Year 9 Learning Journal

Learning Cycle 1

Student Name:_____

NEWQUAY TRETHERRAS

4 simple steps

Summarise

Summarise your class notes, handouts and wider reading to **condense and transform** them **as you go along** (saves time and stress closer to exams).

40%

Organise

Organise your notes and revision using PLCs (or Exam Specifications) and create **Revision Timetables**, to **focus** time and effort **on weaknesses**.

10%

Recall

Use **active recall** and **spaced repetition** to **memorise** the information.

30%

Test Yourself

Test Yourself using **low stakes and high stakes** questions to check you can **apply knowledge and understanding**.

20%

NEWQUAY TRETHERRAS

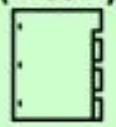
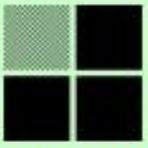
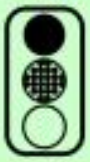
SORT

4 Steps to Success with your Studies

Summarise

- Condense 
- Flash Cards 
- Revision Clocks 
- Cornell Notes 
- Transform 
- Mind Maps or Organisers 
- Sketchnotes 
- Dual Code 

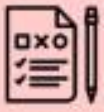
Organise

- PLCs or Exam Specs 
- Organise Folders (Weekly) 
- Chunk 
- Traffic Light (RAG) 
- Revision Timetable (Weekly Review) 
- Interleave 

Recall

- Active Recall (Testing Effect) 
- Look Say Cover Write Check 
- Leitner System (Flash Cards) 
- Memory Journey 
- Blurt - Blank Page Retrieval 
- Mnemonics 
- Group Games 
- Spaced Repetition 

Test Yourself

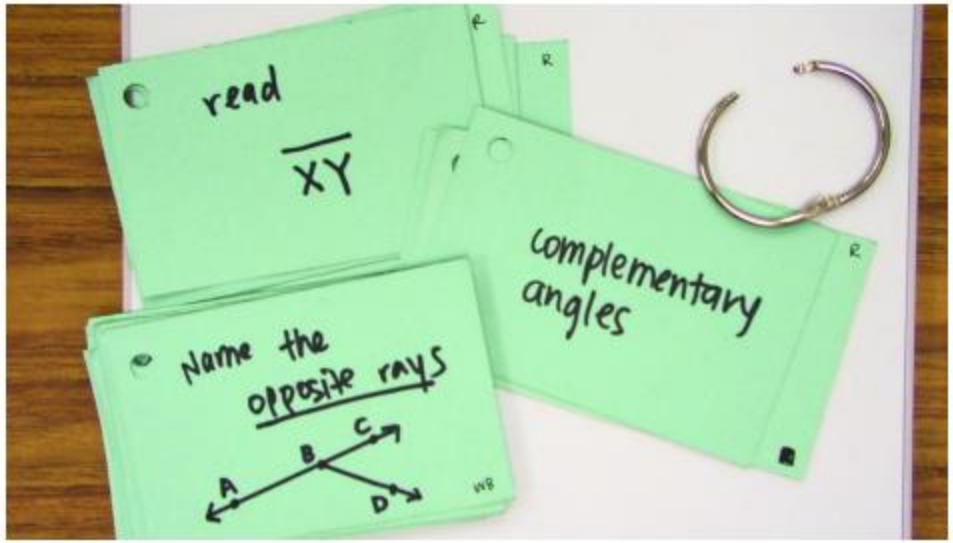
- Low Stakes
- High Stakes 
- Write Plans & Mark Schemes 
- Multiple Choice 
- Past Paper Questions 
- BUGS the Question 
- Online Quiz or App 
- Write Qs using PLC 
- Traffic Light (RAG) Qs 

Find out more at: tretherras.net/nt-revision-resources/

How to Summarise using …

NEWQUAY TRETHERRAS

Flash Cards



What is the idea?

A card with a key word or question on the front, and the definition or answer on the reverse.

What is it useful for?

- Learning definitions/meanings
- Learning a language/translations
- Learning short case study/topic facts

Pros	Cons
Useful for revising on the go (easy to carry). You can test yourself using the front or the back of the card. You can buy Ready made flashcards or use online flashcards e.g. Quizlet.	Simply copying questions and answers/definitions out of textbooks to make the cards, or just reading them over and over, doesn't improve your recall. You can make them too simple (long question, one word answer.) Doesn't help your visual memory (unless they have images). Does not help you make links/ apply facts and detail to high tariff questions.

How do I make one/use one?

1. Break down topics/subject into different units (you can use different colour cards)
2. Use bullet points (to help readability)
3. Doesn't always have to be question and answer – use variety
4. Don't cram too much on one flash card (or just use one word answers!)
5. Don't keep going over flash cards you know well. The 'Leitner System' is a good way to RECALL flashcards. You can also Quiz-Quiz Trade with others.

SORT

How to Summarise using …

NEWQUAY TRETHERRAS

Intelligent Graffiti (Sketchnotes)

What is the idea?

Filling a page with notes and diagrams about a topic. Making connections between ideas and emphasising important information.

What is it useful for?

- Case studies/topic overview
- Making links between different parts of a topic and emphasising the importance of information.

How do I make one/use one?

1. The first rule of intelligent graffiti is THERE ARE NO RULES! (The following are just suggestions)
2. Don't write down everything and use abbreviations.
3. Your notes do not need to be linear – it's up to you how they flow (they only need to make sense to you).
4. Vary handwriting & add emphasise to draw eye to key points.
5. Use connectors and containers to link and organise ideas.
6. Include diagrams and images to represent ideas.

Pros	Cons
There are no rules (flexible depending on you and the topic you are studying) Your notes will be compact, colourful and visual so this makes them easier to review. You can make connections between ideas within the topic. Converting notes into images and words helps your brain learn as it combines visual and verbal memory (dual coding).	They can be time consuming to create. Students do not always include enough detail (not helpful if you need to remember a lot of detail!) The notes may be so 'free' they are hard for you to follow again/ make sense of.

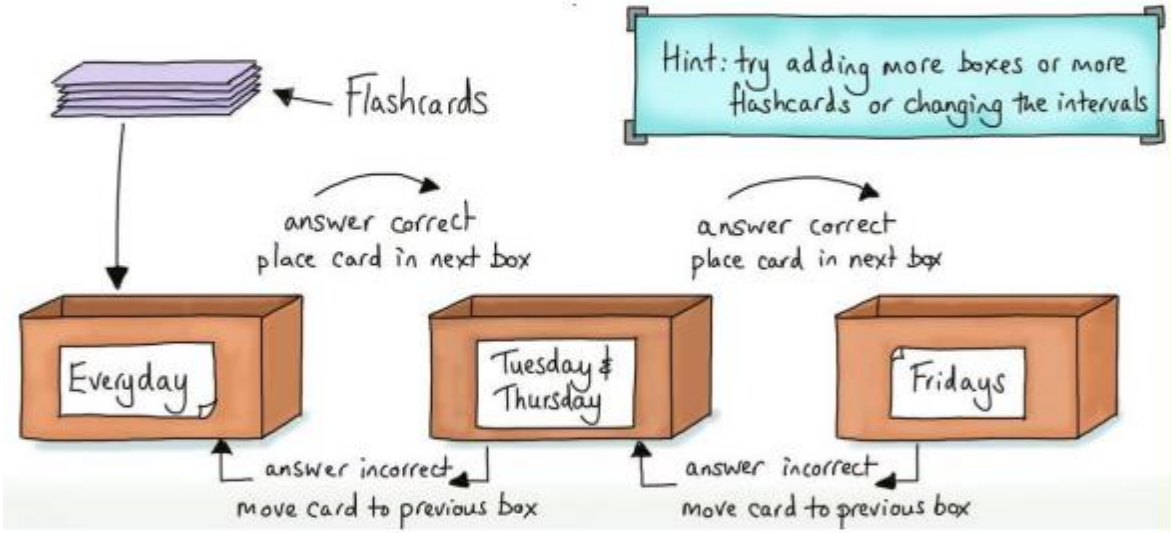
How to Recall using ...

NEWQUAY TRETHERRAS

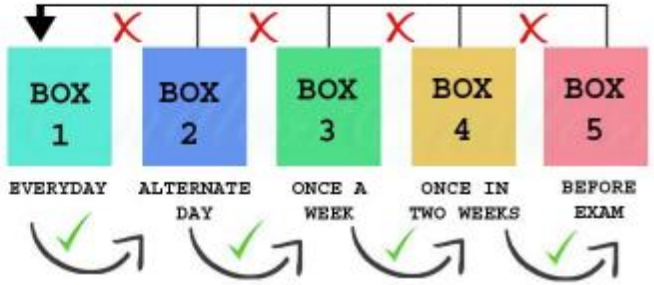
Leitner System (For Flash Cards)

What is the idea?

To revisit flash cards you don't know more frequently and the ones you do know less frequently. Making your revision more efficient.



YouTube Tutorial Video Link



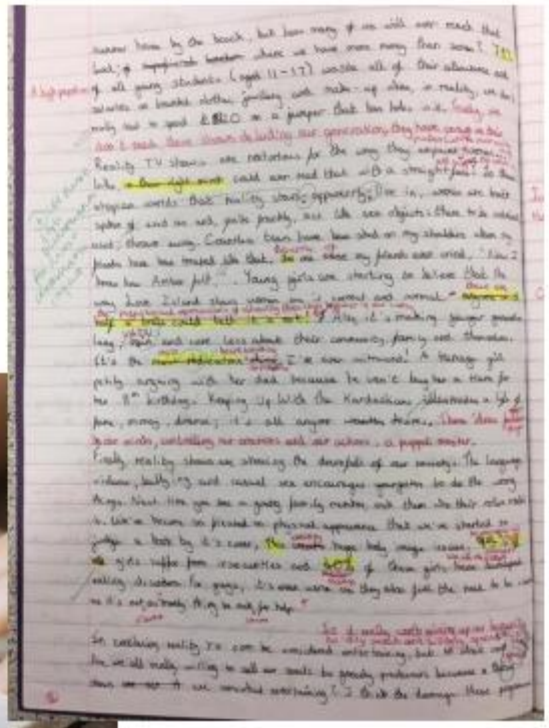
How do I use this method?

1. Create 3 to 5 boxes, folders or piles.
2. Label them as shown in the diagram below.
3. Put all your flashcards (or a set number) in Box 1
4. On day 1 try to recall the information on the flashcards in Box 1
5. If you get a flashcard correct move it into Box 2
6. If you get a flashcard wrong it stays in Box 1
7. On day 2 go through Box 1 and Box 2.
8. Every time you get a card correct it moves forward one box, every time you get it incorrect it goes all the way back to Box 1!
9. Keep visiting the boxes at the time indicated on the label.
10. You can add more cards to Box 1 at any time.

How to Recall using …

NEWQUAY TRETHERRAS

Blurting



What is the idea?

To write everything you remember on the topic you have been revising. It doesn't matter what form this takes (e.g. notes/mind map etc). Check against your revision notes to see what you got right/wrong and make corrections in a different colour. Repeat.

YouTube Tutorial Video Link

How do I use this method?

1. Revise a topic/sub-topic
2. When you think you know it, put your revision notes away.
3. 'Blurt' what you remember onto a piece of blank/scrap paper or a mini whiteboard.
4. Use any method of organizing your ideas on the paper.
5. Once you have got down everything you remember, get out your notes and see what you missed/got wrong.
6. Make corrections in red pen.
7. Focus on learning the bits you missed/got wrong next time you revise.
8. Repeat! *Always start again from scratch and try to recall everything (don't just try and recall the bits you missed/got wrong), this will strengthen your knowledge of the whole topic.*

SORT

English The Tempest	S	O	R	T
Act 1 of The Tempest				
What do we know about the context of the play?				
What do you know about colonialism during the Elizabethan era?				
What happens in Act 1.1?				
How has magic been used in Act 1?				
What do you think of the relationship between Prospero and Miranda?				
What do you notice about Prospero's treatment of Caliban?				
Act 2 of The Tempest and non-fiction source (the rescue of Alexander Selkirk), and Poem (the Solitude of Alexander Selkirk)				
What is the reality of being shipwrecked like from the Alexander Selkirk sources?				
What similarities are drawn between Trinculo and Caliban?				
How is Caliban dehumanised in Act 2.2 by the Europeans on the island?				
Choose one example of how these ideas of otherness are shown in either the poem or non-fiction source about Selkirk?				

English The Tempest	S	O	R	T
Act 3 of The Tempest				
How does Miranda subvert the expectations of femininity during the Elizabethan era?				
What plan does Caliban form against Prospero in Act 3.2?				
How does Prospero use ariel in this Act?				
How does Caliban show an innate connection to the island in Act 3?				
Act 4 of The Tempest and non-Fiction (Captain James Cook and Possession Island)				
What item tempts Caliban and the conspirators in Act 4.1?				
How is marriage presented in Act 4?				
How does Prospero feel about his daughter getting married?				
How are indigenous cultures presented in Cook's diary?				
Act 5 of The Tempest and Adonais by Percy Shelley				
What does Prospero declare he is going to relinquish in his soliloquy?				
Who is forgiven in Act 5.1?				
Who does Prospero release in Act 5?				
Despite the resolution, during the game of chess between Miranda and Ferdinand, what is suggested about the future?				
How could Adonais be viewed as foreshadowing Percy Shelley's death?				
Why do you think an extract from the Tempest was used as an epitaph for Shelley?				

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Maths Personal Learning Checklists

Straight line graphs	Sparx Code	S	O	R	T
Lines parallel to the axis, y=x and y=-x	M797				
Using tables of values	M932				
Understand and use y=mx+c	M888				
Find the equation of a line from a graph	M544				
Interpret gradients and intercepts of real-life graphs	M205				
Forming and solving equations	**Sparx Code**	**S**	**O**	**R**	**T**
Solving one and two-step equations and inequalities	M707 M118				
Solving Equations with brackets	M902				
Solve equations with unknowns on both sides	M554				
Solve inequalities with unknowns on both sides	M732				
Substituting into formulae	M979				
Rearranging formulae in one step	M242				
Rearranging formulae in two steps	M983				
Testing conjectures	**Sparx Code**	**S**	**O**	**R**	**T**
Factors, Multiples and Primes	Q601				
Highest Common Factor	M698				
Lowest Common Multiple	M227				
Conjectures and proofs (H)	U582				
Expand a pair of binomials	M960				

Three dimensional shapes	Sparx Code	S	O	R	T
Properties of 3D shapes	M767				
Nets of 3D shapes	M518				
Plans and elevations	M229				
Surface area of cubes and cuboids	M534				
Surface area of prisms	M661				
Surface area of a cylinder	M936				
Volume of a cube and cuboid	M765				
Volume of other prisms	M722				
Volume of a cylinder	M697				
Volume of a pyramid, cone and sphere (H)	U484 U116 U617				
Constructions and congruency	**Sparx Code**	**S**	**O**	**R**	**T**
Draw and interpret scale diagrams	M112				
Measuring angles	M780				
Constructing triangles	M565				
Using a pair of compasses	M196				
Constructing perpendicular bisectors	M239				
Constructing bisectors of angles	M232				
Constructing loci	M253				
Understanding congruence	M124				
Congruent triangles	U866				

Science Personal Learning Checklists

Science Biology 1a	S	O	R	T
Animal and Plant Cells				
Prokaryotic and Eukaryotic				
Microscopy				
Culturing Microorganisms				
Diffusion & Lungs				
Osmosis				
Active Transport & Root hair cells				
Cell Division – Mitosis				
Stem Cells + Real world case study				

Science Biology 1b	S	O	R	T
Human Digestive System				
Enzymes of the human digestive system				
Effects of pH on Enzymes				
Food Tests				
Digestive system summary				
The Heart				
Blood and Blood Vessels with lungs recap				
Non-Communicable Diseases				
Human Digestive System				

Science Chemistry 1	S	O	R	T
Particle model and changes of state				
Physical changes				
Atoms, elements and compounds				
An introduction to the periodic table				
Introduction to ionic bonding				
Metals Reactivity & Displacement				
Extraction of metals				
Oxidation & Reduction (HT only)				
Acids & Alkalis				
Acids & Metals & Metal Compounds				
Soluble Salts Required Practical				

Mi Vida (My Life)	S	O	R	T
give personal information				
use question words to form questions				
revise numbers/months/dates and birthdays/alphabet				
revise class objects and useful classroom language				
describe others in detail (friends and family)				
use a wide range of adjectives and intensifiers				
use *ser* and *tener* with confidence				
describe a photo about my life				
use comparatives and superlatives				
explain family relationships				
use reflexives and higher-level structures				
revise types of houses, rooms and furniture				
describe my town where I live				
describe my region and say what there is to do there				
say where I am going to live using the future tense				
write a 90 word piece about myself and my life				
USE YOUR VOCAB BOOKLET TO SORT YOUR LEARNING				

La Educación (Education)	S	O	R	T
remember school subjects and can give detailed opinions about them				
remember how to use comparatives and superlatives to compare different subjects				
revise the present tense endings of regular verbs				
describe my school using adjectives				
give detail about the facilities in my school				
compare my school to a school in a Spanish speaking country				
describe my daily routine on a school day using reflexive verbs				
use negatives				
use a range of clothes words to describe my uniform				
give opinions about my uniform				
talk about school rules using hay que and se debe				
talk about school activities and achievements in the present and past tenses				
use direct object pronouns				

Ma vie (My Life)	S	O	R	T
give personal information				
use question words to form questions				
revise numbers/months/dates and birthdays/alphabet				
revise class objects and useful classroom language				
describe others in detail (friends and family)				
use a wide range of adjectives and intensifiers				
use *avoir* and *être* with confidence				
describe a photo about my life				
use comparatives and superlatives				
explain family relationships				
use reflexives and higher-level structures				
revise types of houses, rooms and furniture				
describe my town where I live				
describe my region and say what there is to do there				
say where I am going to live using the future tense				
write a 90 word piece about myself and my life				
USE YOUR VOCAB BOOKLET TO SORT YOUR LEARNING				

L'enseignement (Education)	S	O	R	T
recognise subject pronouns and form ER, IR and RE verbs in the present tense				
remember school subjects and can give detailed opinions about them				
remember how to use comparatives and superlatives to compare different subjects				
describe my school using adjectives				
give detail about the facilities in my school				
compare my school to a school in a French speaking country				
describe my daily routine on a school day using reflexive verbs				
use negatives				
use a range of clothes words to describe my uniform				
give opinions about my uniform				
talk about school rules using il faut and on doit				
talk about school activities and achievements in the present and perfect tense				
compare my current school and primary school using the present and imperfect tense				
write 90 words about my education				
describe a photo about school				
translate sentences using vocabulary from this topic				
talk about Christmas in France/French speaking countries				
USE YOUR VOCAB BOOKLET TO SORT YOUR LEARNING				

Geography and History Personal Learning Checklists

Geography: Tectonic Hazards	S	O	R	T
Describe the structure of the Earth				
Identify, describe and explain the distribution of tectonic hazards				
Describe how plates move at the four different tectonic plate boundaries (margins): Constructive, Conservative, Collision and Destructive				
Explain how convection currents move to cause earthquakes and volcanoes				
Explain the formation of volcanic hotspots (e.g. Hawaii)				
Describe the impacts of earthquakes, volcanoes and tsunamis on health, infrastructure and economy.				
Explain the physical factors that increase vulnerability to tectonic hazards – including **scale (magnitude)** and **characteristics** of pyroclastic flows, lava flows, lahars and ash clouds.				
Explain the human (**social and economic**) factors that increase vulnerability to tectonic hazards.				
Explain how different strategies can reduce the risk of tectonic hazards (i.e. hazard mapping, new building technology and emergency planning).				
Explain how different levels of economic development increase vulnerability in different communities in different tectonic zones.				
Case Studies: I can assess the causes, impacts and human responses to:				
White Island eruption 2022				
Icelandic eruption 2010				
Sichuan Earthquake 2008				

History: Causes and course of the Russian Revolution 1905-1917 Rise of the USSR: collectivisation, induatrialisation & women	S	O	R	T
What was life like in Russia pre-1914?				
Why would Communism appeal to Russians?				
How important was Lenin to the revolution?				
What happened to the Romanovs?				
Why did the Bolsheviks win the Civil War?				
How did Stalin secure his power?				
Did the lives of women improve un the communists?				
Did Stalin improve agriculture and how did Stalin modernize the USSR?				
What was life like in the USSR under the Communists?				

Computing Python	S	O	R	T
Run simple Python programs in Interactive and Script mode				
Write programs using selection to give different outputs based on conditions				
Write programs using different types of data (e.g. strings and integers)				
Correctly use different variable types (e.g. integer and floating point), assignment statements, arithmetic operators				
Use multiple selection statements to give more than 2 outcomes of code				
Write programs that use a loop to repeat sections of code				
Use a while loop to repeat code based on a condition				
Use counters correctly in for loops				
Be able to use for loops with 3 arguments				
Use string manipulation on values stored in variables				
Write programs that use lists				
Create a list and append or change elements in the list				
Create and call a subroutine				

REP Christian Ethics	S	O	R	T
Describe the story of human creation as set out in Genesis				
Explain what the Sanctity of Life is using biblical quotes as evidence				
Describe what Natural Law is and explain how it is used in moral decision making				
Explain the terms prejudice and discrimination using examples				
State 3 of the protected characteristics				
Outline what is meant by the Golden Rule				
Describe the difference between active, passive and physician assisted euthanasia				
Explain how IVF is supported and opposed by Christians				
Explain the difference between pro-life and pro-choice views				
Describe what viability means				
Describe what bodily autonomy means				
Explain what capital punishment is				

Art and Music Personal Learning Checklists

Art Portrait Print	Evidenced	Refined
I am building on my prior knowledge of…..		
Analysing artists' styles to influence my own work		
How to use secondary sources to develop ideas		
Understand proportion through measured observational drawing		
How to use compositional skills to create a well balance lino Portrait design.		
I am developing my skills in…..		
Sketchbook presentation and artist studies		
Exploring Lino cutting and printing techniques		
Producing a series of creative outcomes using experimental backgrounds		
How to present work through critical selection.		

Music Hitmakers Hub	S	O	R	T
Describe the use of riffs, structure, lyrics and melody in songs, using appropriate musical vocabulary.				
Perform independent parts of well-known songs on my own and in an ensemble.				
Perform a more complex part within a group arrangement of a popular song consisting of more than one section e.g. verses and repeating chorus				
Use the words Conjunct and Disjunct when describing melodic motion aurally and when looking at melodies in staff notation.				
Understand and use all elements and terms relating to popular song structure through listening and appraising and performing.				
Write a set of lyrics consisting of verses and a chorus section				
Develop my understanding of how to construct a chord and how to develop this into a chord pattern				
Use the root note of each chord to construct a bass line				
Successfully use the notes from my chords and key to create a repetitive riff/hook				
Using your set of lyrics, compose a diatonic melody that fits with your chosen chords				

Drama & DT Personal Learning Checklists

Drama	S	O	R	T
By the end of this topic I will be able to:				
Understand the key features of a sketch by analysing the professional industry				
Define what is meant by the word stereotypes in performance				
Will know how to structure and perform, an absurd character using vocal and physical skills				
Write, direct and perform a sketch				
By the end of this topic I will:				
Have learnt about the true story of lizzie Borden				
Be able to devise from a historical stimulus				
Understand how to use proxemics to create meaning for an audience				
Be able to use cross-cutting to show movement in time				
Will be able to create an independent research project, presenting my findings in a creative way				

Food: Meal Planning	S	O	R	T
I understand what meal planning is and what affects meal choice				
I can follow instructions / read a recipe independently				
I have a basic knowledge of nutrition and how to eat healthily				
I can plan my time well to complete tasks on time				
I can explain why I have chosen a dish or ingredient				
I can evaluate my work identifying my strengths and weaknesses.				

DT		S	O	R	T
Key Idea: Identifying a design problem and carrying out relevant research	Analysing the context to establish a problem, justified by research				
	Analysing products using the ACCESSFM approach				
	Examples of primary and secondary research and the advantages and disadvantages of each				
	Working properties of materials and choosing the right material for a product				
	Understand the origin of plastics, sustainability, the difference between renewable and non-renewable materials				
Key Idea: Generating design ideas using the iterative design process and developing ideas through the use of modelling	Generating imaginative ideas using 2D drawing techniques				
	Annotating ideas to explain opinion, materials, construction methods and target market opinion				
	Using compliant materials to model the most successful idea				
	Understanding scale and being able to produce a working drawing of the developed design idea				
	Be able to dimension a drawing to show the key measurements				
Key Idea: Developing practical skills to make quality products which are commercially viable	Using marking out tools to accurately mark out the key components of the product				
	Using cutting tools to accurately cut the key components of the product				
	Using shaping tools to accurately finish components to correct dimension				
	Assembling the product using permanent and non-permanent joining methods				
	Understand the reasons for and be able to apply a high-quality surface finish				

English Knowledge Organiser – The Tempest

1 TIER THREE VOCABULARY

Soliloquy	A speech in a play where the character speaks only to the audience, revealing their inner thoughts and feelings about something that they might keep hidden from other characters.
Theme	The bigger idea or subject that is important to the whole story
Metaphor	A comparison between two things when something is said to be something else
Simile	A comparison between two things using the words 'like' or 'as'
Foil	A character that contrasts another character (usually the protagonist) in order to highlight certain qualities about them. A foil is not always the antagonist or villain.
Dramatic Irony	When the audience knows something that the characters in the play do not
Aside	When a character in a play or story briefly speaks only to the audience or reader. Different from a soliloquy in that it is shorter and brief.
Comedy	A genre of literature that is intended to be humorous and amusing. Character still experience challenges but comedies usually end well for the main characters.
Thesis	Translates to 'to put forward'. In your essays, this serves as an introduction where you put forward your main ideas which you will expand on later in the main part of your essay.
Euphemism	When something is said in a more polite or less offensive way in order to not offend or upset

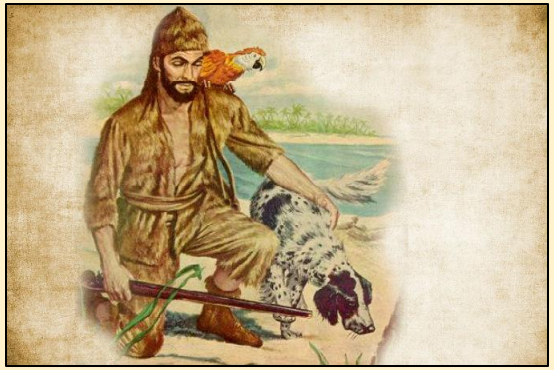
2 Colonialism

A social and political system of domination, whereby one political entity (usually an empire) dominates another one (a colony).

EXAMPLES

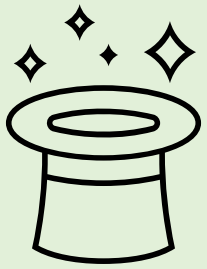
1. Spanish conquest of Latin America
2. The Scramble for Africa
3. Britain in India
4. Britain in Australia
5. China in Tibet
6. Portuguese in Brazil

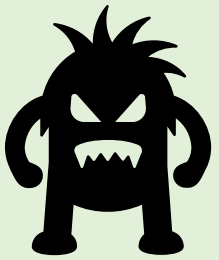
3 Alexander Selkirk



Learn about Alexander Selkirk and the realities of being shipwrecked.

4 Wonder vs Monstrosity





Shakespeare uses **contrast** between the optimism and wonder of Miranda with the supposed monstrosity of Caliban. Shakespeare does this to discuss ideas around **exploitation** – as mentioned by Trinculo who considers using Caliban's appearance to his own financial gain.

5 Creative Writing

How to write an engaging opening using **pathetic fallacy** as inspired by The Tempest.

English Knowledge Organiser – The Tempest

Key Characters	Purpose & Summary
Prospero	The play's protagonist, and father of Miranda. Twelve years before the events of the play, Prospero was the duke of Milan. His brother, Antonio, in concert with Alonso, king of Naples, usurped him, forcing him to flee in a boat with his daughter. The honest lord Gonzalo aided Prospero in his escape. Prospero has spent his twelve years on the island refining the magic that gives him the power he needs to punish and forgive his enemies.
Miranda	The daughter of Prospero, Miranda was brought to the island at an early age and has never seen any men other than her father and Caliban, though she dimly remembers being cared for by female servants as an infant. She represents wonder.
Ariel	Rescued by Prospero from a long imprisonment at the hands of the witch Sycorax, Ariel is Prospero's servant until Prospero decides to release him. He is mischievous and ubiquitous, able to traverse the length of the island in an instant and to change shapes at will. He is associated with spiritual support and magic.
Caliban	Another of Prospero's servants. Caliban, the son of the now-deceased witch Sycorax, acquainted Prospero with the island when Prospero arrived. Caliban believes that the island rightfully belongs to him and has been stolen by Prospero. His speech and behavior is sometimes coarse and brutal. He is used by Shakespeare to explore ideas around colonialism.

Key Symbols	What They Represent
Chess	The object of chess is to capture the king. That, at the simplest level, is the symbolic significance of Prospero revealing Ferdinand and Miranda playing chess in the final scene.
Noises and Music	They represent mystery and create an extravagant atmosphere to the play.
Masters and Servants	The power balance that is prevalent in society.
The Tempest	The tempest that begins the play, and which puts all of Prospero's enemies at his disposal, symbolises the suffering Prospero endured, and which he wants to inflict on others. It also represents power, chaos and magic.

English Knowledge Organiser – The Tempest

1	TIER THREE VOCABULARY
Allegory	A story that is representative or symbolic of something much bigger and has a political, moral or social message.
Epitaph	A short piece of writing that is about or is dedicated to someone who has died
Lexical Field	A collection of words or phrases that can be grouped together under the same category. Different from a semantic field in that it doesn't include images.
Colloquial	An informal or conversational way of speaking.
Phonetic	When words are written how they sound
Oxymoron	A phrase that contains two words that are contradictory but the phrase still makes sense.
Allusion	An indirect reference or suggestion to someone or something
Pace	The speed that something is said. Text and poetry can have a different pace depending on the methods used by the writer or poet.
Motif	An item, usually a physical item, that is referred to throughout a story which represents something. A motif is usually linked to symbolism or theme
Present Tense	When something is written as if it currently happening as opposed to happening in the past or in the future.

2 Justice

Shakespeare explores ideas around justice – at what point can it become bitter vengeance rather than genuine justice.

3 Treason

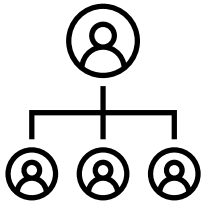
Shakespeare weaves the theme of treason throughout The Tempest. The first instance of treason occurred in the play's prehistory, when Antonio conspired with King Alonso to assassinate Prospero and succeed him as the new Duke of Milan. The attempt to kill Prospero was both political treason and brotherly betrayal. This theme returns later in the play…

4 Essay Writing

Begin to explore what makes a good Literature Essay with a Thesis Led approach.

1. A really clear and perceptive argument, driven through a thesis.
2. Analysis of the text – the characters, the structure and the language used in order to support our argument.
3. Demonstrating an understanding of what the writer aimed to achieve with their story.

5 Hierarchy



The characters obsess about reaching the top of the hierarchy so that they can control others and assert power.

Maths Knowledge Organiser – Keywords

VOCABULARY

Gradient: the steepness of a line

Intercept: where two lines cross. The y-intercept: where the line meets the y-axis.

Parallel: two lines that never meet with the same gradient.

Co-ordinate: a set of values that show an exact position on a graph.

Linear: linear graphs (straight line) – linear common difference by addition/ subtraction

Asymptote: a straight line that a graph will never meet.

Reciprocal: a pair of numbers that multiply together to give 1.

Perpendicular: two lines that meet at a right angle.

Inequality: an inequality compares who values showing if one is greater than, less than or equal to another

Variable: a quantity that may change within the context of the problem

Rearrange: Change the order

Inverse operation: the operation that reverses the action

Substitute: replace a variable with a numerical value

Solve: find a numerical value that satisfies an equation

VOCABULARY

Multiples: found by multiplying any number by positive integers

Factor: integers that multiply together to get another number.

Prime: an integer with only 2 factors.

HCF: highest common factor (biggest factor two or more numbers share)

LCM: lowest common multiple (the first time the times table of two or more numbers match)

Verify: the process of making sure a solution is correct

Proof: logical mathematical arguments used to show the truth of a statement

Binomial: a polynomial with two terms

Quadratic: a polynomial with four terms (often simplified to three terms)

2D: two dimensions to the shape e.g. length and width

3D: three dimensions to the shape e.g. length, width and height

Vertex: a point where two or more line segments meet

Edge: a line on the boundary joining two vertex

Face: a flat surface on a solid object

Cross-section: a view inside a solid shape made by cutting through it

Plan: a drawing of something when drawn from above (sometimes birds eye view)

Perspective: a way to give illustration of a 3D shape when drawn on a flat surface. .

VOCABULARY

Protractor: piece of equipment used to measure and draw angles

Locus: set of points with a common property

Equidistant: the same distance

Discorectangle: (a stadium) – a rectangle with semi circles at either end

Perpendicular: lines that meet at 90°

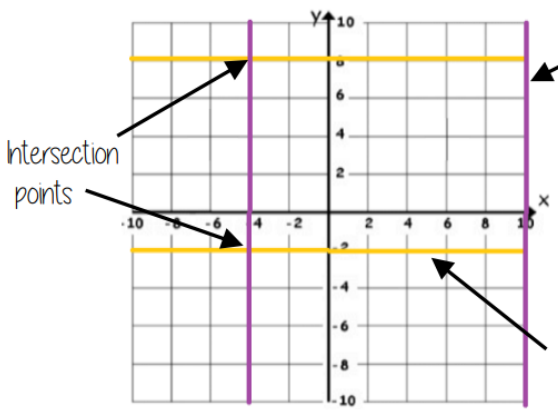
Arc: part of a curve

Bisector: a line that divides something into two equal parts

Congruent: the same shape and size

Maths Knowledge Organiser – Straight Line Graphs 1

Lines parallel to the axes



Intersection points

All the points on this line have a x coordinate of 10

'a' can be ANY positive or negative value including 0

Lines parallel to the **y axis** take the form **x = a** and are **vertical**

Lines parallel to the **x axis** take the form **y = a** and are **horizontal**

All the points on this line have a y coordinate of -2

e.g. (3, -2) (7, -2) (-2, -2) all lay on this line because the y coordinate is -2

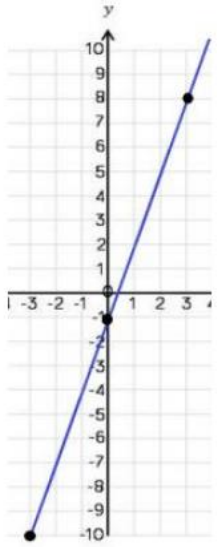
Plotting y = mx + c graphs

$y = 3x - 1$ → 3 x the x coordinate then – 1

x	-3	0	3
y	-10	-1	8

Draw a table to display this information

This represents a coordinate pair (-3, -10)



You only need two points to form a straight line

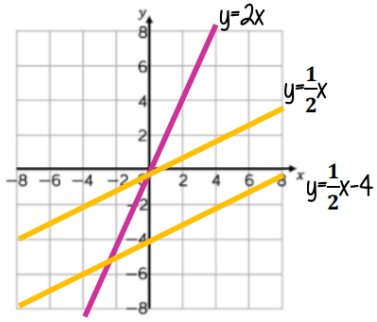
Plotting more points helps you decide if your calculations are correct (if they do make a straight line)

Remember to join the points to make a line

Compare Gradients

$y = mx + c$

The **coefficient** of x (the number in front of x) tells us the gradient of the line



The **greater** the gradient – the **steeper** the line

Parallel lines have the **same** gradient

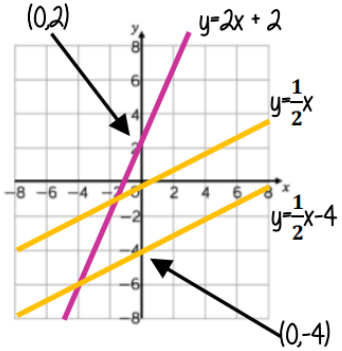
Positive gradients

Negative gradients

Maths Knowledge Organiser – Straight Line Graphs 2

Compare Intercepts

$y = mx + c$ ← The value of **c** is the point at which the line crosses the y-axis. **Y intercept**



The coordinate of a y intercept will always be (0,c)

Lines with the **same** y-intercept cross in the **same** place

y = mx + c

The **coefficient** of x (the number in front of x) tells us the gradient of the line

$y = mx + c$ ← The value of **c** is the point at which the line crosses the y-axis. **Y intercept**

y and x are **coordinates**

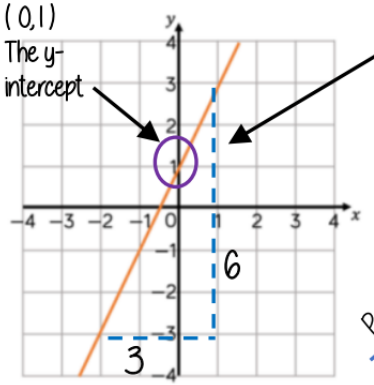
The equation of a line can be rearranged. E.g:

$y = c + mx$

$c = y - mx$

Identify which coefficient you are identifying or comparing

Find the equation from a graph



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

$y = 2x + 1$

The direction of the line indicates a positive gradient

Positive gradients

Negative gradients

Real life graphs

A plumber charges a £25 callout fee, and then £12.50 for every hour. Complete the table of values to show the cost of hiring the plumber.

Time (h)	0	1	2	3	8
Cost (£)	£25				£125

The y-intercept shows the minimum charge. The gradient represents the price per mile

In real life graphs like this values will always be positive because they measure distances or objects which cannot be negative.

Direct Proportion graphs To represent direct proportion the graph must start at the origin.

When you have 0 pens this has 0 cost. The gradient shows the price per pen

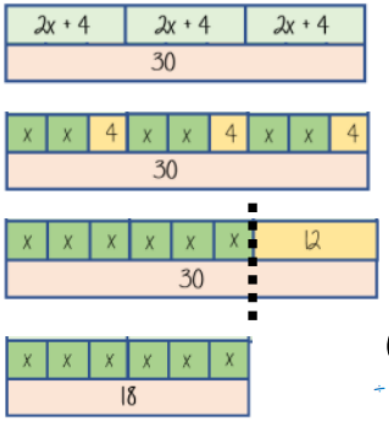
A box of pens costs £2.30

Complete the table of values to show the cost of buying boxes of pens.

Boxes	0	1	2	3	8
Cost (£)		£2.30			

Maths Knowledge Organiser – Forming and Solving Equations 1

Solve equations with brackets



$3(2x + 4) = 30$

Expand the brackets

$6x + 12 = 30$

$-12 \quad -12$

$6x = 18$

$\div 6 \quad \div 6$

$x = 3$

x | 3

Form and solve inequalities

Two more than treble my number is greater than 11

Find the possible range of values

$3x + 2 > 11$

Solve

$x \leftarrow -3 \leftarrow -2 \leftarrow 11$

$x > 3$

Inequalities with negatives

Method 1 Make x positive first

$2 - 3x > 17$

$+3x \quad +3x$

$2 > 17 + 3x$

$-17 \quad -17$

$-15 > 3x$

$\div 3 \quad \div 3$

$-5 > x$

x is true for any value smaller than -5

Smaller ← → Bigger

-7 -5 -3

CHECK IT!

$2 - 3(-6) = 20$

TRUE/ CORRECT

Method 2 Keep the negative x

$2 - 3x > 17$

$-2 \quad -2$

$-3x > 15$

$\div -3 \quad \div -3$

$x > -5$

x is true for any value bigger than -5

This cannot be true...

$x < -5$

When you multiply or divide x by a negative you need to reverse the inequality

Equations with unknown on both sides

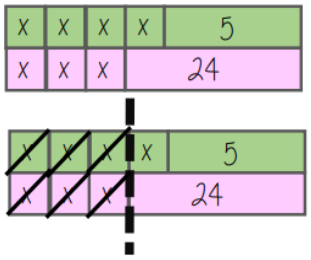
$4x + 5 = 3x + 24$

$-3x \quad -3x$

$x + 5 = 24$

$-5 \quad -5$

$x = 19$



Inequalities with unknown on both sides

Solving inequalities has the same method as equations

$5(x + 4) < 3(x + 2)$

$5x + 20 < 3x + 6$

$2x + 20 < 6$

$2x < -14$

$x < -7$

Check it!

$5(-8 + 4) < 3(-8 + 2)$

$5(-4) < 3(-6)$

$-20 < -18$

-20 IS smaller than -18

Maths Knowledge Organiser – Forming and Solving Equations 2

Formulae and Equations

Substitute in values

Formulae – all expressed in symbols → **Equations** – include numbers and can be solved

Rearranging Formulae (one step)

$x = y + z$

Rearrange to make y the subject.

$y = x - z$

$y \xrightarrow{+z} x$

$y \xleftarrow{-z} x$

Using inverse operations or fact families will guide you through rearranging formulae

Rearranging can also be checked by substitution.

Language of rearranging....

Make XXX the subject

Change the subject

Rearrange

Rearranging Formulae (two step)

In an equation (find x)

$4x - 3 = 9$

$+3 \quad +3$

$4x = 12$

$\div 4 \quad \div 4$

$x = 3$

In a formula (make x the subject)

$xy - s = a$

$+s \quad +s$

$xy = a + s$

$\div y \quad \div y$

$x = \frac{a + s}{y}$

The steps are the same for solving and rearranging

Rearranging is often needed when using $y = mx + c$

e.g. Find the gradient of the line $2y - 4x = 9$

Make y the subject first $y = \frac{4x + 9}{2}$

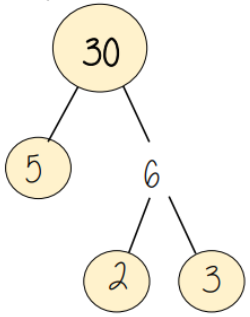
Gradient $= \frac{4}{2} = 2$

Maths Knowledge Organiser – Testing Conjectures 1

Factors, Multiples and Primes

R

Multiplication part-whole models



All three prime factor trees represent the same decomposition

HCF – Highest common factor

HCF of 18 and 30

18: 1, 2, 3, 6, 9, 18

30: 1, 2, 3, 5, 6, 10, 15, 30

Common factors are factors two or more numbers share

LCM – Lowest common multiple

LCM of 9 and 12

9: 9, 18, 27, 36, 45, 54

12: 12, 24, 36, 48, 60

Common multiples are multiples two or more numbers share

True or False?

Conjecture

A pattern that is noticed for many cases

1, 2, 4.....
The numbers in the sequence are doubling each time.

Counterexamples

This sequence isn't doubling it is adding 2 each time

Only **one** counterexample is needed to disprove a conjecture

Always, Sometimes, Never true.

Always – Every value always supports the statement

Sometimes – Examples show the statement being true and counter examples to show when it is false.

Never – No example supports the statement

Examples to try
- 0 and 1
- Fractions
- Negative numbers

Maths Knowledge Organiser – Testing Conjectures 2

Show that

- **Numerical verification** – Show the stages to a solution with numerical values
- **Algebraic verification** – Show algebraic properties of the solution. You may want to use pictorial images to support this
- **Proof** – Simple proofs using algebra

Compare the left hand side of an equation with the right hand side – are they the same or different?

Conjectures

Even
$(2n)$
Multiple of 2

Odd
$(2n + 1)$
One more than any even

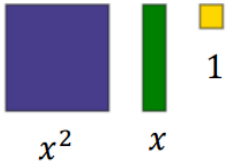
Use numerical verification first
Use pictorial verification – the representations of numbers of odd and even

Expanding binomials

$2\,(x + 2) \equiv 2x + 4$

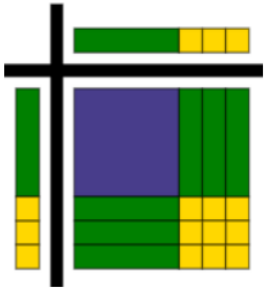
Algebra tiles can represent a binomial expansion
Has two terms

Algebra tiles



Positive values

$(x + 3)(x + 3) \equiv x^2 + 6x + 9$



This is a quadratic.
It has four terms which simplified to three terms

The order of the binomial has no impact on the outcome.
e.g. $(x + 3)(3 + x)$

Exploring the 100 square

In terms of 'n' is used to make generalisations about relationships between numbers

Positions of numbers in relation to n form expressions.
E.g. one space to the right of n
$n + 1$

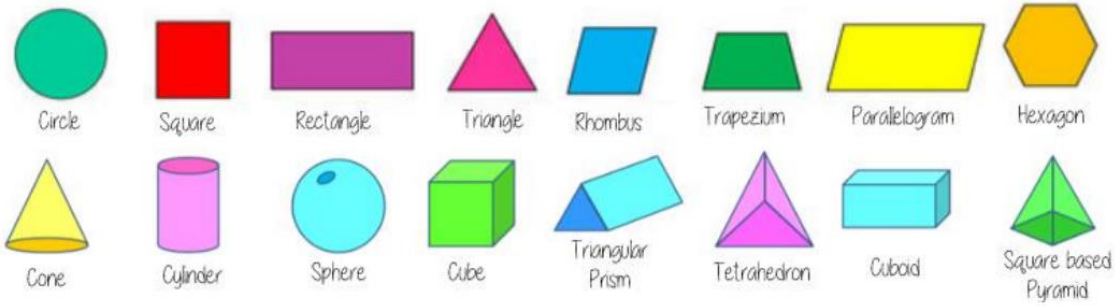
E.g. One row below n
$n + 10$

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

The size of the grid for generalisation changes the relationship statements

Maths Knowledge Organiser – Three Dimensional Shapes 1

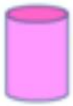
Name 2D & 3D shapes



Recognise prisms

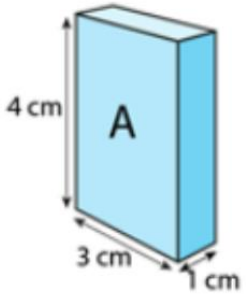
A solid object with two identical ends and flat sides

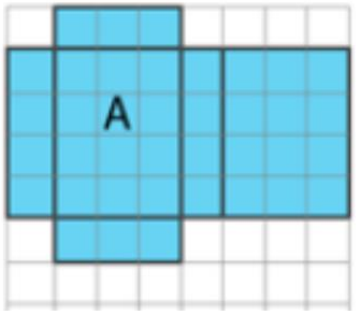
The cross section will also be identical to the end faces



A cylinder although with very similar properties does not have flat faces so is not categorised as a prism

Nets of cuboids

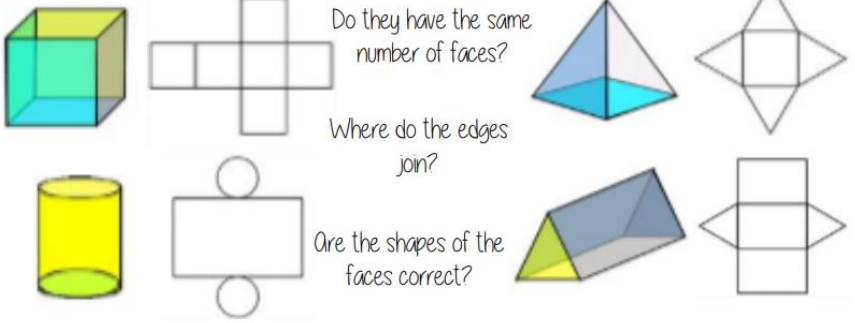




1cm grids help to draw accurately

Visualise the folding of the net. Will it make the cuboid with all sides touching

Sketch and recognise nets



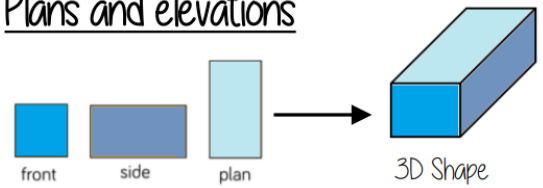
Do they have the same number of faces?

Where do the edges join?

Are the shapes of the faces correct?

Maths Knowledge Organiser – Three Dimensional Shapes 2

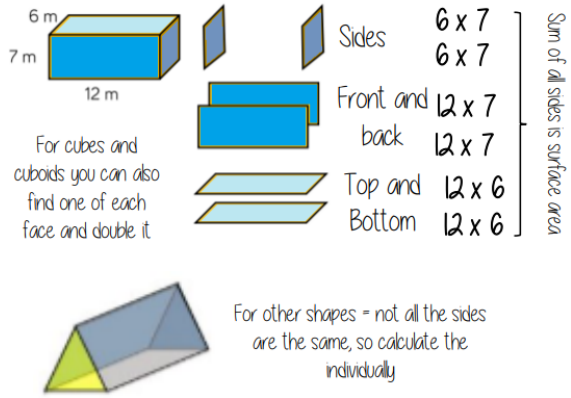
Plans and elevations



The direction you are considering the shape from determines the front and side views

Surface area

Sketching nets first helps you visualise all the sides that will form the overall surface area



For cubes and cuboids you can also find one of each face and double it

For other shapes = not all the sides are the same, so calculate the individually

Volumes

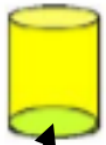
Volume is the 3D space it takes up – also known as capacity if using liquids to fill the space

Counting cubes

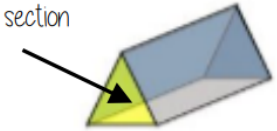
Some 3D shape volumes can be calculated by counting the number of cubes that fit inside the shape.

Cubes/ Cuboids = base x width x height

Remember multiplication is commutative



Cross section



Cross section

Prisms and cylinders = area cross section x height

Height can also be described as depth

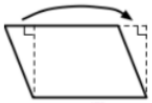
Area of 2D shapes

R

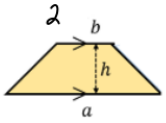
Rectangle
Base x Height

Triangle
½ x Base x Perpendicular height

Parallelogram/ Rhombus
Base x Perpendicular height

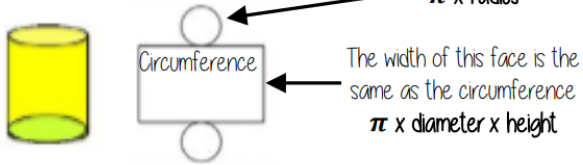


Area of a trapezium
$\frac{(a+b) \times h}{2}$



Area of a circle
$\pi \times \text{radius}^2$

Surface area - cylinders



The area of the circle
$\pi \times \text{radius}^2$

The width of this face is the same as the circumference
$\pi \times \text{diameter} \times \text{height}$

$2 \times \pi \times \text{radius}^2 + \pi \times \text{diameter} \times \text{height}$

Areas – square units
Volumes – cube units

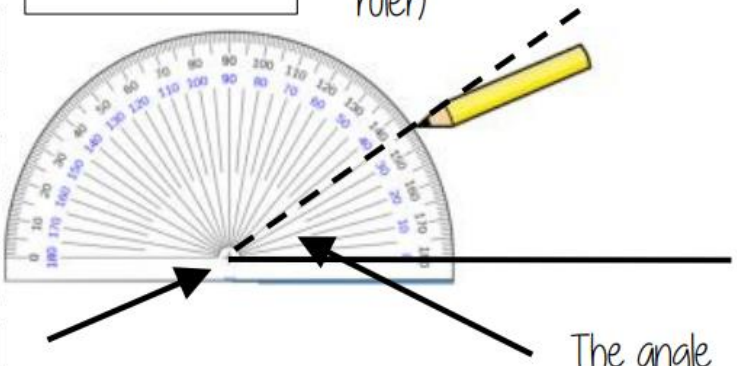
Areas and volumes can be left in terms of pi π

Draw and measure angles

R

Draw a 35° angle

Make a mark at 35° with a pencil And join to the angle point (use a ruler)



The angle

Make sure the cross is at the end of the line (where you want the angle)

Scale drawings

R

A picture of a car is drawn with a scale of 1:30

For every 1cm on my image is 30cm in real life

The car image is 10cm

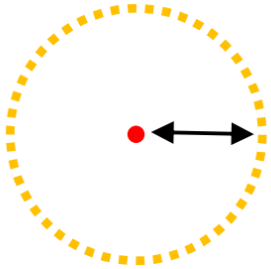
Image	Real life
1cm	30cm
10cm	300cm

× 10 (Image)

× 10 (Real life)

Maths Knowledge Organiser – Constructions and Congruency 2

Locus of a distance from a point

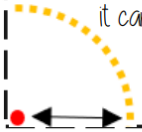


All points are equidistant (the same distance) from the fixed point in the middle.

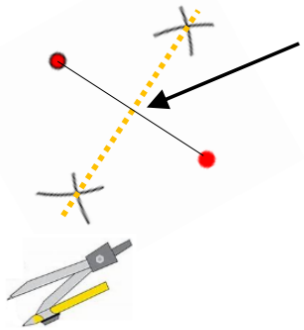
Equipment needed

The radius is the distance from the fixed point

If the point is in the corner it can only make a quarter circle



Locus equidistant from two points



Also a perpendicular bisector

Because if the points are joined, this new line intersects it at a 90°

Keep the compass the same size and draw two arcs from each point

Join the intersections with a ruler.

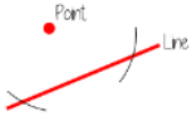
All points on this line are equidistant from both points

Construct a perpendicular from a point

Point

Line

Use a compass and draw an arc that cuts the line. Use the point to place the compass

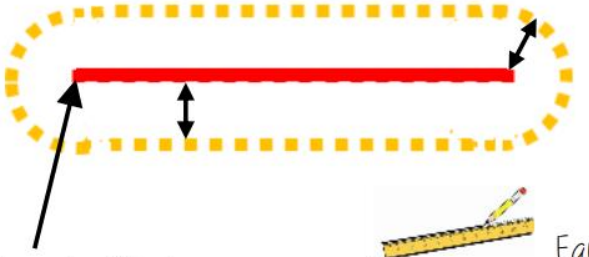


Keep the compass the same distance and now use your new points to make new interconnecting arcs

Connecting the arcs makes the bisector

If P is a point on the line the steps are the same

Locus of a distance from a straight line



All points are equidistant (the same distance) from line

Equipment needed

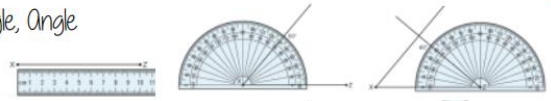
The line is straight so a ruler is used for the straight lines parallel to your original line

The ends of the line are fixed points

Maths Knowledge Organiser – Constructions and Congruency 3

Constructing Triangles

Side, Angle, Angle



Side, Angle, Side

Side, Side, Side

Congruent triangles

Side-side-side

All three sides on the triangle are the same size

Angle-side-angle

Two angles and the side connecting them are equal in two triangles

Side-angle-side

Two sides and the angle in-between them are equal in two triangles (it will also mean the third side is the same size on both shapes)

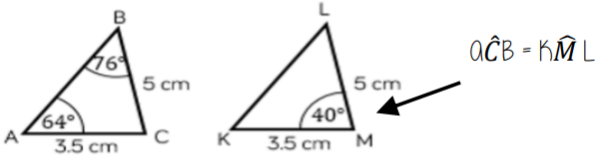
Right angle-hypotenuse-side

The triangles both have a right angle, the hypotenuse and one side are the same

Congruent figures

Congruent figures are identical in size and shape – they can be reflections or rotations of each other

Congruent shapes are identical – all corresponding sides and angles are the same size

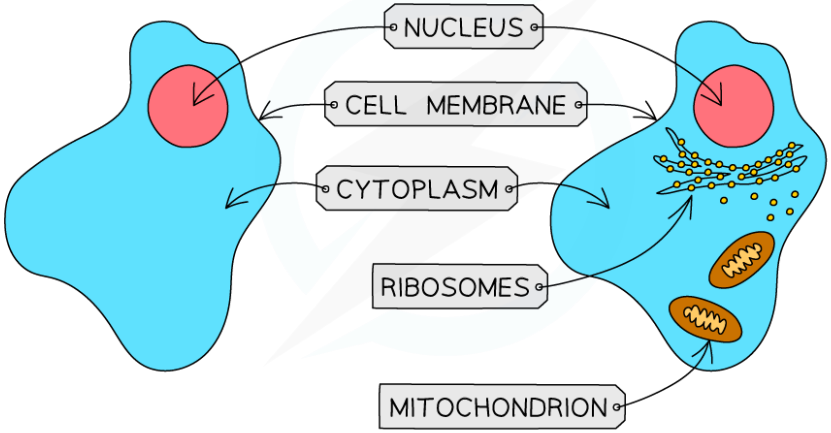


Because all the angles are the same and AC=KM BC=LM triangles ABC and KLM are **congruent**

Science Knowledge Organiser

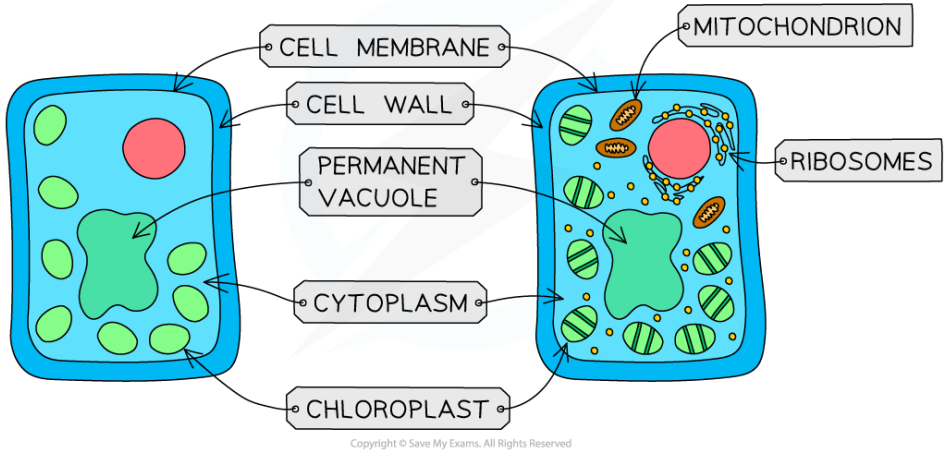
ORGANELLES NOT VISIBLE UNDER A LIGHT MICROSCOPE

ORGANELLES VISIBLE UNDER AN ELECTRON MICROSCOPE



PLANT CELL VIEWED UNDER A LIGHT MICROSCOPE

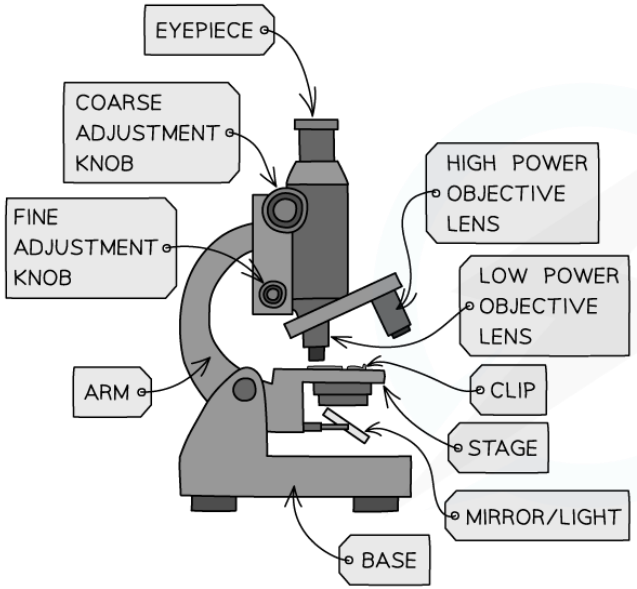
PLANT CELL VIEWED UNDER AN ELECTRON MICROSCOPE

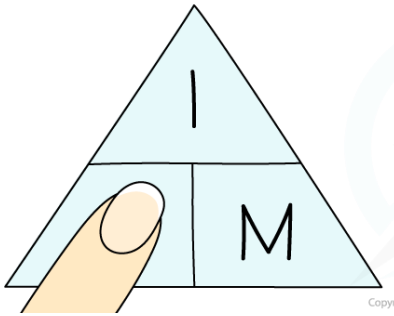


STRUCTURE	FUNCTION
NUCLEUS	• CONTAINS THE GENETIC MATERIAL (DNA) WHICH CONTROLS THE ACTIVITIES OF THE CELL
CYTOPLASM	• A GEL–LIKE SUBSTANCE COMPOSED OF WATER AND DISSOLVED SOLUTES • SUPPORTS INTERNAL CELL STRUCTURES • SITE OF MANY CHEMICAL REACTIONS, INCLUDING ANAEROBIC RESPIRATION
CELL MEMBRANE	• HOLDS THE CELL TOGETHER, SEPARATING THE INSIDE OF THE CELL FROM THE OUTSIDE • CONTROLS WHICH SUBSTANCE CAN ENTER AND LEAVE THE CELL
RIBOSOMES	• FOUND IN THE CYTOPLASM • SITE OF PROTEIN SYNTHESIS
MITOCHONDRIA	• SITE OF MOST OF THE REACTIONS INVOLVED IN AEROBIC RESPIRATION, WHERE ENERGY IS RELEASED TO FUEL CELLULAR PROCESSES • CELLS WITH HIGH RATES OF METABOLISM (CARRYING OUT MANY DIFFERENT CELL REACTIONS) HAVE SIGNIFICANTLY HIGHER NUMBERS OF MITOCHONDRIA THAN CELLS WITH FEWER REACTIONS TAKING PLACE

Science Knowledge Organiser

	Eukaryotic cell	Prokaryotic cell
Size	Most are 5 µm – 100 µm	Most are 0.2 µm – 2.0 µm
Outer layers of cell	Cell membrane - surrounded by cell wall in plants and fungi	Cell membrane - surrounded by cell wall
Cell contents	Cytoplasm, cell organelles include mitochondria, chloroplasts in plants and ribosomes	Cytoplasm, ribosomes, no mitochondria or chloroplasts
Genetic material	DNA in a nucleus - plasmids are found in a few simple eukaryotic organisms	DNA is a single molecule, found free in the cytoplasm - additional DNA is found on one or more rings called plasmids
Type of cell division	Mitosis	Binary fission



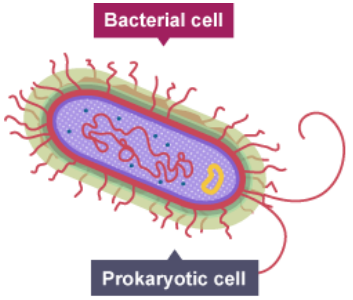


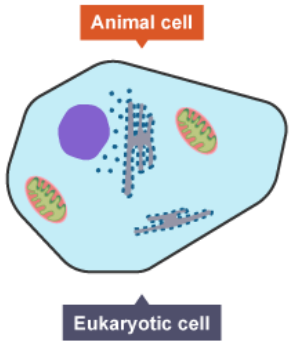
$$A = \frac{I}{M} = \frac{30\ mm}{3000} = 0.01\ mm$$

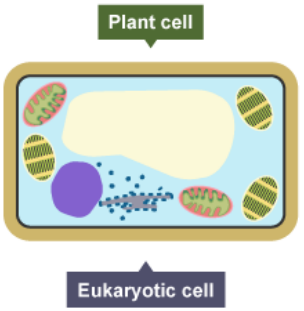
$$0.01\ mm = 10\ \mu m$$

TO USE A MICROSCOPE TO LOOK AT A SPECIMEN:

1. CLIP THE SLIDE CAREFULLY ONTO THE STAGE.
2. ENSURE THE LOWEST-POWERED OBJECTIVE LENS IS OVER THE SLIDE.
3. USE THE COARSE ADJUSTMENT KNOB TO BRING THE STAGE UP JUST BELOW THE LENS.
4. LOOK DOWN THE EYEPIECE AND GRADUALLY MOVE THE STAGE DOWNWARDS USING THE COARSE ADJUSTMENT KNOB. STOP WHEN THE IMAGE IS ROUGHLY IN FOCUS.
5. TO BRING THE IMAGE INTO FOCUS, ADJUST THE FINE-ADJUSTMENT KNOB UNTIL A CLEAR IMAGE IS OBTAINED.
6. TO OBSERVE THE IMAGE WITH A HIGHER MAGNIFICATION, CHANGE THE OBJECTIVE LENS TO A HIGHER POWER AND READJUST THE STAGE USING THE COARSE AND FINE ADJUSTMENT KNOBS.







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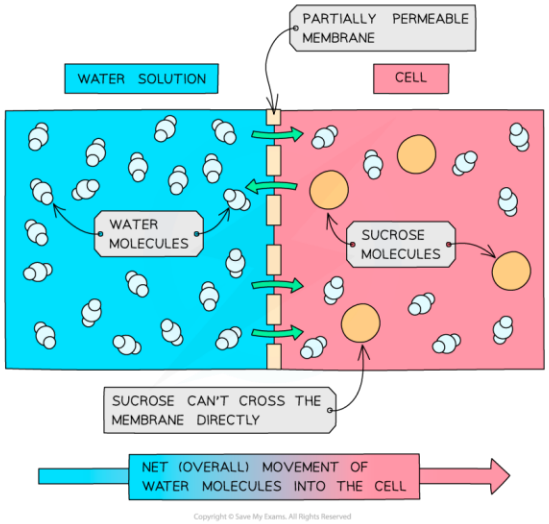

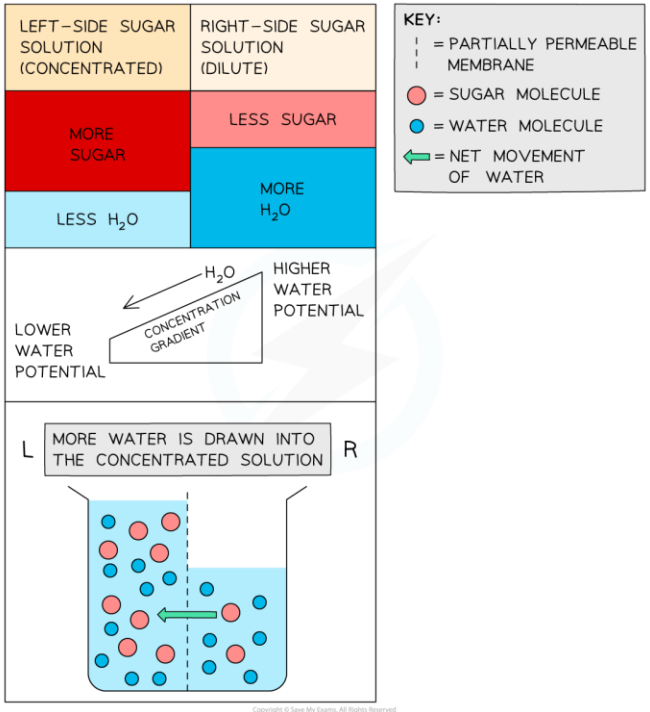

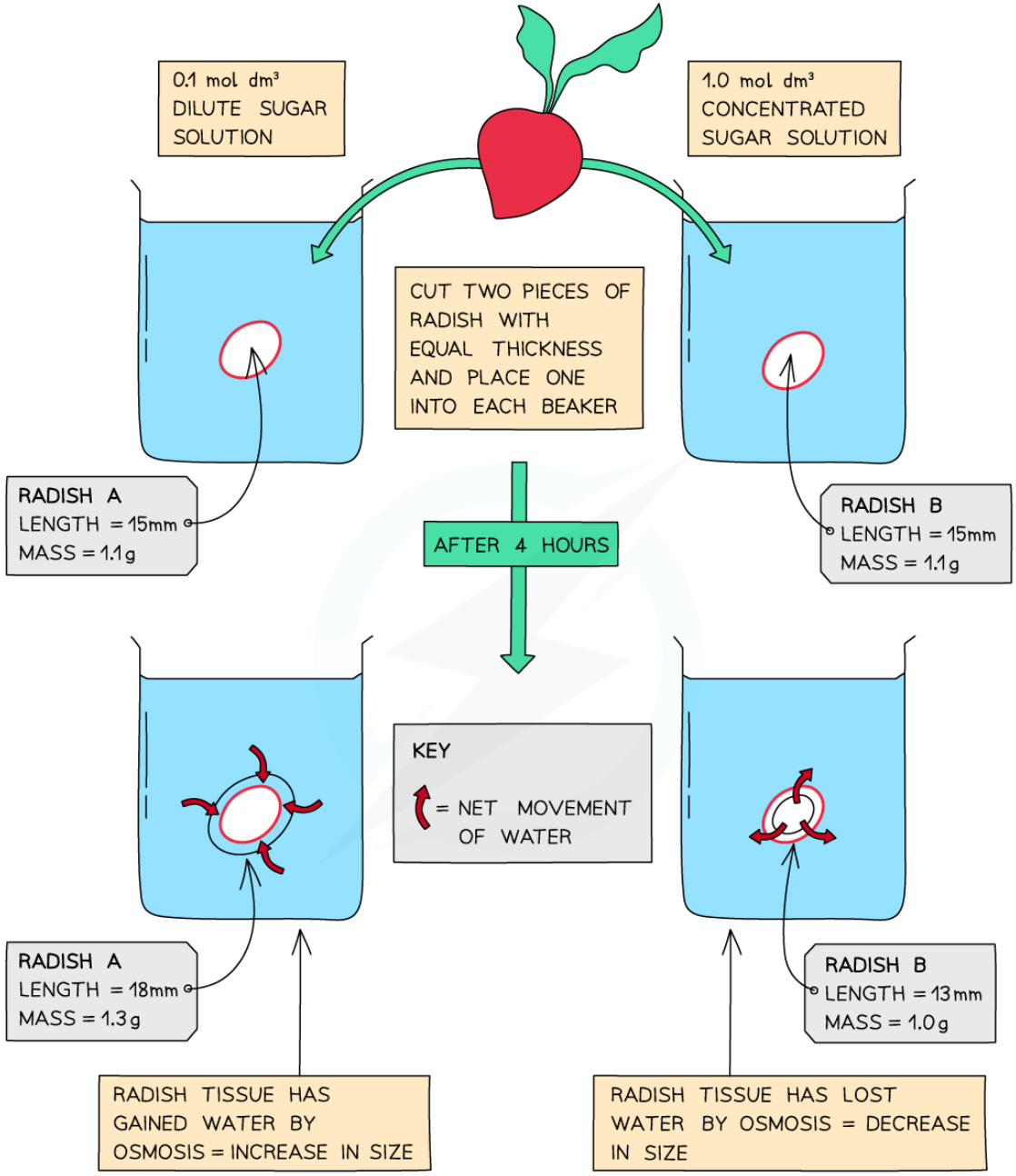

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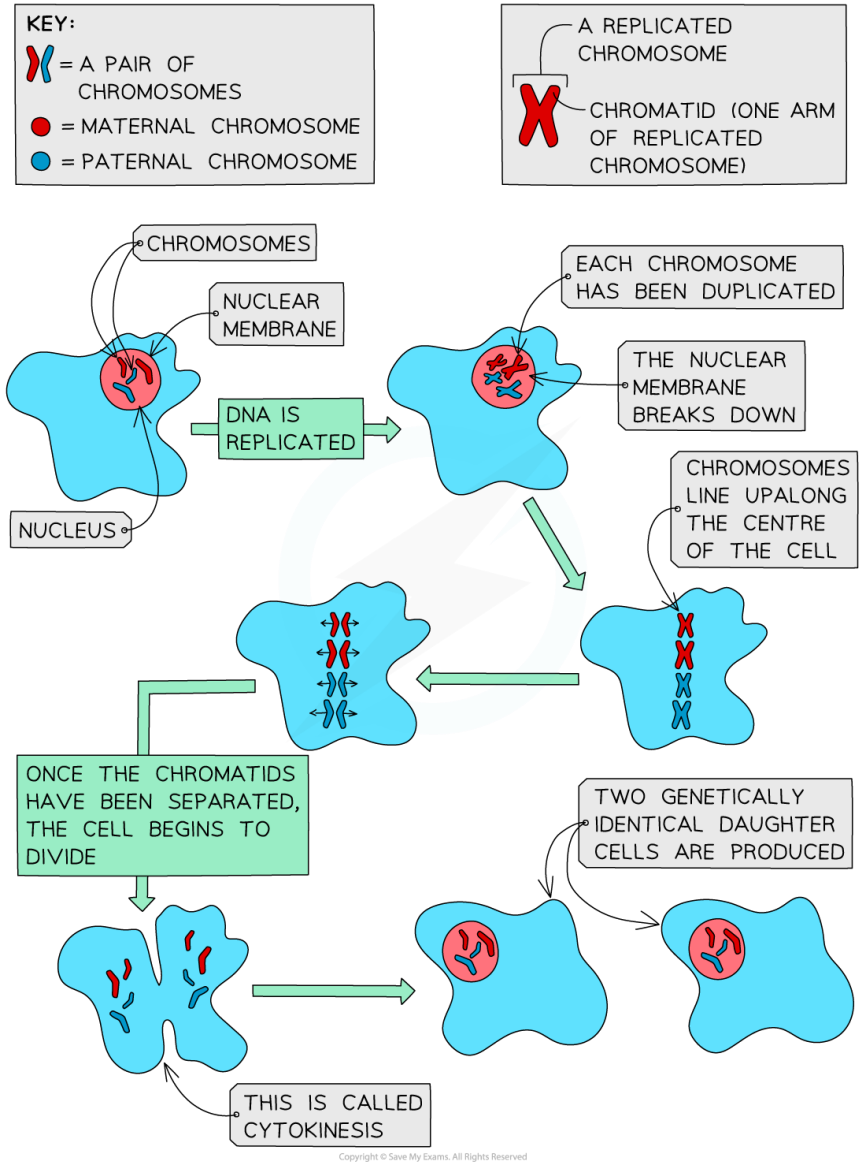

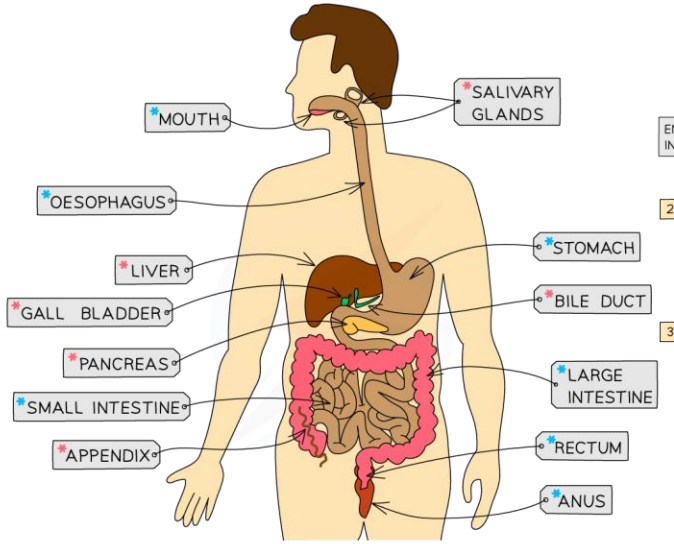

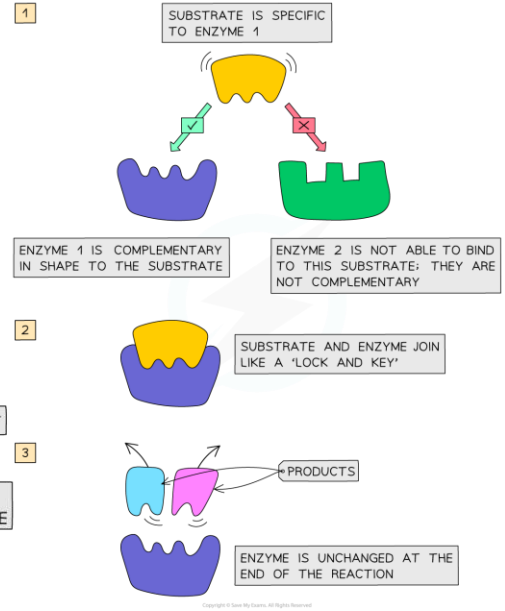

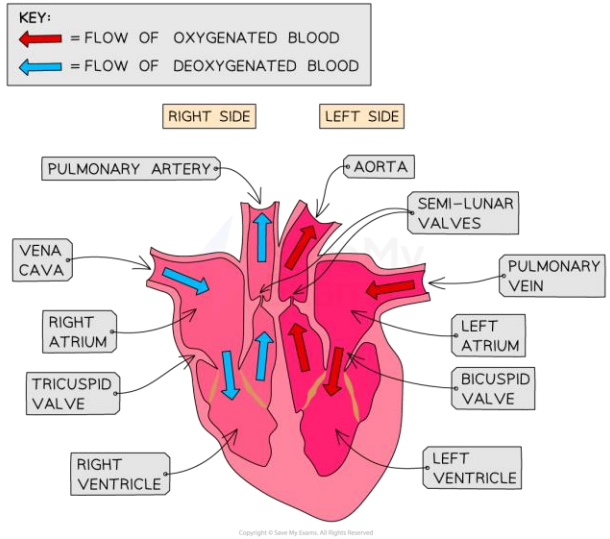

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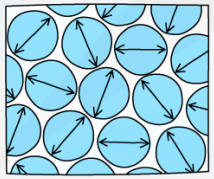
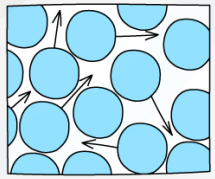
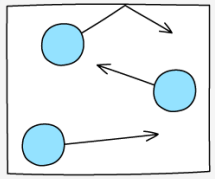
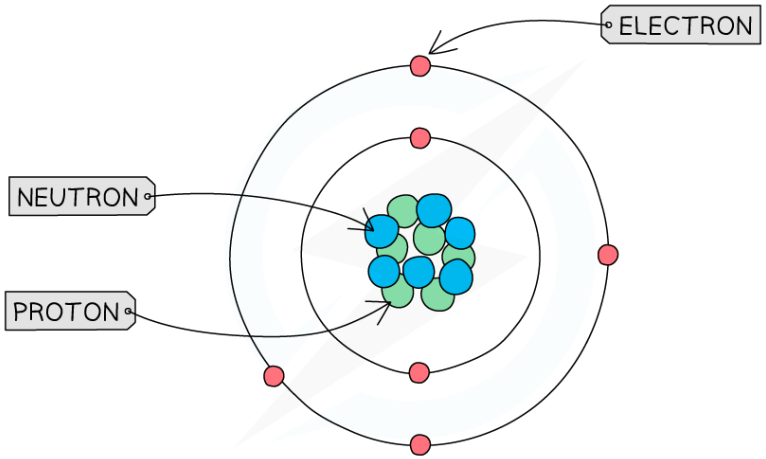
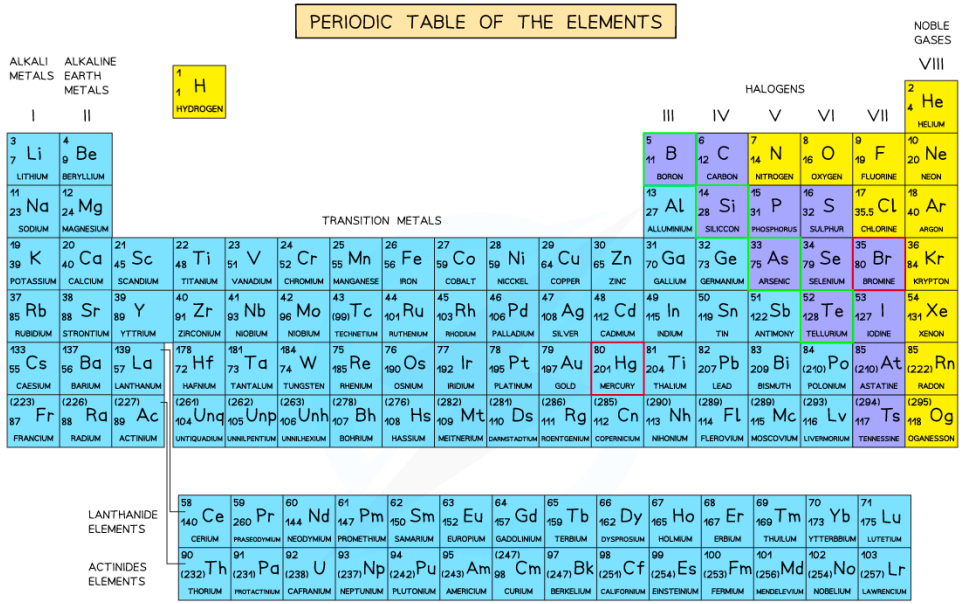
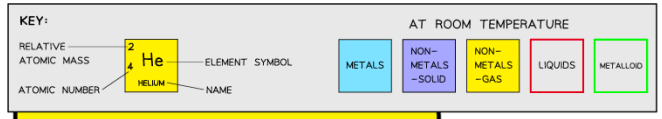
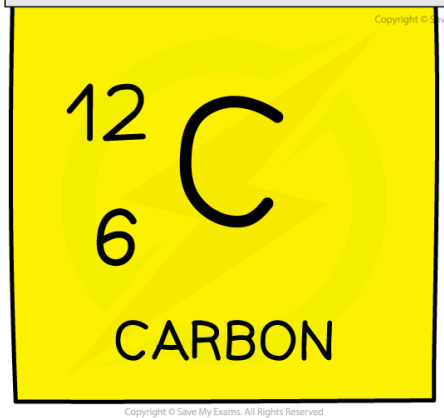
State	Solid	Liquid	Gas
Density	High	Medium	Low
Arrangement of particles	Regular pattern	Randomly arranged	Randomly arranged
Movement of particles	Vibrate around a fixed position	Move around each other	Move quickly in all directions
Energy of particles	Low energy	Greater energy	Highest energy
2D diagram			









6 protons (atomic number 6
6 neutrons (mass – atomic number)
6 electrons

Science Knowledge Organiser

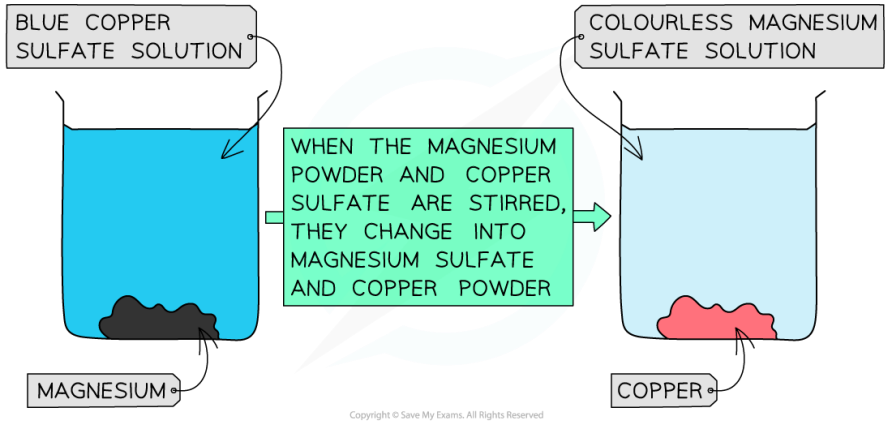
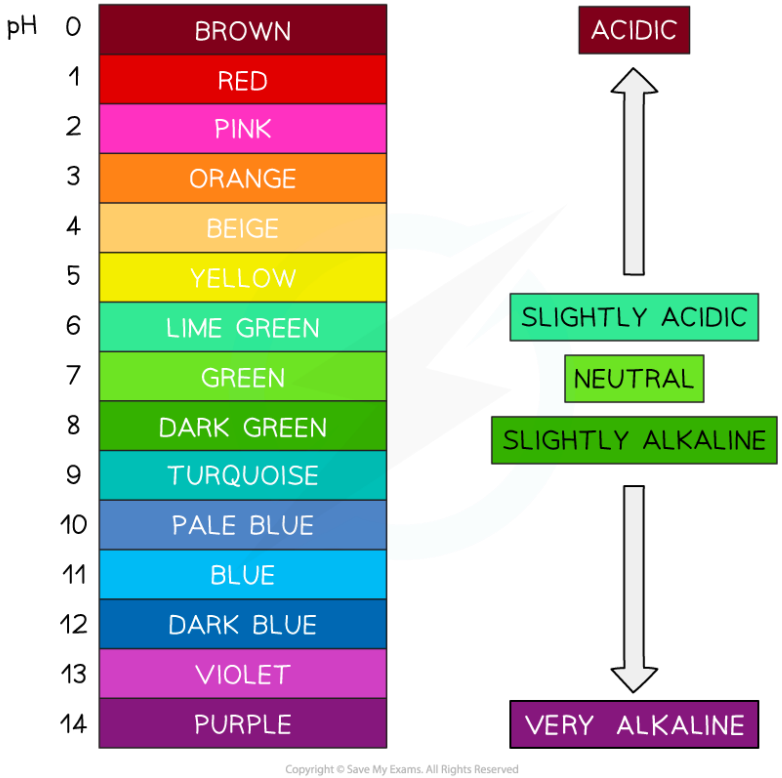
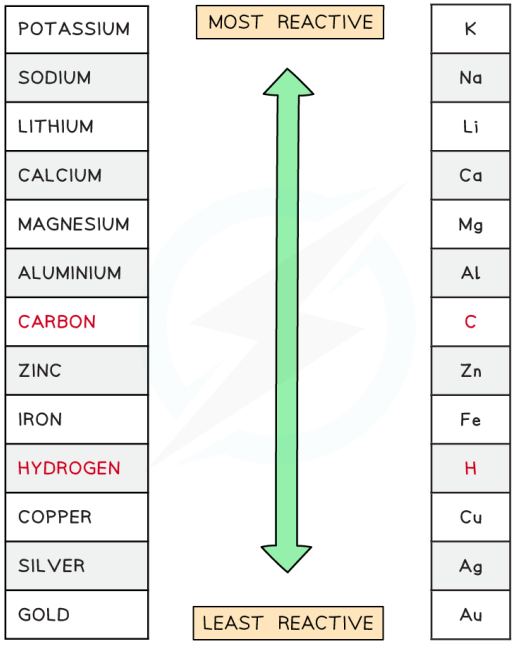


Diagram showing the colour change when magnesium displaces copper from copper sulfate





Naming salts examples

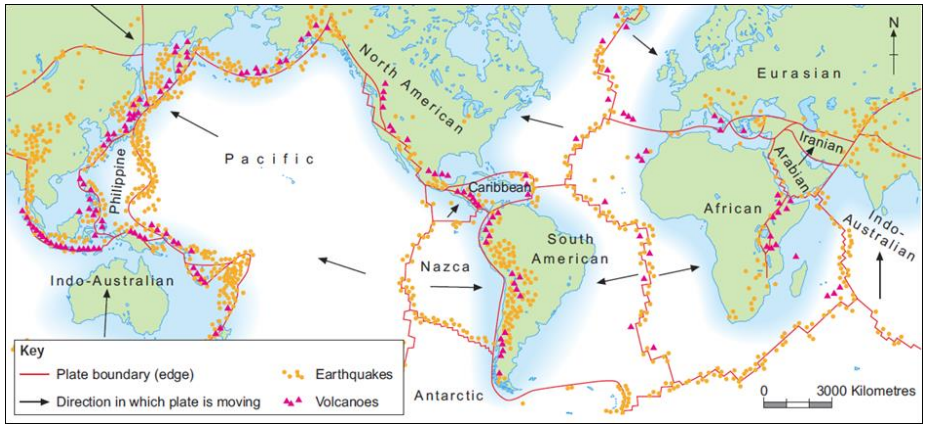
Acid	Base	Name of Salt	Formula of Salt
Sulfuric acid, H_2SO_4	Calcium carbonate, $CaCO_3$	Calcium sulfate	$CaSO_4$
Hydrochloric acid, HCl	Magnesium oxide, MgO	Magnesium chloride	$MgCl_2$
Nitric acid, HNO_3	Potassium hydroxide, KOH	Potassium nitrate	KNO_3

Geography Knowledge Organiser

1 Tier Three Vocabulary

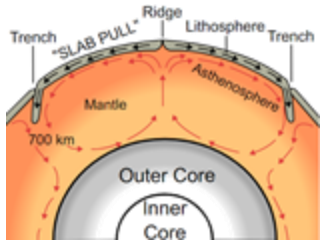
Tectonics	The processes that control the Earth's crust and its evolution over time.
Continental Crust	A thick layer of rock- this is the oldest type of crust at 3.5 billion years old in some places. It is also the thickest at 25-75km thick.
Oceanic Crust	A thin layer of rock- this is the youngest type of crust at 180 million years old in some places. It is also the thinnest at 6-10km thick.
Convection currents	The process of hot magma rising to the crust from deep within the lower mantle. The magma rises because it is much hotter and therefore less dense.
Subduction	Where the oldest crust (Continental) is denser (heavier) sinks below the less dense rock (Oceanic).
Viscosity	A measure of the thickness of lava. Viscosity depends on factors such as the temperature of the lava and its chemical composition.
Magma Chamber	A hollow or cavern beneath a volcano that contains hot, molten rock.
Magnitude	The description of the strength and scale of natural hazards such as volcanoes or earthquakes.
Moment Magnitude Scale (M_W)	A logarithmic scale used to describe the strength of shaking in an Earthquake.
Risk	The chances of a natural disaster occurring.
Vulnerability	To be exposed to risk such as a natural disaster. Some groups are more vulnerable to risk than others. Vulnerability is opposite to capacity.
Capacity	The ability of a group of people to withstand a problem such as a natural disaster. Capacity is opposite to vulnerability.

2 Global Distribution of tectonic hazards



Continental Crust	Oceanic Crust
Oldest crust	Youngest crust
Up to 3.5 BY	Up to 180 MY
Thickest	Thinnest
25-75km thick.	6-10km thick.
Dense Basalt	Low density, Granite

3 Convection Currents



Outer core heats the magma

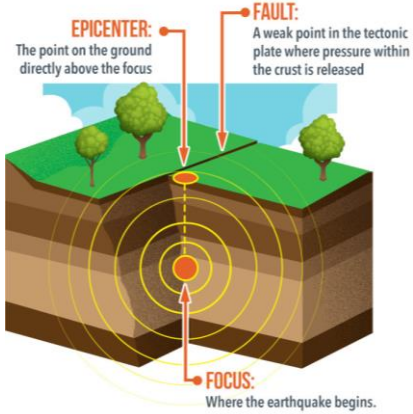
Magma rises towards the crust

Magma cools and condenses towards the crust

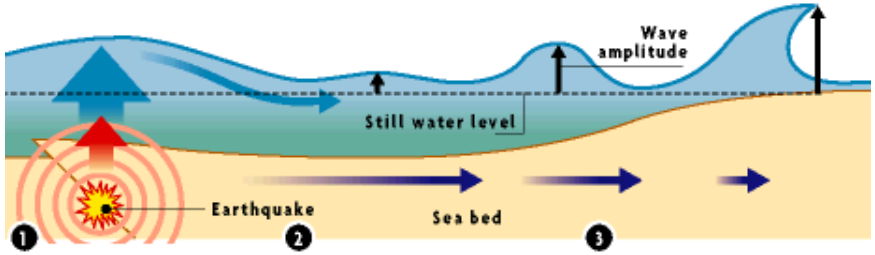
The cooler magma sinks back down towards the core

This creates a current

4 Anatomy of an earthquake



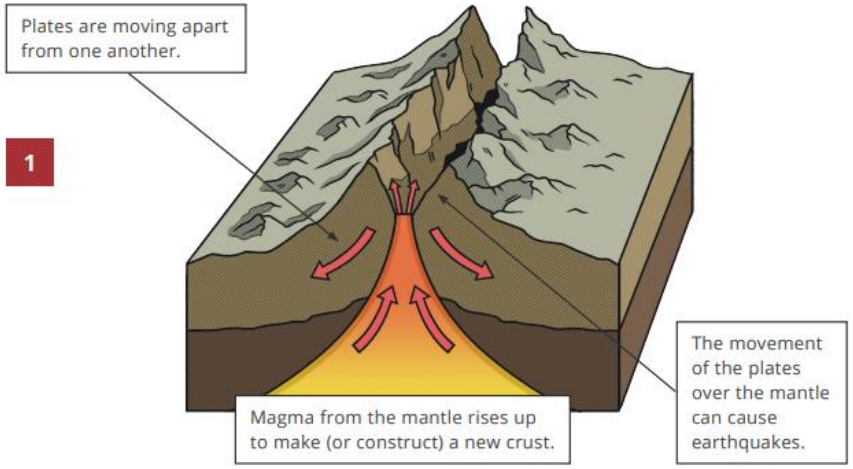
5 Formation of a tsunami



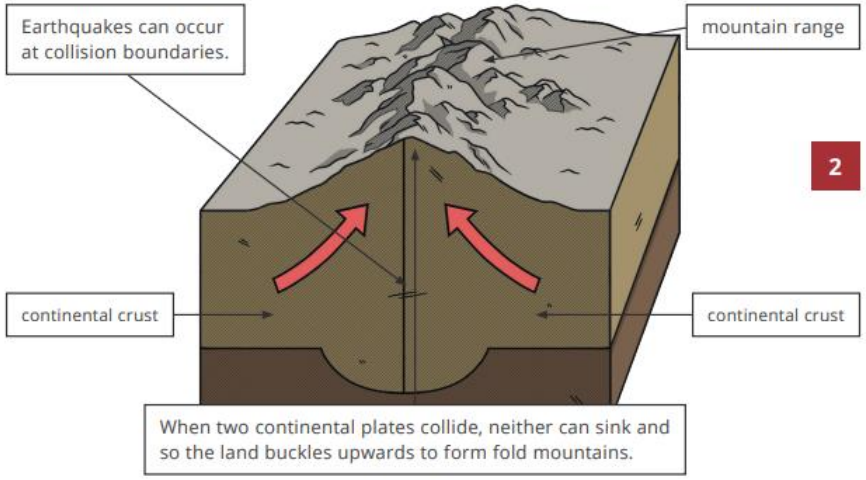
1. An earthquake caused by one tectonic plate sliding under another causes the sea bed to rise, displacing a vast amount of water vertically
2. As the dome of water returns to its natural level, a wave is created. This may be only a few centimetres high but travels very fast across the open ocean
3. As the wave approaches shallower water, friction from the sea bed causes it to slow down but build up in height, creating the tsunami so dangerous to low-lying coastal areas

Geography Knowledge Organiser

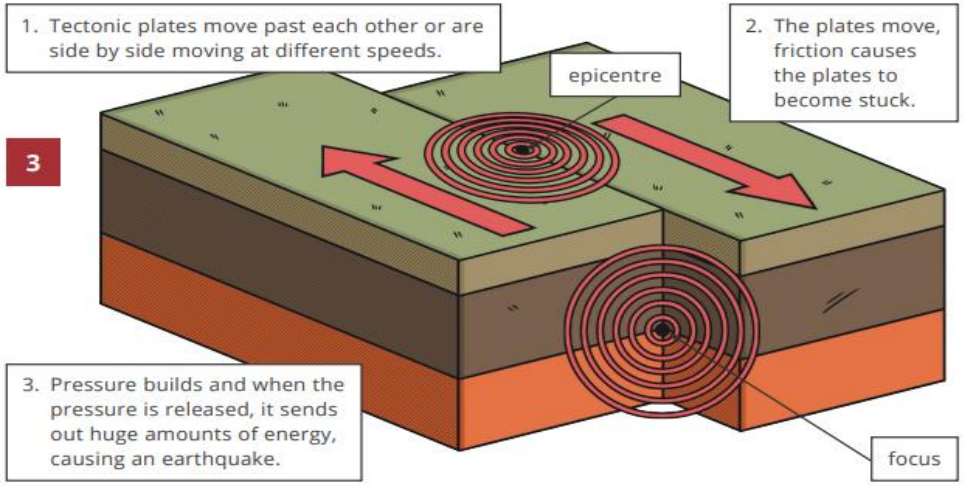
1 Constructive margin: A plate boundary where two plates are moving apart



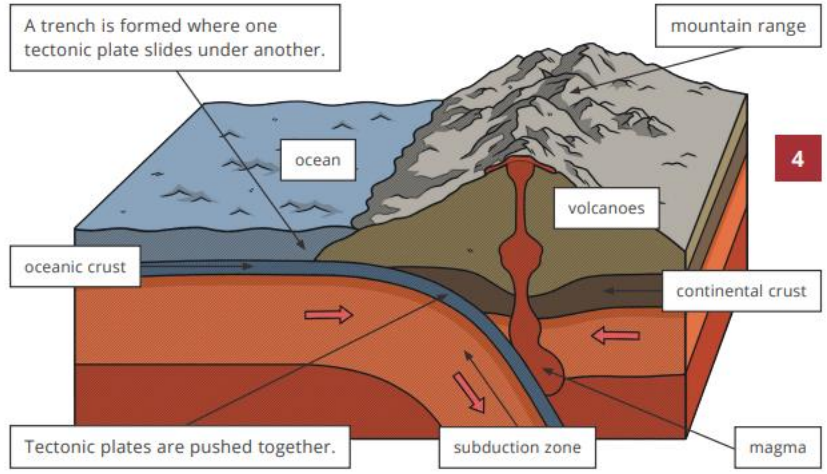
2 Collision margin: A plate boundary where two continental plates are moving towards each other.



3 Conservative plate margin: A plate boundary where two plates are moving in opposite directions or in the same direction at different speeds



4 Destructive margin: A plate boundary where a continental plate and oceanic plate are moving towards each other

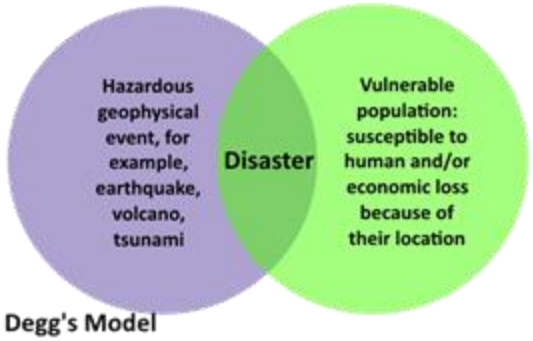


Geography Knowledge Organiser

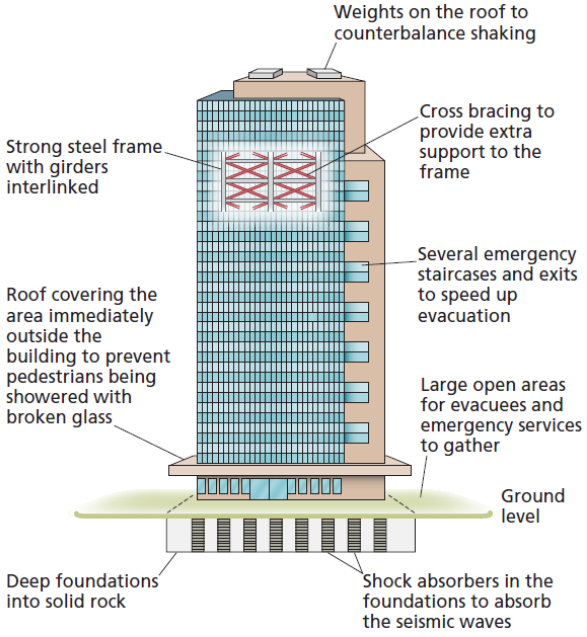
1 Tier Three Vocabulary

Primary Impact	The effects that occur immediately as the earthquake happens. These include buildings collapsing, roads and bridges being destroyed, and railway lines being buckled. All occur due to the shaking of the ground.
Secondary Impact	The subsequent effects of the quake, which can be even more devastating than the primary ones e.g. fires, landslides, tsunamis and disease.
Response	How countries react to a disaster. **Short-term** or immediate - mainly involve search and rescue and helping the injured with medical aid, then providing emergency shelter, food and water. **Long-term** involves rebuilding destroyed infrastructure, eg roads, houses, power and water supplies, schools and hospitals. They also involve 'kick-starting' the local economy.
Volcanic Explosivity Index (VEI)	A measure of the size of a volcanic eruption that is based on the amount of ash ejected and the height of the ash cloud.
Pyroclastic flows	A mixture of hot gas, ash and fragments of volcanic rock that fall, in a tumbling motion, down the slopes of a volcano during some explosive eruptions.
Hazard mapping	Plotting predicted levels of risk of a natural hazard, such as a volcanic eruptions on to a map.
Tiltmeters	A scientific instrument that is used to measure tilting of the ground. Tiltmeters can be used to measure small changes in the ground shape that occur when the magma chamber beneath a volcano is filling with molten rock.
Seismometers	An instrument to measure the strength and frequency of earth shaking or earthquakes.
Epicentre	The place on the surface of the Earth that experiences ground shaking from an earthquake first. This is directly above the focus.
Aseismic	A description of buildings that are design to withstand shaking during an earthquake.
Shoaling	When the Tsunami wave reaches the coast. It then slows down and increases in height due to the shallow beaches.

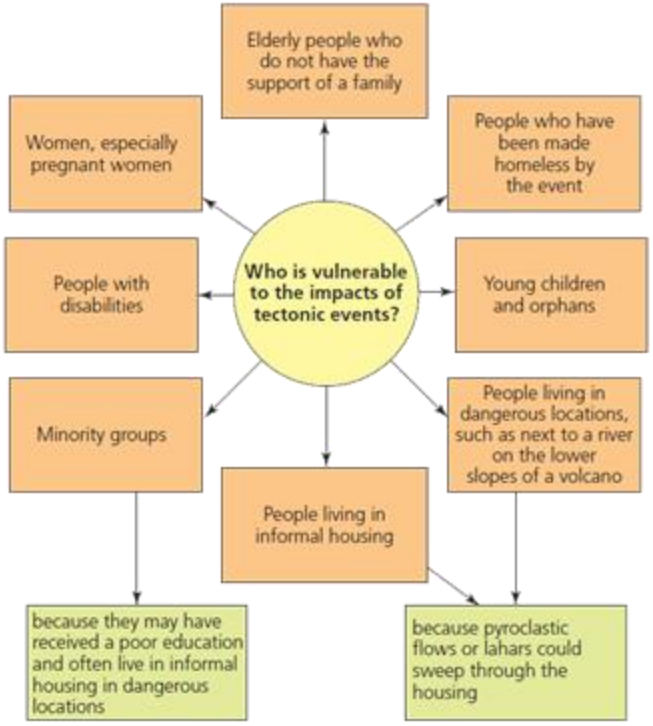
2 The Degg Model



4 Earthquake Resistant Design



3 Human Vulnerability



5 LINKS & FURTHER READING

Click here or use the QR code for GCSE Bitesize

Click here for Internet Geography

History Knowledge Organiser

1. Tsar	The title of the emperor of Russia before the revolution.
2. Bolsheviks	A faction of the Russian socialist movement led by Lenin that seized power in the October Revolution of 1917.
3. Marxism	A political and economic theory advocating for a classless society where the means of production are owned
4. Provisional Government	A temporary government set up after the abdication of Tsar Nicholas II, which was later overthrown by the Bolsheviks.
5. Abdicate	When a monarch voluntarily steps down from the throne.
6. Soviet Union	The socialist state established in 1922, officially called the Union of Soviet Socialist Republics (USSR), that lasted until
7. Red Army	The military force organized by the Bolsheviks during the Russian Civil War and later became the army of the Soviet
8. White Army	The various anti-Bolshevik forces that fought against the Red Army during the Russian Civil War.
9. Lenin	Vladimir Lenin, the leader of the Bolshevik party and key figure in the Russian Revolution.

LINKS & FURTHER READING

Books

The end of Tsarist Russia
The Rise and fall of the Soviet Union
Animal Farm: George Orwell

Documentary (YouTube)

Peoples Century – Red Flag
Lucy Worsley- Empire of the Tsars

History Knowledge Organiser

10. Stalin	Joseph Stalin, the leader of the Soviet Union from the mid-1920s until his death in 1953, known for his totalitarian rule.
11. Five-Year Plans	Government plans for economic development over five years, focusing on rapid industrialization and collectivization in the
12. Collectivization	The policy of consolidating individual land and labor into collective farms in the Soviet Union.
13. Famine	A severe shortage of food resulting in widespread hunger and death.
14. Industrialization	The development of industries on a wide scale, which was a major focus of Soviet economic policy.
15 Revolution	A fundamental and relatively sudden change in political power and political organization.
16. Purges	The removal of people considered undesirable by those in power, often through violent means, used extensively by Stalin.
17. Labor Camps	Places where prisoners are forced to do hard labor as a form of punishment, commonly used in Stalin's Soviet Union.
18. Execution	The act of putting someone to death, often used as a political tool by the Bolsheviks and Stalin.
19. October Revolution	The second phase of the Russian Revolution in 1917 when the Bolsheviks seized power from the Provisional Government.

Computing Knowledge Organiser

1	TIER THREE VOCABULARY
Abstraction	The process of simplifying complex systems or concepts by focusing on essential features while hiding unnecessary details.
Algorithms	Step-by-step instructions or procedures for solving a specific problem or performing a specific task.
Array	A collection of data items stored in sequential order
Arithmetic operators	Symbols used to perform mathematical operations such as addition (+), subtraction (-), multiplication (*), division (/), and others.
Boolean	A data type that represents logical values, either True or False.
Comments	Annotations in code that are not executed but provide information or explanations
Comparison operators	Symbols used to compare values, such as equal to (==), not equal to (!=), greater than (>), less than (<), greater than or equal to (>=), and less than or equal to (<=).
Concatenate	link together in a chain or series. Used in program to join data together
Conditional statements	Programming structures that allow different paths of execution based on specified conditions.
Data types	The classification of data in programming languages, including string (text), integer (whole numbers), float (decimal numbers), and Boolean (true/false).
Debugging	The process of identifying and fixing errors or bugs in a program to ensure it runs correctly.
Elif statement	A conditional statement that allows multiple conditions to be checked in sequence and executes if any of the conditions are true.
Else statement	A conditional statement that executes a block of code if the condition(s) in an if statement are false.
Error handling	Techniques used to catch and handle errors or exceptions that may occur during the execution of a program.
Float	A data type that represents numbers with decimal places.
For loop	A loop that iterates over a sequence of elements, such as a list or a defined number of times
If statement	A conditional statement that executes a block of code if a specified condition is true.
Indexing	The process of accessing specific elements in a list or string by their position using square brackets
Input	The process of providing data or information to a program during its execution.
Integer	A data type that represents whole numbers without decimals.
Iteration	The repetition of a process in order to generate a sequence of outcomes.

3 Output

```
# Printing a simple text
print("Hello, world!")

# Printing a variable
name = "Alice"
print("Hello,", name)

# Printing multiple variables
age = 25
print("Hello,", name, "You are", age, "years old.")
```

4 Input

```
# Taking input as a string
name = input("Enter your name: ")
print("Hello,", name)

# Taking input as an integer
age = int(input("Enter your age: "))
print("You are", age, "years old.")

# Taking input as a float
height = float(input("Enter your height in meters: "))
print("Your height is", height, "meters.")
```

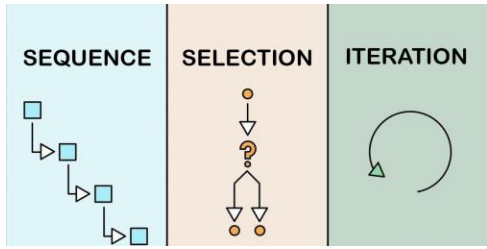
5 Selection

```
# Example: Checking a number and string input using if statements
number = int(input("Enter a number: "))
if number > 0:
    print("The number is positive.")
elif number < 0:
    print("The number is negative.")
else:
    print("The number is zero.")

secret_word = "banana"
guess = input("Enter your guess for the secret word: ")
if guess == secret_word:
    print("Congratulations! You guessed the secret word correctly!")
else:
    print("Sorry, your guess is incorrect.")
```

Computing Knowledge Organiser

1	TIER THREE VOCABULARY
Lists	**A data structure in Python used to store an ordered collection of items.**
Logical operators	Operators used to combine or manipulate logical expressions, including AND, OR, and NOT.
Loops	Structures that repeat a block of code until a certain condition is met.
Nested conditionals	Conditionals within other conditionals, allowing for more complex decision-making.
Output	The result or data produced by a program after performing operations or calculations.
Parameters	Values passed to a function to customize its behaviour or provide inputs for calculations.
Programming language	A formal language with a set of rules and syntax that allows programmers to write instructions to be executed by a computer.
Python	A high-level programming language known for its simplicity and readability
Random module	A Python module that provides functions for generating random numbers and selecting random elements.
Return	A statement within a function that specifies the value to be returned as the result of the function.
Selection	Selection is a programming construct that allows you to execute different blocks of code depending on a condition.
Slicing	Extracting a portion of a list or string by specifying a range of indices.
String	A data type that represents a sequence of characters, typically used to store and manipulate text.
Subroutines	Blocks of reusable code that perform specific tasks or operations.
Syntax Error	The rules and structure governing the arrangement of words, symbols in a programming language. If they're not correct a program will not run
Testing	The process of verifying the correctness of a program by running various test cases
Variable	A named container that holds a value that can be changed and accessed during the program's execution.
While loop	A loop that repeats a block of code as long as a specified condition is true.



6 Comparisons

Operator	Description	Example
==	Equal	5 == 5
!=	Not equal	5 != 3
>	Greater than	5 > 3
<	Less than	3 < 5
>=	Greater than or equal to	5 >= 5
<=	Less than or equal to	3 <= 5

7 For Loop

```
# Example: Using a for loop with specified start, end, and increment values
print("Printing numbers from 1 to 10 with an increment of 2:")
for i in range(1, 11, 2):
    print(i)

print("\nPrinting numbers in reverse order:")
for i in range(10, 0, -2):
    print(i)
```

8 While Loop

```
# Example: Using a while loop to repeatedly ask the user for input
secret_word = "python"
guess = ""

while guess != secret_word:
    guess = input("Enter your guess for the secret word: ")
    if guess == secret_word:
        print("Congratulations! You guessed the secret word correctly!")
    else:
        print("Sorry, your guess is incorrect. Try again.")
```

REP Knowledge Organiser – Christian Ethics

Lesson 1 - Sanctity of Life and Natural Law

Creation of Humans:
In the Book of Genesis, God created Humans and granted them a soul. This is what separates us from other living things.

Sanctity of Life:
Life is a precious gift from God and is considered sacred (valuable for spiritual reasons).

Natural Law:
Christians believe that the sanctity of life must be prioritised in ethical decision making. This is one of the Primary Precepts of Christian Ethics.

Lesson 2 - Discrimination

Prejudice:
Negative thoughts and views towards a group of people.

Discrimination:
Negative actions based on prejudices.

Protected Characteristics:
Legally protected groups of people, making it illegal to discriminate based on things like race and sexuality.

Golden Rule:
The belief present in all religions that we should care for one another. In Christianity this is shown in the quote by Jesus 'Love thy neighbour'.

Lesson 3 - Euthanasia

The act of helping someone to die. Currently illegal in the UK.

Active Euthanasia:
Actions that accelerate the process of death. E.g. taking a medically prescribed drug that will cause death

Passive Euthanasia:
Omission of care. Stop providing the life sustaining medical care that is keeping a person alive. E.g. removing a breathing tube.

Physician Aided Dying:
Medical intervention to help terminally ill people to die.

Lesson 4 - Fertility Treatment

The process of establishing pregnancy through artificial means

In-vitro fertilisation (IVF):
Fertilising eggs outside of the womb to create embryos that are then implanted in the womb.

Artificial Insemination:
A partner or donor's sperm is inserted closer to an egg in the hopes of establishing an embryo

Stem Cell research:
Using unwanted embryos for medical research into various genetic conditions and medical treatments

Lesson 5 - Abortion

An abortion is the premature termination of a foetus

Embryo:
The stage of pregnancy between 2 and 8 weeks where organs etc are beginning to develop

Foetus:
The stage of pregnancy from 8 weeks to birth. At this stage, the major organs are present and growing.

Viability:
The stage of pregnancy where the foetus has a reasonable chance of survival (around 24 weeks).

Pro-Life: People who are opposed to abortion

Pro Choice: People who support female bodily autonomy

Lesson 6 - Capital Punishment

The death penalty, a sentence given for the most serious crimes. The UK banned the death penalty in 1969 with the last execution taking place in 1964.

Status:
55 countries use the death penalty including the USA, China, Saudi Arabia and Japan

Methods:
Common methods of execution around the world include firing squads, hanging, electrocution and lethal injections.

Human Rights:
The United Nations has banned the death penalty as a violation of human rights

Lesson 7 - Assessment

A question paper worth 40 marks that should take 30 minutes to complete. It will consist of:

- 20 multiple choice questions worth 1 mark each
- 5 'state two' questions where you have to give examples of key words. These are worth 2 marks each
- 2 'describe and explain' questions where you must explore a religious view on an issue covered in this Learning Cycle. These are worth 5 marks each.

You will need to know the key words and main religious views of conservative and liberal Christians on the ethical issues we have covered.

In your 5 mark answers you will be expected to give examples and biblical quotes to support your answer

Art Knowledge Organiser

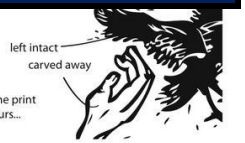
1	TIER THREE VOCABULARY
Analyse	Analyse - examine (something) methodically and in detail, typically in order to explain and interpret it.
Composition	Composition is the arrangement of elements within a work of art.
Contemporary Art	The term contemporary art is loosely used to refer to art of the present day and of the relatively recent past, of an innovatory or avant-garde nature
Designs	Designs are plans to explain your ideas in a visual way.
Expression	Expression is something that expresses or communicates ideas or feelings.
German Expressionism	German Expressionism was an early twentieth century German art movement that emphasized the artist's inner feelings or ideas over replicating reality, and was characterised by simplified shapes, bright colours and gestural marks or brushstrokes
Influence	Influence is to be inspired by the style of art styles and movements.
Linocut	A linocut is a relief print produced in a manner similar to a woodcut but that uses linoleum as the surface into which the design is cut and printed from
Medium	Medium can refer to both to the type of art (e.g. painting, sculpture, printmaking), as well as the materials an artwork is made from

2 Techniques and skills:

Using a grid to develop accuracy and proportion within drawing- add a grid to the image you want to draw and then transfer the shapes and lines into an empty grid.

Presentation Ideas

About Linocut printmaking

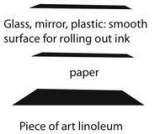


- It is an inexpensive way of making original art
- You can easily make multiples of the same image
- It's a 'relief' printing method: carving away the surface area to make the print
- Prints can be high-contrast/bold, fine/detailed, one colour, many colours...
- Text and the images need to be carved in reverse (mirror image)

TOOLS


Brayer: for rolling out ink
$15+


Carving handle and tip
$5 + $1.50



Piece of art linoleum (or softer material called Speedy-cut)
$2


Printmaking ink, ideally- can be water or oil based
$5

Spoon

STEPS

1 Design your image on the linoleum

Draw it in reverse. You could: sketch it, transfer it from a photocopy with a photo-copy pen, cut it out of paper then trace around it...

2 Plan where you will cut away from the design

Anything you carve away will show the paper, not the ink. This is the relation-ship between positive and negative space.

3 Carving

Carve the linoleum slowly, carve away from you, and don't put your (other) hand between the tool and the path it's on.

4 Inking

Place a small amount of ink on the flat surface (glass, mirror, plastic). Roll the brayer to smooth out the ink. Ink the linoleum.

5 Printing

Place the paper on top of the linoleum. Use your hand or the back of a spoon to apply even pressure. Large images will look best with a tool called a "baren": a hand-tool that is a disk with a nylon surface, instead of the spoon.

6 Printing continued...

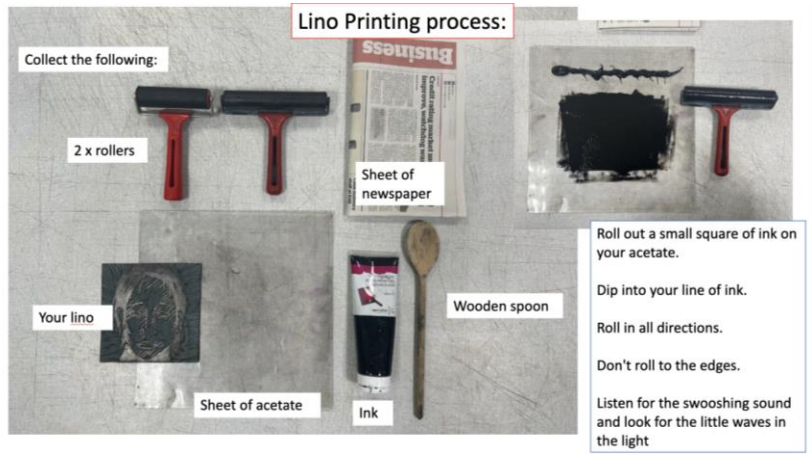
Lift th
learn by trial and error how much ink and pressure is required.

Each print is unique. Cherish the imperfections.

A note on printing on fabric... it's possible with special fabric inks, if the design is treated like a stamp. Detailed images are more difficult with this technique.

Centering the Tanget Conference
Coast Salish Territories/ Vancouver BC
April 2011 www.sambradd.com

3 Health and Safety



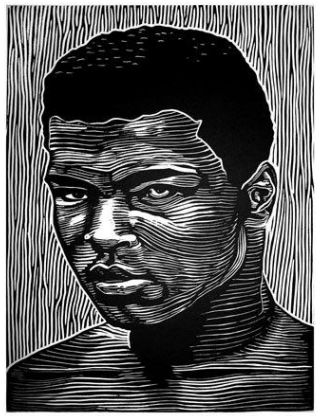
Art Knowledge Organiser

1 Continued	TIER THREE VOCABULARY
Mood	Mood – the general atmosphere, or state of mind and feelings, that a work of art generates. For example, the mood of a painting could be disturbing or tranquil, dark or energetic.
Portrait	Portrait - A portrait is a representation of a particular person. A self-portrait is a portrait of the artist by the artist
Printmaking	Printmaking - A print is an impression made by any method involving transfer from one surface to another
Proportion	Proportion - Proportion is the relationship of one part of a whole to other parts
Refine	Refine – to improve your artwork
Tone	Tone - The lightness or darkness of something – this could be a shade, or how dark or light a colour appears
Mixed media	Mixed media is a term used to describe artworks composed from a combination of different media or materials
Monochromatic	Monochromatic - containing or using only one colour.
Woodcut	Woodcut is a method of relief printing from a block of wood cut along the grain.
Expression	Expression is something that expresses or communicates ideas or feelings.

4 Artists- Contemporary and Historical

German Expressionists.

Larry Winston Collins.

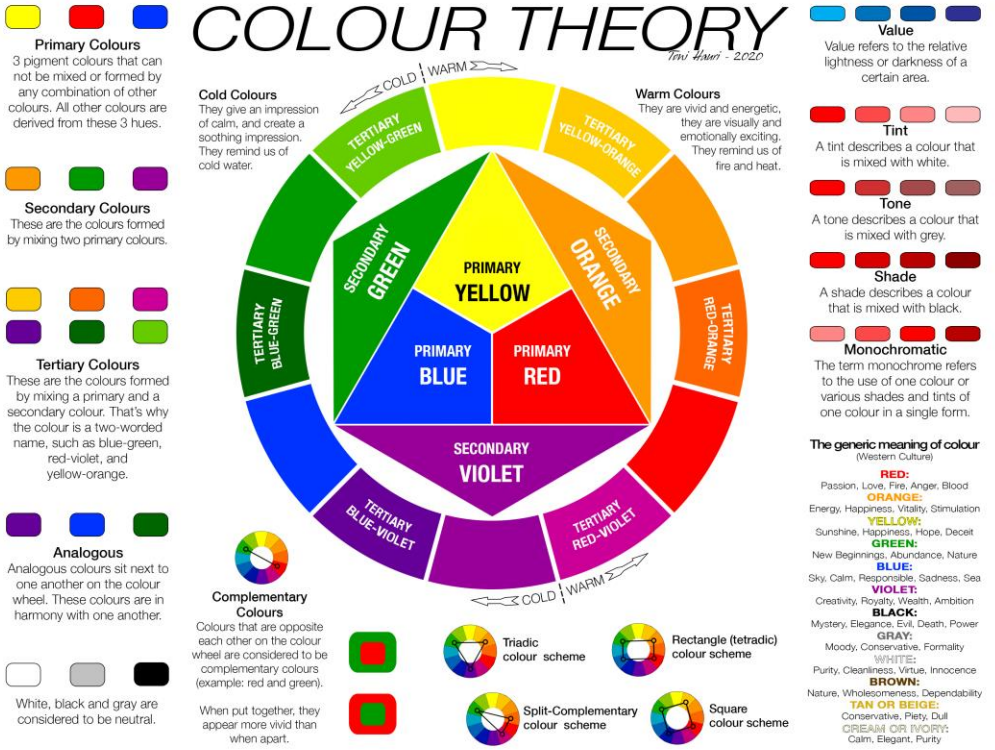


Natalia Moroz

Alex Binnie

5 Extension Task

Explore colour theory and plan for colour variations of your prints.

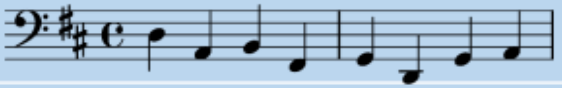
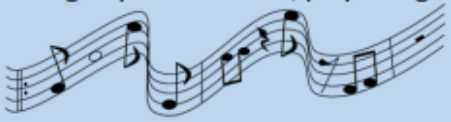
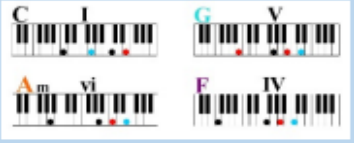


6 LINKS & FURTHER READING

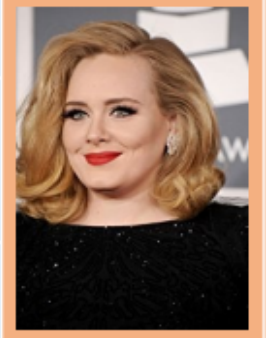
Explore a range of printmaking processes- BBC Bitesize.

V&A block printing
William Morris wallpaper – info and video to see the multiple layers.

Music Knowledge Organiser

Verse	The part of the song that sets up the chorus and tells the story. 
Chorus	The part of the song that is usually the most memorable, and includes the title. This is typically the part of the song that people remember and sing along with! 
Bassline	The lowest pitched part of the music often played on bass instruments such as the bass guitar or double bass. Creative and distinctive basslines make your song stand out! 
Melody	The main "tune" of a song or piece of music, played higher in pitch that the **bassline.** 
Chord Sequence	The pattern of chords used to create the harmony of the song for the melody 
Lyricist	The person responsible for writing the lyrics during the songwriting process. 
Strophic	A structure of a popular song which is simply Verse, Verse, Verse etc. It can also be referred to as A-A-A-A etc. 
Verse-Chorus Form	A structure of a popular song which makes use of verses and choruses – there's usually an intro, bridge and outro somewhere in there too! 

Adele (b.1988)



Adele is often cited as the one of the most successful female singers in history, selling over 40 million albums and 50 million singles in just five years. Here one of her most famous songs, Someone Like You, here. Can you work out the structure? https://www.youtube.com/watch?v=hLQl3WQQoQ0

Ed Sheeran (b.1991)

Ed Sheeran is a singer-songwriter, famous for his honest and emotional songwriting. His two albums '+' and '÷' are two of the best selling UK albums of all time. Listen to one of his most emotive songs, Supermarket Flowers, here: https://www.youtube.com/watch?v=bIB8EWqCPrQ

Taylor Swift (b.1989)

Taylor Swift is an American singer-songwriter who has her roots in Country music, and has moved more into mainstream pop music in recent years. Have a listen to her song *Love Story* released in 2008. Can you name the instruments used? https://www.youtube.com/watch?v=8xg3vE8Ie_E

Lizzie Borden

Information you need to know

- On the 4th August 1892, Andrew Borden returned from a trip to town and lay on the couch in the sitting room
- Emma, Lizzie's older sister, was away visiting relations
- At 11.15 am, their maid, Bridget Sullivan, was awakened by Lizzie shouting
- Andrew Borden lay dead, having been bludgeoned to the head and face with a sharp instrument
- Then the dead body of Abby Borden was found in the bedroom in a similar way.

The Case

- The investigation was launched
- Suspects included: the maid, John Morse (Andrew Borden's brother-in-law) and Lizzie
- Lizzie was accused of the murders
- She claimed to be completely innocent
- She was acquitted of the murders on the 20th June 1893

Drama Knowledge Organiser

DRAMA KEY WORDS

VOCAL SKILLS

Tone	Pause
Pitch	Projection
Pace	Inflection
Intonation	Accent
Silence	Emphasis

PHYSICAL SKILLS

Body Language	Posture
Facial Expressions	Movement
Gestures	Gait
Stillness	Stage Presence
Eye-Contact	Interaction

SPACE PERFORMANCE CONVENTIONS

Levels	Freeze- Frame
Proxemics	Narration
Stage Left/Right	Split Scene
Centre Stage	Thought-Track
Transition	Mime
Blocking	Improvisation
Cannon	Physical Theatre
Duologue	Unison
Soundscape	Monologue

ADJECTIVES

- abrupt
- angry
- anxious
- assured
- cold
- controlled
- deep
- enthusiastic
- firm
- forceful
- gentle
- harsh
- hesitant
- loud
- sarcastic
- sly
- soft
- stutter
- timid
- trusting
- aggressive
- defiant
- dismissive
- distraught
- distressed
- eager
- eye contact: direct, focused, avoiding, accusing
- fearful
- gentle
- rapid
- relaxed
- slow
- sluggish
- smooth
- smug
- strong
- thoughtful
- anger
- anti-climax
- appreciation
- believable
- delight
- development
- disappointment
- emotional response
- empathy
- emphasis
- engagement
- feeling
- focal point
- horror
- interest
- intrigue
- irritation
- light-relief
- realistic
- sympathy
- understanding

Other Useful Vocabulary:
Hot-seating
Character
Motivation
Warm-Up
Role-on-the-Wall
Genre

Other Useful Vocabulary:
Rehearsal
Sound Effects
Naturalistic
Abstract
Minimalistic

DT Knowledge Organiser – Food Meal Planning

Key Terms	Description
Allergies	When a person's immune system reacts strongly to certain foods causing symptoms like difficulty in breathing, swelling or hives
Ethical	Relating to moral principles
Cultural	Relating to the ideas, customs, and social behaviour of a society.
Vegan	A strict vegetarian who consumes no food that comes from animals. (such as meat, eggs, or dairy products)
Budget	How much money you have to spend on certain items- eg food
Cross Contamination	Transfer of bacteria from one source to another. Use of different coloured chopping boards.

Skills	Use in the lesson
Knife skills	Use of bridge and claw holds for safe cutting.
Sauce making	Reduction method to thicken curry sauce
Whisking	Making a swiss roll rise by aeration of the eggs and sugar.
Folding in	Gently mixing the flour into the mix without bursting air bubbles.
Presentation skills	Improving how the food looks- adding colour.
Safe use of meat	Safe storage and cooking.

Plan and make task in preparation for KS4 Hospitality and Catering Suitable menu choice, justification for choices, planning the practical session, producing the dishes, evaluation.

DT Knowledge Organiser – Textiles

Techniques	Explanation
Templates	Made with squared paper for accuracy and used to cut the fabrics
Pins	Used to hold the template to the fabric for cutting
Fabric shears	Used to cut through the layers of fabric, usually 2 to save time
Sewing machine	A straight stitch used to create stable and straight seams
Seam	Usually sewn with a 10mm allowance so accuracy is maintained
Hem	A neatly finished visible edge

DT Knowledge Organiser

1. Research sources

Primary research sources:

- Interviews
- Questionnaires
- Surveys
- Focus groups
- Case studies
- User observations
- Product testing and trials

Advantages

- Data is up to date and relevant
- Questions and surveys can be tailored to specific needs

Disadvantages

- A large number of people are needed
- Data gathering is time consuming

Secondary research sources:

- Government data
- Articles from books, magazines and the internet
- Company reports
- Exemplar work from others

Advantages

- Data is already collated and available
- Data may be free or low cost
- Huge amount of research is available and accessible

Disadvantages

- Data may not be up to date
- Data may not be specific to company needs
- Data is available for all

2. Product analysis

3. Working properties and tier 3 vocabulary

Definition	Property	Examples
The ability of a material to be stretched or drawn or pulled without breaking.	**Ductility**	Copper because it can be drawn out to make wire.
The ability to return to its original shape after stretching or compression.	**Elasticity**	Lycra is used for sportswear to provide freedom of movement.
The ability to withstand impact, wear, abrasion and indentation.	**Hardness**	Tungsten, used for knives, drills and saws.
The ability to be bent and shaped without cracking or splitting.	**Malleability**	Gold, copper, silver and lead can all be easily hammered into shape.
The ability to withstand a force such as pressure, compression, tension or shear.	**Strength**	May be strong in one force and not another. Concrete is strong under compression, but not tension.
The ability to absorb shock without fracturing	**Toughness**	Kevlar body armour absorbs impact.

4. The age of plastic

For more than 50 years, the global production and consumption of plastic has continued to rise. Approximately 300 million tons of plastic is produced each year, plastic is relatively inexpensive to produce and very versatile.

What are polymers?

Polymers are mostly synthetic materials. They are usually derived from finite resources such as coal, natural gas or crude oil. More renewable and sustainable materials such as vegetable starches are being used to make bio-plastics.

Renewable and non-renewable materials

Materials which can be 'grown' are classed as renewable. This includes timber and paper. It also includes materials which are derived from animals such as wool and leather as we can grow more animals. Non-renewable materials are materials which cannot be recreated in the human life-time. Examples are metals and plastics. Energy sources such as oil, coal and gas are also non-renewable.