazard that has caused death and destruction.



TECTONIC HAZARDS

TECTONIC THEORY

Primary Effect	Caused directly by hazard. Buildings destroyed, death.
Secondary Effect	Caused by a primary effect. Homelessness, lack of clean water, disease.
Immediate Response	Evacuate, search and rescue, provide clean water.
Secondary Response	Rehouse, rebuild, improve monitoring.
Reasons people live in tectonic areas	Always lived there, confident of monitoring, tourism, fertile soil.
Risk management	Monitoring, Prediction, Protection and Planning.
Hazard in a LIC	Haiti earthquake: Jan 2010, Richter 7, 200 000+ dead.
Hazard in a HIC	New Zealand earthquake: Sept 2010, Richter 7.1, 1 died initially [185 in aftershock].

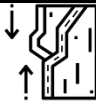
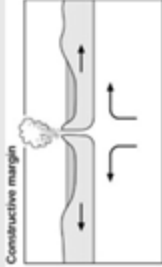
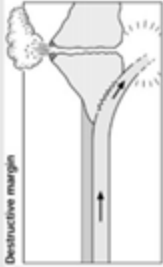


PLATE BOUNDARIES

Destructive Margin	Oceanic crust subducts under continental crust. V+E.
Constructive Margin	Oceanic crust moves apart creates new land as magma rises. V+E.
Conservative Margin	Plates slide past each other with friction. E.



Plates either move towards each other (destructive margin) away from each other (constructive) or past each other (conservative).

Year 9 Geography – Plate Boundaries; Earthquakes and Volcanoes

Plate Boundaries	
Tectonic plate	One piece of the earth's crust.
Plate boundary	The point at which two tectonic plates meet.
Conservative Margin	Two plates move past each other in opposite directions or the same direction at different speeds.
Constructive Margin	Two plates move apart, allowing magma to rise and cool, forming new rock.
Destructive Margin	An oceanic and continental plate collide. The oceanic plate is denser and is plunged into the mantle where it is destroyed.
Collision	Two plates collide and one is pushed upwards, creating fold mountains.
Stick and Slip	The principle that plates stick together at their boundary, pressure builds and then is suddenly released, causing an earthquake.

The 3 P's Prediction Seismometer	A machine that detects seismic waves caused by earthquakes. Can give vital seconds of warning.
The 3 P's Preparation	Japan has 40,000 trained responders ready to give first aid, organise evacuations, use rescue equipment and reduce the death toll of a disaster. California has The Shakeout – a whole state practise drill once a year.
The 3 P's Protection	Earthquake proof buildings that are designed and built to withstand an earthquake. Eg Tokyo Skytree.
Immediate response	The actions taken within the first hours and days of a disaster to minimise death.
Long Term Response	The actions taken to repair, rebuild and prevent future disasters.



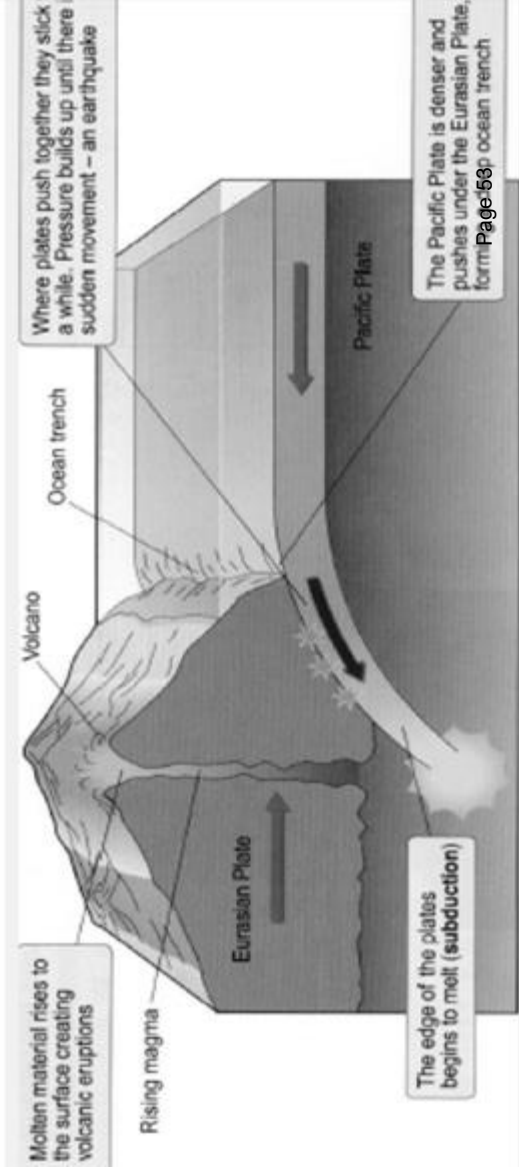
Earthquake Management

Focus	The point at which the pressure breaks between 2 stuck plates, causing an earthquake
Epicentre	The surface directly above the focus, where the earthquake is felt strongest.
Intensity	The concentration or strength of something.
Seismic Shockwave	A rapid flow of energy that is sent through the earth after an earthquake.
P-Waves	The first and fastest compression waves.
S-Waves	The second perpendicular waves, the most destructive.
Magnitude	The size or severity of something, like an earthquake.
Moment Magnitude Scale	The measure by which the strength of earthquakes is determined.
Logarithmic	A scale on a graph where numbers increase exponentially, e.g. 1,10,100,1000 instead of 1,2,3,4.

Measuring Earthquakes

Subduction	The Oceanic Crust sinking under the Continental Crust
Ocean Trench	A deep dip in the ocean caused by subduction. Eg Mariana Trench
Fold Mountains	Huge Mountain Ranges caused by plates buckling as they collide. EG The Andes.
Composite Volcanoes	Explosive volcanoes created by rising magma from melting Oceanic Crust.

Destructive Boundaries



Year 9 Geography – How fair is the world for the people who live within it?

Key Term

Gross National Income per Capita (GNI per capita).

This is the total amount of money a country makes divided by the total population.

A High Income Country is set at greater than \$12,500.

A Low Income Country is below \$1,035.

A Middle Income Country is between \$1,035 and \$12,500.

Development Indicators

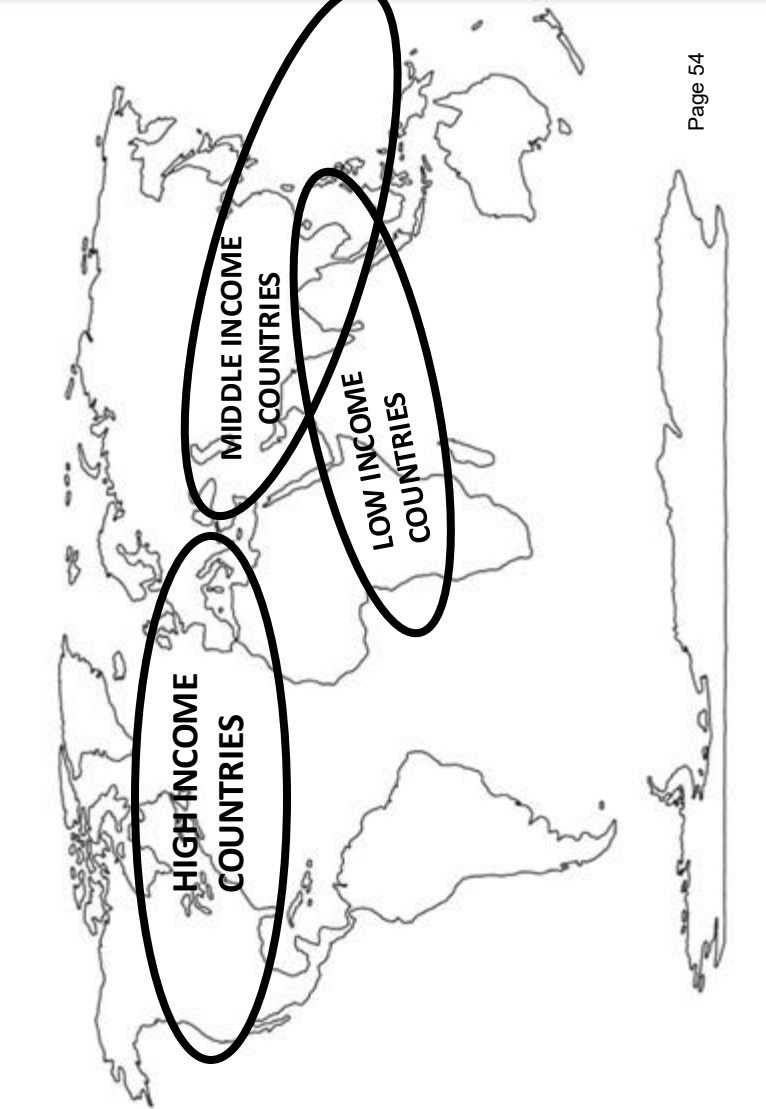
Life Expectancy	The average age that a person dies in a population.
Infant mortality rate	The number of babies that die before age 1 out of every 1000 live births.
% of population with access to clean water, education, electricity etc.	The % of a population that have access to basic social needs.
GNI	Gross National Income – The total amount a country earns through its goods and services.
GNI per capita	The GNI divided by the total population.
Infer	Using the information from a development indicator to judge quality of life in a country. For example, low life expectancy is the result of a lack of clean water, lack of regular food, exposure to pollution etc.
HDI	Human development Index. A holistic view looking at education, health and wealth in a country.

Key Terms

Social	Something that relates to people.
Economic	Something that relates to money.
Quality of life	The standard of health, comfort, and happiness experienced by an individual or group.
Development	Advancement in terms quality of life, both in social and economic terms
Inequality	The unfair situation in society when some people have more opportunities, money, etc. than other people.
Inequality fact	The richest 8 people have more wealth than the poorest 4 billion people combined.
Demographics	The statistical characteristics of the structure of human populations (such as age, ethnicity or income).

Cotton Industry Investigation

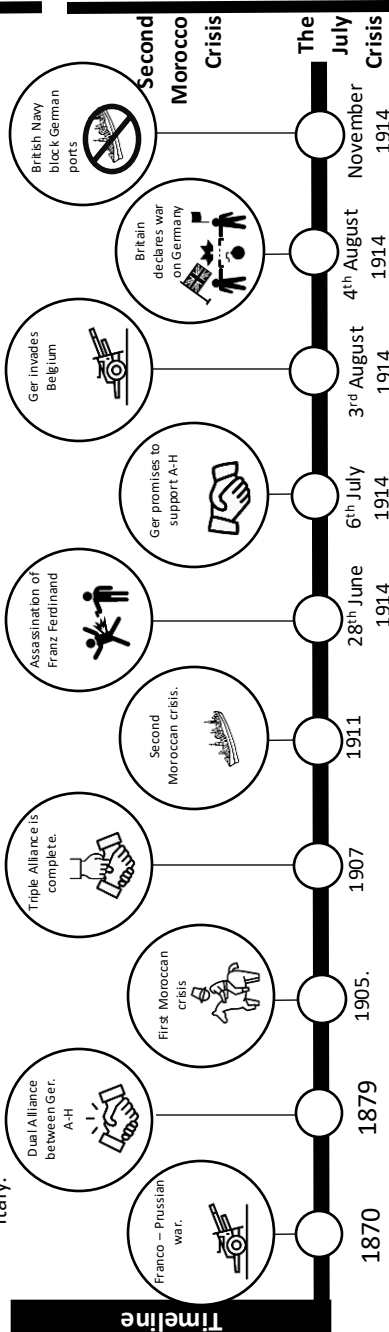
Primary Industry	The stage involved with the extraction of raw materials, in this case, cotton farms.
Secondary Industry	Manufacturing of products
Tertiary Industry	Sales and services.
Quaternary Industry	Digital, high tech, space age production.
Sweatshops	Cramped, dangerous factories which exploit workers with low wages.
Globalisation	The means of production of a product that spans the globe in its components, manufacture and sales.
Fairtrade	Global trade organised so that everyone involved receives a living wage.
Hypocrisy of Nike	They advertise as a company that represents human empowerment, but exploit people and the environment when they can to maximise profit.
Consumerism/ Fast fashion	The ideology that makes people want to continue buying things, long after they have what they need.
‘Someone is paying for cheap clothing’	A £5 pair of jeans will have been paid for by someone’s freedom, or means the worker isn’t earning a living wage.

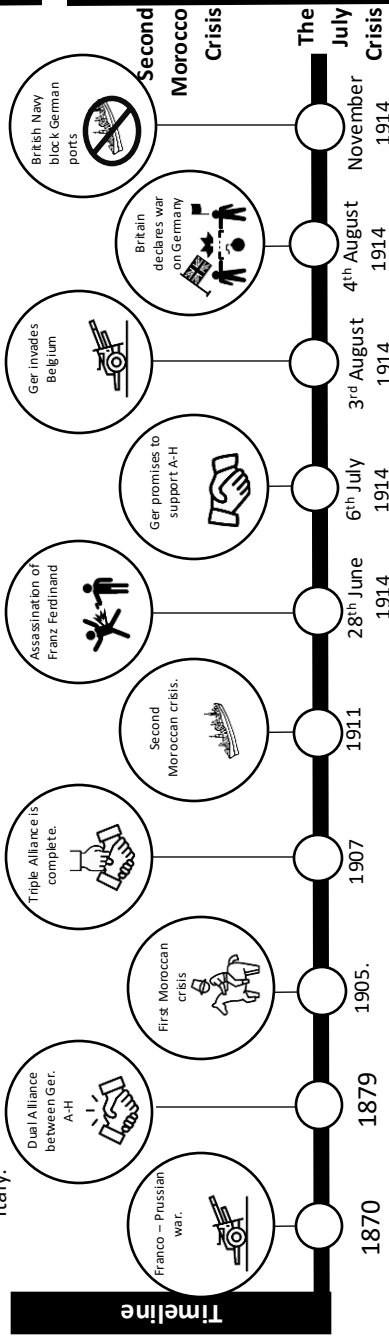


Year 9 History

Half term 2: The First World War – The Causes of War

Source skills

Key people		Key terms		Key events		Content	
Central Powers	Kaiser Wilhelm II (1859-1941)	Imperialism	Extending a country's influence by building a large overseas empire – usually using military force.	Causes of World War One	Militarism; Spending on armies rose by 300% in Europe between 1890-1914. Naval Arms Race – Germany aimed to have more dreadnoughts than Britain.	Provenance	Who created the source and why
	Archduke Franz Ferdinand (1863-1914)	Nationalism	A feeling of being superior to other countries and pride in your country.				
	Ferdinand was heir to Austro-Hungarian throne. He was assassinated by Gavrillo Princip in 1914. His death sparked a chain of events that led to World War One.	Militarism	The belief that a country should keep a strong military and be prepared to use it to defend the country's interests.				
Allied Powers	David Lloyd George (1863-1945)	Weltpolitik	'World politics' – an aggressive empire building policy.	The First Moroccan Crisis	Alliances: By 1914, Europe had formed two opposing alliances. The need for allies increased tension.	Provenance	Who created the source and why
	British politician responsible for Britain's ammunition during the war. Became Prime Minister of Great Britain in 1916 and saw Britain to victory.	Alliance	A group of countries that are formally united or working together for a similar aim or common purpose.				
	Gavrillo Princip	Annexe.	To take over another country.				
Alliances	Triple Entente – Britain, France and Russia (with Serbia).	Kaiser	Rule of Germany	The Balkans	Imperialism; The Kaiser's <i>Weltpolitik</i> led to conflict in Morocco in 1905 & 1911. Austro-Hungarian expansion in the Balkans led to tension with Russia in 1908.	Provenance	Who created the source and why
	Triple Alliance – Germany, Austria-Hungary and Italy.	Ultimatum	A final demand with a threat of force if you don't agree.				
		Mobilise	To get troops ready for battle.				
				Timeline			
							



Year 9 History

Half term 3: The First World War – Life in the Trenches

Key people

Central Powers

Kaiser Wilhelm II (1859-1941)
Grandson of Queen Victoria, Kaiser Wilhelm was emperor of Germany. His foreign policy of *Weltpolitik* brought him into conflict with other European powers. He abdicated at the end of the war, fleeing to the Netherlands.

General Hindenburg (1837-1934)

Commander of the German forces in WWI. He eventually becomes President of German and is replaced by Hitler when he dies.

Allied Powers

Gen. Douglas Haig (1861-1928)

British soldier who commanded the allied forces at the Somme. Very controversial to this day with disputes over this tactics and understanding of the war.

Lord Kitchener (1850-1916)

British war hero who served in the Boer War. His image was used in recruitment campaigns across Britain to encourage men to join the war.

'Tommy's' and 'Huns'

Tommy – Slang name for British soldiers.
Huns– Pejorative nickname given to German soldiers.

Key terms

Tank

No Mans Land

Poison Gas

Somme

Blockade

Stalemate

Attrition warfare

Conscription

Armistice

Content

What can be seen in the source.

Provenance

Who created the source and why?

Key events

Mechanical weapon, first used on the Somme.

Area between the trenches, disputed terrain.

Weapon designed to irritate the skin and blind victims..

The most 'famous' battle of WWI, with over 1 million deaths.

Stopping food and supplies getting to an area or country.

A standstill where neither army can advance.

Wearing an enemy down through prolonged and continued attack.

Every man of fighting age is required to fight in the army.

An agreement to stop fighting; a ceasefire. This was signed on Nov 11th 1918.

The Battle of the Somme

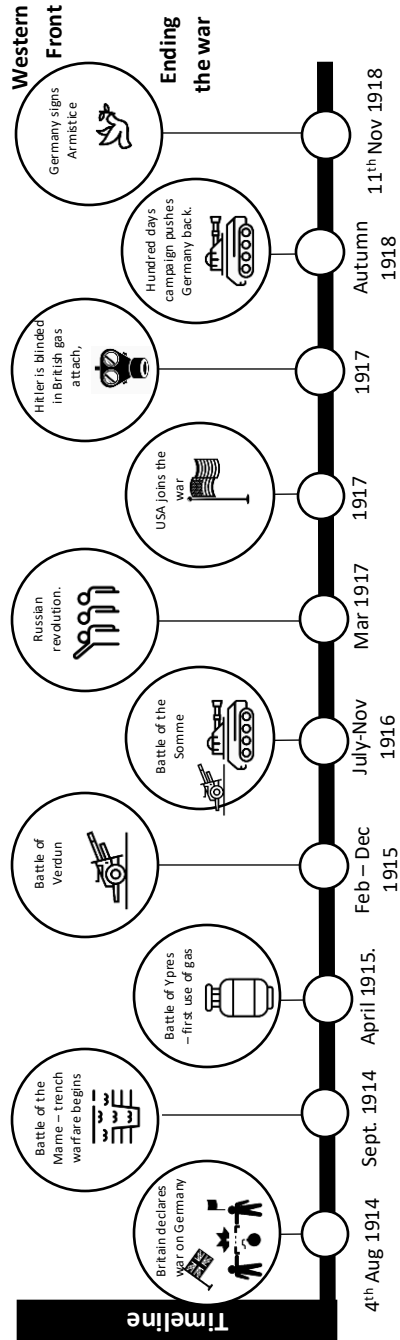
The most infamous battle of WWI and has been used as an example to demonstrate the horrors of the war. Lunched to relieve the French forces who were involved in heavy fighting at Verdun.

The first day of the battle, July 1st 1916, was a calamitous day for the British forces, with over 50,000 casualties. This was after a 10 day bombardment of the German lines. The same tactics were repeated for many weeks and months thereafter.

146,000 Allied deaths, 164,000 German deaths. A shocking battle for the people back home in Britain.

Two views of Haig: 'Lions led by donkeys' which sees Haig as an uncaring general who tried the same failed tactics over and over again. Others take a more sympathetic view.

The Western Front



Life on the Western Front was difficult for soldiers, with poor hygiene, cold and damp living arrangements and boredom being prominent aspects of soldiers lives.

Fighting during the war went on for 4 years (1914-18). In 1916, David Lloyd George became Prime Minister and announced a 'total war' effort, which included mass production of weapons in Britain. In 1917, America joined the war for the Allies. They brought new weapons and soldiers.

By 1918, Germany was close to running out of resources and its soldiers began to desert. On 11th November 1918 Germany surrendered, signing the Armistice.

Life in the trenches

Hygiene – soldiers often went weeks without washing

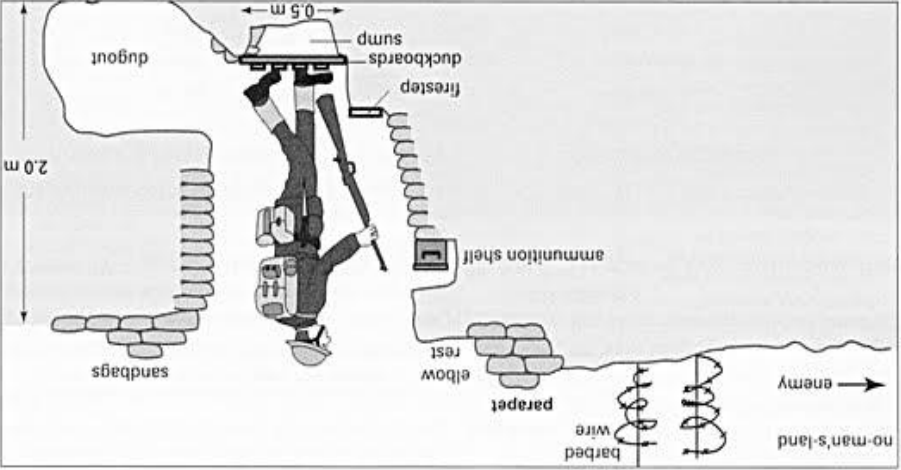
Food – the repetitive nature of the bland food added to the sense of boredom. Stale biscuits, tinned beef and tea were common food rations for soldiers. They received chocolate and cigarettes from home.

Shell shock – the constant fear of bombardment and snipers bullets brought on crippling paranoia as soldiers struggle to cope mentally with their surroundings.

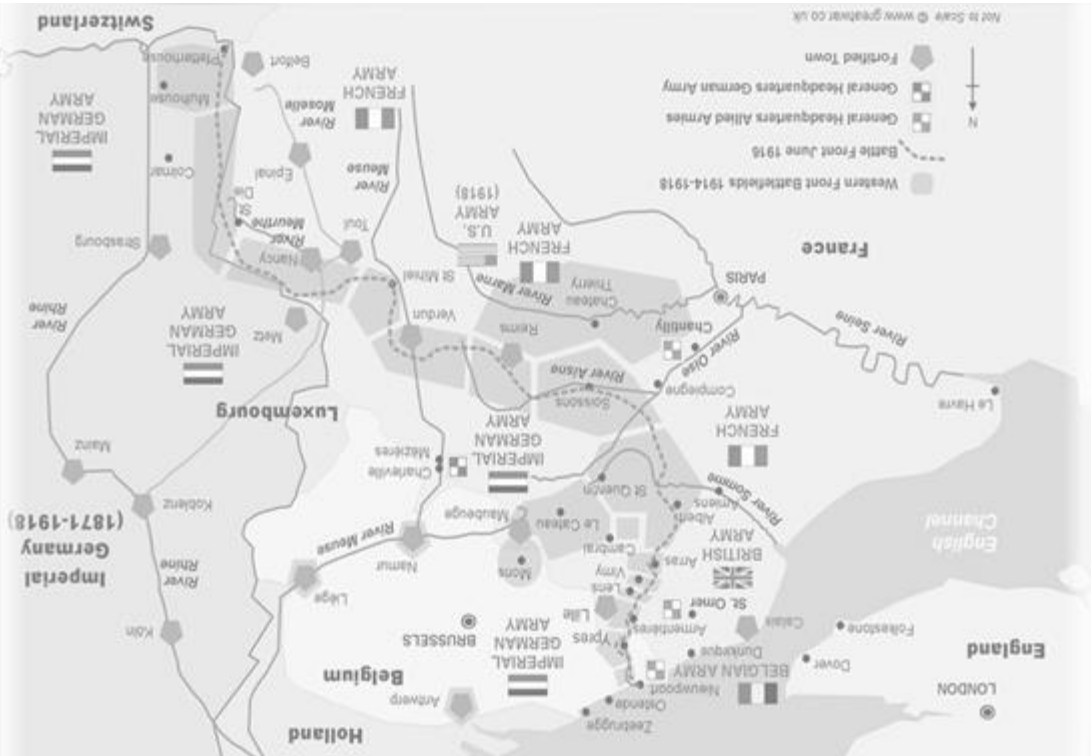
Boredom – life in trenches was repetitive and boring with little stimulation. There were long periods of waiting around.

Trench foot – exposure to wet and muddy conditions meant that soldiers' feet became cracked and raw. The British realised early on how important feet were and enforced strict care of socks and feet amongst British soldiers.

Letters – writing home was one of the few releases from the boredom



After the Germans failed to capture Paris and were held back after the Battle of the Marne in 1914, both sides 'dug in' a long line of trenches; the Western Front.



Year 9 History

Half term 3: Nazi Germany

Source skills

Content What can be seen in the source.
Provenance Who created the source and why?

Key people

Adolf Hitler (1889-1945)
Leader of Nazi Party and the fascist dictator of Germany from 1934 until 1945. During his dictatorship, he initiated WWII with his invasion of Poland.

Joseph Goebbels (1897-1945)
Minister for Propaganda in Nazi Germany. One of Hitler's closest advisors and was known for his public speaking and antisemitism.

Hermann Goering (1893-1946)
Leading Nazi official and head of the German air force during WWII.

Heinrich Himmler (1900-1945)
Leading member of the Nazi party and responsible for the Gestapo. He was one of the main architects of the Holocaust.

Hans and Sophie Scholl
Students and members of the White Rose Group who left anti Nazi leaflets in public places. They were executed for their crimes.

Claus von Stauffenberg
Senior officer at the War Office in Berlin famous for the 1944 July bomb plot in which Hitler was injured.

Key terms

Anti-Semitism
Hatred and mistreatment of Jewish people.

Concentration Camp
A prison camp used to hold political prisoners.

Dictator
Ruler of a country with absolute control.

The Fuhrer
Hitler's title; meaning all powerful leader.

Gestapo
The secret police in Nazi Germany.

Great Depression
A period of severe worldwide economic depression triggered by the Wall Street Crash of 1929.

Hitler Youth
A programme aimed at young people in Nazi Germany in preparation for the military.

Indoctrination
The process of teaching a person or group to accept a set of beliefs.

Kinder, Kirche, Kuche (3Ks)
Children, Kitchen, Church –3 areas of focus for women in Nazi Germany

Mein Kampf
"My Struggle" – Hitler's book, written whilst in prison in 1925.

Police State
Govt exercising power through police.

SS (Schutzstaffel)
Hitler's private protection squad who became elite soldiers..

Treaty of Versailles
Agreement at the end of WW1 that blamed Germany for war.

Key events

Voting for Hitler
At the end of WW1, many Germans were angry with the Treaty of Versailles. It made Germany take the blame for WW1. Hitler used this upset and hatred to encourage people to vote for his policies that were centred around revenge. Hitler promised to;

- ❑ Destroy the Treaty of Versailles
- ❑ Destroy Communism
- ❑ Reunite German speakers
- ❑ Create living space in the East (Lebensraum)

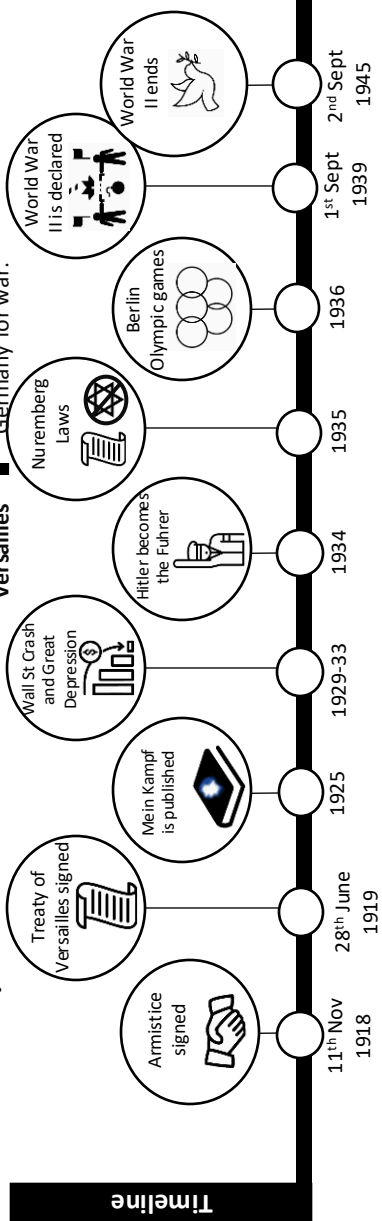
He also blamed the Jews and Communists for all of the hardship Germany was suffering.

Women
Before Hitler was elected, women in Germany had many rights and freedoms. When Hitler came to power this changed he believed they should perform a more 'traditional' role. He believed the role of women was 'kinder, kuche, kirche'. Propaganda was used to indoctrinate women. The mother cross was awarded to women who were successful in producing children.

Children
The next generation of Nazis had to be indoctrinated from an early age, so education was about racial purity and ensuring the Thousand Year Reich. The Nazis used the school curriculum and after school groups like the Hitler Youth to control the young people of Germany.

Control
Hitler used propaganda, censorship and the police state to make sure he remained in total control of Nazi Germany. Organisations such as the Gestapo and the SS created an atmosphere of fear which led to German's following orders. Those who did speak out found themselves executed or put in concentration camps. This use of fear was supported by changes in the law, for example in 1933 there were 3 crimes punishable by death. By 1943, the number had risen to 45.

Timeline



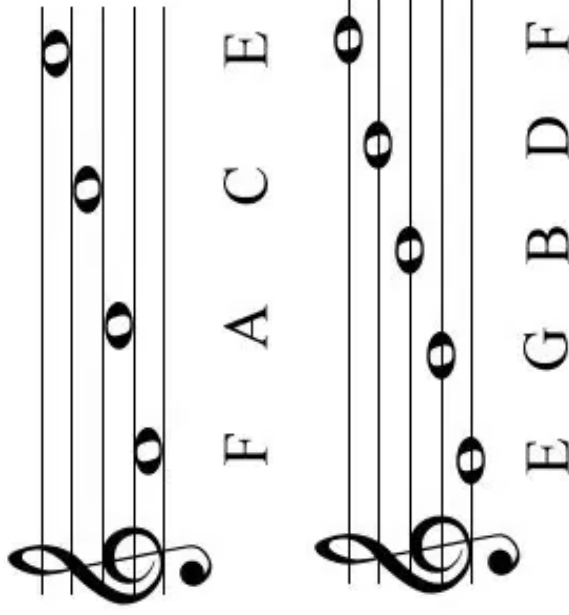
Terminology	
12 bar blues	A chord sequence, used as a foundation within blues music, that is repeated.
Blues scale	A collection of notes that are used to create specific genres of music.
Melody	The tune within a piece of music.
Improvise	Creating music on the spot. Unprepared performance.
Expression	To add emotion and sensitivity to music. To lift music from the page.
Raga	A collection of notes mainly used within classical Indian music.
Tala	A cycle of beats that repeats, mainly used in classical Indian music.

D ^b	E ^b	G ^b	A ^b	B ^b	D
C [#]	D [#]	F [#]	G [#]	A [#]	C
C	D	E	F	G	A
				B	C

Famous musicians you will study

- Bessie Smith
- Sonny Terry & Brownie McGhee
- Howlin' Wolf
- Billie Holiday
- Anoushka Shankar
- A.R. Rahman

Stave Notation - Treble Clef



Musical elements: Dynamics, Rhythm, Pitch, Structure, Melody, Instrumentation, Tempo, Texture, Tonality, Harmony.

Blues instruments

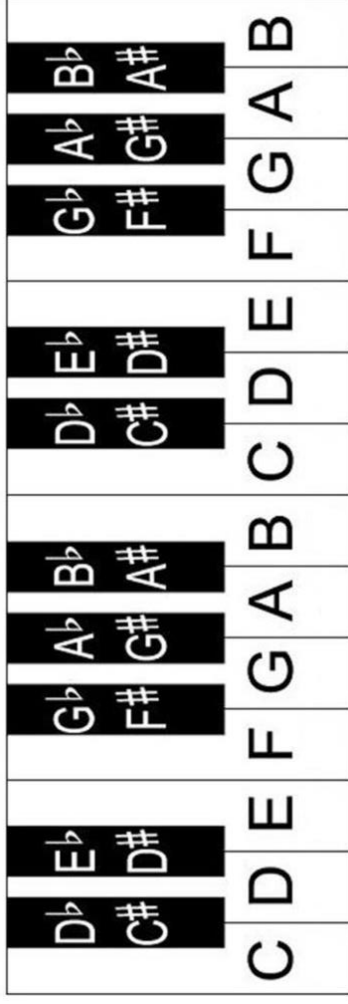
Banjo, harmonica, vocals, guitar, piano, trumpet, saxophone.

Indian instruments

Sitar, bansuri, sarangi, harmonium, tabla, tambura.

Terminology	
DAW	Digital Audio Workstation. We are using a program called Mixcraft.
Programming	A form of music production using electronic devices and software.
MIDI	Musical Instrument Digital Interface. A way to connect musical devices to control and create sound.
Synthesiser	An electronic musical instrument that generates audio signals.
Velocity	The force something is played with, which links to the volume of sound. This can be edited through Mixcraft.
Metronome or click track	A continuous click or sound at equal measures. To aid playing in time.
Piano roll	A graphical display of MIDI notes. Showing pitch, length and velocity, which can be edited and controlled.

Keyboard Diagram



How to build a basic chord

1) Use the 1st, 3rd and 5th notes of the scale to build a basic chord.

Example: A B C D E F G
= A minor chord = A C E

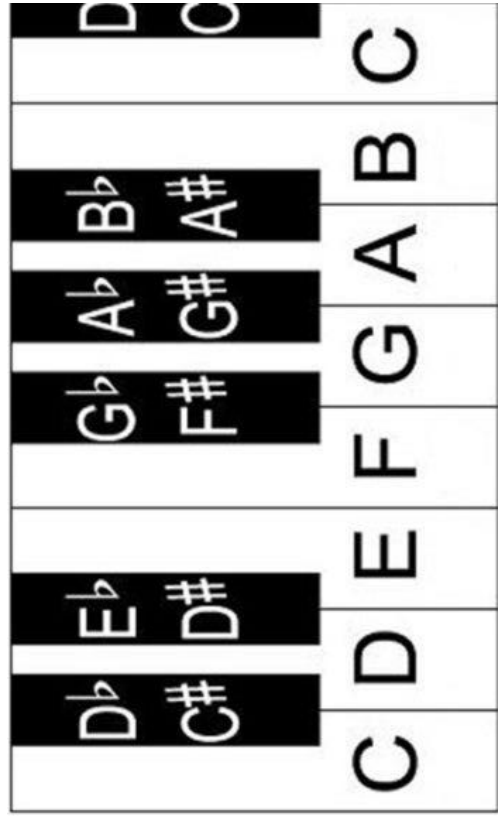
2) Major Chord

5+4 semitones = Example: C E G

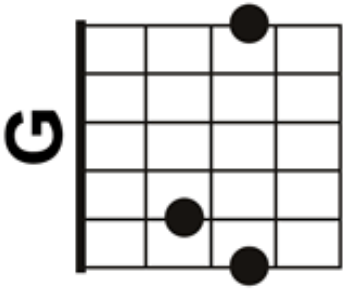
3) Minor Chord

4+5 semitones = Example: A C E

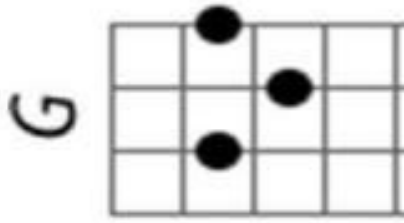
Keyboard Diagram



Guitar chord diagram



Ukulele chord diagram



How to build a chord

Use the 1st, 3rd and 5th notes of the scale to build a basic chord.

Example: A B C D E F G
A minor chord = A C E

Terminology

- Notation
- Accuracy
- Fluency
- Tempo
- Beat
- Time signature
- Rhythm
- Melody
- Phrasing
- Sequence
- Pitch
- Instrumentation
- Structure
- Harmony
- Chords
- Style
- Genre
- Ensemble

Rules

- ☐ A basketball team can have a maximum of five players on the court.
- ☐ Player substitutions can be made at any time and there is no restriction on the number of substitutions made.
- ☐ A ball can travel through dribbling or passing.
- ☐ A player is no longer able to dribble with the ball once the player puts two hands on the ball. At this point, a player must either pass or shoot.
- ☐ If a team wins possession back in their own half, they have ten seconds to get it into their opponent's end or a foul will be called.
- ☐ An attacking team has 24 seconds from gaining possession of the ball to shoot
- ☐ After the shot is taken, the clock is restarted for another 24 seconds.
- ☐ After a team scores a basket, the ball is returned back to the opposition to start again.
- ☐ All fouls that are committed throughout a game are to be accumulated and when a certain number is reached, the umpire will award a free throw.
- ☐ Depending on where a technical foul is committed, the umpire may award a number of free throws a player will receive.
- ☐ Violations can be awarded by the officials in basketball for player handling errors. These include travelling, double dribble, goal-tending and back court violation.

Officials

During a competitive game of basketball there are two referees, a scorekeeper, timekeeper and a shot clock operator. To ensure that everybody is aware of a decision made, the referees perform a series of hand and arm signals.

Scoring

In a game of basketball there are three clear ways to score points. If a shot is successfully scored from outside of the three-point line, three points are awarded. If a shot is successfully scored from inside of the three-point line, two points are awarded. If a team is awarded a technical foul then they will receive between one and three free shots. Each shot scored will be awarded with one point.

Bounce Pass

A bounce pass is a short pass that enables the player to find a teammate in a crowded area. The height of the ball makes it difficult for the opposition to intercept.

Stage one

Feet shoulder width apart in opposition, with knees bent. Place hands each side and slightly behind the ball, with the fingers comfortably spread. Hold the ball at waist level, with elbows tucked in.

Stage two

Step in the direction of the pass, through extending your legs, back and arms. The wrist and fingers should be forced through the ball releasing it off the first and second fingers of both hands. Follow through with the arms fully extended, fingers pointing at the target and thumbs pointing to the floor.

Chest Pass

A chest pass is a very fast and flat pass. This enables a team to move quickly up a court in a precise and accurate fashion.

Stage one

Stand with feet shoulder width apart, on the balls of your feet with back straight and knees slightly bent. Place hands on the sides of the ball with the thumbs directly behind the ball and fingers comfortably spread. The ball should be held in front of the chest with the elbows tucked in.

Stage two

Step in the direction of the pass by extending your legs, back and arms. Push the ball from the chest with both arms (not from one shoulder). Fingers are rotated behind the ball and the thumbs are turned down. The back of the hands face one another with the thumbs straight down.

Stage three

Make sure the ball is released off the first and second fingers of both hands. Follow through to finish up with the arms fully extended, fingers pointing at the target and thumbs pointing to the floor.

Jump shot

The purpose of the jump shot is to allow the shooter to take aim from a higher position and therefore prevent a defender from blocking it.

Stage one

Place feet shoulder width apart, toes pointing straight ahead, and knees bent. Place non-shooting hand on the side of the ball and the shooting hand at the back of the ball, with the elbow tucked in. Hold the ball at chest height.

Stage two

Extend the legs/ankles by jumping straight up. Whilst in flight, extend back, shoulders and elbow. Flex the wrist and fingers forwards and release the ball at the highest point. After release, fingers should be pointed at the target, with the palm facing down.

Lay-up

A lay-up provides a player with the opportunity to drive at the opponent's basket, jump close to the target and release the ball safely at the backboard.

Stage one

Dribble to the side of net. When a few metres away from the basket, hold the ball with both hands on the shooting hands side of the body. Place the non-shooting hand on the side of the ball, and shooting hand on top of the ball.

Stage two

The last step before the lay-up jump should ensure that take off foot is opposite to the shooting hand (left foot/right hand). Flex the knee at take-off.

Stage three

Whilst jumping, extend the shooting knee and raise the ball up. Bring the ball between the shoulder and ear. Direct the wrist and fingers straight at the basket and release the ball at the highest point. Complete the follow through with the arm up and palm facing down, and hold until the ball has reached the basket.

Key terms

Backhand Doubles Forehand Grip Rally Ready position Serve Singles Shuttle

Rules and regulations

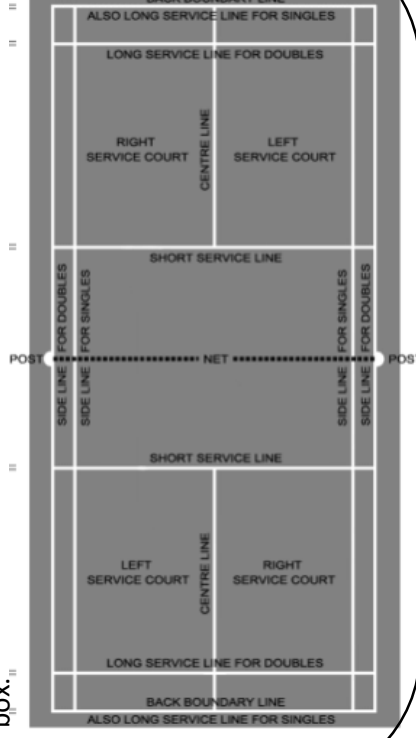
- A game always starts at love all (0-0).
- A game is played up to 21 points; the game must be won by two clear points.
- A game always starts with a serve from the right hand box (Even).
- The serve must land beyond your opponents service line.
- All serves must be hit into the diagonal service box.
- Whoever wins the point serves next.
- You cannot hit the net with your racket or body.

Serving/ court area

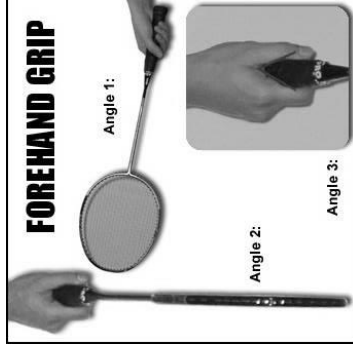
There are three types of serve: Short/backhand, long, flick.

Court area: *long and thin* for singles, *short and wide* for doubles.

Determining where to serve from: If the score is even you serve in the right box, if the score is odd you serve in the left box.



Types of grip



Attacking shots

- Smash shot
- Drop shot
- Net shot

Defensive shots

- **Overhead clear** (played to the back of your opponents court)

Exit routes:

Todmorden Badminton Club

Todmorden
Leisure Centre
Ewood Lane
OL14 7DF

Brunlea Badminton Club

St Peter's Centre
Burnley
BB11 1NG
Page 64

Short pass

A short side foot pass enables a team to quickly pass a ball and help maintain possession. It is used for accuracy.

- ☐ Move parallel to the ball and place your non-kicking foot to the side of the ball.
- ☐ Keep your eye on the ball until you have it under your control.
- ☐ Look up to see where is the best place to pass it.
- ☐ On selection of your pass, maintain a strong body position.
- ☐ Swing your kicking foot through and strike the ball with the inside of your foot.
- ☐ Aim to hit the middle of the ball to ensure it stays close to the ground.
- ☐ Keep looking at your target.
- ☐ Follow your kicking leg through towards the intended target.
- ☐ The speed of the kicking leg will direct how hard you kick the ball.

Long pass

A long pass is an attacking skill that allows players to switch the direction of the attack very quickly to create space, find a teammate or to catch out the opposition.

- ☐ Move parallel to the ball and place your non-kicking foot to the side of the ball.
- ☐ Keep your eye on the ball until you have it under your control.
- ☐ Look up to see where is the best place to pass the ball.
- ☐ On selection of your pass, maintain a strong body position.
- ☐ Explosively bring your kicking foot through and strike the ball with laces of your football boot.
- ☐ Aim to hit the middle of the ball to ensure it stays close to the ground or the lower half of the ball if you want to lift it over opposition players.
- ☐ Keep looking at your target.
- ☐ Follow your kicking leg through towards the intended target and your body over the ball.
- ☐ The speed of the kicking leg will direct how hard you kick the ball.

Control

Good control of the football is an essential skill to maintain possession of the ball from the opposition and, if done accurately, gives the player more time to make the correct next decision.

- ☐ Keep your eye on the ball at all times.
- ☐ On contact with the ball, withdraw the foot slightly to take the momentum out of the ball (this is known as "cushioning").
- ☐ Aim to make contact with the middle of the ball to ensure that it stays close to the ground and does not bounce up.
- ☐ Once under control, move the ball out of your feet to allow the next decision to be made.

Block tackle

The block tackle is an essential skill for winning the ball back in football. It is mainly used when confronting an opponent head on and it is important to complete it with good timing and technique to prevent injury or fouls.

- ☐ Close down your opponent quickly but do not rush uncontrolled at them.
- ☐ Try to reduce any space around you and monitor for passing options.
- ☐ Stay on the balls of your feet, arms slightly out to jockey your opponent.
- ☐ Keep your eye on the ball and wait for a clear view of the ball.
- ☐ When you can see most of the ball, transfer your weight from your back to front foot and move the inside of your foot towards the ball.
- ☐ Maintain a strong body position.

Throw-in

The throw-in is the legal way to restart the game if the ball has gone out of play from either of the side-lines.

- ☐ Hold the ball with both hands and ensure that the thumbs are behind the ball and fingers are spread.
- ☐ Hold the ball behind the head with relaxed arms and elbows bent.
- ☐ Keep your feet shoulder-width apart.
- ☐ Face your target.
- ☐ Lean back with both feet in contact with the ground.
- ☐ Slightly bend your knees and arch your head, neck, shoulders and trunk.
- ☐ When ready, propel yourself forward and release the ball just as it passes your head.
- ☐ Once the ball is released, bring your strongest leg forward and out in front of you for balance.

Heading

The header can be an attacking or defensive skill and is used to try and win the ball when it is in the air.

- ☐ Keep your eyes on the ball.
- ☐ Use your forehead to make contact with the bottom of the ball for a defensive header or the top of the ball for an attacking header.
- ☐ For a defensive header, it is important to get good height and distance but for an attacking header you need power and accuracy.
- ☐ You can also use flick headers to pass to a team mate.

Year 9 PE

Health, Fitness and Exercise

Health can be defined as 'complete physical, mental and social wellbeing and not only the absence of illness or infirmity'. Fitness can be defined as 'the ability to meet the demands of the environment'. Exercise can be defined as 'a form of physical exercise done to improve health or fitness or both'. *Adults* - five sessions of thirty minutes activity per week. The activity should be physical enough to cause the adult to breathe more deeply and to begin to sweat. *Children and young people* - seven sessions of sixty minutes per week. At least two of these sessions should be of high intensity exercise such as running, jumping or cardiovascular based sports.

Consequences of a sedentary lifestyle

If a person does not take part in regular physical activity, exercise or sport then they are at risk of a number of illnesses and negative effects such as weight gain or obesity; heart disease; hypertension (high blood pressure); diabetes; depression; increased risk of osteoporosis and loss of muscle tone.

Lifestyle choices

Other lifestyle choices can affect a person's health in either a positive or negative way. For example, eating a balanced diet means a person is less likely to become ill or put on excess body fat; getting enough sleep is important for the body to rest and brain to function optimally; not smoking as this causes illnesses such as bronchitis and lung cancer and not taking recreational drugs such as alcohol as in the short term it can lead to disorientation and poor decision-making and in the long term can lead to disease.

Health related exercise

Body composition	Definition	Example
Cardiovascular fitness	The percentage of body weight which is fat, muscle and bone	The gymnast has a lean body composition to allow them to propel themselves through the air when performing on the asymmetrical bars
Flexibility	The ability of the heart, lungs and blood to transport oxygen	Completing a half marathon with consistent split times across all parts of the run
Muscular endurance	The range of motion (ROM) at a joint	A gymnast training to increase hip mobility to improve the quality of their split leap on the beam
Strength	The ability to use voluntary muscles repeatedly without tiring	A rower repeatedly pulling their oar against the water to propel the boat towards the line
Agility	The amount of force a muscle can exert against a resistance	Pushing with all one's force in a rugby scrum against the resistance of the opposition pack
Balance	The ability to change the position of the body quickly and control the movement	A badminton player moving around the court from back to front and side to side at high speed and efficiency
Coordination	The ability to maintain the body's centre of mass above the base of support	A sprinter holds a perfectly still sprint start position and is ready to go into action as soon as the gun sounds
Power	The ability to use two or more body parts together	A trampolinist timing their arm and leg movements to perform the perfect tuck somersault
Reaction time	The ability to perform strength performances quickly	A javelin thrower applies great force to the spear while moving their arm rapidly forward
Speed	The time taken to respond to a stimulus	A boxer perceives a punch from their left and rapidly moves their head to avoid being struck
	The ability to put body parts into motion quickly	A tennis player moving forward from the baseline quickly to reach a drop shot close to the net

Rules ☐ Players are not allowed to travel with the ball. ☐ A team can have up to 12 players but only seven are allowed to play on court. ☐ Defending players are unable to snatch or hit the ball out of another player's hands. ☐ A defending player is only allowed to stand beside the player with the ball until it has left their hands. ☐ A defending player must stand three feet away from the person with the ball. ☐ An attacking player is unable to hold the ball for more than three seconds. ☐ Players must remain within their designated zones. ☐ The team retaining possession after the ball goes out of play have three seconds at the side-line to get the ball back into play.	Officials During a competitive game of netball there are two referees and up to two scorekeepers and timekeepers officiating. Scoring In a game of netball there are two clear ways to score points: 1. In open play, if a shot is successfully scored from inside the goal circle, the team gains one point. 2. If the team is awarded a technical foul then they will receive a free shot at the net. A successful shot will be awarded with one point.
Bounce Pass A bounce pass is a short pass that enables the player to find a teammate in a crowded area. The height of the ball makes it difficult for the opposition to reach and intercept. Stage one Feet shoulder-width apart in opposition, with knees bent. Place hands each side and slightly behind the ball, with the fingers comfortably spread. Hold the ball at waist level, with elbows tucked in. Stage two Step in the direction of the pass, extending the legs, back and arms. The wrist and fingers should be forced through the ball, releasing it off the first and second fingers of both hands. Follow through with the arms fully extended, fingers pointing at the target and thumbs pointing to the floor.	Chest Pass A chest pass is a very fast and flat pass which enables a team to move quickly up a court in a precise and accurate fashion. Stage one Stand with feet shoulder width apart and on the balls of your feet, with back straight and knees slightly bent. Place hands on the sides of the ball with the thumbs directly behind the ball and fingers comfortably spread. Stage two The ball should be held in front of the chest with the elbows tucked in. Step in the direction of the pass, by extending the legs, back, and arms. Push the ball from the chest with both arms (not from one shoulder). Fingers are rotated behind the ball and the thumbs are turned down. Stage three The back of the hands face one another with the thumbs straight down. Make sure the ball is released off the first and second fingers of both hands. Follow through to finish up with the arms fully extended, fingers pointing at the target and thumbs pointing to the floor.
Shoulder Pass A shoulder pass is a very dynamic, fast and long pass which enables a team to switch positions on court very quickly to either find a player in space or break defensive screens. Stage one Player's feet should be shoulder width apart in opposition. Opposite foot forward to throwing arm. Stand on balls of feet with toes pointing toward target, and knees slightly bent. Hold the ball at head height, slightly behind the head. Elbow should be at a 90° angle and fingers spread behind the ball. Stage two Step in the direction of the pass by transferring the body weight from back foot to front foot. Pull the arm through with the elbow leading. To follow through, fully extend your arm and wrist. Point the fingers in the same direction as the pass, with palms facing down.	Pivoting The pivoting action is a swivel movement that allows the player to move on a fixed axis to either pass or shoot. Stage one Run towards the ball and jump by extending the legs and ankles. Keep the eyes firmly fixed on the ball. Bring the hands out in front of the body at chest height with fingers spread open and pointing up. Stage two In the air catch the ball with thumbs an inch or two apart making a 'W' shape. Land on the ball of one foot on the ground. Flex the knee and ankle as the foot hits the floor. Stage three Stand with knees slightly bent and the feet shoulder width apart. Bring the ball into the body to protect it. Pivot by rotating on the ball of the landing foot. Keep the upper body straight and head up. Make sure the hip of the pivoting leg is pointing in the direction the player is aiming to pass the ball in. The player can move or step with the other foot any number of times. The player is not allowed to lift the foot they are pivoting on before they release the ball.

Year 9 Spanish Unit 1 – Future Holidays

Este verano (This summer) La semana que viene/próxima (Next week) El mes que viene/próximo (Next month)	voy a ir (I am going to go) vamos a ir (we are going to go)	de vacaciones (on holidays)	a Inglaterra (to England) a Gales (to Wales) a Escocia (to Scotland) a Irlanda (to Ireland) a España (to Spain) a Alemania (to Germany)	en autocar (by coach) en avión (by plane) en barco (by boat) en coche (by car) en tren (by train)
El año que viene/próximo (Next year) En junio (In June) En julio (In July) Durante las vacaciones (During the holidays)	voy a quedarme (I am going to stay) vamos a quedarnos (we are going to stay)	en la casa de mi familia (in my family home) en un camping (on a campsite) en un hotel barato (in a cheap hotel) en un hotel de lujo (in a luxury hotel) en un albergue juvenil (in a youth hostel)	en el norte (in the north) en el sur (in the south) en la capital (in the capital)	de España (of Spain) del país (of the country) de la ciudad (of the city)
			en el centro (de la ciudad) (in the centre [of the city]) en un pueblo (in a town) en la costa (on the coast) en la montaña (in the mountains)	en una aldea (in a village) en una/la ciudad (in a/the city)
Voy a pasar (I am going to spend) Vamos a pasar (We are going to spend)	una semana (a week) dos semanas (two weeks) un mes (a month) quince días (fifteen days)	allí (there) con mi familia (with my family) con mis primos (with my cousins) con mis amigos (with my friends)	y será (and it will be) y creo que será (and I think that it will be)	aburrido (boring) divertido (fun) guay (cool) genial (great)
			ir de marcha (to go clubbing) jugar con amigos (to play with friends) montar en bici (to ride a bike/go cycling) relajarme / relajarnos (to relax) salir al centro (to go out in town) tocar la guitarra (to play the guitar) tomar el sol (to sunbathe)	cada mañana / tarde (each morning / afternoon or evening) todo el día (all day long) todos los días (every day) todos los fines de semana (every weekend)
Voy a (I am going) Vamos a (We are going)	bailar (to dance) comer comida deliciosa (to eat delicious food) comer y dormir (to eat and to sleep) comprar recuerdos (to buy souvenirs)	descansar (to rest) hacer buceo (to do/go diving) hacer deporte (to do sport) hacer natación (to do/go swimming) hacer turismo (to do/go sightseeing) ir a la playa (to go to the beach) ir de compras (to go shopping)		
Me gustaría (I would like) Nos gustaría (We would like)				

Year 9 Spanish Unit 2 – A Past Holiday – Location, Transport + Accommodation

El año pasado (Last year)		fui (I went)	de vacaciones (on holiday)	a Alemania (to Germany)	a Francia (to France)	
El mes pasado (Last month)						
El verano pasado (Last summer)						
Hace dos semanas (Two weeks ago)						
Hace un mes (A month ago)		fuimos (We went)		a Escocia (to Scotland)	a Irlanda (to Ireland)	
Viajé (I travelled)	en (by)	autocar (coach)	y el viaje (and the journey)	fue (was)	cómodo (comfortable)	largo (long) rápido (quick)
Viajamos (We travelled)		avión (plane)				
		barco (boat)				
		coche (car)				
		tren (train)		duró (lasted)	una hora (1 hour) dos horas (2 hours)	diez horas (10 hours) dos días (2 days)
Me alojé (I lodged)		en un albergue juvenil (in a youth hostel)	en un hostel (in a hostel) en un hotel barato (in a cheap hotel) en un hotel de lujo (in a luxury hotel)	y (and)	fue genial (it was great)	
Nos alojamos (We lodged)		en un camping (on a campsite)				
		en una granja (on a farm)				
Me quedé (I stayed)		en casa de mis abuelos (at my grandparents' house) en casa de mi amigo (a friend's house)				
Nos quedamos (We stayed)		un buen restaurante (a good restaurant)	una zona de spa (a spa area)	un parque acuático (an aqua park)	la gente era simpática (the people were nice)	
Nos encantó (We loved it)	porque (because)	había (there was)	un gimnasio (a gym)	una sala de juegos (a games room)	el hotel era genial (the hotel was great)	
Lo pasamos bomba (We had a great time)		una playa bonita (a lovely beach)			había mucho que hacer (there was a lot to do)	

Year 9 Spanish Unit 3 – A Past Holiday – Activities on each day

Durante las vacaciones (During the holidays)	alquilé una bici (I rented/hired a bike)	descansé en la playa (I relaxed/rested on the beach)	probé platos típicos (I tried some typical dishes)	con mi familia (with my family)
	comí comida deliciosa (I ate delicious food)	di un paseo (I went for a walk)	saqué fotos (I took pictures)	con mi hermano (with my brother)
	compré recuerdos (I bought souvenirs)	jugué al tenis (I played tennis)	visité el castillo (I visited the castle)	con mi hermana (with my sister)
	conocí a mucha gente (I met a lot of/many people)	nadé en el mar (I swam in the sea)	vi un partido de fútbol (I saw a football game)	con mi madre (with my mother)
El primer día (On the first day)	hice (I did/went) hicimos (we did/went)	buceo (diving)	senderismo (hiking)	con mi padre (with my father)
		natación (swimming)	turismo (sightseeing)	con mis amigos (with my friends)
El segundo día (On the second day)				
El tercer día (On the third day)				
El último día (On the last/final day)				
Un día (One day)				
Lo mejor fue cuando (The best thing was when)	fui (I went) fuimos (we went)	al centro comercial para comprar cosas (to the shopping centre to buy some things) al centro de la ciudad para hacer turismo (to the city centre to do sightseeing) a la montaña para hacer senderismo (to the mountains to do hiking) al parque para jugar al tenis (to the park to play tennis) a la playa para nadar en el mar (to the beach to swim in the sea) a la piscina para tomar el sol (to the swimming pool to sunbathe)		
	alquilamos una bici (we rented/hired a bike)	conocimos a mucha gente (we met a lot of/many people)	jugamos al fútbol (we played football)	sacamos fotos (we took pictures)
	comimos comida deliciosa (we ate delicious food)	descansamos en la playa (we relaxed/rested on the beach)	nadamos en el mar (we swam in the sea)	vimos un partido de rugby (we saw a rugby game)
	compramos recuerdos (we bought souvenirs)	dimos un paseo (we went for a walk)	probamos platos típicos (we tried typical dishes)	visitamos el castillo (we visited the castle)

Year 9		ARCH Curriculum (Personal Development)			Health and Wellbeing	
Self-Awareness		Mental Health and Wellbeing (MHWB)			Healthy Lifestyles	
Key Terms		Characteristics of positive MHWB			Having a healthy lifestyle is important for so many reasons; it can help: • you have positive MHWB and boost your mood • improve your brain function • help you have more energy • boost your immune system • prevent disease Having a healthy lifestyle includes: • eating healthy food • sleeping for at least 8 hours • getting plenty of exercise • taking care of your personal hygiene (taking a regular shower/bath, brushing your teeth, washing your hands, keeping your clothes clean) • getting regular checks at the dentist • understanding the importance of things that can prevent illness eg. vaccinations • wearing sunscreen during the summer months	
Resilience	To be able to cope with or recover quickly from difficulties.	A person with good mental health can manage their emotions, cope with stress, manage healthy relationships and make good decisions. People with poor mental health struggle in these areas. Our mental health is impacted by lots of factors, so it is important we understand how to take care of ourselves to protect our mental health. This includes:				
Wellbeing	Being comfortable, healthy and happy.					
Self confidence	To be able to trust in your own abilities, qualities and judgement.					
Personal Strengths	Skills & actions that you can do well.					
Your identity will grow and change throughout your time at school. It is important to understand what your strengths are and to also understand your areas for development.		• eating healthy food • avoiding energy drinks • getting plenty of exercise • sleeping for at least 8 hours • taking time away from social media/gaming • spending quality time with friends and family	MHWB Support  Mr Stair <i>Mental Health Lead</i> Online Tools: <i>Kooth.com</i> <i>Northpoint.org.uk</i>			
Drugs, Alcohol and Tobacco		Managing risk and personal safety			Puberty and sexual health	
Prescription drugs and over counter medication Only ever use medicine when necessary; use it under the guidance of an adult, following the instructions. Antibiotics should only ever be used when prescribed.		Keeping yourself safe online 1. Think before you post anything. Don't upload or share anything you wouldn't want your parents, carers or teachers to see. 2. Don't share your personal details with people. Check your privacy settings. 3. Think about who you are talking to. If it is someone you have never met, be cautious; there are some people who will try to gain your trust to get you to share personal information.			Puberty can cause physical and emotional changes; it affects everyone differently and at different ages. The average age for females is 11 and for males 12; it can happen earlier or later than this. It will happen slowly over time. If you have any worries, or would like advice, speak with your parents, carers or an adult in school. <i>Childline</i> also has some good advice on their website.	
Vaping It is illegal for vapes to be sold to anyone under 18. This is due to the harm caused by and addiction to nicotine. Please also be aware that there are lots of unregulated vapes on the market, this means you do not know what is in it and it can cause significant harm.						
Alcohol It is illegal for alcohol to be sold to anyone under 18. This is due to the harm caused by and the addiction to alcohol.	Illegal drugs These substances are illegal due to the harmful effect they can have on your body, including addiction.	Basics of First Aid Providing first aid can save lives and make a difference. If you come across a situation where someone needs medical attention, call for help (call 999). Download ' <i>what three words</i> ' so you can give your exact location.			Menstrual Health Starting your periods can be daunting. They can often be irregular; this can mean they can happen at any time and that the flow could suddenly become heavier. Make sure you have a sanitary pad/tampon in your bag. You can also use period pants to make you feel more secure. If you ever need a sanitary towel/tampon, please ask at student reception.	

Year 9			ARCH Curriculum (Personal Development)		Relationships
Positive Relationships			Relationship Values	Forming and maintaining respectful relationships	
Key Terms			How to manage conflict in friendships		
Biological sex	The sex a person is assigned at birth, usually based on their genitals.		It is important to understand what positive relationships looks like; there are differences in different types of relationships, but the values are based on similar things. Trust in relationships You build trust in your relationships by: • Listening to each other • Allowing one another to be free to make their own decisions • Being honest with each other • Supporting one another in times of need • Making each other feel safe Relationships with your peers At school, you will interact with lots of different people that you are not necessarily friends with. It is important that, even if we do not have a good relationship with another person, we are still kind and respectful to them.	If you fall out with someone you are close with, this can be very upsetting. If this does happen, avoid doing anything in the heat of the moment that you might regret later. Seek support from an adult who will be able to help you work through the conflict.	
Gender identity	How a person feels about their gender. This may be different to their sex.			Forming friendships online – how to stay safe	
Sexual orientation	The gender or genders a person is sexually attracted to.			Be very wary of trusting people you make friends with online. Some people will do this to gain your trust and then take advantage of you. To stay safe, you should never share personal details, photos or intimate details with people you meet online.	
Healthy relationships	A relationship that involves trust, honesty, respect and open communication.			Dealing with loss, divorce and bereavement	
Types of relationships			We all experience loss at some point in our lives; this can include the separation or divorce of parents, loss of a friend or family member or loss of a pet. If you are struggling to cope, please speak with your parents, carers or an adult in school.		
Consent			Social Influences		
This relates to all aspects of life, but it is especially important in an intimate relationship. Consent it to give permission for something to happen or an agreement to do something. To give consent, the person needs to be able to choose; this means they should be old enough, and not under the influence of any substances that might change the way they think. Consent should be clearly and freely communicated and if a person changes their mind, this must be adhered to.			Peer Pressure		
			Peer pressure is a term used to describe the influence from members of your peer group. This includes your friends but also includes groups online. This pressure can lead to you doing things you know are wrong or harmful; it can then lead to risk-taking behaviour.		
			How to resist peer pressure		
			1. Pay attention to how you feel. If you are being coerced into doing something you know is wrong, you need to seek help.		
			2. Stay true to your values. Be confident about your values and say no to anything you do not want to do.		
			3. Find true friends. When you have positive relationships with people (true friendships), they will not coerce you into doing anything you do not want to do.		
			Anti Bullying		
			You might not be actively involved in a bullying a person, but if you are aware, it is happening you should do something about it. If you talk to an adult in school, it will be treated with confidentiality.		

Year 9	ARCH Curriculum (Personal Development)		Careers and Preparing for Adulthood	
Learning Skills	Choices and Pathways	Work and Careers		
Being a lifelong learner Throughout our lives, we never stop learning. At school you can gain academic qualifications, but you are also learning lots of skills that will be important later in life as well. Skills and qualities you can have that are important to an employer include: • good attendance and punctuality • being a good team player • being able to communicate well • being polite, friendly and approachable • to have a good work ethic • to have resilience and ambition • ability to take on problems and solve challenges	During year 9, you will make choices about the GCSEs you want to take. All students will take English, Maths and Science; you will then also choose an EBacc subject (Computing, Geography, History, Latin, Triple Science or Spanish); you will then choose three other subjects (these will vary each year based on demands). When considering your options, it is helpful to think about your ambitions for future study or careers and to think about what you enjoy. Studying something you enjoy is very important. During the options process, we will talk to each student and their families to support the decision-making process. If you have a career in mind, make sure you speak to your head of year about this, to make sure you make the right choices at this stage.	 Miss Kinlin Careers Lead	 Mr Stoakes Careers Advisor	
		Aspirations for the future Use this space to say what your aspirations for the future are. This might be a specific career or a pathway for education you want to enter (eg. University).		
Employment Rights and Responsibility	Duke of Edinburgh Award	Media Literacy and Resilience		
The youngest age that you can work part-time is 13. The only exception to this is involved in areas such as acting or modelling. You can only work full time once you reach minimum school leaving age. Volunteering There is no minimum age for volunteering. If you want to volunteer, then please speak with your parents and carers first so they can make sure you are safe. Volunteering is a great way to give back to your community or an organisation. It can be very rewarding, and it can also help you build some great skills that will be beneficial for future employment. Examples of volunteering can include: • helping at school and community events • litter picking in your local area • visiting elderly and sick relatives or friends to give them companionship and support	In year 9, you will have the opportunity to undertake the bronze Duke of Edinburgh Award. The Bronze Duke of Edinburgh Award offers you a chance to develop essential life skills, including teamwork, leadership, and problem-solving. It is great for building your confidence and self-esteem and it is held in high regard by prospective employers. The award has four parts to it: 1. Volunteering: Giving time to help others or the community without pay. 2. Physical: Engaging in a physical activity regularly to improve fitness. 3. Skills: Developing a new skill or improving an existing one. 4. Expedition: Planning and completing an outdoor journey with a group. This is usually a two-day hike, camping overnight.	Sharing information online Please remember to never share information online that you would not want your parents, carers or teachers to see. Once you have shared a piece of information or an image online, you no longer have control over it. It can be shared widely in a matter of minutes. Using social media Social media can be a great way to connect with your friends. It is important to find a balance with your use of social media to protect your mental health; if you find yourself in a situation where you cannot cope without it, this is unhealthy, and you need to seek support. Echo Chambers Social media apps are designed to give you more of the content you like. This is great for finding out more about your interests, but it can also limit your view of the world. This makes it hard for you to understand the views of others and can also lead to developing extremist views.		