



**BRISTOL
METROPOLITAN
ACADEMY**

Monday 4th November	Week A
Monday 11th November	Week B
Monday 18th November	Week A
Monday 25th November	Week B
Monday 2nd December	Week A
Monday 9th December	Week B
Monday 16th December	Week A

Please note: Maths homework will be on an online platform for this term. It will be set and checked weekly separately from the timetable.

Knowledge Organisers 2024-25 Year 9 – Term 2

Complete your homework on the night stated e.g. if it is a Monday Week A you will complete ICT/DT

	Week A	Week B
Monday	ICT/DT	MFL
Tuesday	English	English
Wednesday	Science	Science
Thursday	History	Geography
Friday	RS	Music/Art

Contents

How to

Art

Computing

Drama

DT

English

Food

French

Geography

German

History

Maths

Music

PE

RS

Science

Spanish

Textiles

This Knowledge Organiser is to help you see the key information for each subject for this term. You can use this to help you both with homework and with revision, supporting your learning at home. In the table below you will find the instructions for each subject to be completed on the correct day.

Subject	Tasks
Maths	Homework question tasks/sets will be set weekly on an online platform. You will have one week to complete this online, before it is checked for competition and the next set is published.
Science	For term 1 this will be directed by your classroom teacher. It could involve an online platform too.
English	Using the separate question booklet, divide your homework book page in half length ways, write the questions out on the left hand side. First, attempt to answer the questions from memory/your own knowledge. Then use your knowledge organiser booklets to check your answers and fill in the missing ones.
MFL	Find the correct date in the KO and the question booklet. With the list of 10 key words for that week, complete the look – say - cover – write – check method in your homework book. Complete this process for each word/phrase 4 times each.
Geog/Hist/RS /DT	Same process as outlined for English above. DT have 5 questions and not 10.
ICT	For term 1, continue to use the KO to do revision/key words etc in your homework books.
Music/Art	For music and art, you will have two practical tasks to complete each term for each subject. These will be found in the question booklets and will be checked by you classroom teacher.

At the back of this booklet, you will find: Sentence starters, a history chronology, DT sentence starters, a periodic table, maps of the world, subject websites, a RAG sheet and a timetable.

How to present your homework:

Subject written on the left-hand side of the page and underlined.
For example: Food

Topic written on the centre of the page and underlined.
For example: Sugars

One single straight line between both pieces of homework.

Subject: Food Tuesday 25th June 2019

Topic: Sugars

Keyword	Definition
Monosaccharides	
Disaccharides	
Intinsic sugars	
Polysaccharides	

Subject: English

Topic: Macbeth

1. Who are the four most important characters in Macbeth?
Macbeth, Lady Macbeth, Banquo and Macduff.
2. What are three character traits of Banquo?
Gullible, superstitious and ambitious.
3. How would you describe Lady Macbeth?
She is manipulative, cold-blooded and cruel.
4. How is Lady Macbeth two-faced?
She is warm and welcoming to Duncan, and then manipulates her husband to kill him.
5. What is the name of Banquo's son?
Fleance

Date written fully on the right-hand side of the page and underlined. This should be the day you complete the homework.

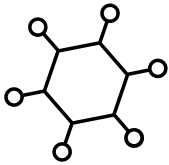
Home Learning Strategies to help you revise

Brain Dump



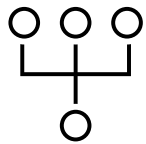
Write down everything you know about a certain topic on a page. Use your KO to add extra notes in a different colour.

Mind Map



Condense a topic showing the important links and connectors between key parts. Use your KO to add in extra notes.

Diagram



Draw a clear diagram for a subject including labels and key features. Make sure you use correct vocabulary and spellings.

Vocabulary



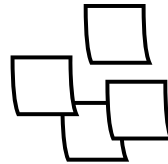
Learn the key words associated with a topic and commit the word and spelling to memory. Test yourself or ask someone else to test you.

Retrieval Quiz



Write key questions about a topic as well as the answers. Use the content of the KO to help you. Check to see if you can remember the answers without looking.

Compare



Complete a comparison table showing two different sides of a topic. Can you use it to create an argument for one viewpoint?

Year 9 — Past Project

Content: In this project you will learn
Knowledge – different artists who have represented
Understand – What inspired these artists to create work and how to write about the work
Skills – You will learn how to analysis artists work, improve drawing skills, tonal work, ceramics
Outcome – Tonal drawing and ceramic piece



Shape, form, space Closed Open Distorted Flat Organic Deep Flat Positive Negative Foreground Background Composition Convex/concave Elongated Large Small 2D 3D	Tone Bright Dark Faded Smooth Harsh Contrasting Intense Sombre Grey Strong Powerful Faint Light Medium Dark Dramatic Large Small	Pattern and Texture Repeated Uniform Geometric Random Symmetrical Soft Irregular Coarse Bold Uneven Bumpy Rough Smooth Uneven Spiky Broken Furry Fine Flat Grid	Line Fluent Free Controlled Powerful Strong Geometric Angular Light Delicate Flowing Simple Thick Thin Horizontal Broken Interrupted Rounded Overlapping Broken Faint	Colour Bright Bold Primary Secondary Tertiary Radiant Dull Vivid Contrasting Deep Monochrome Harmonious Complementary Natural Earthy Subtle Pale Cool Warm Saturated Luminous Strong
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The Suffragettes' Movement
 The women's suffrage movement was a decades-long fight to win the right to vote for women in the United States. It took activists and reformers nearly 100 years to win that right, and the campaign was not easy: Disagreements over strategy threatened to cripple the movement more than once.

The Civil Rights Movement
 The civil rights movement in the United States was a decades-long struggle by African Americans and their like-minded allies to end institutionalized racial discrimination, disenfranchisement and racial segregation in the United States.

The Stonewall Riots
 The Stonewall riots were a series of spontaneous, violent demonstrations by members of the gay community in response to a police raid that began in the early morning hours of June 28, 1969, at the Stonewall Inn in the Greenwich Village neighborhood of Manhattan, New York City.



Basic, simple, solid, loud, quiet, bright, realistic, stylised, observed, busy, vibrant, strange, interesting, balanced, lively, negative, recognisable, abstract, tactile, meaningful, symbolic, depressing, unique, emotive, hidden, textural, dynamic, disturbed, sophisticated, puzzling, optimistic, powerful, intentional, concealed, subtle.

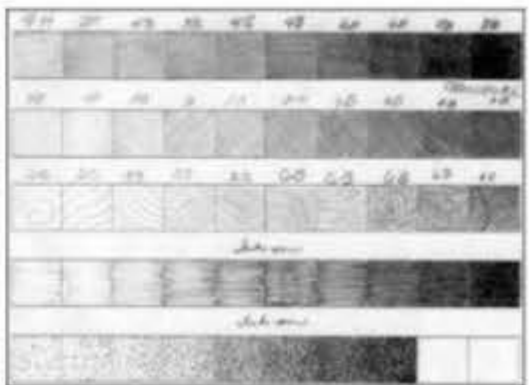
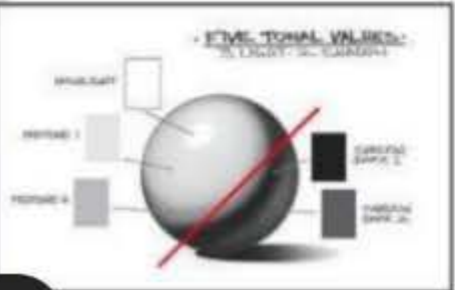
REMEMBER to check your... Spellings, Grammar and Punctuation

Sentence Starter Help
 Try thinking of your own too

Example
 I have created this piece using watercolours, saturated pencil and oil pastel. I have learnt how to blend the watercolours to show different tones and use oil pastel to show the darkest tones and add texture. The piece shows strong shapes and vivid colours. I have added coloured pencils to show some areas in more detail and focus. The artist Georgia O'Keefe has inspired my piece. In her work she uses bright, bold colours to show close-up views of flowers with a range of dark to light tones. I am to now further develop my piece by using other materials. I could do this by experimenting with black prints on watercolour background or possibly trying printing onto fabric to then stitch into to show more detail.

- In this piece I have...
- The materials I have used are...
- The technique I have used is...
- Through working in this way I have learnt how to...
- I have shown... in the style of...
- This piece could develop further by including...
- The artist... has influenced my designs because...
- To develop this piece further I could...
- I think using... worked really well because...
- I am particularly pleased with... and I now am to...

- KEYWORDS**
- Conflict
 - Inequality
 - Racism
 - Discrimination
 - Slavery
 - Apartheid
 - Female emancipation
 - Social Class
 - Gay rights



Computational thinking:

Algorithm:

A sequence of instructions that carries out a task.

Abstraction:

The process of removing unnecessary detail in a problem.

Decomposition:

Breaking down a task into manageable tasks.

Programming:

Pseudocode – A way of representing algorithms using a common language.

Python – A general-purpose programming language.

IDE – Integrated Development Environment. Two examples are **Thonny** and Python IDLE. Benefits:

- + It highlights errors for you
- + Functions are colour-coded
- + Autocomplete and auto-indent
- + Allows debugging with breakpoints
- + Better user interface design

Errors:

Logic error – a fault in the logic or structure of the program.

Syntax error – syntax is the spelling and grammar of a programming language. An error occurs when you type in the code incorrectly.

Variables:

A memory location where values are stored.

The value can be changed later. E.g.:

```
score = 34
name = "Miss Thomas"
name = input("What is your name?")
pets = int(input("How many pets do you have?"))
```

Data types:

Each variable is associated with a data type.

String – any mix of letters, numbers and symbols, e.g. "apple12" or "Miss Thomas"

Integer – A whole number e.g. 42

Real/float – A decimal number e.g. 3.14

Boolean – True or False

Sequence – Executing instructions in order.

```
score = 34
score = score + 1
print("Your score is", score)
```

Selection – A decision or question. The code makes a choice between two paths.

```
if score > 20:
    print("You rock!")
else:
    print("You should practice more.")
```

Iteration – Repeating or looping code.

```
while timer > 0:
    playGame()
    timer = timer - 1
```

Operators:

+	add	Mathematical
-	subtract	
*	multiply	
/	divide	
<	Less than	Comparison
<=	Less than or equal to	
>	Greater than	
>=	Greater or equal to	
==	is equal to	
!=	is not equal to	

Cyber Security:

Encryption – converting data into a code, to prevent it being intercepted.

Cryptography – the study of writing or solving codes, such as encryption.

Firewall – decides which data to block and accept on a network.

Malware – software designed to disrupt a computer system.

Year 9 Drama Knowledge Organiser. Make sure when you rehearse and perform your devised piece, you include the following skills and techniques:

Physical Skills

Body language
Interaction
Posture
Gait
Gesture
Spatial awareness
Proxemics
Control
Mannerisms
Facial expressions
Eye focus / contact
Energy
Stage presence
Characterisation

Blocking: the precise movement and positioning of actors on a stage

Vocal Skills

Volume
Diction
Emphasis
Accent
Intonation
Inflection
Emotional tone
Pitch
Pace
Pause

You can include:

Levels, mime, slow motion, direct address, flash back, flash forward, improvisation, silence, pause

Teamwork

It is important to work together as a team and commit clearly to that group:

- turn up on time
- be positive
- accept ideas
- respect other opinions

At the very beginning of the devising, things will not be perfect. Remember the bigger picture and be positive, knowing that details can be fine-tuned later on. Groups that are always evolving and experimenting with their ideas can experience more success with their work.

The final stages of the process

Run through the piece for an audience that understand its importance.

- get rid of things that don't work
- run the piece with any technical aspects (projection and sound)
- test sound levels and **sightlines**

Then ask for honest feedback and act on it.

- Does it make sense if it needs to?
- Have the initial aims and objectives been met?
- Is the desired message being received clearly?
- Is the pace appropriate?
- Is it running smoothly?
- Has everyone learned what happens, when and where?

Be prepared to make mistakes and be resilient enough to carry on, but most importantly, enjoy performing.

Year 9 D&T – Pewter Project

What is pewter?

- Pewter is a malleable metal alloy consisting of tin, antimony, copper, bismuth, and sometimes silver. Modern pewter consists of are 94% tin.
- Pewter has a low melting point (around 170–230 °C) making it ideal for melting on a chip forge and brazing hearth and casting

Elements of Design

LINE

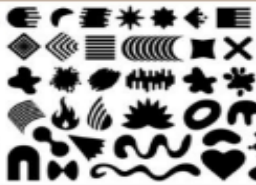
A line is a mark between two points. There are various types of lines, from straight to squiggly to curved and more.

SPACE

Space is the area around or between elements in a design. It can be used to separate or group elements

SHAPE

Height + width = shape. There are three basic shapes : Geometric (triangles, squares, circles etc), natural (leaves, animals, trees, people) and abstract (see image)



TEXTURE

Texture relates to the surface of an object; the look or feel. Concrete is rough; metal is smooth.



2D Design Basic Tools



- SELECT** – Use this tool to select different tools and highlight objects.
- LINE** – This tool creates straight lines. Click to start the line, extend out and click to finish.
- CIRCLE** – This tool creates circle shapes. Click to start the circle, extend to the size needed and click to finish.
- PATH** – This tool creates curved lines through continual clicks.
- RECTANGLE** – This tool can be used to create both rectangular and square shapes.
- TEXT** – Use this tool to insert text onto your designs. The font, size and direction of the text can be changed.
- DELETE PART** – Use this tool to delete separate lines and objects.
- DELETE ANY** – Use this tool to delete whole lines and objects.

Computer aided design (CAD)

Computer aided design now has the capability to design new products in 3D, visualise them in a variety of materials and send images around the world for collaboration and consultation. Once production is finalised, these designs are sent to computer aided manufacture (CAM) machines to be formed. Autodesk and Solidworks are common forms of CAD software used.

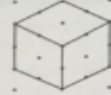
Advantages of CAD	Disadvantages of CAD
Ideas can be drawn and developed quickly	Expensive to set up
Designs can be viewed from all angles and with a range of materials	Needs a skilled workforce
Some testing and consumer feedback can be done before costly production takes place	Difficult to keep up with constantly changing and improving technology

Isometric Drawing Shows Objects at 30°

- 1) Isometric drawing can be used to show a 3D picture of an object.
- 2) It doesn't show perspective (things don't get smaller in the distance), but it's easy to get dimensions right.
- 3) There are three main rules when drawing in isometric:

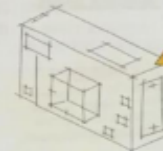
- Vertical edges are drawn as vertical lines.
- Horizontal edges are drawn at 30°
- Parallel edges appear as parallel lines.

This drawing's been done on isometric dot paper. You could use plain paper and a 30°/60° set square instead.



Crating Can Be Used to Draw 3D Shapes

Crating is where you start by drawing a box — the 'crate' — and gradually add bits on and take bits off till you get the right shape. For example, you can remove sections from a cuboid to make any other 3D shape.



- 1) When you're sketching a 3D object, it's easier if you imagine it as a basic shape.
- 2) First draw the basic geometric shape faintly.
- 3) Stick to a particular drawing technique — isometric drawing, for example.
- 4) The object can then be drawn within the box.
- 5) Details of the object can be added by drawing more geometric shapes on top.



What is an Alloy?

Definition: A metal alloy is a substance that combines more than one metal or mixes a metal with other non-metallic elements.

- Example**
 Iron + Carbon = Steel
 Copper + zinc = Brass

What other alloys can you think of?

Malleable

Definition: A material that can be hammered or pressed into shape without breaking or cracking.

Computer aided manufacture (CAM)

By using Computer aided manufacture, designs can be sent to CAM machines such as laser cutters, 3D printers and milling machines.

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

Context

McCarthyism – accusations of disloyalty, subversion, or treason without proper regard for evidence.

Italian Immigration – Immigrants usually faced persecution from other Americans, which is why they live together for protection.

American Dream – Life should be better, richer and fuller for everyone.

Greek Tragedy – Central character cannot avoid their tragic fate.

Plot

Eddie Carbone is an Italian longshoreman working on the New York docks. When his wife's cousins, Marco and Rodolfo, seek refuge as illegal immigrants from Sicily. Eddie agrees to shelter them. The trouble begins when his wife's niece is attracted to Rodolfo. Eddie's jealousy culminates in an unforgivable crime against his family and the Sicilian community.

Characters

Alfieri: An Italian-American lawyer. He narrates the story, speaking directly to the audience and attempts to make the social and moral implications of the story clear.

Eddie: An Italian immigrant and longshoreman (dockyard worker). He is the husband of Beatrice and Catherine's non-biological uncle. He is the **tragic hero** of the play.

Beatrice: An Italian immigrant and Eddie's wife. She has raised Catherine since the death of her mother. She is a warm and caring character.

Catherine: The orphaned niece of Beatrice and Eddie. Catherine has been sheltered by Beatrice and Eddie and wants to experience the world.

Marco: Cousin of Beatrice and an illegal Italian immigrant. He is hard working and plans to send the money he earns back to his family in Italy.

Rodolpho: Cousin of Beatrice and an illegal Italian immigrant. Rodolpho is seen as an effeminate (acting in a stereotypical feminine way) because he cooks, sews, sings and dances. He wants to be an American and gain wealth and fame. His relationship with Catherine causes problems with Eddie.

Symbolism

Brooklyn Bridge - Alfieri's viewpoint from the bridge that links Italian and American cultures and allows Alfieri to narrate past events to the audience.

Italy – Homeland, origin and cultural link to the people of that community.

High heels - For Catherine, high heels are representative of womanhood, freedom of expression, flirtation.

Key quotes

"I'm ashamed. Paper Doll they call him. Blondie now." – Eddie isn't happy with the way that Rodolpho presents himself. He worries that the other longshoreman will judge him and doubt his masculinity.

"My wife – she feeds them from her own mouth." – Marco tells Eddie and Beatrice how poor their family is in Italy. It makes it clear why he and Rodolpho have come to America.

"All the law is not in a book." – This links to the key themes of Justice and Honour. The Italian community live by their own rules that are outside the law. E.g. If you snitch, you are exiled from the community and may be beaten or killed.

"Called me a rat in front of the whole neighborhood." – Eddie shows his anger at Marco's words. He doesn't want to be dishonoured in the Italian community.

"Eddie, I never meant to do nothing bad to you." – Catherine shows how upset she is. She doesn't understand Eddie's behaviour and realises that her relationship with him has changed forever.

"He allowed himself to be wholly known, and for that I think I will love him more than all my sensible clients." – Alfieri respects Eddie and his outpouring of emotions. Alfieri feels that Eddie is a product of the Italian community and could not have changed his fate.

Key Words

Tragic hero: A main character who has a **tragic flaw** which leads to their downfall or death.

Tragic flaw: the character defect that causes the downfall of the **tragic hero**.

Tragedy: a genre of play which deals with tragic events and ends in an unhappy ending. It usually involves the downfall of the main character.

Foreshadowing: a warning of a future event.

Prologue: an event or act that leads to another.

Narrator: a person who retells or recounts the events of a novel or play.

Themes

Community –

Law versus Honour: American law (represented by Alfieri) is not followed in the Italian community. Instead, they follow their own form of justice based on **honour**. E.g. If you snitch, you will be exiled from the community and beaten/killed.

Masculinity: Gender stereotypes influence the characters, especially Eddie. He is determined to be masculine and is suspicious of Rodolpho's 'feminine' behaviour.

Love: Confusion between familial love and romantic love causes issues within the play.

Jealousy: Eddie's jealousy becomes his **tragic flaw** and leads to his downfall.

9.10 Leisure and heathy living

3 time frames
 Infinitives
 Time phrases

opinions
 justifications
 describing and comparing



Verbs and the present tense in French

The infinitive

When you look up a verb in the dictionary, you find its original, unchanged form which is called the **infinitive** (manger, boire, jouer, visiter, habiter, aller etc.). The infinitive ends in **-re, -er** or **-ir**.

Forming the present tense in French

Take off the last 2 letters of the infinitive (**-re, -er** or **-ir**) and add the following endings depending on the pronoun:

*Important! There are some key irregulars to learn which don't follow this pattern – aller (as shown here), être, avoir and faire are really important!

	RE verb	ER verb	IR verb
Je (I)	-s	-e	-s
tu (you)	-s	-es	-s
il/elle (he/she)		-e	-t
nous (we)	-ons	-ons	-issons
vous (you all)	-ez	-ez	-issez
ils/elles (they)	-ent	-ent	-issent

Verbs and the near future tense in French

You can talk about the future by using the **near future** tense.

Use part of the verb **ALLER** + a + the infinitive to say what you are **going** to do.

Ce soir je vais jouer au tennis. *This evening I am going to play tennis.*

Demain Paul va a faire un gateau. *Tomorrow Paul is going to make a cake.*

Aller (to go)

Je vais	I am going
Tu vas	You are going
Il/elle va	He /she/one is going
Nous allons	We are going
Vous allez	You (lot) are going
Ils/elles vont	They are going

Verbs and the past tense in French



AVOIR (present) J'ai Tu as Il /elle a Nous avons Vous avez Ils /elles ont	ÊTRE (present) Je suis Tu es Il /elle est Nous sommes Vous êtes Ils /elles sont	-ER ⇒ É (parlé) -IR ⇒ I (fini) -RE ⇒ U (vendu) être ⇒ été avoir ⇒ eu faire ⇒ fait pouvoir ⇒ pu vouloir ⇒ voulu
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1. Expressing FUTURE intentions :

J'ai l'intention de + infinitive (I plan to/ I intend to ...)

Je voudrais + infinitive (I would like to...)

2. Using infinitives after j'aime/je n'aime pas/je déteste/je préfère :

You can also use an infinitive after opinion verbs such as aimer, détester and préférer. They are usually translated with a **gerund** (a verb ending with -ing) in English:

J'aime habiter à Newcastle - I like living in Newcastle.

Tu préfères jouer au foot ou au tennis? - Do you prefer playing football or tennis?

Je déteste boire du café parce que c'est dégoûtant – She hates drinking coffee because it's disgusting.

3. Opinions

J'aime - I like

J'aime beaucoup- I like **a lot**

Je n'aime pas beaucoup- I don't like **much**

Je préfère – I prefer

Je déteste - I hate

Je ne peux pas supporter - I can't stand

4. Justification

Parce que - because

Ainsi– therefore/so

Par conséquent - consequently

5. Comparisons

Plus....que –more...than

Moins...que - less...than

Aussi...que – as...as

6. Superlative

Le/la plus – the most

Le/la moins – the least

Le/la mieux – the best

Le/la pire – the worse

7. Time phrases

Normalement - normally

D'habitude - usually

Généralement - generally

Quelquefois – sometimes

Ensuite – next

Rarement - rarely

Le weekend prochain– next weekend

La semaine prochaine - next week

Le weekend dernier - last weekend

Le mois dernier - last month

L'été dernière - last summer

Pendant le confinement - during lockdown

9.10 Leisure and Healthy Living FRENCH

ACTIVITY VERBS

aller	To go
jouer	To play
manger	To eat
visiter / rendre visite	To visit / pay a visit
faire	To do
danser	To dance
boire	To drink
regarder	To watch
écouter	To listen
lire	To read
acheter	To buy
finir	To finish
écrire	To write
dormir	To sleep
nager	To swim
rester	To stay
voyager	To travel
chanter	To sing
envoyer des textos	To text
contacter	To contact
appeler	To call
cuisiner	To cook
aider	To help
travailler	To work
se relaxer	To relax
se reposer	To rest

INTENSIFIERS

très	very	extrêmement	extremely
tellement	so	trop	too
assez	quite	vraiment	really
un peu	a bit	pas du tout	not at all

HEALTHY LIVING VERBS

	se coucher	To go to bed
	avoir envie de	To fancy (feel like)
	trouver (un emploi)	To get a job
	courir	To run
	se droguer	To take drugs
	se soûler	To get drunk
	se sentir bien/mal	To feel well/unwell
	être au régime	To be on a diet
	être en forme	To be in shape
	garder la forme	To stay in shape
	éviter	To avoid
	fumer	To smoke
	essayer (+ infinitive)	To try (to do something)
	se lever	To get up
	s'inquiéter	To worry
	se sentir	To feel
	avoir mal	To have pain
	avoir sommeil	To feel sleepy
	surmonter	To overcome

LES GENS

avec	with
mes ami(e)s	my friends
mon frère	my brother
ma sœur	my sister
mes parents	my parents
ma famille	mi family
seul	alone

PEOPLE

ENDROITS

Chez moi	At my home
Chez mon ami(e)	At my friend's house
Dans ma chambre	In my bedroom
Dans le salon	In the living room
Dans le jardin	In the garden
Dans mon quartier	In my neighbourhood
En Angleterre	In England
À l'étranger	Abroad
En ville	In town
À la campagne	In the countryside
À la montagne	In the mountains
Au bord de la mer	At the coast

PLACES

ADJECTIVES

relaxant(e)	relaxing
agréable	pleasant
sérieux / sérieuse	serious
sportif / sportive	sporty
enrichissant / enrichissante	enriching
amusant / amusante	fun
passionnant / passionnante	exciting
rapide	quick
énervant / énervante	annoying
gratifiant / gratifiante	rewarding
ennuyeux / ennuyeuse	boring
facile	easy
difficile	difficult
intéressant / intéressante	interesting
bon/ bonne pour la santé	healthy
mauvais/ mauvaise pour la santé	unhealthy

What do we need proteins for?

Function

- Build enzymes and hormones
- Build cell membranes
- Repair and maintain tissues
- Defend the body (antibodies)
- Secondary source of energy

What happens if we have too much or too little?

Excess

- Kidney and liver diseases
- Weight gain

Deficiency

- Kwashiorkor
- Slowing growth rate
- Swelling

Protein alternatives

Vegetarians and vegans don't consume meat so instead they use protein alternative products which are manufactured in order to provide protein in a diet and protein rich foods.



Soy chunks



Tofu



Textured vegetable protein (TVP)



Tempeh



Beans, lentils, chickpeas

What do we need carbohydrates for?

Functions

- Primary source of energy
- Store energy for later
- Build DNA
- Prevent the body from using proteins as an energy source

What happens if we have too much or too little?

Excess

- Tooth decay
- Type 2 diabetes
- Weight gain and obesity
- Hyperglycaemia

Deficiency

- Weight loss
- Lack of energy, tiredness
- Severe weakness
- Hypoglycaemia

What do we need fats for?

Functions

- Source of energy
- Insulation
- Dissolve vitamins
- Build hormones
- Build cell membranes

What happens if we have too much or too little?

Excess

- Obesity
- Hypertension
- Coronary heart disease
- Fatty liver disease
- Type 2 diabetes

Deficiency

- Weight loss
- Vitamin deficiency
- Heart disease
- Feeling cold

There are two different types of fats

Proteins can denature when:



They are heated



They come into contact with acidic/alkaline ingredients



They are whisked, beaten or kneaded



Proteins unravel becoming firm when heated

- <https://www.ifst.org/lovefoodlovescience/resources/carbohydrates-gelatinisation>
- <https://www.ifst.org/lovefoodlovescience/resources/fats-and-oils-aeration>
- <https://www.ifst.org/lovefoodlovescience/resources/fats-and-oils-plasticity>

Visible fats



Fats you can see, such as on meat are often saturated.

Invisible fats



Unsaturated fats you cannot see, such as in nuts and avocados. They are often good for the brain,



Butter



Cream



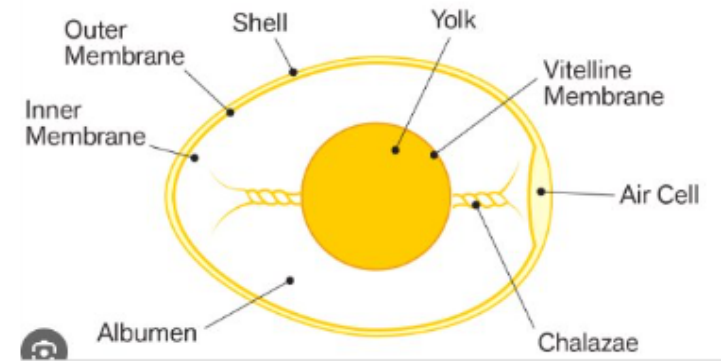
Eggs



Olive oil



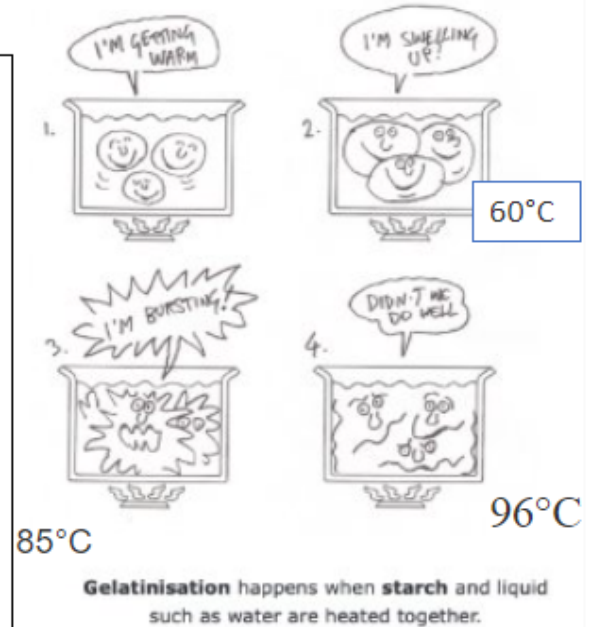
Avocado



The food science bit!

Thickening sauces with starches.

- **Gelatinisation** happens when a **starch** and liquid mixture are heated.
- The water enters the **starch** granules and they **swell** and change texture.
- As more water is taken in, the granules expand, and the mixture becomes **viscous and thick**.
- This results in a **gel** which thickens sauces by the process of **gelatinisation**.



Gelatinisation happens when **starch** and liquid such as water are heated together.

9.9 Technology and Media - German

Technology verb infinitives	
löschen	to delete, erase
hochladen	to upload
chatten	to chat online
Fotos teilen	to share photos
kommunizieren	to communicate
antworten/beantworten	to answer
schaffen	to create
geben	to give
herunterladen	to download
schicken	to send
funktionieren	to work, to function
speichern	to save (data on computer)
sprechen	to speak, to talk
das Internet surfen	to surf the internet
können	to be able to
bekommen	to receive
Fotos machen	to take photos
streamen	to stream
benutzen	to use

Technology nouns	
eine Datei	file
Junk-Mail	spam, junk mail
eine E-Mail	email
Computerfestplatte	hard drive
Spiele	games
die Nachrichten/SMS	text message
das Handy/das Smartphone	mobile/smartphone
der Compter	computer
der Laptop	laptop
die Computerspiele	video game
das Lied	song
der Bildschirm	screen
das Internet	internet
das soziale Netzwerk	social network
eine Zeitschrift	magazine
Chatroom	chat room
der Tablet- PC	tablet
die Technologie	technology

Technology adjectives	
langweilig	boring
alt/altmodisch	old
spannend	exciting
schwer	difficult
kurz	short
modisch	fashionable
langsam	slow
unterhaltsam	entertaining
gruselig	scary
aufregend	stimulating
lehrreich	informative
interessant	interesting
nutzlos	useless
lang	Long
gefährlich	dangerous
praktisch	practical
schnell	fast
dumm	stupid
kaputt	broken
nützlich	useful

Tv Genres	
die Komödien	comedies
die Quizsendungen	quiz shows
die Dokumentarfilme	documentaries
die Nachrichten	the news
die Sportsendungen	sports programmes
die Krimis	police shows
die Seifenopern	soap operas

Film genres	
die Actionfilme	action films
die Liebesfilme	romantic films
ein Science-Fiction-Film	sci-fi film
die Abenteurfilme	adventure films
der Thriller/der Krimi	Suspense/thriller film
die Horrorfilme	horror films

9.10 Leisure and healthy living vocabulary list

<p><u>Die Aktivitäten</u> gehen/fahren spielen essen besuchen machen tanzen trinken fernsehen hören lesen kaufen beenden sehen schreiben schlafen schwimmen treffen reisen singen SMS schicken kontaktieren anrufen telefonieren kochen herunterladen arbeiten helfen nachdenken sich entspannen sich ausruhen</p>	<p><u>activities</u> to go to play to eat to visit to do to dance to drink to watch TV to listen to read to buy to finish to see to write to sleep to swim to meet to travel to sing to text to contact to call/phone To telephone to cook to download to work to help to meditate to relax to rest</p>	<p><u>Orte</u> Zu Hause bei meinem Freund bei meinem Vater bei meiner Mutter bei meinen Großeltern in meinem Schlafzimmer im Wohnzimmer im Garten in meiner Gegend in England im Ausland in der Stadt auf dem Land in den Bergen an der Küste</p>	<p><u>Places</u> At home At my friend's house At my dad's At my mum's At my grand-parents' In my room In the living room In the garden In my neighbourhood In England Abroad In town In the countryside In the mountains By the seaside</p>	<p><u>Leute</u> mit Meine Freunde Mein Bruder Meine Schwester Meine Eltern Meine Familie allein</p>	<p><u>People</u> With My friends My brother My sister My parents My family Alone</p>	<p><u>Intensifiers</u> sehr– very zu– too so– so wirklich – really ziemlich – quite äußerst – extremely ein bisschen – a bit, überhaupt nicht - not at all</p>	<p><u>Adjektive</u> nett angenehm froh/glücklich geschwätzig schön lustig niedlich/süß hübsch/schön sauber perfekt schnell reich klug schüchtern fleißig traurig langweilig nervig ernst einfach schwer streng hässlich laut unhöflich schrecklich faul sportlich bereichernd interessant alt entspannend gesund ungesund</p>	<p><u>Adjectives</u> Kind Pleasant Happy Chatty Beautiful Funny Cute Pretty Clean Perfect Fast Rich clever Shy Hard working Sad Boring Annoying Serious Easy Difficult Strict Ugly Noisy Rude Horrible/Awful Lazy Sporty Enriching Interesting Old Relaxing Healthy unhealthy</p>	<p><u>Healthy living key verbs</u> ins Bett gehen to go to bed Lust haben to fancy, to feel like laufen to run Drogen nehmen to take drugs sich betrinken to get drunk sich gut/krank fühlen to feel well/ill auf Diät sein to be on a diet Fit sein to be fit vermeiden to avoid rauchen to smoke versuchen to try to aufstehen to get up in Form bleiben to keep fit sich sorgen to worry schmecken/probieren to try, to taste, sich fühlen to feel überwinden to overcome Schmerzen haben to have a pain (in) müde sein to be tired</p>
---	--	--	---	--	--	--	--	--	--

9.10 Leisure and healthy living

3 time frames
 Infinitives
 Time phrases

opinions
 justifications
 describing and comparing



Verbs and the present tense in German

The infinitive

When you look up a verb in the dictionary, you find its original, unchanged form which is called the **infinitive** (essen, trinken, spielen, sein, feiern, gehen etc.).

Forming the present tense in German

(I do or I am doing – German does not have a separate '-ing' form)

Take the infinitive – knock off the ending (en) and then add the ending relevant to the person you are talking about. Regular verbs follow the same pattern as 'machen'.

*Important! There are some key irregulars to learn which don't follow this pattern – sein and fahren (as shown here) and fahren are really important!

	machen To do	spielen To play	fahren To go
ich(I)	mache e	spiele e	fahre e
du (you)	mach st	spiel st	fähr st
er/sie (he/she)	mach t	spiel t	fähr t
wir (we)	mach en	spiel en	fah ren
ihr (you all)	mach t	spiel t	fah rt
Sie (you polite)/sie (they)	mach en	spiel en	fah ren

German and the future tense

You can talk about the future 2 different ways

1. Use a future time phrase and the present tense

Nächste Woche spiele ich Tennis= Next week I am going to play tennis.

2. Use a part of 'werden' + an infinitive

Morgen werden wir ins Kino gehen. Tomorrow we will go to the cinema

Es wird toll sein = it will be great

Verbs and the past tense in German

Take the present tense of 'haben' or 'sein' + the past participle.

Verbs to do with movement (gehen/fahren etc) take sein

haben = to have

sein = to be

ich habe

ich bin

du hast

du bist

er/sie/es hat

er/sie/es ist

wir haben

wir sind

ihr habt

ihr seid

Sie haben

Sie sind

sie haben

sie sind

Ich habe Tennis gespielt = I (have) played tennis

Ich bin ins Kino gegangen = I went to the cinema

werden (will/to be going to)

ich werde	I will
du wirst	You (sing) will
er/sie/es wird	He /she/it will
wir werden	We will
ihr werdet	You (lot) are going
Sie/sie werden	You polite/They will

1.Expressing FUTURE intentions :

Ich habe vor, zu + infinitive (I plan to/ I intend to ...)
 Ich möchte + infinitive (I would like to...)

2.Using gern/nicht gern/lieber :

These phrases are used with a verb
 Ich wohne **gern** in Newcastle - I **like** living in Newcastle.
 Gehst du **gern** ins Kino? - Do you like going to the cinema?
 Ich spiele **nicht gern** Tischtennis, weil es langweilig ist. - I **don't like** playing football because it is boring
 Ich lese lieber Bücher = I **prefer** reading books

3.Opinions

Ich mag - I like/ich mag...nicht
 Ich liebe- I love
 Ich interessiere mich für = I am interested in
 Ich bin dagegen – I am against
 Ich hasse - I hate
 Ich kann...nicht leiden - I can't stand
gefällt mir = I like.....

4.Justification

denn – because
weil - because
deshalb– therefore/so
dennoch/trotzdem - nevertheless
obwohl = although

5.Comparisons

Add 'er' to the adjective. You can't add the word 'mehr' = more.
 Er ist kleiner = he is smaller es ist billiger = it is cheaper
Exceptions are besser (better)/größer(bigger)/älter(older)
Superlative
 You add an '-ste' to the adjective, sometimes '-este' to make it easier to say. Fred ist der Kleinste = Fred is the smallest. Ellie ist die Lauteste
Comparing Things
 Joe ist älter **als** Fred = Joe is older **than** Fred
 Joe ist **weniger** alt **als** Fred = Joe is **less** old **than** Fred
 Joe ist **so** alt **wie** Fred = Joe is **as** old **as** Fred
 Joe ist **genauso** alt **wie** Fred = Joe is **just as** old **as** Fred

7.Time phrases

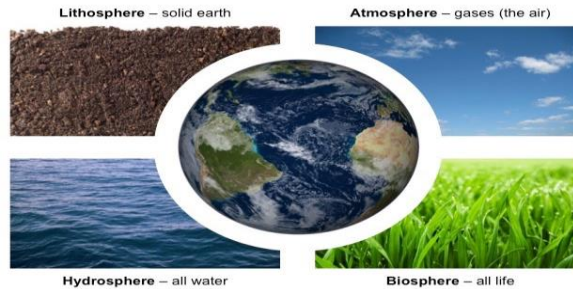
normalerweise- normally	dann – then	letztes Wochenende - last weekend
gewöhnlich - usually	selten - rarely	letzten Monat - last month
neulich - recently	nächstes Wochenende – next weekend	letzten Sommer - last summer
manchmal – sometimes	nächste Woche - next week	während Lockdown - during lockdown



The Earth's Spheres:

There are 4 main spheres on Earth. They are all connected and work with Each other. This is called 'Interdependence'.

We get all of our natural resources from these four spheres.



Ecological footprint:

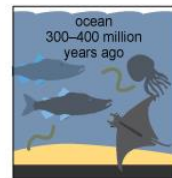
- Today humanity uses 1.6 Earths to provide the resources we use and absorb our waste.
- We use more ecological resources and services than nature can regenerate in the same period of time.
- If everybody on Earth lived like we do in most HICs – we would reach the 'overshoot' day by May/June.
- If everybody on Earth lived like they do in Vietnam – we wouldn't reach 'overshoot' day until Dec 21st

Rocks, Oil and Soil

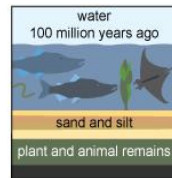
- Soil is formed due to the weathering of rocks and the wider nutrient cycle.
- It can take between 100-1000 years to form 1cm of soil.
- Importance of soil examples:
 - + growing crops
 - + reducing flood risk

Petroleum and natural gas formation

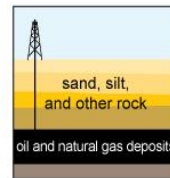
Tiny marine plants and animals died and were buried on the ocean floor. Over time, the marine plants and animals were covered by layers of silt and sand.



Over millions of years, the remains were buried deeper and deeper. The enormous heat and pressure turned the remains into oil and natural gas.



Today, we drill down through layers of sand, silt, and rock to reach the rock formations that contain oil and natural gas deposits.



Source: Adapted from National Energy Education Development Project (public domain)

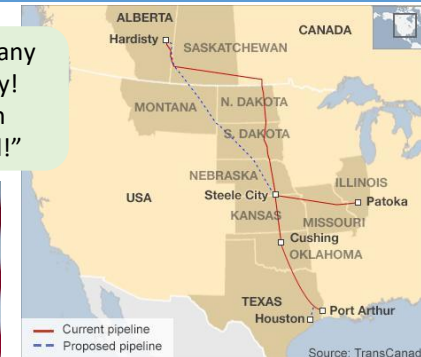
Keystone pipeline

The Keystone XL (KXL) Pipeline is huge energy project, first proposed in 2008, that was designed to massively increase the amount of crude oil being transported between the Oil Sands in Alberta, Canada to the oil-hungry, industrialised states of Texas, Illinois and Nebraska in the USA.



"Building this pipeline will create many jobs and advance US energy security! As one of my first acts in office, I am reviving the project, it will go ahead!"

"I am overturning Mr Trump's reversal of Mr Obama's 2015 rejection of the pipeline! I am completely cancelling it!"



Key Word	Definition
Interdependence	The idea that two or more things are connected and rely on each other
Lithosphere	The Earth's crust, including landforms, rocks and soils
Hydrosphere	The water on the surface of the Earth eg. Oceans and rivers
Biosphere	The living matter on Earth, including all plants and animals
Atmosphere	The thin, fragile layer of gases that surrounds the Earth
Renewable	A resource that can be recreated/replaced/reused eg sunlight
Non-renewable	A resource that cannot be replaced or recreated eg. Coal/oil
Raw Materials	A resource in its natural state, before production. Eg wood, cotton, oil
Finite Resources	Material that has a definite, fixed amount and can therefore eventually run out before it can be replaced
Paris Agreement	A legally binding international treaty on climate change, with a goal of limiting global warming to well below 2 degrees C.
Carbon emissions	The greenhouse gasses produced from human activities such as burning fossil fuels in factories and from car exhausts.



WW1 Context: 1914 - 1918. Germany, Austria-Hungary, Bulgaria and the Ottoman Empire (the Central Powers) fought against Great Britain, France, Russia, Italy, Romania, Japan and the United States (the Allied Powers). When the war ended, the Central Powers defeated, more than 16 million people, soldiers and civilians, had died.

Key Events

1	4th August 1914 – Britain declares war on Germany.
2	7 August 1914 - Regimental Sergeant-Major Alhaji Grunshi of the Gold Coast (today's Ghana) Regiment fired the first shot for Britain during WWI.
3	10 October 1914 – From the British colonies ; 1.5 million Indian soldiers and 1.3 million Canadians, Australians, New Zealanders and South Africans fight on the allied side. France also draws on its colonies in Africa.
4	22nd April 1915 – During the second Battle of Ypres, Belgium, German forces first large scale attacking using chlorine gas.
5	25 April 1915 - The Gallipoli campaign, the Allies attack Germany's allies in the Middle East, the Ottoman Turks.
6	21 February – 15 December 1916 – The Battle of Verdun the longest battle in WWI.
7	1 July 1916 – 18 November 1916 – The Battle of the Somme was one of the largest conflicts of WWI and the highest number of casualties ever recorded on the first day of battle. First use of tanks.
8	6 April 1917 – Following the German U-Boat campaign attacking America ships coming to Britain the USA should declare war on Germany.
9	20 Nov 1917 – 6 Dec 1917 – The Battle of Cambrai – first time blood is stored near the front line to help casualties and tanks were used successfully.
10	11th November 1918 – The end of WW1 and the armistice is signed, bringing the war on the Western Front to an end.



History – Year 9 Knowledge Organiser Term 2



Who do we remember in WW1?

Key Skills

Significance	It can be very hard to decide what is historically significant because what is important to one person might not be to another. During this enquiry you are going to five R's of significance to make your judgements. These are:
--------------	---

R

Remarkable: An event/person that was remarked on by people at the time or since. *Reported.*

R

Remembered: People have not forgotten it.

R

Resulted in change: had consequences for the future *It led to other things happening.*

R

Revealing: tells us a lot about a person's time.

R

Resonant: An event/person that has an effect on future generations. *People connect with it today.*

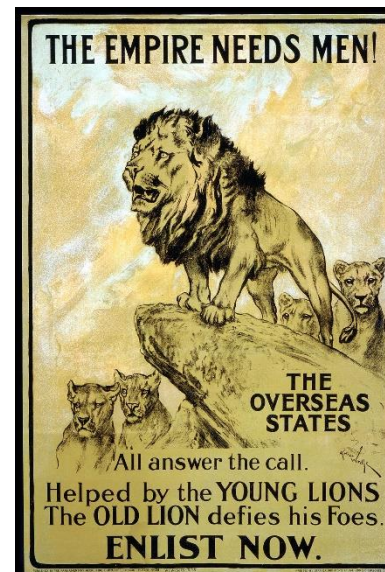
Key Terms

11	Trench	Long, narrow ditches dug into the ground to shield soldiers from the enemy.
12	Barbed wire	Coiled wire with sharp edges set in front of the trench to make it harder for the enemy to attack head on.
13	Trench foot	A foot disease developed due to soldiers standing in water all day.
14	Shell shock	A mental health condition suffered by soldiers during WW1 after experiencing frontline action
15	Propaganda	Information, can be biased, that promotes a political cause/point of view.
16	Conscription	Compulsory enrolment into a countries armed forces. <i>The draft.</i>
17	Cenotaph	A monument to someone buried elsewhere, especially one commemorating people who died in a war.
18	Victoria Cross	Britain's highest award for bravery.

Key Skills

As historians we use sources as evidence to learn about the past. To check if a source is useful we use the following steps:

- Content:** What does the source say/show?
- Nature:** What type of source is it?
E.g.. diary/photograph
- Origin:** Where has it come from?
When was it made? Who made it?
- Purpose:** Why was the source made?



PERCENTAGES & PERCENTAGE CHANGE

What We Need To Know

Percentage of an amount – Non calculator

To calculate any percentage it is useful to start with 10%.

30% of 120: $10\% = 120 \div 10 = 12$ To find 10% we divide by 10.

$30\% = 3 \times 12 = 36$ To find 30% we multiply 10% by 3.

45% of 80: $10\% = 80 \div 10 = 8$ $5\% = 8 \div 2 = 4$
 $40\% = 4 \times 8 = 32$ 5% is half of 10% so we divide by 2.
 $45\% = 40\% + 5\% = 32 + 4 = 36$

To find 1% we divide the starting amount by 100.

$1\% \text{ of } 30 = 30 \div 100 = 0.3$.

Percentage of an amount – Calculator

When we have a calculator we can use a multiplier; this is the decimal equivalent of the percentage.

80% of 120: $80\% = 0.80$
 $80\% \text{ of } 120 = 0.80 \times 120 = 96$ Change the percentage to a decimal and then multiply.

33% of 90: $33\% = 0.33$
 $33\% \text{ of } 90 = 0.33 \times 90 = 29.7$ Be careful if the percentage is less than 10.

4% of 88: $4\% = 0.04$
 $4\% \text{ of } 88 = 0.04 \times 88 = 3.52$ Take care using decimal percentages, still divide by 100.

12.5% of 42: $12.5\% = 0.125$
 $12.5\% \text{ of } 42 = 0.125 \times 42 = 5.25$

Skill	Tips	Example
1. Percentage	Number of parts per 100.	31% means $\frac{31}{100}$
2. Finding 10%	To find 10%, divide by 10	10% of £36 = $36 \div 10 = £3.60$
3. Finding 1%	To find 1%, divide by 100	1% of £8 = $8 \div 100 = £0.08$
4. Percentage Change	$\frac{\text{Difference}}{\text{Original}} \times 100\%$	A games console is bought for £200 and sold for £250. % change = $\frac{50}{200} \times 100 = 25\%$
5. Fractions to Decimals	Divide the numerator by the denominator using the bus stop method.	$\frac{3}{8} = 3 \div 8 = 0.375$
6. Decimals to Fractions	Write as a fraction over 10, 100 or 1000 and simplify.	$0.36 = \frac{36}{100} = \frac{9}{25}$
7. Percentages to Decimals	Divide by 100	$8\% = 8 \div 100 = 0.08$
8. Decimals to Percentages	Multiply by 100	$0.4 = 0.4 \times 100\% = 40\%$
9. Fractions to Percentages	Percentage is just a fraction out of 100. Make the denominator 100 using equivalent fractions.	$\frac{3}{25} = \frac{12}{100} = 12\%$
10. Percentages to Fractions	Percentage is just a fraction out of 100. Write the percentage over 100 and simplify.	$14\% = \frac{14}{100} = \frac{7}{50}$
11. Increase or Decrease by a Percentage	Non-calculator: Find the percentage and add or subtract it from the original amount. Calculator: Find the percentage multiplier and multiply.	Increase 500 by 20% (Non Calc): 10% of 500 = 50 so 20% of 500 = 100 $500 + 100 = 600$ Decrease 800 by 17% (Calc): $100\% - 17\% = 83\%$ $83\% \div 100 = 0.83$ $0.83 \times 800 = 664$
12. Percentage Multiplier	The number you multiply a quantity by to increase or decrease it by a percentage.	The multiplier for increasing by 12% is 1.12 The multiplier for decreasing by 12% is 0.88 The multiplier for increasing by 100% is 2.

<https://www.bbc.co.uk/bitesize/topics/zxjpn9q>
<https://vle.mathswatch.co.uk/vle/>

PERCENTAGES & PERCENTAGE CHANGE

What You Need To Know

Percentage increase and decrease

Increase: To calculate a percentage increase we calculate the percentage and add the value on to the original amount.

Non Calculator: Increase 70 by 65%

$$10\% = 70 \div 10 = 7 \quad 5\% = 7 \div 2 = 3.5$$

$$60\% = 6 \times 7 = 42$$

$$65\% = 60\% + 5\% = 42 + 3.5 = 45.5$$

Calculate 65% by splitting into 10% and 5% and then add the answer on to the original amount.

$$70 + 45.5 = 115.5$$

Calculator: Increase 130 by 26%

$$26\% \text{ of } 130 = 0.26 \times 130 = 33.8$$

$$130 + 33.8 = 163.8$$

Calculate 26% using a multiplier and add this answer onto the original amount.

Decrease: To calculate a percentage decrease we calculate the percentage and subtract the value off the original amount.

Non Calculator: Decrease 20 by 35%

$$10\% = 20 \div 10 = 2 \quad 5\% = 2 \div 2 = 1$$

$$30\% = 3 \times 2 = 6$$

$$35\% = 30\% + 5\% = 6 + 1 = 7$$

Calculate 35% by splitting into 10% and 5% and then subtract the answer off the original amount.

$$20 - 7 = 13$$

Calculator: Decrease 65 by 14%

$$14\% \text{ of } 65 = 0.14 \times 65 = 9.1$$

$$65 - 9.1 = 55.9$$

Calculate 14% using a multiplier and subtract this answer off the original amount.

Key Terms

Percentage: Out of one hundred.

Decimal: A decimal is a fraction written in a special form e.g. 0.6.

Multiplier: This is used to calculate percentages when we have a calculator.

Increase: When an amount goes up.

Decrease: When an amount goes down.

Simple interest: The amount of interest is fixed over period of time.

Compound interest: The interest earned over time will continue to increase.

Simple interest

To calculate simple interest we start by calculating the percentage and multiplying it by the period of time.

Example: £250 is in a bank account which is paying 5% simple interest per year. How much will be in the bank account at the end of 3 years?

$$5\% = 0.05$$

$$0.05 \times 250 = \text{£}12.50$$

Multiply by 3 because the question asks for 3 years.

$$3 \times \text{£}12.50 = \text{£}37.50$$

Add your answer to the original amount in the question.

$$\text{£}250 + \text{£}37.50 = \text{£}287.50$$

Compound interest

To calculate compound interest we use powers as the amount changes at the end of each year.

Example: £250 is in a bank account which is paying 4% compound interest per year. How much will be in the bank account at the end of 5 years?

$$4\% \text{ increase} = 1.04$$

Interest means an increase so $100\% + 4\% = 104\%$ which as a multiplier is 1.04

$$1.04^5 \times 250 = \text{£}304.16$$

Power of 5 because the questions asks for 5 years.

This is the final answer

<https://www.bbc.co.uk/bitesize/topics/zxjpn9q>
<https://vle.mathswatch.co.uk/vle/>

PROBABILITY

Key Words

Probability: The chance of something happening as a numerical value.

Impossible: The outcome cannot happen.

Certain: The outcome will definitely happen.

Even chance: Two different outcomes each with the same chance of happening.

Expectation: The amount of times you expect an outcome to happen based on probability.

Event: an outcome or defined collection of outcomes of a random experiment

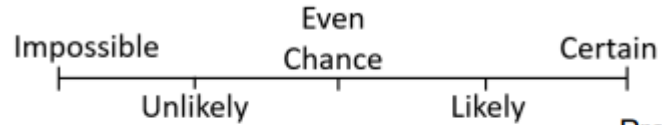
Frequency: the number of times the data value occurs

Independent events: One event does not affect another

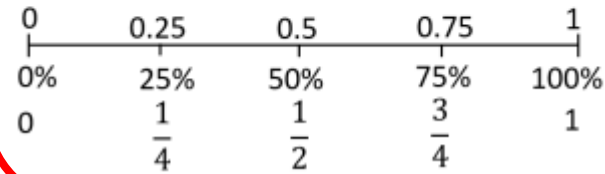
Mutually exclusive: 2 events that cannot both occur at the same

Key Concepts

Chance



Probability



Probabilities can be written

- Fractions
- Decimals
- Percentages

Tips

The sum of probabilities always add up to 1.

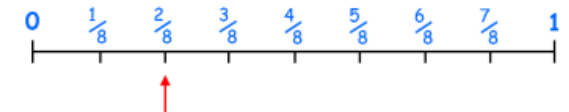
Examples



1) What is the probability that a bead chosen will be **yellow**. Show the answer on a number line.

$$\text{Probability} = \frac{\text{Number of favourable outcomes}}{\text{Total number of outcomes}}$$

$$P(\text{Yellow}) = \frac{2}{8} = \frac{1}{4}$$



2) How many **yellow** beads would you **expect** if you pulled a bead out and replaced it 40 times?

$$\frac{1}{4} \times 40 = \frac{1}{4} \text{ of } 40 = 10$$

Questions

	1	2	3
Prob	5	4	9

- Calculate the probability of choosing a 2.
- Calculate the probability of not choosing a 3.

	1	2	3
Prob	0.37	2x	x

- Calculate the probability of choosing a 2 or a 3.

PROBABILITY

Key Concepts

Probabilities can be described using **words** and **numerically**.

We can use **fractions, decimals or percentages** to represent a probability.

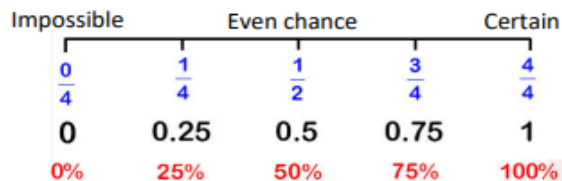
Theoretical probability is what should happen if all variables were fair.

All probabilities must **add to 1**.

The probability of something **NOT** happening equals:

$$1 - (\text{probability of it happening})$$

Example 1



There are only red counters, blue counters, white counters and black counters in a bag.

Colour	Red	Blue	Black	White
No. of counters	9	3	5	2

- 1) What is the probability that a blue counter is chosen? $\frac{3}{19} = \frac{\text{number of blue}}{\text{total number of counters}}$
- 2) What is the probability that red is **not** chosen? $\frac{10}{19} = \frac{\text{number of all other colours}}{\text{total number of counters}}$

Example 2

There are only red counters, blue counters, white counters and black counters in a bag.

Colour	Red	Blue	Black	White
No. of counters	9	3x	x-5	2x

A counter is chosen at random, the probability it is red is $\frac{9}{100}$. Work out the probability it is black.

$$9 + 3x + x - 5 + 2x = 100$$

$$6x + 4 = 100$$

$$x = 16$$

$$\text{Number of black counters} = 16 - 5$$

$$= 11$$

$$\text{Probability of choosing black} = \frac{11}{100}$$

$$\text{Theoretical Probability} = \frac{\text{Number of favorable (desired) outcomes}}{\text{Total number of possible outcomes}}$$

Key Words

Theoretical
Probability
Fraction
Decimal

Percentage
Certain
Impossible
Even chance

Theoretical Probability is what is expected to happen based on mathematics

$$P(\text{event}) = \frac{\text{number of favorable outcomes}}{\text{total number of possible outcomes}}$$

Example:

A coin is tossed.

$$P(\text{head}) = \frac{1}{2}$$

$$P(\text{tail}) = \frac{1}{2}$$

Experimental Probability is found by repeating an experiment and observing the outcomes.

$$P(\text{event}) = \frac{\text{number of times event occurs}}{\text{total number of trials}}$$

Example:

A coin is tossed 10 times:
A head is recorded 7 times
and a tail 3 times.

$$P(\text{head}) = \frac{7}{10}$$

$$P(\text{tail}) = \frac{3}{10}$$

PROBABILITY

Key Words

Experimental probability differs to theoretical probability in that it is based upon the **outcomes from experiments**. It may not reflect the outcomes we expect.

Experimental probability is also known as the **relative frequency** of an event occurring.

Estimating the number of times an event will occur:

$$\text{Probability} \times \text{no. of trials}$$

Key Words

Experimental
Relative frequency
Fraction
Decimal
Probability
Estimate

Relative Frequency Example

Colour	red	blue	white	black
Prob	x	0.2	0.3	x

A spinner is spun, it has four colours on it. The relative frequencies of each colour are recorded. The relative frequency of red and black are the same.

a) What is the relative frequency of red?

$$1 - (0.2 + 0.3) = 0.5$$

$$x = \frac{0.5}{2} = 0.25$$

b) If the spinner is spun 300 times, how many times do you expect it to land on white?

$$0.3 \times 300 = 90$$

Questions

Number	1	2	3	4
Prob	x	0.46	0.28	x

A spinner is spun which has 1,2,3,4 on it. The probability that a 1 and a 4 are spun are equal.

a) What is the probability that a 4 is landed on?

b) If the spinner is spun 500 times how many times do we expect it to land on a 2?

ANSWERS: a) 0.13 b) 230

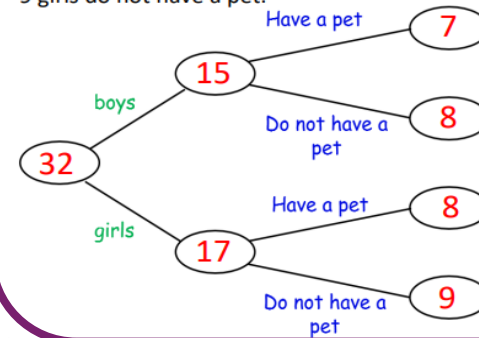
Questions

- 1) Draw a two-way table for the question above.
- 2) Find the probability that a pupil chosen is a boy with no pets.
- 3) A girl is chosen, what is the probability she has a pet?

ANSWERS: 2) $\frac{32}{8}$ 3) $\frac{17}{8}$

Frequency Tree Example

In Hannah's class there are 32 students.
15 of these students are boys.
7 of the boys have a pet.
9 girls do not have a pet.



$$P(\text{boy}) = \frac{15}{32}$$

$$P(\text{Girl with pet}) = \frac{8}{32}$$

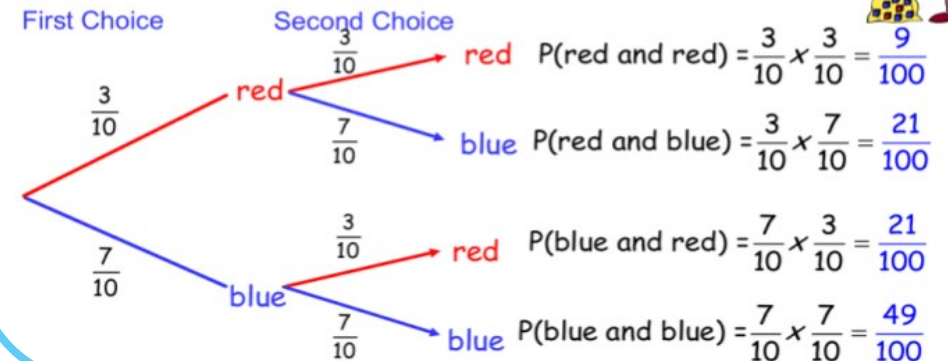
Formula
 $P(A \cap B) = P(A) \times P(B)$
 $P(A \cup B) = P(A) + P(B)$
 or (non ME) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$

Probability (Tree Diagrams)

Tree diagrams can be used to help solve problems involving both **dependent** and **independent events**.

The following situation can be represented by a tree diagram.

Peter has ten coloured cubes in a bag. **Three** of the cubes are **red** and **7** are **blue**. He removes a cube at random from the bag and notes the colour before replacing it. He then chooses a second cube at random. Record the information in a tree diagram.



Reggae

Year 9 – Term 3



'Skank' chords are played on beats 2 & 4

- ### Key listening
- Dawn Penn – No no no no
 - Toots and the Maytals – Monkey Man
 - Bob Marley and the Wailers – Buffalo Soldier
 - Marcia Griffiths – Back in the Day
 - Sister Nancy – Bam bam
 - Jimmy Cliff – The Harder they Come

Reggae, style of popular music that originated in Jamaica in the late 1960s and quickly emerged as the country's dominant music. By the 1970s it had become an international style that was particularly popular in Britain, the United States, and Africa. It was widely perceived as a voice of the oppressed

Reggae Instruments

- Heavy Electric Bass Guitar
- Electric Guitar playing chords and Solos
- Keyboards and Pianos playing chords and riffs
- Singers with lyrics about politics, love and everyday events
- Horns and Brass instruments
- African and cuban Percussion

Film and Game Music

Year 9 – Topic 1



Keywords

- Leitmotif** – A short piece of music that represents a character
- Underscore** – Quiet music that plays underneath dialogue
- Dialogue** – The characters voices
- Foley** – All non-music sounds
- Composer** – The person who writes the music
- Film score** – The music that accompanies a film
- Mickey-Mousing** – Use sound and rhythm to imitate the action on screen

Genres

- Horror Sci-fi Comedy
- Romance Action Adventure
- Thriller Kids Fantasy
- Comic-book Film Noir

Garageband Shortcuts

- Cmd + Space = Search
- Cmd + C = Copy
- Cmd + V = Paste
- + (On screen) = Add new instrument
- Double Click (on a part) = Edit Music
- Cmd + T = Cut
- Cmd + Z = Undo

PE Knowledge Organiser

EXERCISE INTENSITY

Key terms

HR: heart rate (RPE x 10)

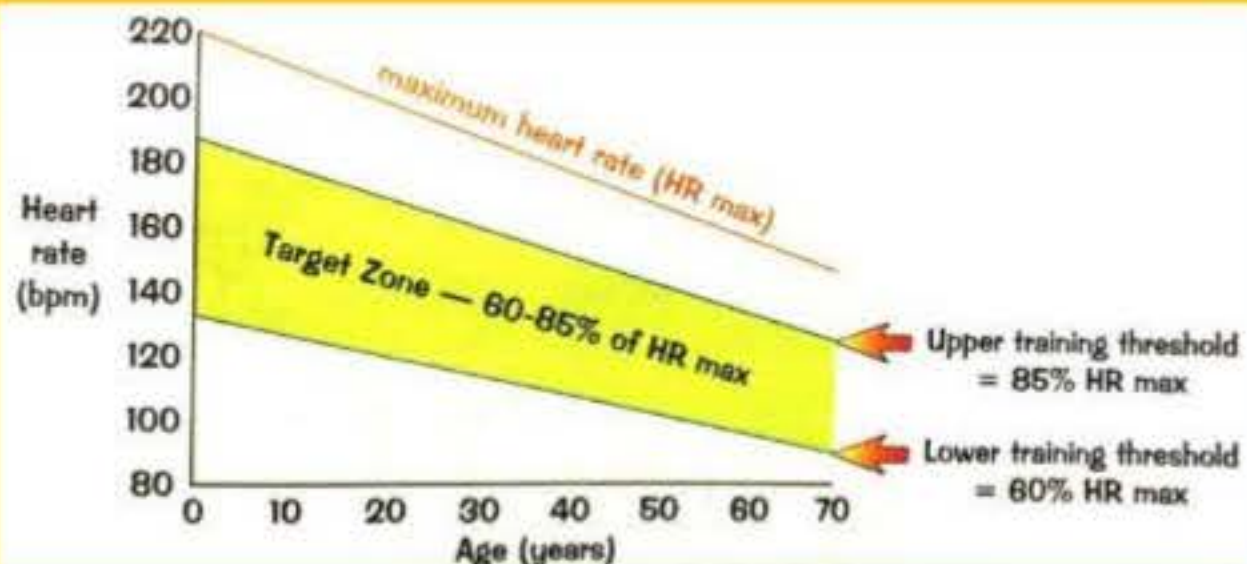
HR max: maximum heart rate (220 – age)

RPE: rating of perceived exertion (Borg 6-20 scale)

There are two ways in which you can determine exercise intensity:

- Heart rate (HR)
- Rating of Perceived Exertion (RPE)

The recommended training zone for aerobic endurance is 60-85% HR max.



Rating of Perceived Exertion (RPE)

The Borg (6-20) Rating of Perceived Exertion (RPE) Scale (**below**) measures a performer's rate of perceived exertion – how hard they think they are working.

6	20% effort
7	30% effort: very, very light intensity
8	40% effort
9	50% effort: very light intensity
10	55% effort
11	60% effort: fairly light intensity
12	65% effort
13	70% effort: somewhat hard intensity
14	75% effort
15	80% effort: hard intensity
16	85% effort
17	90% effort: very hard intensity
18	95% effort
19	100% effort: very, very hard intensity
20	Exhaustion

RPE and Heart Rate

The number on the RPE scale can be multiplied by 10 to get an estimate of heart rate during training.

$$\text{HR (bpm)} = \text{RPE} \times 10$$

If an individual is working at 12 on the RPE scale, their HR could be worked out

$$12 \times 10 = 120 \text{ bpm}$$


How to measure Heart Rate (HR) using pulse

Place index and middle finger on radial artery (wrist). Count the beats for 60 seconds and this is your Heart Rate.




Year 9 Religious Studies: Situational ethics

Key terms	
Morality	The distinction between right and wrong or good and bad behaviour.
Absolute morality	The belief that what is right will always be right regardless of situation, culture, religious tradition, time or age.
Relative morality	The belief that that different courses of action might be needed/justified in different situations.
Abortion	A procedure to end a pregnancy so that it does not result in the birth of a child.
Sanctity of life	The belief that life is precious or sacred (special). For many religious believers, only human life holds this special status.
Utilitarianism	The theory that states that you should do the action that creates the most happiness for the most amount of people.
Situation Ethics	The theory that states right and wrong always depend on the situation, there are no absolute rules, only to do what is the most loving thing.
Autonomy	The freedom to act on your own values and interests.

 Views on abortion	Some of the arguments against abortion
	<ul style="list-style-type: none"> • Every human being, including an embryo or foetus, has the right to live and to reach their potential. • There are alternatives to abortion, eg adoption.
	Some of the arguments for abortion
	<ul style="list-style-type: none"> • A woman has the right to choose whether or not she wants to have the baby. It is her body. • The embryo or foetus does not have the same rights as the mother.
	Religious views:
	<ul style="list-style-type: none"> • Roman Catholics believe that life begins at conception and therefore abortion is morally wrong. • Islamic scholars agree that the termination of a pregnancy for foetal anomalies is allowed before ensoulment • Most Sikhs accept that life begins at conception and abortion is generally forbidden. • Majority of religions may allow abortions in certain situations, such as to protect the mother's health.

MY BODY
MY CHOICE

 Views on euthanasia	Some of the arguments against euthanasia
	<ul style="list-style-type: none"> • euthanasia would weaken society's respect for the value and importance of human life. • it would lead to worse care for the terminally ill
	Some of the arguments for euthanasia
	<ul style="list-style-type: none"> • Human beings should have the right to be able to decide when and how they die • It is expensive to keep people alive when there is no cure for their illness.
	Religious views:
	<ul style="list-style-type: none"> • Roman Catholic Church teaches that no person has the right to deliberately end the life of another person, or his or her own life. • Some Christians, however, accept that if a person is terminally ill and in extreme pain or distress, euthanasia may be an act of compassion. • The Sikh Gurus rejected suicide (and by extension, euthanasia) as an interference in God's plan. • Islam is against euthanasia. They believe that all human life is sacred because it is given by Allah

CAMPAIGN FOR
DIGNITY
IN DYING.

Year 9 Religious Studies: Situational ethics



Key terms	
Anti-abortion	opposing abortion and euthanasia.
Pro-choice	advocating the legal right of a woman to choose whether or not she will have an abortion.
Dignity	quality of existing with respect.
Euthanasia	the painless killing of a patient suffering from an incurable and painful disease or in an irreversible coma.
Passive euthanasia	Intentionally letting a patient die by withholding artificial life support such as a ventilator or feeding tube.
Active euthanasia	killing a patient by active means, for example, injecting a patient with a lethal dose of a drug.
Capital punishment	the legally authorized killing of someone as punishment for a crime.
Conscience	The individual feeling of right and wrong a person has

! DEATH PENALTY

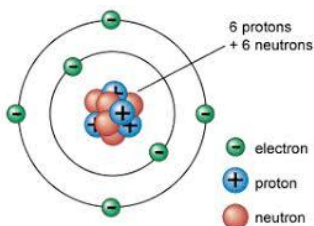
Views on capital punishment	<p>Capital punishment in the UK:</p> <p>The Human Rights Act formally abolished the death penalty in the UK. This means that a public official, including the police or courts, cannot execute someone or sentence them to death as punishment for something they have done. This applies in all circumstances, including during peacetime and times of conflict.</p>
	<p>Some of the arguments against capital punishment</p> <ul style="list-style-type: none"> • Jesus amended the Old Testament teaching on retribution in Matthew 5:38-39 when he said: You have heard that it was said, 'If anyone slaps you on the right cheek, turn to them the other cheek also.' • Sikhs believe that the punishment that God has set for us collectively and individually is enough and we should not mess with God's plan
	<p>Some of the arguments for capital punishment</p> <ul style="list-style-type: none"> • The Bible sets down the death penalty for some crimes, so it must be acceptable to God. This is often seen as retribution. • Muslims believe that capital punishment is a most severe sentence but one that may be commanded by a court for crimes of suitable severity.

Who owns my body? Am I special? Are we simply the sum of the chemicals and minerals that make up our bodies or do we have greater worth than that? Whose life is it anyway?



Atom Structure

Diagram



Carbon atom

Subatomic Particles

Subatomic particle	Location	Mass	Charge
Proton	Nucleus	1	+1
Neutron	Nucleus	1	No charge
Electron	Shells	0 (negligible)	-1

Atom Symbols

Bigger number is the mass number.
To find neutrons subtract the smaller number

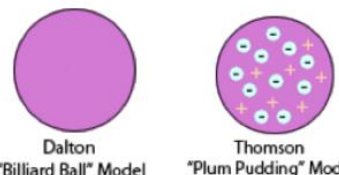
Atomic number is the number of protons in the atom's nucleus

Symbol is used as a short-hand and in chemical equations

Mass number is the number of protons and neutrons in the nucleus

32
Ge
Germanium
74

History of Atom

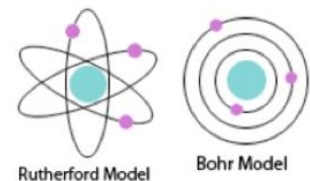


Dalton

Solid sphere

Thomson

Protons/ electrons randomly arranged

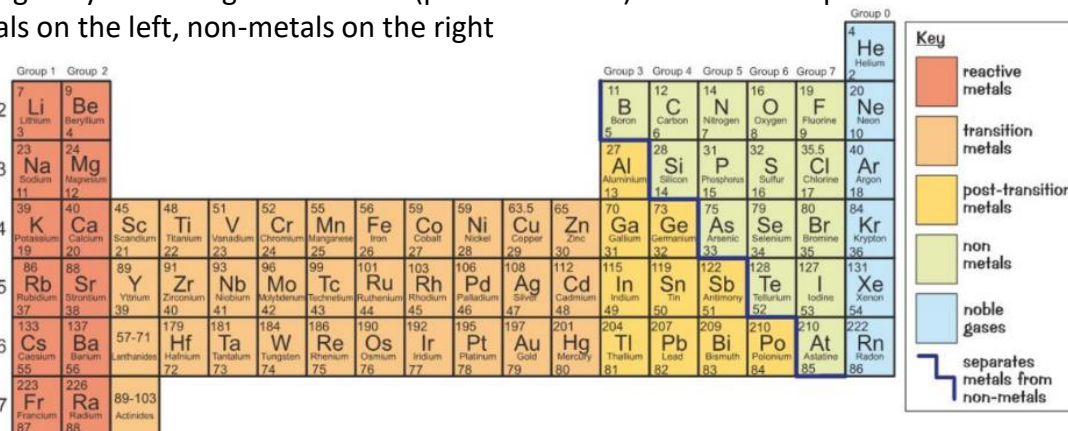


Rutherford/Bohr

Positive nucleus with electrons around

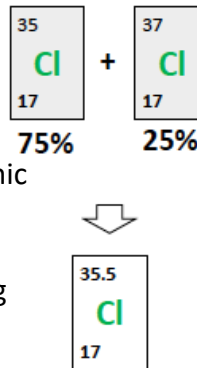
Modern Periodic Table

- Arranged by increasing atomic mass (proton number) in rows called periods
- Metals on the left, non-metals on the right



Isotopes

- Elements with the same number of protons but different numbers of neutrons
- This explains why relative atomic mass (M_r) isn't always a whole number



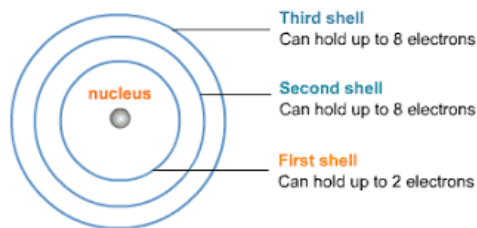
H - e.g. M_r of Cl is calculated using The abundance of each of the Atomic masses of the isotope
 $(35 \times 75/100) + (37 \times 25/100) = 35.5$

History of Periodic table

- Dimitri Mendeleev was the first to publish an organised table of elements
- He arranged by relative atomic mass
- But he also left gaps so that elements with similar properties were in the same group
- Using the gaps he was able to predict elements that had not been discovered yet

Electronic Configuration

- Using the rules to draw the first 20 elements
- Rule 1



- Rule 2/3

	Group								Number of occupied energy levels
	1	2	3	4	5	6	7	0	
Period 1								2 He	1
Period 2	3 Li 2.1	4 Be 2.2	5 B 2.3	6 C 2.4	7 N 2.5	8 O 2.6	9 F 2.7	10 Ne 2.8	2
Period 3	11 Na 2.8.1	12 Mg 2.8.2	13 Al 2.8.3	14 Si 2.8.4	15 P 2.8.5	16 S 2.8.6	17 Cl 2.8.7	18 Ar 2.8.8	3
Period 4	19 K 2.8.8.1	20 Ca 2.8.8.2							4
	1	2	3	4	5	6	7	8	

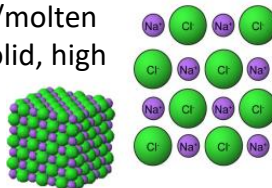
Number of electrons in highest occupied energy level (except for helium)

Ions

- Atoms are more stable with full outer electron shells
- Metals lose electrons resulting in a positive ion. E.g. sodium in group 1 → Na⁺ ion and calcium in group 2 → Ca²⁺ ion
- Non-metals gain electrons resulting in a negative ion, e.g. oxygen in group 6 → O²⁻ ion and chlorine in group 7 → Cl⁻ ion

Ionic Compounds

- Positive and negative ions arrange in a regular lattice
- This explains properties including ability to dissolve, conduct electricity when dissolved/molten but not solid, high melting & boiling points



Fullerenes, Allotropes

C60

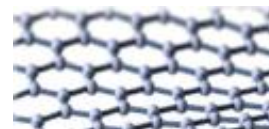
Strong, weak intermolecular forces (like graphite)

Can be used as lubricants

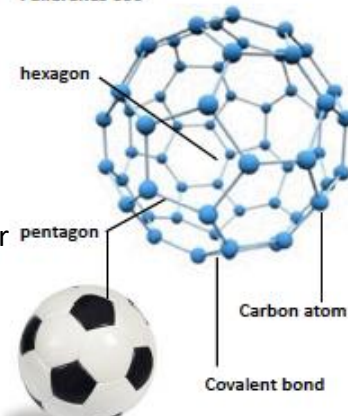
Graphene

Strong, light, good electrical conductor

Can be rolled into tubes

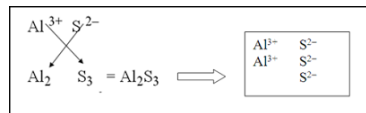
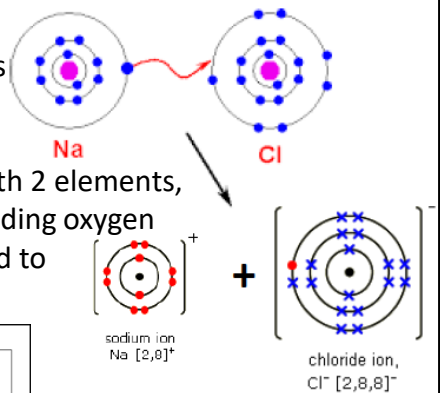


Fullerenes C60



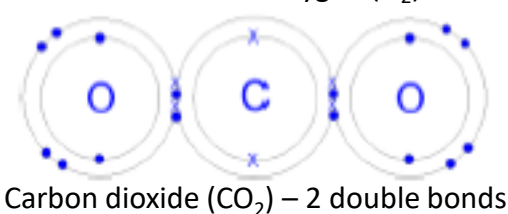
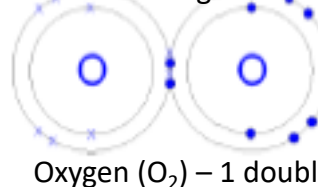
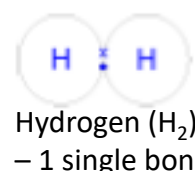
Ionic Bonding

- Positive and negative ions are attracted and form a compound
- Compound name -ide with 2 elements, -ate with 3 elements including oxygen
- Use the crossover method to determine the formula

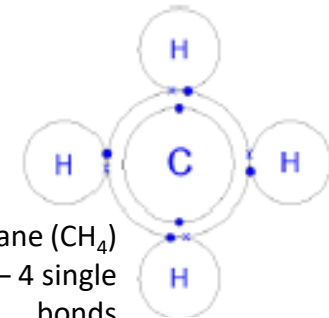


Covalent Bonding

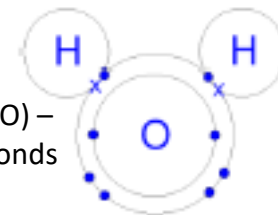
- Electrons are shared to complete the outer shell
- Simple molecular, strong bonds between atoms
- Weak between molecules → gases at room temp



Methane (CH₄)
– 4 single bonds

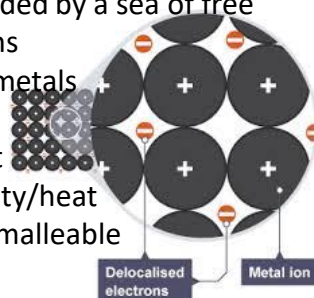


Water (H₂O) – 2 single bonds



Metallic Bonding

- Metal atoms lose electrons to become positive ions surrounded by a sea of free electrons
- Allows metals to conduct electricity/heat and be malleable

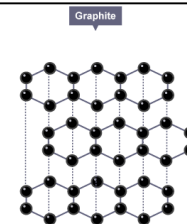
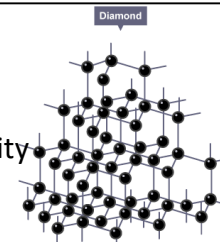


Bonding Models

Ball and stick models are limited: they don't show electrons and appear to have large gaps between atoms. Dot and cross diagrams are limited: they are 2D and don't show bond angles.

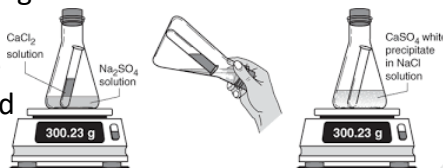
Giant Covalent Structures, Allotropes

- Bonding between many non-metal atoms
- Diamond, each C atom forms 4 bonds
- Rigid, strong and doesn't conduct electricity
- Used for cutting tools
- Graphite, each C forms 3 bonds leaving a free electron and weak bonds between layers
- Soft, good electrical conductor - Used as a lubricant



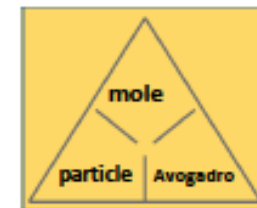
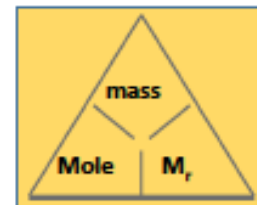
Conservation of mass

- In a closed system the total mass of the reaction before and after doesn't change
- This is because no atoms are destroyed or created, they are just rearranged
- If mass goes up it's because one of the reactants has joined from the air
- If mass goes down it's because a gas has been released



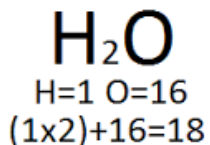
H - Moles

- A mole is an amount of particles equal to Avogadro's constant (6.02×10^{23})
- One mole of any substance will have a mass in grams equal to the relative particle mass (A_r or M_r) for the substance
- The number of particles of substance in a given mass of that substance can be found by using the 1st equation to find the number of moles and the 2nd equation to find the number of particles



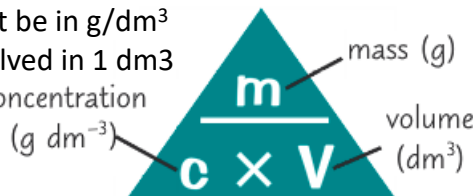
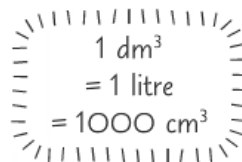
Relative Masses (M_r)

- To find M_r add the relative atomic mass (A_r) of the elements making up a compound



Calculating Concentration

- The more solute dissolved in in a given volume, the more crowded the particles are = more concentrated
- Volume must be in g/dm^3
- 1 gram dissolved in 1 dm^3 = 1 g/dm^3 concentration



Calculating Reacting Masses

- In reactions there will be a limiting reactant which is used up, other reactants are in excess
1. Write out the balanced equation
 2. Work out M_r of the reactant and product you're interested in
 3. Divide both by the M_r of the limiting reactant
 4. Multiply both by the given mass of the limiting reactant
- To find the mass of limiting reactant needed to make a certain mass of product
1. Write out the balanced equation
 2. Work out the M_r of the reactant and product you're interested in
 3. Divide both by the M_r of the product
 4. Multiply both by the given mass of the product

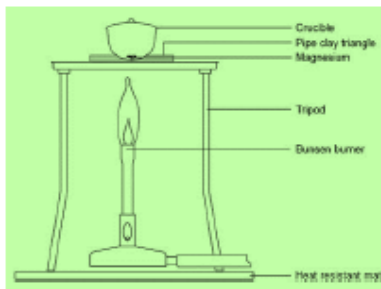
Empirical Formulae

- Tells you the smallest ratio of atoms in a compound
- To find it divide the molecular formula by the highest common multiple

Compound	Molecular Formula	Empirical Formula
Butane	C_4H_{10}	C_2H_5
Octane	C_8H_{18}	C_4H_9

- Use empirical formula along with M_r to find molecular formula, divide M_r of the compound by the M_r of the empirical formula, then multiply everything in the empirical formula by 2

Experimental Technique



If 9.6g of Mg reacts with 6.4g of O:
 $9.6 / 24$ (A_r Magnesium) = 0.4
 $6.4 / 16$ (A_r Oxygen) = 0.4

Ratio 0.4 : 0.4 or 1:1 (MgO)

H - Balancing Equations with Reacting Masses

1. Divide mass of each substance by $M_r \rightarrow$ moles
2. Divide all moles by the smallest number of moles
3. Multiply by an amount to make them all whole numbers
4. Write a balanced equation using these numbers

Acids (p):

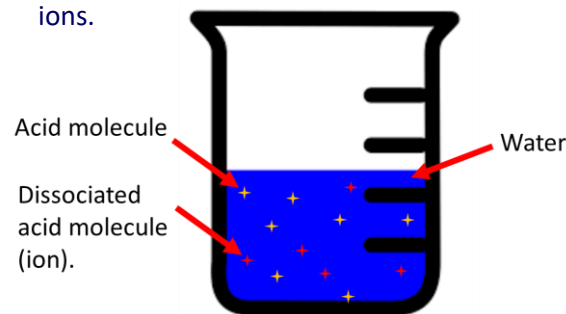
- **Source of hydrogen ions (H^+) when in solution.**
- pH 1 – pH 6 (neutral = pH 7)
- Strong acids are corrosive and can be harmful to humans.
- Examples: Vinegar; citrus fruits; bee stings.

Alkalis & bases (p): pH 8 – pH 14.

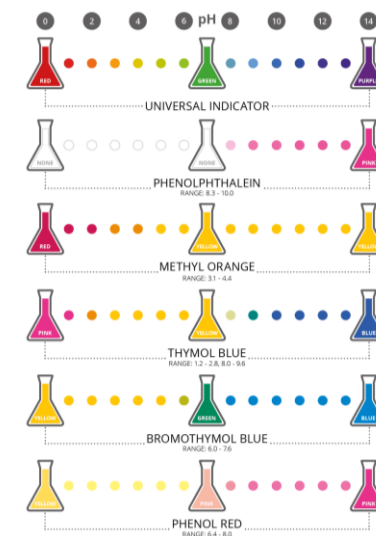
- **Alkalis are sources of hydroxide ions (OH^-) when in solution.**
- Bases are any substances that react with acids to form salt and water only.
- All alkalis are soluble bases.
- Examples: Wasp stings; bleach; indigestion tablets; toothpaste.

Acid strength (p):

- The pH scale shows the strength of an acid (or alkali).
- The strength of an acid is determined by the proportion of ions which dissociate (split) in solution, e.g. $HCl \rightarrow H^+ + Cl^-$.
- Strong acids: High proportion of dissociated ions.
- Weak acids: Low proportion of dissociated ions.



Indicators (p): Different chemicals can be used to test the pH of solutions.

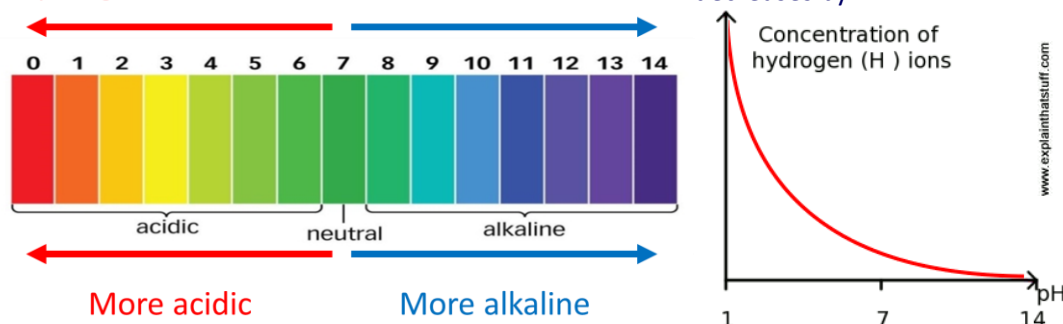


pH scale (p): A measure of the proportion of hydrogen ions or hydroxide ions in a solution.

Increasing concentration of hydrogen ions

Increasing concentration of hydroxide ions

As hydrogen ion concentration increases 10x, pH of the solution decreases by 1.



Neutralisation (p): Chemical reaction between acid (pH1-6) and alkali (pH8-14) produces a salt and water (neutral at pH7).

- Neutralisation happens because of reactions due to ionic charges of atoms.
- Acids and alkalis dissociate (split) into ions (charged atoms) in solution.
 - Hydrochloric acid: $HCl \rightarrow H^+ + Cl^-$
 - Sodium hydroxide (alkali): $NaOH \rightarrow Na^+ + OH^-$
- The hydrogen and hydroxide ions react to form water: $H^+ + OH^- \rightarrow H_2O$
- The sodium and chlorine atoms react to form sodium chloride (salt): $Na^+ + Cl^- \rightarrow NaCl$

Acids & metals (p): Acid + metal \rightarrow salt + hydrogen

- Evidence: Effervescence, or the production of hydrogen bubbles. Testing with a lit splint should produce a squeaky pop.
- Strength of reaction depends on metal's place in reactivity series.
- Magnesium + sulfuric acid \rightarrow magnesium sulfate + hydrogen
- $Mg(s) + H_2SO_4(aq) \rightarrow MgSO_4(aq) + H_2(g)$

Acids & carbonates (p): Acid + metal carbonate \rightarrow salt + water + carbon dioxide

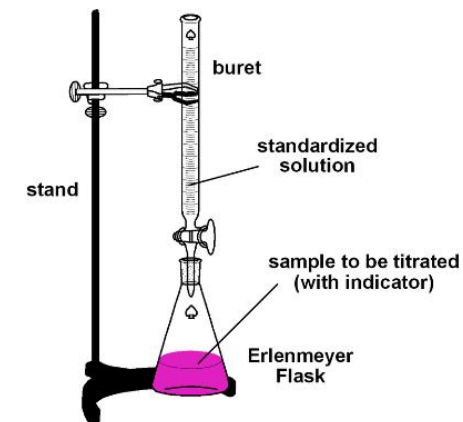
- Evidence: Bubbling the carbon dioxide through limewater will turn the limewater cloudy.
- E.g.: Copper carbonate + sulfuric acid \rightarrow copper sulfate + water + carbon dioxide
- $CuCO_3(s) + H_2SO_4(aq) \rightarrow CuSO_4(aq) + H_2O(l) + CO_2(g)$

Acid concentration (p):

- Acids are sources of hydrogen ions when in solution.
- The concentration of the solution is determined by the amount of acid dissolved in a volume of solvent.
- Measured in moles (e.g. 1M, 2M).
- Concentrated acid: Large amount of acid per litre of solvent.
- Dilute acid: Small amount of acid per litre of solvent.

Soluble salts & titration (p):

- When a neutralisation reaction produces a soluble salt, it can be extracted by crystallization (evaporating the solvent).
- To create a neutral product (pH7), exactly the right amount of acid and alkali must be used.
- **Titration** measures exact amounts of acid added to an alkali.
- Single-colour indicators show clearly when pH7 is reached.



Insoluble salts & precipitates (p):

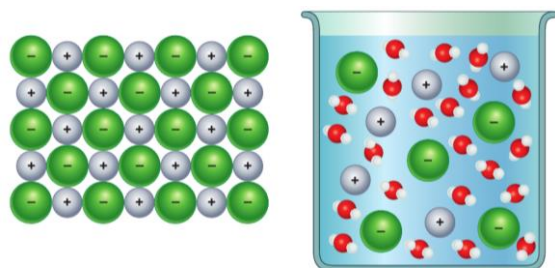
- Some salts produced by an acid-alkali reaction are not soluble – they do not dissolve in any solvents.
- These are called precipitation reactions, as they cause precipitate to form.
- Precipitate is insoluble particles of solid which form in the solvent.
- Preparation of insoluble salts:
 - Mix the two solutions;
 - Filter the mixture to remove most of the precipitate;
 - Rinse the beaker with distilled water and pass this through the filter to retain any remaining precipitate.

Soluble	Insoluble
All nitrates	None
Most sulfates	Lead sulfate, barium sulfate and calcium sulfate
Most chlorides, bromides and iodides	Silver chloride, silver bromide, silver iodide, lead chloride, lead bromide, lead iodide
Sodium carbonate, potassium carbonate, ammonium carbonate	Most other carbonates
Sodium hydroxide, potassium hydroxide, ammonium hydroxide	Most other hydroxides

State symbol **(s)** indicates a precipitate. Example: reaction of limewater with carbon dioxide:
 Calcium hydroxide (limewater) + carbon dioxide → calcium carbonate + water
 $Ca(OH)_2(aq) + CO_2(g) \rightarrow CaCO_3(s) + H_2O(l)$

Ions & electrolytes (p):

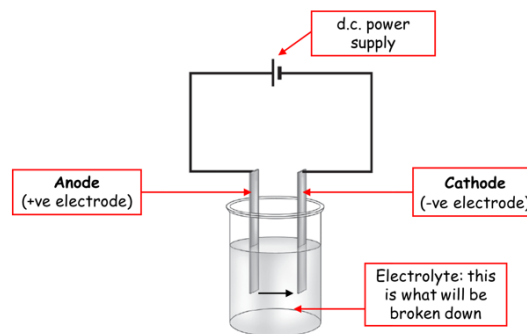
- Atoms which have lost or gained electrons.
- Charged (positive or negative).
- Ionic solids dissolve into free ions in water.
- Any liquid with free ions in solution is called an **electrolyte**.
- Electrolytes can conduct electricity.



A (a) The ions cannot move in the lattice structure of solid sodium chloride. (b) The ions can move when sodium chloride is dissolved in water.

Electrolysis (p):

- Means of separating out ionically-bonded compounds.
- Negative ions collect at the anode (positive electrode).
- Positive ions collect at the cathode (negative electrode).



Click to add text

H - Ionic equations (p):

- All salts are ionically bonded.
- Ionic equations show only the ions which change.
- For example:
 - Lead nitrate + sodium chloride → lead chloride + sodium nitrate
- Full equation: $Pb(NO_3)_2(aq) + 2NaCl(aq) \rightarrow PbCl_2(s) + 2NaNO_3(aq)$
- Ionic equation:** $Pb^{2+}(aq) + 2Cl^-(aq) \rightarrow PbCl_2(s)$
- All ions which do not change are called **spectator ions**.

Acids & metal oxides / metal hydroxides (p):

- Metal oxide + acid → salt + water**
- E.g.: Copper (II) oxide + hydrochloric acid → copper chloride + water
 $CuO + 2HCl \rightarrow CuCl_2 + H_2O$
- Metal hydroxide + acid → salt + water
- E.g.: Calcium hydroxide + nitric acid → calcium nitrate + water
 $Ca(OH)_2 + 2HNO_3 \rightarrow Ca(NO_3)_2 + 2H_2O$

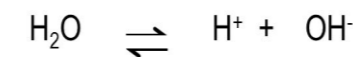
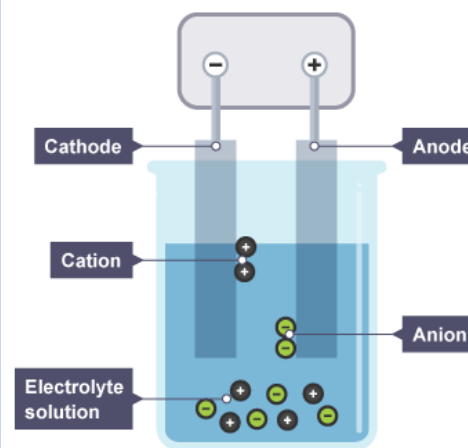
Negative ion	Element given off at anode
Chloride, Cl ⁻	Chlorine, Cl ₂
Bromide, Br ⁻	Bromine, Br ₂
Iodide, I ⁻	Iodine, I ₂
Sulfate, SO ₄ ²⁻	Oxygen, O ₂

H – Reactions at electrodes (p):

- OIL RIG: Oxidation Is Loss, Reduction Is Gain.**
- At the anode, negative ions lose electrons (oxidation).
- At the cathode, positive ions gain electrons (reduction).
- Example:
 - Zinc chloride electrolyte
 - Cathode reaction: $Zn^{2+} + 2e^- \rightarrow Zn$
 - Anode reaction: $2Cl^- \rightarrow Cl_2 + 2e^-$

Naming salts (p):

Acid *Salt formed*
 Hydrochloric Acid → Chloride
 Sulfuric Acid → Sulfate
 Nitric Acid → Nitrate



State symbols (p):

- In chemical equations, state symbols can be included after every chemical to show the state (solid, liquid, gas) of the chemical.
- (s)** = solid
- (l)** = liquid
- (g)** = gas
- (aq)** = in solution / dissolved.

EDEXCEL 9-1 Chemistry | Topic 3 – Chemical Changes | Required Knowledge

Acids (p43):

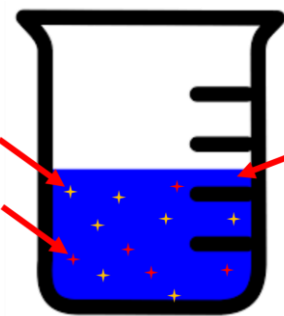
- **Source of hydrogen ions (H^+) when in solution.**
- pH 1 – pH 6 (neutral = pH 7)
- Strong acids are corrosive and can be harmful to humans.
- Examples: Vinegar; citrus fruits; bee stings.

Alkalis & bases (p43): pH 8 – pH 14.

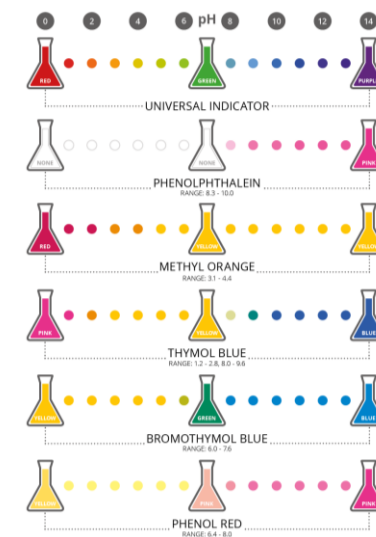
- **Alkalis are sources of hydroxide ions (OH^-) when in solution.**
- Bases are any substances that react with acids to form salt and water only.
- All alkalis are soluble bases.
- Examples: Wasp stings; bleach; indigestion tablets; toothpaste.

Acid strength (p44):

- The pH scale shows the strength of an acid (or alkali).
- The strength of an acid is determined by the proportion of ions which dissociate (split) in solution, e.g. $HCl \rightarrow H^+ + Cl^-$.
- Strong acids: High proportion of dissociated ions.
- Weak acids: Low proportion of dissociated ions.

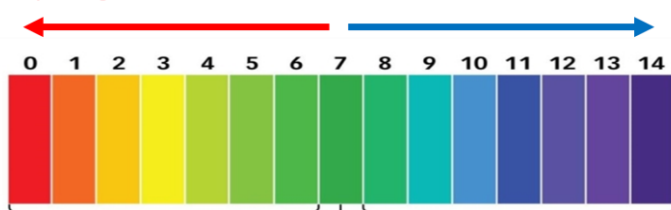


Indicators: Different chemicals can be used to test the pH of solutions.



pH scale (p43): A measure of the proportion of hydrogen ions or hydroxide ions in a solution.

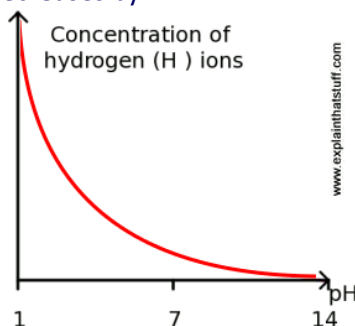
Increasing concentration of hydrogen ions (red arrow pointing left) and increasing concentration of hydroxide ions (blue arrow pointing right).



More acidic

More alkaline

As hydrogen ion concentration increases 10x, pH of the solution decreases by 1.



Neutralisation (p43): Chemical reaction between acid (pH1-6) and alkali (pH8-14) produces a salt and water (neutral at pH7).

- Neutralisation happens because of reactions due to ionic charges of atoms.
- Acids and alkalis dissociate (split) into ions (charged atoms) in solution.
 - Hydrochloric acid: $HCl \rightarrow H^+ + Cl^-$
 - Sodium hydroxide (alkali): $NaOH \rightarrow Na^+ + OH^-$
- The hydrogen and hydroxide ions react to form water: $H^+ + OH^- \rightarrow H_2O$
- The sodium and chlorine atoms react to form sodium chloride (salt): $Na^+ + Cl^- \rightarrow NaCl$

Acids & metals (p45): Acid + metal \rightarrow salt + hydrogen

- Evidence: Effervescence, or the production of hydrogen bubbles. Testing with a lit splint should produce a squeaky pop.
- Strength of reaction depends on metal's place in reactivity series.
- Magnesium + sulfuric acid \rightarrow magnesium sulfate + hydrogen
- $Mg(s) + H_2SO_4(aq) \rightarrow MgSO_4(aq) + H_2(g)$

Acids & carbonates (p45): Acid + metal carbonate \rightarrow salt + water + carbon dioxide

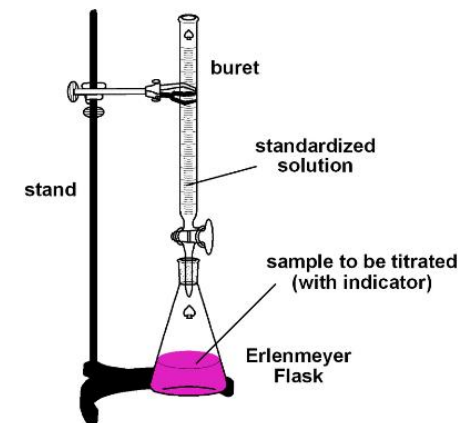
- Evidence: Bubbling the carbon dioxide through limewater will turn the limewater cloudy.
- E.g.: Copper carbonate + sulfuric acid \rightarrow copper sulfate + water + carbon dioxide
- $CuCO_3(s) + H_2SO_4(aq) \rightarrow CuSO_4(aq) + H_2O(l) + CO_2(g)$

Acid concentration (p44):

- Acids are sources of hydrogen ions when in solution.
- The concentration of the solution is determined by the amount of acid dissolved in a volume of solvent.
- Measured in moles (e.g. 1M, 2M).
- Concentrated acid: Large amount of acid per litre of solvent.
- Dilute acid: Small amount of acid per litre of solvent.

Soluble salts & titration (p47):

- When a neutralisation reaction produces a soluble salt, it can be extracted by crystallization (evaporating the solvent).
- To create a neutral product (pH7), exactly the right amount of acid and alkali must be used.
- **Titration** measures exact amounts of acid added to an alkali.
- Single-colour indicators show clearly when pH7 is reached.



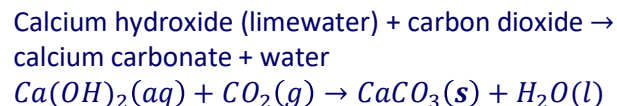
EDEXCEL 9-1 Chemistry | Topic 3 – Chemical Changes | Required Knowledge

Insoluble salts & precipitates (p46):

- Some salts produced by an acid-alkali reaction are not soluble – they do not dissolve in any solvents.
- These are called precipitation reactions, as they cause precipitate to form.
- Precipitate is insoluble particles of solid which form in the solvent.
- Preparation of insoluble salts:
 - Mix the two solutions;
 - Filter the mixture to remove most of the precipitate;
 - Rinse the beaker with distilled water and pass this through the filter to retain any remaining precipitate.

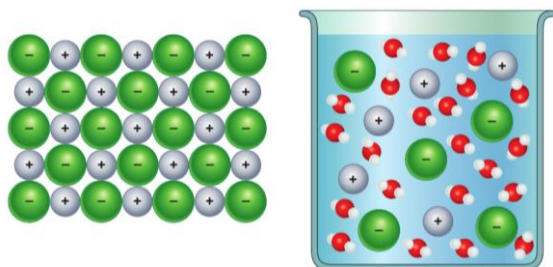
Soluble	Insoluble
All nitrates	None
Most sulfates	Lead sulfate, barium sulfate and calcium sulfate
Most chlorides, bromides and iodides	Silver chloride, silver bromide, silver iodide, lead chloride, lead bromide, lead iodide
Sodium carbonate, potassium carbonate, ammonium carbonate	Most other carbonates
Sodium hydroxide, potassium hydroxide, ammonium hydroxide	Most other hydroxides

State symbol **(s)** indicates a precipitate. Example: reaction of limewater with carbon dioxide:



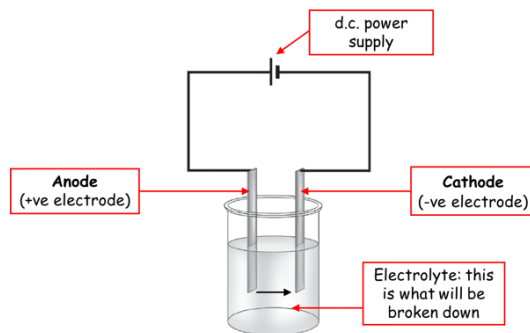
Ions & electrolytes (p48):

- Atoms which have lost or gained electrons.
- Charged (positive or negative).
- Ionic solids dissolve into free ions in water.
- Any liquid with free ions in solution is called an **electrolyte**.
- Electrolytes can conduct electricity.



Electrolysis (p48):

- Means of separating out ionically-bonded compounds.
- Negative ions collect at the anode (positive electrode).
- Positive ions collect at the cathode (negative electrode).



H - Ionic equations (p):

- All salts are ionically bonded.
- Ionic equations show only the ions which change.
- For example:
 - Lead nitrate + sodium chloride → lead chloride + sodium nitrate
- Full equation: $Pb(NO_3)_2(aq) + 2NaCl(aq) \rightarrow PbCl_2(s) + 2NaNO_3(aq)$
- Ionic equation:** $Pb^{2+}(aq) + 2Cl^-(aq) \rightarrow PbCl_2(s)$
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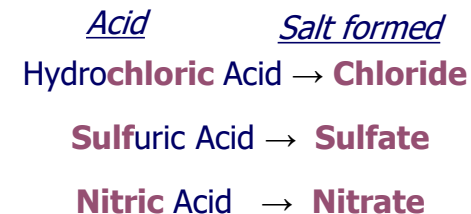
Acids & metal oxides / metal hydroxides (p47):

- Metal oxide + acid → salt + water**
- E.g.: Copper (II) oxide + hydrochloric acid → copper chloride + water

$$CuO + 2HCl \rightarrow CuCl_2 + H_2O$$
- Metal hydroxide + acid → salt + water
- E.g.: Calcium hydroxide + nitric acid → calcium nitrate + water

$$Ca(OH)_2 + 2HNO_3 \rightarrow Ca(NO_3)_2 + 2H_2O$$

Naming salts (p47):



State symbols:

- In chemical equations, state symbols can be included after every chemical to show the state (solid, liquid, gas) of the chemical.
- (s)** = solid
- (l)** = liquid
- (g)** = gas
- (aq)** = in solution / dissolved.

H – Reactions at electrodes (p49):

- OIL RIG: Oxidation Is Loss, Reduction Is Gain.**
- At the anode, negative ions lose electrons (oxidation).
- At the cathode, positive ions gain electrons (reduction).
- Example:
 - Zinc chloride electrolyte
 - Cathode reaction: $Zn^{2+} + 2e^- \rightarrow Zn$
 - Anode reaction: $2Cl^- \rightarrow Cl_2 + 2e^-$

Oxidisation (Pg 114)

- A reaction involving oxygen.
- **Oxidisation** is the addition of oxygen, **reduction** is the loss of oxygen.



- **Iron oxide** is **reduced** to **iron** (as oxygen is removed).
- **Carbon monoxide** is **oxidised** to **carbon dioxide** (as oxygen is added).

Reactivity (Pg 114)

- Shows how easily metals are oxidised.
- A reactivity series shows metals in order of reactivity.

The Reactivity Series		
least resistant to oxidation	Potassium	K
	Sodium	Na
	Calcium	Ca
	Magnesium	Mg
	Aluminium	Al
	Carbon	C
	Zinc	Zn
	Iron	Fe
	Hydrogen	H
	Copper	Cu
	Silver	Ag
most resistant to oxidation	Gold	Au
		least reactive

- Also a measurement of saying how easily a metal atom gives up electrons to become an ion.
- More reactive = gives up electrons more easily.

Oxidisation & reduction (Pg 116)

- **Oxidisation** is also the **loss of electrons**.
- **Reduction** is the **gain of electrons**.

O
I
L
R
I
G

When dealing with electrons:
Oxidation Is Loss,
Reduction Is Gain.

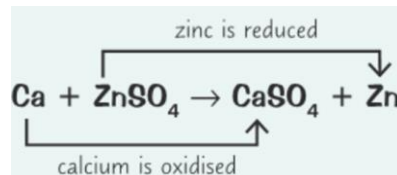
Metal reactions (Pg 115)

- Metals with different reactivity react to acids and water in different ways:

Metal	Reaction with water	Reaction with dilute acid	Tendency of metal atoms to form cations
potassium	react with cold water to form hydrogen and a metal hydroxide	react violently	↑ increasing ability of metal atoms to form positive ions
sodium			
calcium		react to form hydrogen and a salt solution	
magnesium	react very slowly, if at all, with cold water but react with steam to form hydrogen and a metal oxide		
aluminium			
zinc	do not react with cold water or steam	do not react	
iron			
copper			
silver			
gold			

Displacement reactions (Pg 116)

- Metals differently with metals salts, depending on the reactivity of the metals.
- The more reactive element takes the place of the less reactive element.
- The more reactive metal loses electrons (is oxidised) while the more reactive metals gains electrons (is reduced).
- Remember OILRIG.



- Calcium is more reactive than zinc, and takes it's place in the metals salt to become calcium sulfate leaving pure zinc on it's own.

Ore (Pg 117)

- A rock containing enough metal in in to make it **economically worthwhile** to extract the metal.

Metal extraction (Pg 117)

- Unreactive metals, e.g. gold, removed from the Earth's crust in pure form.
- More reactive metals form metals compounds, e.g. bauxite (aluminium oxide) the source of aluminium.
- The method for extracting metals from ores depends on the reactivity of the metal.

Metal	Method of extraction
potassium	electrolysis of a molten compound
sodium	
calcium	
magnesium	
aluminium	
(carbon)	heat an ore with carbon
zinc	
iron	
copper	found as the uncombined element
silver	
gold	

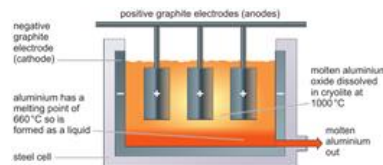
Method 1: Reduction with carbon (Pg 117)

- The ore is reduced, the carbon replacing the less reactive metals, leaving pure metals behind.
- Iron oxide (haematite) is the source of pure iron.



Method 2: Electrolysis (Pg 118)

- The ore is melted and an electrical current passed through it. The pure metal forms on the negative electrode.



Method 3: Biological methods (Pg 118)

- **Bioleaching** uses bacteria grown on copper ore which produce a solution containing the metals ions.
- The copper is extracted by reduction with iron and purified by electrolysis.
- **Phytoextraction** uses plants that grow and absorb the metal compounds. When burned they form an ash which the metal can be extracted from.

Advantages/disadvantages:

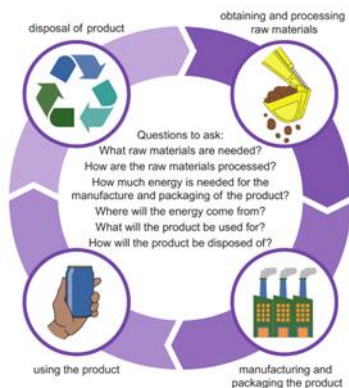
Process	Advantages	Disadvantages
both bioleaching and phytoextraction	no harmful gases (e.g. sulfur dioxide) are produced causes less damage to the landscape than mining conserves supplies of higher grade ores	very slow
bioleaching	does not require high temperatures	toxic substances and sulfuric acid can be produced by the process, and damage the environment
phytoextraction	can extract metals from contaminated soils	more expensive than mining some ores growing plants is dependent on weather conditions

Recycling (Pg 119)

- Reusing materials already extracted from the Earth is cheaper and has environmental benefits.
- Recycling aluminium cans is 95% more energy efficient per tonne over extracting it from ore.
- Prevents environmental damage from further mining
- Prevents landfill of cans.

Life cycle assessments

- New planned products are assessed using and LCA.
- Each aspect is considered to see if it impacts the environment too significantly.



Example: **Car B** is the most logical choice to manufacture based on the statistics considered...

Car	CO ₂ emissions (tonnes)	Waste solid produced (kg)	Water used (m ³)	Expected lifespan of product (years)
A	17	10 720	8.2	11
B	21	5900	6.0	17
C	34	15 010	9.5	12

- Least solid waste and water used.
- Second best for CO₂ emissions
- Longest lifespan

Reversible reactions

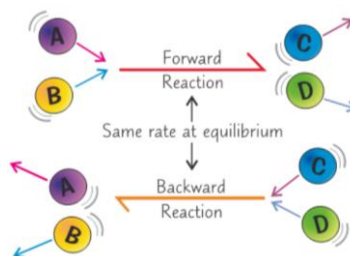
- Reactions where products can react to form the original reactants.
- Reactions go **both** ways!



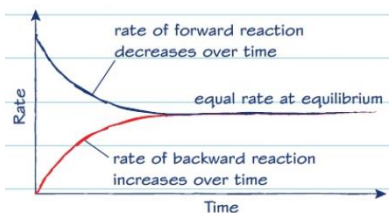
- Note the arrow points in both directions, showing this is a reversible reaction.

Dynamic Equilibrium

- In a closed system, reversible reactions reach **dynamic equilibrium**.
- This means the rate of the forward reaction is equal to the rate of the backwards reaction.



- The dynamic bit means that these reactions do NOT stop, products are formed from reactants and reactants react to form products...it just means the concentrations of the reactants and products does not change.

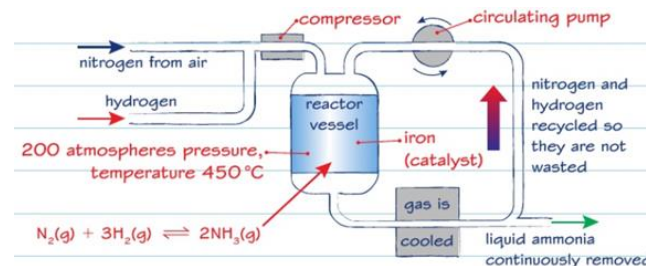


Factors effecting the equilibrium position

- Different factors can be used to shift the position of the equilibrium point...either to produce more product or more reactants.
- The factors are **temperature**, **pressure** (for reactions involving gasses) and **concentration** (of the reactants and products).

The Haber process

- Reaction between hydrogen and nitrogen to form ammonia.
- You need to remember the conditions for the process...
 - Pressure of 200 atmospheres
 - Temp of 450 °C
 - Iron catalyst



Le Chatelier's Principle

- The principle states, any change to either temp, pressure or concentration in a reversible reaction and the equilibrium position will move to counteract that change.
- This means we can adjust these factors to get more product or more reactant, if that's what is needed.
- Details of how each change effects the reaction can be found below, using the Haber process as an example.

TEMPERATURE All reactions are **exothermic** in one direction and **endothermic** in the other (see page 134).

- 1) If you **decrease the temperature**, the equilibrium will move in the **exothermic direction** to produce more heat.
- 2) If you **increase the temperature**, the equilibrium will move in the **endothermic direction** to absorb the extra heat.

For example: $N_2 + 3H_2 \rightleftharpoons 2NH_3$
This reaction is exothermic in the forward direction. If you decrease the temperature, the equilibrium will shift to the right (so you'll make more product).

PRESSURE Changing this only affects equilibria involving **gases**.

- 1) If you **increase the pressure**, the equilibrium will move towards the side that has **fewer moles of gas** to **reduce** pressure.
- 2) If you **decrease the pressure**, the equilibrium will move towards the side that has **more moles of gas** to **increase** pressure.

For example:
 $N_2 + 3H_2 \rightleftharpoons 2NH_3$
This reaction has 4 moles of gas on the left and 2 on the right. If you increase the pressure, the equilibrium will shift to the right (so you'll make more product).

CONCENTRATION

- 1) If you **increase the concentration** of the **reactants**, the equilibrium will move to the **right** to **use up the reactants** (making **more products**).
- 2) If you **increase the concentration** of the **products**, the equilibrium will move to the **left** to **use up the products** (making **more reactants**).
- 3) **Decreasing** the concentration will have the **opposite effect**.

For example:
 $N_2 + 3H_2 \rightleftharpoons 2NH_3$
If you increase the concentration of N_2 or H_2 , the equilibrium will shift to the right to use up the extra reactants (so you'll make more product).

Verbs and the present tense in Spanish

The infinitive

When you look up a verb in the dictionary, you find its original, unchanged form which is called the **infinitive** (comer, beber, jugar, visitar, vivir, ir etc.). The infinitive ends in **-ar, -er or -ir**.

Forming the present tense in Spanish

Take off the last 2 letters of the infinitive (**-ar, -er or -ir**) and add the following endings depending on the pronoun:

*Important! There are some key irregulars to learn which don't follow this pattern – ir (as shown here), ser, tener and hacer are really important!

	AR verb	ER verb	IR verb
yo (I)	-o	-o	-o
tu (you)	-as	-es	-es
él/ella (he/she)	-a	-e	-e
nosotros/as (we)	-amos	-emos	-imos
vosotros/as (you all)	-áis	-éis	-ís
ellos/ellas (they)	-an	-en	-en

Verbs and the near future tense in Spanish

You can talk about the future by using the **near future** tense.

Use part of the verb IR + a + the infinitive to say what you are **going** to do.

Este tarde **voy a jugar** al tenis. *This evening I am going to play tennis.*

Mañana Paul **va a hacer** un pastel. *Tomorrow Paul is going to make a cake.*

IR (to go)

voy	I am going
vas	You are going
va	He /she/one is going
vamos	We are going
vais	You (lot) are going
Van	They are going

Verbs and the past tense in Spanish

The **preterite** is the past tense used in Spanish to describe a completed action at a specific time in the past (e.g. ayer (yesterday), el año pasado (last year)). For regular we take off **-ar, -er – ir** and add the below endings :

	-AR	-ER / -IR
I	é	í
You (sg)	aste	iste
He/she/it	ó	ió
We	amos	imos
You (pl)	asteis	isteis
They	aron	ieron

Examples:

Tomar = to take
 To form "I took"

TOMAR ~~X~~ > tom > tomé

Hablar = to speak
 To form "she spoke"

HABLAR ~~X~~ > habl > habló

1.Expressing FUTURE intentions :

Tengo la intención de + infinitive (I plan to/ I intend to ...)

Me gustaría + infinitive (I would like to...)

2.Using infinitives after me gusta/no me gusta/odiar/preferir :

You can also use an infinitive after opinion verbs such as *aimer*, *odiar* and *preferir*. They are usually translated with a **gerund** (a verb ending with -ing) in English:

Me gusta vivir à Newcastle - I like living in Newcastle.

Prefieres jugar al fútbol o al tenis? - Do you prefer playing football or tennis?

Odio beber café porque es asqueroso – She hates drinking coffee because it’s disgusting.

3.Opinions

Me gusta(n) - I like

Me gusta(n) **mucho** - I like a lot

No me gusta(n) **mucho** - I don’t like much

Prefiero – I prefer

Odio - I hate

No suporto - I can’t stand

4.Justification

Porque - because

Por lo tanto – therefore/so

Por consiguiente- consequently

5.Comparisons

Más.....que –more...than

Menos...que - less...than

Tan...como – as...as

6.Superlative

El/la más – the most

El/la menos – the least

El/la major – the best

El/la peor – the worse

7.Time phrases

Normalmente - normally

Usualmente - usually

Generalmente - generally

De vez en cuando/a veces – sometimes

Luego – next

Raramente - rarely

El fin de semana que viene– next weekend

La semana que viene- next week

El fin de semana pasado - last weekend

El mes pasado - last month

El verano pasado- last summer

Durante la cuarentena- during lockdown

ACTIVITY VERBS

ir	To go
jugar	To play
comer	To eat
visitar	To visit
hacer	To do
bailar	To dance
beber	To drink
ver	To watch
escuchar	To listen
leer	To read
comprar	To buy
terminar	To finish
escribir	To write
dormir	To sleep
nadar	To swim
quedar	To stay
viajar	To travel
cantar	To sing
mandar SMS	To text
contactar	To contact
llamar	To call
cocinar	To cook
ayudar	To help
trabajar	To work
relajarse	To relax
descansar	To rest

INTENSIFIERS

muy	very	extremadamente	extremely
tan	so	demasiado	too
bastante	quite	realmente	really
un poco	a bit	nada	not at all

HEALTHY LIVING VERBS

 acostarse	To go to bed
apetecer	To fancy (feel like)
 conseguir (un trabajo)	To get a job
 Correr	To run
 Drogarse	To take drugs
 Emborracharse	To get drunk
 Encontrarse bien/mal	To feel well/unwell
 Estar a dieta	To be on a diet
 Estar en forma	To be in shape
 Mantenerse en forma	To stay in shape
 Evitar	To avoid
 Fumar	To smoke
Intentar (+ infinitive)	To try (to do something)
 Levantarse	To get up
 Preocuparse	To worry
Sentirse	To feel
 Tener dolor	To have pain
 Tener sueño	To feel sleepy
Superar	To overcome

GENTE

con	with
mis amigos	my friends
mi hermano	my brother
mi hermana	my sister
mis padres	my parents
mi familia	my family
solo/a	alone

PEOPLE

SITIOS






En casa	At home
En la casa de <u>mi amigo</u>	At my friend's house
En mi dormitorio	In my bedroom
En el salón	In the living room
En el jardín	In the garden
En mi barrio	In my neighbourhood
En Inglaterra	In England
En el extranjero	Abroad
En el pueblo	In town
En el campo	In the countryside
En las montañas	In the mountains
En la costa	At the coast

PLACES

ADJECTIVES

relajante	relaxing
agradable	pleasant
serio/a	serious
deportivo/a	sporty
enriquecedor/a	enriching
divertido/a	fun
emocionante	exciting
rápido/a	quick
molesto/a	annoying
gratificante	rewarding
aburrido/a	boring
fácil	easy
difícil	difficult
interesante	interesting
bueno/a para la salud	healthy
malo/a para la salud	unhealthy

Year 9 Textiles Knowledge Organiser

Equipment	Use
Bobbin 	A bobbin is a cylinder, to which cotton thread is wrapped around. It is found in the bottom part of a sewing machine.
Overlocker machine 	An overlocker does not replace a sewing machine. Its primary function is to clean finish a raw edge, giving the project a professional appearance.
Quick unpick 	It is used to quickly remove stitches and seams.
Tailor's chalk 	Used to mark on to fabric. It is easily washed off.
Measuring Tape 	It is a flexible ruler that can be used for body measurements, tailoring and dressmaking. It is flexible to measure fabric and curves of the body.

The 6 R's when it comes to sustainability



RETHINK



REFUSE



REPAIR



REDUCE



REUSE

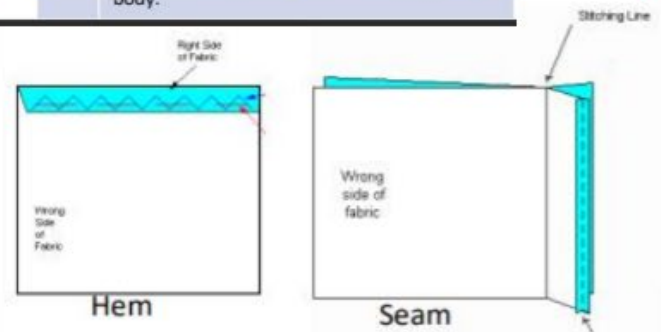


RECYCLE



Batik

Batik is a type of resist printing process in which wax is applied to the fabric in specific areas. When the wax hardens, the fabric is submerged in dye. The wax prevents the dye from reaching the fibers. The fabric is then boiled to remove the wax. This fabric-dyeing method makes cotton look cracked. Batik is characterised by a unique, nearly pattern-less appearance.



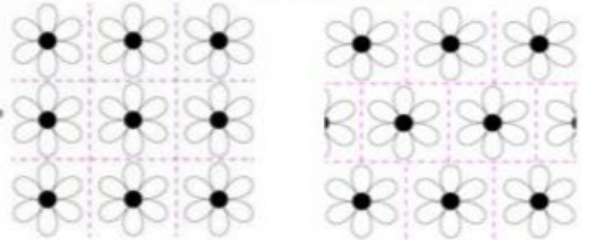
What is the difference between a hem and a seam?

A hem is a neat non fraying edge made by folding fabric over and stitching it down. A seam is a line along which pieces of cloth are joined by sewing.



One image is called a 'motif'

The motif has been repeated to make two different patterns



plain repeat pattern
 brick repeat pattern/offset repeat pattern

Textiles Hierarchy of Key words

Tier 3 'Academic' keywords.	analyse embellishment Woven/ bonded/ knitted Free machine embroidery	Plain seam sustainable function develop
	Complementary colours contrast compare context colour	environment fastening embroidery iron effect design machine line theme shape appliqué improve Texture tone Fabric sew
	Tier 2 Valuable keywords used in most lessons every lesson.	Tier 1 Basic keywords used in almost every lesson.

Use these in your writing and speaking

Use connectives to link each paragraph!	Explain an idea: <ul style="list-style-type: none"> Although Except Unless However Therefore 	Sequencing: <ul style="list-style-type: none"> Firstly Secondly Next Finally Since
Adding to: <ul style="list-style-type: none"> Furthermore Also As well as Moreover 	Cause and effect: <ul style="list-style-type: none"> Thus So Therefore Consequently 	Contrasting: <ul style="list-style-type: none"> Whereas Instead of Alternatively Otherwise Then again
To empathise: <ul style="list-style-type: none"> Above all Ultimately Especially Significantly 	To compare: <ul style="list-style-type: none"> Likewise Equally In the same way Similarly 	Give examples: <ul style="list-style-type: none"> Such as For example In the case of As revealed by For instance

Sentence starter phrases

Most people would agree...
 Only a fool would think...
 We all know...
 A sensible idea would be...
 The fact is that...
 Surely you would agree that...
 Without a doubt...
 I am certain that...
 Some people might argue...
 However...
 Also...

DESCRIBE



I believe that...
 I think that...
 The main idea is...

EXPLAIN



This means that...
 Therefore...
 This maybe because...

JUSTIFY



This is positive because...
 This is negative because...
 It is useful/not useful because...

ANALYSE



One strength is...
 One weakness is...
 One argument is...

EVALUATE



One advantage is...
 One disadvantage is...
 The best option is...

COMPARE AND CONTRAST



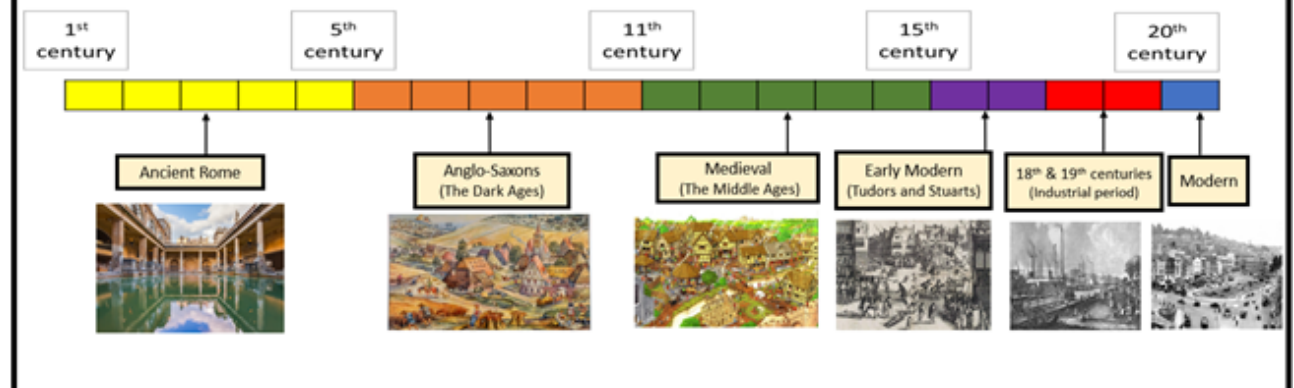
One similarity is...
 One difference is...
 On the other hand...

History Chronology Skills

- Historians rely on **chronology** (time order) to understand and divide up large periods of History.
- The timeline below shows the language used to describe the different periods of **British History**.
- Each block represents one **century** (100 years).

Century Formula = Add one '1' to the number of hundreds.

E.G: AD 150 = 1 + 1 = 2nd Century AD
 E.G: AD 1650 = 16 + 1 = 17th Century AD
 E.G: 500 BC = 5 + 1 = 6th Century BC
 E.G: 3000 BC = 30 + 1 = 31st Century BC
 When your date is 2 digits or less, it MUST be the first century AD/BC.
 E.g. AD 34 = 1st Century AD. 3BC = 1st Century BC.



Use these in your writing and speaking in DT



Design and Technology Keywords

Food and Nutrition	Design and Technology	Textiles
Caramelisation	Carbon footprint	Plain seam
Aeration Amino acids	Planned Obsolescence	analyse sustainable
Plasticity Shortening	Iterative Design Tolerance	embellishment
Coagulation Denaturation	Technology Push Anthropometrics	Woven/ bonded/ knitted
Gelatinisation	Consumer Social Footprint	Free machine function
Emulsification Pasteurisation	Ergonomics Forming Processes	embroidery develop
Unsaturated Protein	Aesthetics Target Market	Complementary colours
Radiation Saturated	Properties Deciduous	contrast environment
Conduction Carbohydrates	Automation Coniferous	fastening
Digest Deficiency	Automation Functionality	compare embroidery
Cross-contamination Convection	Primary Source Sustainability	iron equipment
Micro-organisms	Continuous Improvement	context appliqué
Flavour Claw grip	Cost Customer	effect improve
Texture Aroma	Materials Customer Annotation	colour design shape
Energy Nutrients	Safety Product	machine
Appearance Bridge hold	Design Environment	pattern line Texture
Mix Smell	User Prototype	theme tone
		thread Fabric sew



Sentence Starters - DT

I have designed...because
My project was about...
I found... during my research
My design is suitable for...
I have learnt how to...
The most enjoyable part of my project was....
The area I found the most challenging was...
Equipment I have used include...
I would improve my work by...
I am pleased with my finished product because...

Sentence Starters- Food and Nutrition

In order to work hygienically/safely I made sure I
I worked safely when in the kitchen by...
If I could improve any skill, I would improve...because...
Overall, I am happy/unhappy with my progress/dish because....
The texture of my dish is... this is because...

Sentence starters- Textiles

I have designed....
The context of my design is...
My research is useful because...
By researching, I am able to.....
By researching I have found out....
I researched into....
My design is suitable for.....
My design is based upon...
I have planned to..
The order I will work in is...
The most enjoyable part of m project was...
The area I found most challenging was...
I am most pleased with...
I am pleased with my finished project because...
Equipment I used was...



The periodic table of the elements

1	2											3	4	5	6	7	0		
		Key relative atomic mass atomic symbol <small>name</small> atomic (proton) number										1 H hydrogen 1							4 He helium 2
7 Li lithium 3	9 Be beryllium 4											11 B boron 5	12 C carbon 6	14 N nitrogen 7	16 O oxygen 8	19 F fluorine 9	20 Ne neon 10		
23 Na sodium 11	24 Mg magnesium 12											27 Al aluminium 13	28 Si silicon 14	31 P phosphorus 15	32 S sulfur 16	35.5 Cl chlorine 17	40 Ar argon 18		
39 K potassium 19	40 Ca calcium 20	45 Sc scandium 21	48 Ti titanium 22	51 V vanadium 23	52 Cr chromium 24	55 Mn manganese 25	56 Fe iron 26	59 Co cobalt 27	59 Ni nickel 28	63.5 Cu copper 29	65 Zn zinc 30	70 Ga gallium 31	73 Ge germanium 32	75 As arsenic 33	79 Se selenium 34	80 Br bromine 35	84 Kr krypton 36		
85 Rb rubidium 37	88 Sr strontium 38	89 Y yttrium 39	91 Zr zirconium 40	93 Nb niobium 41	96 Mo molybdenum 42	[98] Tc technetium 43	101 Ru ruthenium 44	103 Rh rhodium 45	106 Pd palladium 46	108 Ag silver 47	112 Cd cadmium 48	115 In indium 49	119 Sn tin 50	122 Sb antimony 51	128 Te tellurium 52	127 I iodine 53	131 Xe xenon 54		
133 Cs caesium 55	137 Ba barium 56	139 La* lanthanum 57	178 Hf hafnium 72	181 Ta tantalum 73	184 W tungsten 74	186 Re rhenium 75	190 Os osmium 76	192 Ir iridium 77	195 Pt platinum 78	197 Au gold 79	201 Hg mercury 80	204 Tl thallium 81	207 Pb lead 82	209 Bi bismuth 83	[209] Po polonium 84	[210] At astatine 85	[222] Rn radon 86		

* The elements with atomic numbers from 58 to 71 are omitted from this part of the periodic table.

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





Subject websites

These websites will help you with homework, reading around the subject and revision

English

<https://www.sparknotes.com/> - *Macbeth, A Christmas Carol, An Inspector Calls*

<https://app.senecalearning.com/> - *Macbeth, A Christmas Carol, An Inspector Calls, Power and Conflict Poetry*

<https://www.bbc.com/bitesize> - *Macbeth, A Christmas Carol, An Inspector Calls*

Maths

<https://corbettmaths.com/>

<https://vle.mathswatch.co.uk/vle/>

<https://www.mathspad.co.uk/>

Science:

<https://www.bbc.com/bitesize>

<https://www.senecalearning.com/>

<https://www.memrise.com/>

Geography

Time for Geography - videos (mainly focused on physical processes)

Bitesize

Cool Geography

History

Seneca Learning

BBC bitesize - use Edexcel resources for GCSE.

Art Websites

<https://www.tate.org.uk/>

<https://www.bbc.co.uk/bitesize/subjects/z6f3cdm>

<https://www.incredibleart.org/>

Computer Science and IT.

www.mrahmedcomputing.co.uk

Drama

<https://youtu.be/VeTpob9LBM8>

<https://youtu.be/wlSEU13mRBE>

<https://www.bbc.co.uk/bitesize/guides/zsf8wmn/revision/1>

DT:

<http://www.mr-dt.com/>

<http://technologystudent.com/>

<https://www.senecalearning.com/>

PE

<https://www.bbc.com/bitesize/examspecs/ztrcg82>

<https://sites.google.com/view/ocrgcseperevision/home>

RS

KS3 <https://www.bbc.co.uk/bitesize/subjects/zh3rkqt>

