The Trafalgar School at Downton

Knowledge Organiser

Year 9: Terms 1 and 2

2023/2024

Name……House……

Contents

Using a Knowledge Organiser well

What is a Knowledge Organiser? A Knowledge Organiser is a document that sets out the key information you need to understand, learn and memorise in each of the subjects you study this term.	**Why do I have to carry my Knowledge Organiser around with me?** Your teachers will want you to use your Knowledge Organisers in lessons. They are yours forever and you may want to annotate or highlight on them when your teacher talks about things in them. They will certainly be used in lessons when you have a cover teacher and you can use them whenever you find yourself with some spare time.
How should I use my Knowledge Organiser? You should use your Knowledge Organiser to learn this key information and commit it to memory. Your teachers will often quiz you on the information on the Knowledge Organiser in your lessons. The best way of using it is to use the look, cover, write, check method which you will have been introduced to in your Knowledge Organiser launch assemblies.	**What do I do with my Knowledge Organiser at the end of the term?** You don't have to carry your Knowledge Organiser around with you anymore but you should keep it somewhere safe where you can easily get it out and use it. Remember that the information on the Knowledge Organiser includes things you will need to remember for your GCSE exams, so your teachers will continue to quiz you on it.
Why is a Knowledge Organiser important? New GCSE specifications mean that students have to memorise more facts, equations, quotations and information than ever before and there are things you will learn right from the start of year 7 that you will need to know in year 11 when you sit your GCSE exams – the Knowledge Organiser helps you to identify the things that you need to try and commit to your long term memory and return to over and over again during your time at secondary school. There are also things that we think it is important you learn about and remember that might not be in a GCSE exam but represent useful knowledge for life.	

Being Trafalgar

At the end of your time at the school your knowledge organisers will provide you with lots of help and support when your prepare for your GCSE exams.

To help yourself you should:

- Keep your Knowledge Organisers as tidy as possible
- Highlight parts of them as you go through learning lessons or add in post-it notes etc. to help you learn key knowledge
- Keep your used Knowledge Organisers safe at home. If you have used them since Year 7 you will end up at the end of Year 11 with 14 Knowledge Organisers. Line them up on your shelf at home and keep coming back to them for your revision, homework and learning
- Show them to your parents and talk through with them the facts and knowledge you have learned about in lessons – help them to learn new things too!
- Take your Knowledge Organiser for the term you are in to school every day and use it in every lesson you can!

Learning the knowledge in the organiser

Your Knowledge Organiser is a vital document. It contains all the key things from your lessons that you will need to work on committing to your long-term memory.
The best method to use when you are working on memorising things from your Knowledge Organiser is to self-quiz, using the Trafalgar Revision Method, below:

Really read and understand	Read the information 3 or more times and ask for help in understanding
Reduce the knowledge	Rewrite the information, making revision cards or mind maps
Remember	Reread and test that you can remember
Repeat	Repeat the process above until you can recall the information quickly and accurately. Only at this point have you acquired the knowledge!

How do I remember? Activating your memory

Students often say "I can't remember" and the reason for this is that the information they are trying to remember and learn is not yet in their **long term memory**.

Your long term memory gets activated by repetition over a number of days. And so repeat the following process to embed knowledge in your long term memory.

Look	Read the information 3 or more times 
Cover	Now cover what you have just read up
Write	Now try and write down the information you have just read 
Check	Did you write down the information correctly? If you made mistakes, correct them with a different colour pen and repeat daily until you "just know it".

Language Methods to Practise in your Fortnightly Writing Challenge and Examine in your Reading

alliteration:	the repetition of a consonant sound to begin a series of words.
anecdote:	a short story to prove a point e.g. a dad, talking to his children about the dangers of running in the house, a dad might include an anecdote about falling in his home as a boy and breaking his arm.
antithesis:	putting two opposite ideas together to highlight contrasts.
emotive language:	words and phrases that are used to make the reader feel a particular emotion.
extended metaphor:	a version of metaphor that extends over the course of multiple lines, paragraphs, or stanzas of prose or poetry
foreshadowing:	the writer hints at an event that will happen later in his story/poem/play/writing.
imperative verbs:	instructional/command words that give the action the speaker/writer wants you to do.
metaphor:	like a simile, but instead of using 'like' or 'as' it compares two things by suggesting that something is something else.
modal verbs:	help show the level of possibility, ability, obligation or permission of the main verb/action e.g. might, can, must, may ...
pathetic fallacy:	the projection of human emotions/mood onto non-human objects found in nature e.g. the weather.
sensory description:	employing the five senses in writing to evoke a mental image and/or sensation for the reader.
simile:	a comparison which finds similar characteristics in two objects and compares them, always by using the words 'like' or 'as'.
statistics:	factual data used in a persuasive way.
superlative:	an adjective or adverb that shows the highest or lowest degree of comparison e.g. best, worst, finest, most, etc.
onomatopoeia:	using words that sound like the noise they represent.
personification:	a type of figurative language that gives an object human characteristics (emotions, sensations, speech, physical movements).
rhetorical question:	a question asked for a purpose other than to obtain the information the question asks e.g. create a dramatic effect; emphasise a point; make you think about/eager to learn the answer.

When writing, don't fragment. Fuse or splice your sentences.

Unfortunately, I don't think I'm going to get a good grade. Because I didn't study. ✗ FRAGMENT

Fix it by re-joining the fragment to the sentence: Unfortunately, I don't think I'm going to get a good grade because I didn't study. ✓

In the holiday, I went to Paris it is the most beautiful place I have ever visited. ✗ Fuse

Fix it by using a full stop (never a comma), coordinating conjunction (for, and, but, or, yet, so), or subordinating conjunction (as, because, so that, before, after, until, since, when, although, etc.), or semi-colon to join the two sentences:
In the holiday, I went to Paris **as** it is the most beautiful place I have ever visited. ✓

Heavy rain fell throughout the night, by morning every major road was flooded. ✗ SPLICE

Fix it in the same way you would fix a fuse: Heavy rain fell throughout the night; by morning every major road was flooded. ✓

Use fronted adverbials:

Rather slowly, (manner)
During the night, (time/temporal)
Every minute or two, (frequency)
At the end of the corridor, (spatial)

Just beyond the stairwell on his left, he opened the door.

Use a two and then three word sentence:

It hurt. I was dying!

Snow fell. Flakes floated precariously.

Use anaphora:

Now is the time for action. **Now is the time** to take up arms. **Now is the time** to fight for your country.

Use epiphora (epistrophe)

I can't believe I was robbed. Everything is **gone**. My television and electronics are **gone**. The money I left on my nightstand is **gone**.

Use a range of sentence structures:

The spotted green frog jumped into the pond.
(simple)

The spotted green frog jumped into the pond **and** he splashed water on me.
(compound – coordinating conjunction: for, and, nor, but, or, yet, so)

The spotted green frog jumped into the pond **when** the hawk flew overhead.
(complex – subordinating conjunction: if, although, as, before, because, when, after, since, until, so that, while etc.)

When the hawk flew overhead, the spotted green frog jumped into the pond.
(subordinate/dependent clause start)

The frog, **which had been lurking underwater**, jumped on the lily pad.
(embedded clause)

Use a past participle - 'ed' start:
Glazed with barbecue sauce, the rack of ribs lay nestled next to a pile of sweet coleslaw.

Use a present participle - 'ing' start:
Whistling to himself, he walked down the road.

Use a tricolon (tripartite list):

'I stand here today **humbled** by the task before us, **grateful** for the trust you have bestowed, **mindful** of the sacrifices borne by our ancestors.'

Snap! Crackle! Pop! (Rice Krispies slogan)

Use a conditional sentence:

When people smoke cigarettes, their health suffers.

If I had cleaned the house, I could have gone to the cinema.

Use paired adjectives to describe a noun:

Take a look at this bright red spider.

Luckily, it isn't a wild, dangerous one.

Use anadiplosis (yoked sentence):

Building the new motorway would be **disastrous, disastrous** because many houses would need to be destroyed.

'Fear leads to **anger**. **Anger** leads to **hate**. **Hate** leads to suffering.'
Yoda, *Star Wars*.

Use different sentence types:
The wind is blowing. **(declarative)**

Put your pen down. **(imperative)**

Who do you trust most in the world? **(interrogative)**

Pollution is killing us! **(exclamation)**

Use discourse markers to begin paragraphs and start/link some sentences:
First of all, To begin with, Firstly,

Therefore, Consequently, Hence, As a result,

Furthermore, In addition, Additionally, Moreover,

Meanwhile, Later that day, Seconds later, Subsequently, That afternoon,

On the whole, Interestingly, Basically, In short, Broadly speaking,

Alternatively, Conversely, Similarly, On the other hand, Despite this, Likewise, However,

To conclude, Finally, In conclusion, Eventually, In the end,

PUNCTUATION PIT STOP

Full Stop

Full stops are used to:

1) **mark the end of a sentence.**

Carefully, he kicked the ball into the goal.

2) show when a word has been abbreviated.

Saint Peter's Road is on the High Street.

→ St. Peter's Road is on the High Street.

COMMAS

Commas are used to separate:

1) items in a list .

Bert, Ernie and Elmo are my three pet rats.

2) dependent clauses and phrases.

While I was in the bath, the cat scratched at the door. That meant, because I was on my own in the house, I had to get out to let him in. Thankfully, I had a towel handy!

Quotation Marks

Quotation marks show exact words that are spoken or written by someone.

'Don't be late!' shouted Mrs Smith.

'I will be,' Molly said, and added, 'so don't expect me before 11.'

Question Mark

Question marks are used at the end of direct questions instead of a full stop.

What is your favourite food?

How do you feel today?

An indirect question ends with a full stop, rather than a question mark:

I'd like to know what you've been doing all this time. I wonder what happened.

Exclamation Mark

Exclamation marks express strong emotions: forcefulness, commands, anger, excitement, surprise etc.

Don't buy that car! Stop telling me what to do! I'm free! You're late! She actually won!

They're also used for most interjections:

'Hi! What's new?' 'Ouch! That hurt.'

'Oh! When are you going?'

Semi-colon

Semi-colons are used to separate two sentences that are closely related:

It was winter; the snow was falling heavily.

They can also be used to separate items in a list made of longer phrases. I have been to Newcastle, Carlisle, and York in the North; Bristol, Exeter, and Portsmouth in the South; and Cromer, Norwich, and Lincoln in the East.

Colon

Colons are used to:

1) **begin a list.**

I have three pet rats: Bert, Ernie and Elmo.

2) **indicate that what follows it is an explanation or elaboration of what precedes it.**

Unfortunately, the weather forecast was wrong: it rained all day!

Apostrophe

An apostrophe is used to show:

1) **omission - where a letter or letters has been missed out.**

does not → doesn't I am → I'm

2) possession – when some thing/one owns something. Thankfully, they played Susan's game. Interestingly, David's house has no garden, but Susan's ~~house~~ does.

Dash –

Dashes are used for parenthesis: a word or phrase inserted as an explanation or afterthought into a passage which is grammatically complete without it. E.g.

Last year, they roasted the winning brisket — the size of a pillow — in a mighty clay oven. Paul felt hungry – more hungry than he'd ever been.

Brackets

Brackets are used in pairs for parenthesis: a word or phrase inserted as an explanation or afterthought into a passage which is grammatically complete without it. E.g.

Andrew Jacklin (last year's losing finalist) is expected to win this heat.

Tigers are carnivores (meat eaters)!

Ellipsis ...

Ellipsis is used to:

1) **show a pause or hesitation in someone's speech or thought.**

I don't know ... I'm not sure.

2) build tension or show that something is unfinished.

Looking up, Paul couldn't believe what he saw ...

Writing the text for a Leaflet/Guide

Stay Safe and Sound Online — clear/apt/original title

Manage your online reputation — subtitles

Anything that you upload, email or message could stay online forever. Therefore, before you post anything online, consider whether or not you would want your parents, teacher or a future employer seeing it. If the answer is no, don't post it! Your privacy is key here.

Privacy Matters

effectively/fluently sequenced paragraphs

Make sure you set high privacy settings on networks. Regularly you should change passwords and never share or put online any of your personal details like a phone number, address or your school details. Make sure your safety and privacy settings are activated on your mobile devices too, so you aren't sharing private information. Be aware that using public WiFi might not filter inappropriate content, so look for friendly WiFi symbols when you're out and about.

....

Remember: — bullet points

- make sure you know how to block abusive comments and report worrying content;
- don't arrange to meet people in real life that you've only talked to online;
- use secure and legal sites to download music and games;
- when using the internet for homework, use information appropriately and explain things in your own words rather than copying.

Text for a Speech/Talk

'Address to Nation on the Challenger' by Ronald Regan (28th January, 1986)

Ladies and Gentlemen, I'd planned to speak to you tonight to report on the state of the Union, but the events of earlier today have led me to change those plans. Today is a day for mourning and remembering. Nancy and I are pained to the core by the tragedy of the shuttle Challenger. We know we share this pain with all of the people of our country. This is truly a national loss.

...

a clear address to an audience

For the families of the seven, we cannot bear, as you do, the full impact of this tragedy. But we feel the loss, and we're thinking about you so very much. Your loved ones were daring and brave, and they had that special grace, that special spirit that says, 'Give me a challenge and I'll meet it with joy.' They had a hunger to explore the universe and discover its truths. They wished to serve, and they did. They served all of us.

...

rhetorical indicators that an audience is being addressed throughout

The crew of the space shuttle Challenger honoured us by the manner in which they lived their lives. We will never forget them, nor the last time we saw them, this morning, as they prepared for the journey and waved goodbye and 'slipped the surly bonds of earth' to 'touch the face of God.'

Thank you.

a clear sign off e.g. 'Thank you for listening'.

Writing Forms

Article

Andy Murray's Appliance of Science — clear/apt/original title

By Jim White — by-line

If the Caledonian superman wins Wimbledon this year, it will be thanks to [illegible] pieces of sushi a day, a magic potion and a battalion of experts. — strapline

If you want to know what it is about Andy Murray that makes him stand out from the rest of us – apart from that fizzing backhand return and the huge-mouthed celebratory yodel – it is summed up in one word: science!

Sample Check — sub-headings

Today, before he even steps out on to the Centre Court for his Wimbledon semi-final against huge-hitting Pole Jerzy Janowicz, Murray will [illegible]ve been subject to several of these. He does [illegible] time he pops to the lavatory. The osmolarity check is conducted by one of his staff, its purpose to gauge the percentage of water and minerals in his urine, to show whether his body is correctly hydrated. The fact is, if Murray wins [illegible] will [illegible]ly be thanks to the bloke who inspects his wee.

introductory (overview) paragraph

fluently sequenced paragraphs

fluently sequenced paragraphs

Daily Diet

At 7.30 this morning, while many of [illegible] arriving at Wimbledon's press restaurant will have begun their day assaulting a tottering Himalaya of fried starch, Murray will have eaten yogurt, fruit and a bagel smeared in peanut butter ...

Writing to Review

clear, engaging title

Feeling Icy About Frozen?

effective introduction

Last weekend I **was forced to endure** a new DVD that has been added to **my [illegible]tle sister's** ever-growing Disney collection: Frozen 2. For those of you who have been living on a different planet for the last few years, the Frozen franchise is particularly big business for girls under the age of around 7 or 8.

At first, **I have to be honest**, I was pretty reluctant to watch it. The first version of Frozen followed the usual Disney drama of: boy meets girl, dramas occur, friends are made, and annoyingly catchy songs are sung. There were the conventional talking animals too and (**I have to admit it**), a cute little snowman. In hope of reacquainting myself with the humour of this cold, carrot-nosed cutie – **I gave up the fight**, and decided **I'd try to grin and bear it** through the sequel...!

use topic specific language

use your tone to make the reader feel like you are sharing personal information and advice.

Surprisingly, having sat through the whole of the movie, **I'm willing to confess**: it actually wasn't too bad. The music is slightly better than the first one. In Frozen 2, there are some instrumental versions of songs and the riffs are well pitched and engaging. This was a definite **positive for me**, although I was a little annoyed when **I started humming the tune** on the school bus yesterday morning!

...

effectively/fluently linked paragraphs to sequence a range of ideas (no room to produce the other paragraphs/conclusion here).

As for the characters... Elsa and Anna are still the leading ladies, with Sven, Olaf, and the talking reindeer, (whose name I can't actually remember). Elsa is still a little too overly heroic as she constantly runs off to try and fix things with the customary 'we know it's going to end badly' music tinkering away in the background...

Writing a formal letter

writer's address

35 Hibiscus Crescent
Andover
Hants
SP10 3WE

221B Bakers Street
London
NW1 6XE

reader's address

date

20th February, 2020

Dear Sir or Madam

Formal Salutation: Sir/Madam/Mr Roderick/Mrs Roderick

I am writing because you chair a committee in charge of the compulsory wearing of school uniforms. I am a student at Brinsley High School, a friendly and successful school where uniforms are not worn.

Of course, I agree that students won't spend all morning choosing what to wear or beg parents for clothes that will impress. However, there is another side to this case: uniforms breed uniformity. We are a culturally diverse nation and if we all dress the same, this encourages us to be the same. At Brinsley High, we are encouraged to express individuality, yet this seems to be in contradiction of the message enforced uniform sends to us.

fluently sequenced paragraphs

fluently sequenced paragraphs

Furthermore, …

Yours faithfully
Boris Johnson

formal sign off: Yours faithfully (Sir/Madam = Faithfully) (Mr/Mrs = Sincerely)

Writing a Report

Fundraising at Frecklewood

clear title

The Frecklewood Donkey Sanctuary is a charity that cares for rescued and unwanted donkeys. The sanctuary is based a mile away from Frecklewood Academy and the school has a long history of partnership, having sent many year 10 students there for work experience week. The charity is currently in need of funds, having seen a 12% dip in charitable giving during the past few years….

Benefits of fundraising

subheadings

introductory paragraph outlining aims

As part of this investigation we have spoken with school leaders at the five state secondary schools in the Danshire area about the fundraising activities that they undertake. Collectively they raise funds for numerous causes, including Shelter (a charity that tackles homelessness), Stonewall (a charity that promotes equality for lesbian, gay, bi and trans people) and Young Dementia UK (who provide support for people whose lives are affected by young onset dementia).

…

Formal tone

One team leader said 'Some of our students have pursued careers in the charity sector as a result of their fundraising work at school.' …

Suggestions for activities

subheadings

clear conclusion addressing task and recommendations

As Frecklewood has a student …

Ultimately the benefits of fundraising events are huge. Whichever approach Frecklewood Academy takes, the charity, students and staff are all set to benefit.

Dystopian Narrative: *The Machine Stops* by E.M. Forster

Above her, beneath her, and around her, the Machine hummed eternally; she did not notice the noise, for she had been born with it in her ears. The earth, carrying her, hummed as it sped through silence, turning her now to the invisible sun, now to the invisible stars. She awoke and made the room light.

"Kuno!"

"I will not talk to you," he answered, "until you visit me."

"Have you been on the surface of the earth since we spoke last?"

His image faded.

Again she consulted the book. She became very nervous and lay back in her chair palpitating. She directed the chair to the wall, and pressed an unfamiliar button. The wall swung apart slowly. Through the opening she saw a tunnel that curved slightly, so that its goal was not visible. Should she go to see her son, this would be the beginning of the journey.

Of course she knew all about the communication-system. There was nothing mysterious in it. She would summon a car and it would fly with her down the tunnel until it reached the lift that communicated with the air-ship station: the system had been in use for many, many years, long before the universal establishment of the Machine. Those funny old days, when men went for change of air instead of changing the air in their rooms! And yet — she was frightened of the tunnel: she had not seen it since her last child was born.

Writing a Narrative: extract is from The Silent Land, by Graham Joyce.

It was snowing again. Gentle six-pointed flakes from a picture book were settling on her jacket sleeve. The mountain air prickled with ice and the smell of pine resin. Several hundred metres below lay the dark outline of Saint-Bernard-en-Haut, their Pyrenean resort village; across to the west, the irregular peaks of the mountain range.

…

If there are few moments in life that come as clear and as pure as ice, when the mountain breathed back at her, Zoe knew that she had trapped one such moment and that it could never be taken away. Everywhere was snow and silence. Snow and silence; the complete arrest of life; a rehearsal and a pre-echo of death. She pointed her skis down the hill. They looked like weird talons of brilliant red and gold in the powder snow as she waited, ready to swoop. I am alive. I am an eagle.

…

The noise itself filled her ears and muffled everything, and then there was silence, and the total whiteness faded to grey, and then to black!

Climax (turning point, height of action/problem at its worst):

- use exciting adverbs and verbs;
- accelerate pace and heighten tension using lots of shorter sentences.

Fail to Plan
Plan to Fail!

Rising Action (build towards conflict):

- build on character, setting, plot;
- introduce a complication/problem;
- build tension/ excitement;
- use interesting adjectives, sensory description, figurative language etc.

Freytag's Pyramid/ the Story Mountain is the best for planning narratives (stories).

Falling action (turning point, height of action/problem at its worst):

- what events happen to solve the problem?

Exposition (Introduction):

- use an opening hook to grab attention e.g. mysterious atmosphere, in medias res, etc.
- use descriptive vocabulary to set the scene and describe the main character/setting;
- foreshadow what is to come.

Dénouement/Resolution (ending):

- link back to the start (circular);
- what has the character learned?
- how are things different now?
- is there an exciting twist or cliff-hanger ending?

Conclusion: To conclude, repeat RQ, Quite simply, yes!

Yours Sincerely

Intro: My address right hand side, + date, school address left,
Dear Mr Cole
Should we consider discontinuing wearing a school uniform, you've asked? Quite simply, yes! Within this letter, you will find several arguments setting out precisely why we should make this change.

Counter reason: old-fashioned tradition, so easier to continue
Argument reason: other traditions - burnt witches, slept on straw, walked barefoot – now discontinued so …
Supporting example: anecdote, use experts

P1

Form: Letter
Audience: Headmaster
Purpose: Argue change uniform

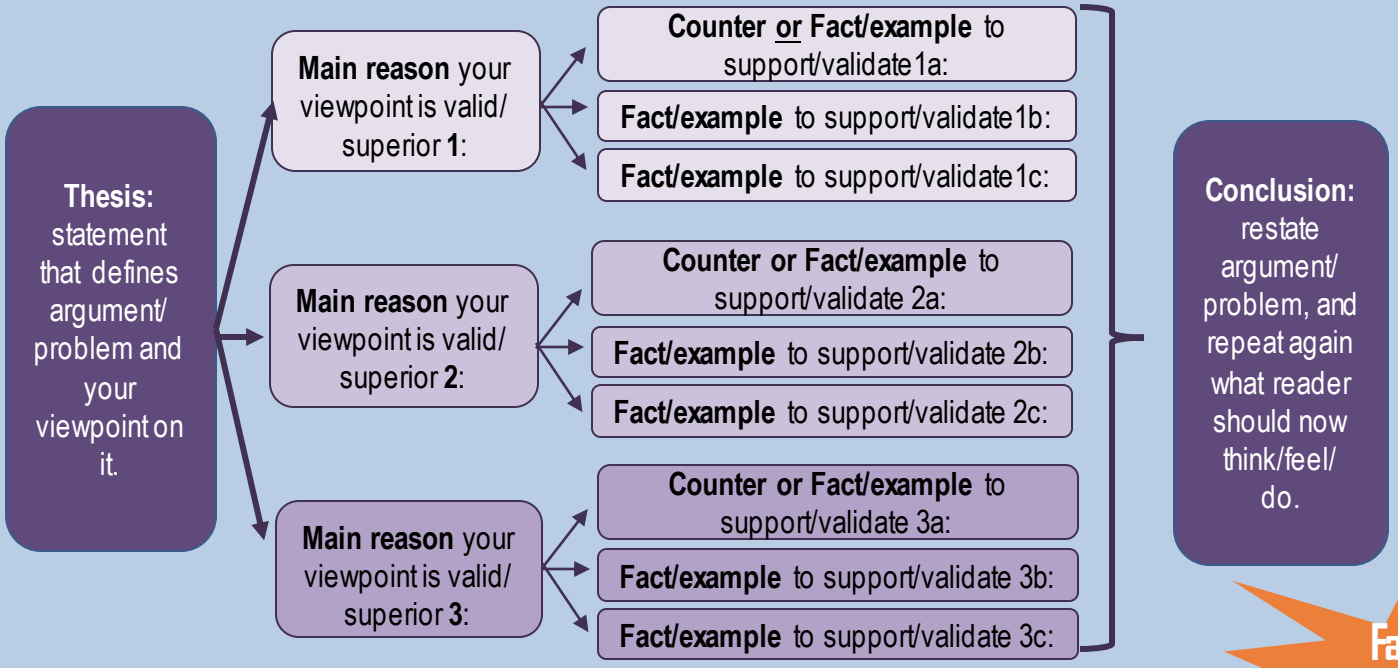
P2

Counter reason: all look same so no prejudice/bullying over clothes,
Argument reason: no individualism, learning who we are
Supporting example: RQ +triple
Isn't part of our learning at school about learning how to dress appropriately, learning who we are, learning how to judge people on what is inside, not what wear?

P3

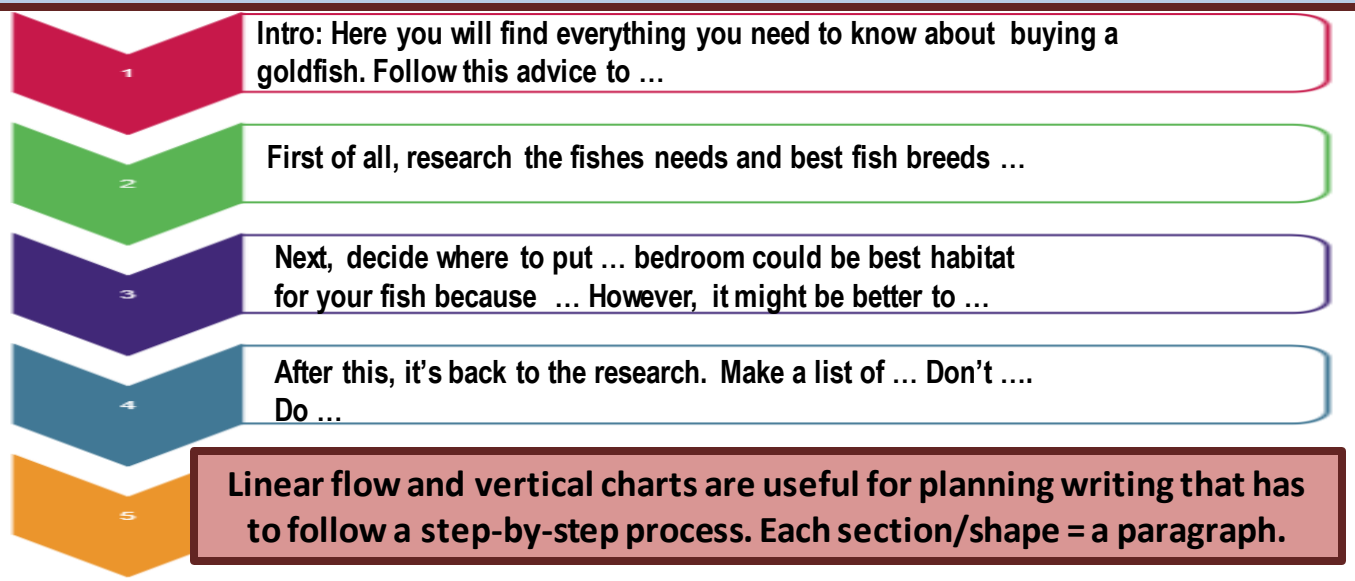
Counter reason: cost cheaper as not designer or from shops making huge profit
Argument reason: cost of blazers, trousers and skirts from school uni shop expensive as no competition, own clothes mix 'n' match so fewer outfits needed, wear weekends so more use,
Supporting example: emotive language: force poorer families to go without, statistics

Mind maps/spider diagrams, allow you to jot down content ideas in no particular order and then decide on the best order to write them up in – so they're ideal for non-fiction writing. Each leg = a paragraph



Plan non-fiction writing (include a counter-argument for writing to argue) using a graphic organiser.

Fail to Plan
Plan to Fail!



Linear flow and vertical charts are useful for planning writing that has to follow a step-by-step process. Each section/shape = a paragraph.

The Grid Plan is good for making sure you include lots of different methods, or to compare two/more things side-by-side. Each row/column = a paragraph.

Paragraph content/ topic	Language method/vocab	Sent structures	Punc
1: waves engulfing and devouring the sea side town - noisy and disruptive, movement	onomatopoeia crash, whip, smash personify so violent/threatening	'ing' start verbs (pres part)	! ;
2: train victim moving across railway line past houses towards destination	personify - victim, alliteration, metaphor: A caterpillar, the train sways and pitches precariously along the track to its daily destination. Snatching bites, the sea salt nips at its metal skin as it passes, eating away at it, killing it. Rattles. Will it survive?	Chain/ tricolon Question	? - -
3: zoom in on one carriage window, motion sick	Windows hit by spray that 'like a tamed ca' has 'turned savage' today. Passenger pitched side-to-side; bubbling sickness rising bile from stomach!	Anadiplosis (yoked)	' ' ; !
4: houses	Like soldiers standing to attention they are defending their inhabitants. Diff pastel colours of a seaside town: prawn pink, salmon peach, oyster grey, seaweed green, cracking paintwork	Fronted spatial adverbials	( ) :
5: canopy of sky above threatening	Adjectives for mood: grey sky, stuffed clouds full of cold, sharp rain, Verb: beating down, attacking,	Two then three word sentences	… ;

Writing Purposes	Key Language/Structural methods	Chocolate Model!
Inform: tell the reader what they want/need to know.	➢ **Use interesting facts details;** ➢ **use brackets to explain technical terms.**	**Interestingly, chocolate** is actually made from the seeds of a cacao tree. After fermentation, the beans are dried, cleaned, and roasted. The shell is then removed to produce cacao nibs **(unadulterated chocolate in rough form).**
Explain: tell the reader how and why.	➢ **Use connectives: 'as a result', 'because', 'so that', when;** ➢ **use sequence discourse markers: Eventually, Another, Furthermore.**	**Often, when** in need of comfort or reassurance, or in stressful situations, people crave chocolate. Primarily, this is **because** dopamine is released into your brain **when** you eat chocolate, and **as a result** it can lower levels of anxiety …
Describe: help the reader to picture it and imagine the experience.	➢ **Use similes, metaphors, personification, interesting adjectives/verbs, sensory description.**	**Enticingly,** the **dome** of **dark** chocolate**, flecked sporadically** with **lime slivers, remained encased** in its **fluted carapace. Around** the outside of it **cleaved** the **diminutive remains** of its **neighbour:** a **praline** long ago eaten**! Velvety smooth,** this **solitary bead** of **ganache glistened, revelling** in its **escape**, yet **mourning** its **rejection.**
Narrate: tell the reader a tale that will have them hanging on your every word.	➢ **Use the mountain/ pyramid structure;** ➢ **use some description;** ➢ **use a few lines of direct speech.**	**Suddenly**, she was aware she had arrived at her destination! On the door in front of her, a **scarlet square of shiny plastic printed** with the words 'Chocolate Laboratory' stood out on **splintering wood**. **Why she was standing on this doorstep, though, and what, or who, had led her here in the first place?**
Persuade: try to get the reader to do as you ask/agree with you.	➢ **Use APE FOR REST: anecdote, personal pronouns, emotive language, fact, opinion, rhetorical questions, repetition, experts, statistics, triples.**	**One of** the **world's greatest comfort** foods, Chocolate, is **the unrivalled 'go-to'** when **life takes a bad turn**, an **easy gift** to **thrill** just about **everyone,** and a **tasty treat** that will **uplift even the most melancholy of moods.**
Argue: present two sides, but ensure your side appears strongest so reader agrees with you.	➢ **Use sequence discourse markers;** ➢ **use 'Some believe ..', 'However, most people would agree that';** ➢ **use APE FOR REST (above).**	**First of all, some believe that as chocolate** is high in calories, it is bad for you. **However, scientific experts have proven** that chocolate, as it contains high levels of antioxidants, could **lower cholesterol levels, improve mood and prevent memory decline**!
Advise: help warn and guide reader, but reassure with carefully considered advice.	➢ **Use imperative verbs (stop, do, don't, wait etc.), and modal verbs (if, could, might, should).** ➢ **use second person (you, your).**	**Most importantly, if you** are feeling bored and craving chocolate, **don't** give in to your yearning. Instead, **you could go** for a walk, **run** errands, **call** a friend or **read** a book. **If you** can take your mind off food for a short time, the craving **may** pass.

Most Often Mis-spelled words

amateur	definite(ly)
basically	environment
beginning	exceed
blasphemy	government
changeable	grateful
collectible	immediate
colloquial	judgement

Term 1 & 2 SPIVoT words

conundrum	erroneous
hypothetical	embarrass
meander	dissatisfied
consequently	especially
adjacent	equipped
disastrous	desperate
donkey	efficient
exception	

WILLIAM GOLDING

William Golding was born on 19th September, 1911, in Cornwall, England. He grew up in Marlborough, Wiltshire. Golding's parents tried to bring him up with a scientific, rational view of the world and wanted him to be a scientist. A frustrated child, he found an outlet in bullying his peers. Later in life, he described his childhood self as a brat, even going so far as to say, "I enjoyed hurting people."

Golding went to Oxford in 1930 to study science but changed to English Literature. After graduating he worked as a writer, actor and producer with a small theatre group and then became a teacher.

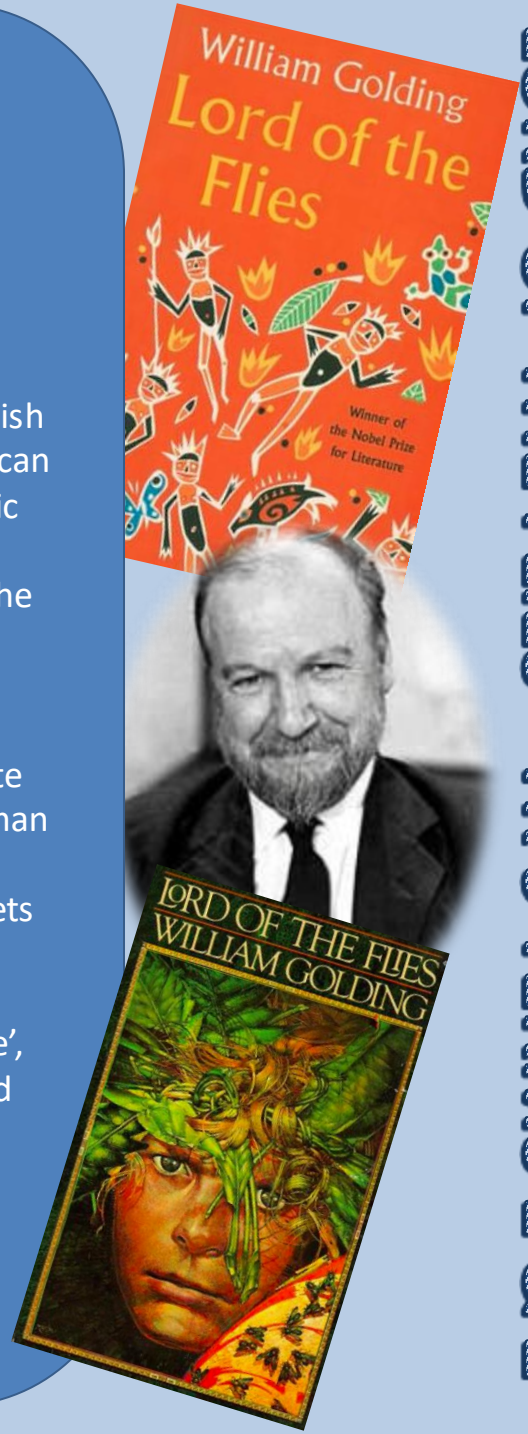
During the Second World War Golding served with the Royal Navy and was profoundly affected by his experiences. After the war he taught English and Philosophy at Bishop Wordsworth's boys' school in Salisbury. His experience teaching unruly young boys served as inspiration for his first novel *Lord of the Flies*. He also wrote LOTF due to his disgust after the war. He was appalled at what human beings can do to one another – he thought people were born with the potential to be evil and war gave people an excuse to release this evil personality trait. War and conflict were the perfect conditions for it.

Years later he said that writing the book was 'like lamenting the lost childhood of the world'. In 1962 he retired from teaching to become a full time writer.

The novel is an examination of what human nature is really like. In 1954, the world had witnessed many shocking events: the systematic destruction of the Jewish race, two world wars revealing atrocities of what man can do to man, the 1945 the mushroom cloud of the atomic bomb. The Cold War where people were terrified of a nuclear war was in full flow…this is, potentially, what the boys were being evacuated from..

Golding also explores the idea of original sin – the religious idea that we are all capable of evil – it is innate in our nature. He also explores how both power and man corrupts everything they come into contact with – for example, the destruction of the island when the fire gets out of control.

He won the Booker Prize in 1980 with 'Rites of Passage', was awarded the Nobel Prize for Literature in 1993 and was knighted in 1988. William Golding died in 1993.

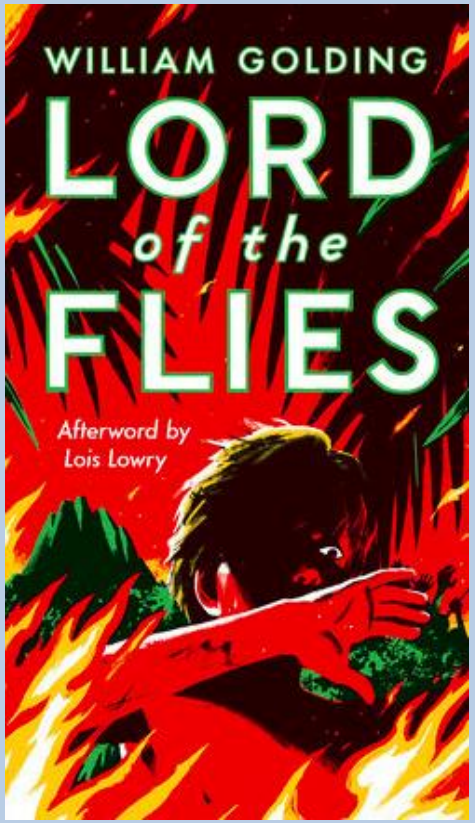


LORD OF THE FLIES - YR 9 TERM 1 & 2

This novel can be split into three distinct parts…	
PART 1	INNOCENT BOYS ON BEAUTIFUL ISLAND – the boys arrive and have an assembly making the early decisions about what to do. There is an emphasis on island as a paradise and there is a hope of rescue. The boys find pleasure in the day to day events. There is a strong sense of law, order and sense – the boys have a strong sense of the forbidden and what is right and wrong.
PART 2	THREAT AND FEAR APPEAR – with the arrival of the dead airman comes a physical threat – the fear becomes real. Destruction occurs and this is caused by the boys' actions. There is the beginning of the idea that they have evil within them (Simon's realization that "what I mean is…maybe it's only us". Evil has been let loose on the island and this is established with Simon on the beach (the airman is no longer needed to symbolize evil at this point and so he disappears).
PART 3	CONSEQUENCES OF CREATING EVIL – moral anarchy is unleashed by murder of one of the boys on the beach – rule and order is destroyed – Piggy's incident, torture, hunting of Ralph and Ralph's will to kill or be killed. The boys lose individual identity and become a mass/mob. At the end of the novel, we are reminded of how far the boys have descended into a lawless culture when the naval officer is embarrassed by what he sees.

SYMBOLS IN THE NOVEL	The Lord of the Flies	The dead airman
Piggy's glasses	The island	The conch
fire	The Beast	

Themes in 'Lord of the Flies'	
Human nature	Violence and death
Civilisation v savagery	Survival
Innocence and loss of it	Power
Fear	Leadership



Did you know…?

Ralph's name comes from the Anglo-Saxon language and means 'counsel' (good advice)

Jack's name is Hebrew in origin and means 'one who supplants' (takes over/replaces)

Roger's name, which is Germanic in origin, means 'spear' (weapon)

Simon's name comes from the Hebrew word meaning 'listener'

Terminology	Definition
allegory	a story, poem, or picture that can be interpreted to reveal a hidden meaning, typically a moral or political one. Remember 'Animal Farm' in Year 7?
microcosm	a community, place, or situation regarded as encapsulating in miniature the characteristics of something much larger. In LOTF, the island is a microcosm of the globe as a whole. Remember the ranch in 'Of Mice and Men' in Year 8?
macrocosm	the whole of a complex structure, especially the world or the universe, contrasted with a small or representative part of it. Contrasted with microcosm.
scar	a mark left where a wound, burn, or sore has not healed completely. The plane crash leaves a SCAR on the island paradise – suggests it is not perfect from the start. This can also suggest that humankind ruins things – it is a manmade object that creates this scar and the boys do not respect their island paradise.
irony	the expression of one's meaning by using language that normally signifies the opposite, typically for humorous or emphatic effect.
foreshadowing	be a warning or indication of (a future event).
metaphor	a figure of speech in which a word or phrase is applied to an object or action to which it is not literally applicable.
symbolism	the use of symbols to represent ideas or qualities. In LOTF, the conch is a symbol of law and order/civilisation.
authority	the power or right to give orders, make decisions, and enforce obedience.
civilised	bring (a place or people) to a stage of social and cultural development considered to be more advanced
savage	Not domesticated or cultivated; wild: a savage animal. Not civilized; barbaric: a savage people

SOME USEFUL WEBSITES TO HELP YOU WITH THE LORD OF THE FLIES:

https://youtu.be/NnnZ6y1HPqI Why you should read LOTF by TED-Ed

Sparknotes.com (search for Lord of the Flies)

www.william-golding.co.uk

www.cliffsnotes.com (search for Lord of the Flies)

IMPORTANT QUOTATIONS	
Within the diamond haze of the beach something dark was fumbling along…Then the creature stepped from the mirage on to clear sand, and they saw that the darkness was not all shadow but mostly clothing.	You got your small fire alright. [..] the boys were falling still and silent, feeling the beginnings of awe at the power set free below them.
Bollocks to the rules […] we'll close in and we'll beat and beat and beat –"	We've got to have rules and obey them. After all , we're not savages.
Roger gathered a handful of stones and began to throw them. Yet there was a space round Henry, perhaps six yards in diameter, into which he dare not throw. Here, invisible yet strong, was the taboo of the old life. Round the squatting child was the protection of parents and school and policemen and the law.	
Fear can't hurt you any more than a dream. There aren't any beasts to be afraid of on this island…serve you right if something did get you, you useless lot of crybabies.	I'm frightened. Of us.
"There isn't anyone to help you. Only me. And I'm the beast…Fancy thinking the Beast was something you could hunt and kill…You knew didn't you? I'm part of you? […] Why things are the way they are?"	
"I just take the conch to say this. I can't see no more and I got to get my glasses back. Awful things has been done on this island. I voted for you for chief. He's the only one who ever got anything done. So now you speak Ralph…"	
The rock struck Piggy a glancing blow from chin to knee: the conch exploded into a thousand white fragments and ceased to exist.	
Ralph wept for the end of innocence, the darkness of man's heart and the fall through the air of a true, wise friend called Piggy.	

CHARACTERS

Ralph: the largest and most physically powerful. Wants to plan and follow rules, but even he is sometimes seduced by savagery. **Symbolises: law, government and civil society**.

Piggy: the smartest boy but has asthma and is fat so he is bullied. Has a tendency to lecture and is ridiculed. **Symbolises: science and rationality.**

Jack: leader of the hunters. Loves to hunt and kill, gets angry when he does not get his own way. Believes a leader should be obeyed. **Symbolises: dominance, power and fear.**

Simon: dreamy, dark haired boy prone to fits. He recognizes that the beast is within themselves. He is unafraid and he meditates. At one with nature. **Symbolises: religion and spirituality.**

Roger: quiet and intense at first then becomes more and more evil. He tortures SamnEric and likes to inflict pain. **Symbolises: brutality**

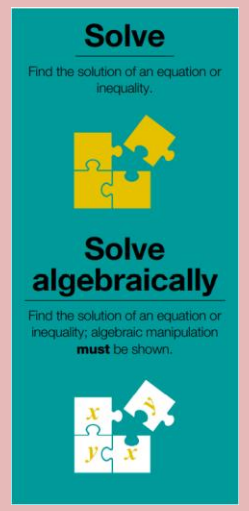
LORD OF THE FLIES – THE PLOT

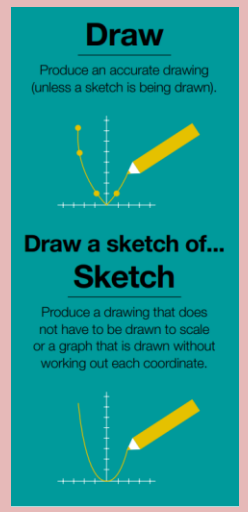
CHAPTER		CHAPTER	
1	Schoolboys have crash landed on a deserted island. The reader meets Ralph and Piggy. Piggy has asthma. They find a conch to summon any other survivors including twins SamnEric, Jack, Roger and Simon.	7	Jack and Ralph continue to clash as they search for the beast. Ralph kills a boar and is flushed with excitement. Robert is almost killed in a re-enactment. Later they head up the mountain and see 'the beast' and they are terrified.
2	The boys focus on short term pleasure and fun. Ralph suggests building a fire to be rescued. Jack wants to hunt. A boy with a birthmark tells of 'the beast'. He goes missing after the fire and the boys are ashamed.	8	Jack declares himself chief of his own group. Simon meditates alone and learns what the beast is. Piggy tries to cheer Ralph up with talk of a new fire. The savages dance around as they kill a sow with Roger being very brutal.
3	Ralph wants to build shelters but only Simon helps whilst the others play and Jack hunts. The fire has been allowed to go out. Simon slips away to meditate.	9	A storm comes and the have no shelter. Simon emerges from the forest and is set upon by the other boys who think he is the beast.
4	Island life gets a rhythm. Mornings are pleasant because it is cool but evening is not because the boys worry about the beast. A boat goes past but there is no fire to attract it. Piggy is laughed at for sundial idea. Jack paints his face and hunts and kills a pig chanting 'Kill the pig. Cut her throat. Spill her blood'. Ralph walks away.	10	Jack's gang have moved to Castle Rock. Ralph, Piggy and SamnEric remain but cannot keep the fire going by themselves. Jack steals Piggy's glasses whilst the others protect the conch.
5	Ralph calls a meeting too get people to follow the rules, but he and Jack are more apart than ever. There is talk of the beast a little'un suggesting it comes from the ocean at night. Jack just wants to hunt and won't listen to the rules of the conch. Ralph wishes for adults or a sign from the adult world.	11	The boys go to Castle Rock to confront Jack…. Jack attempts to kill Ralph with a spear. Ralph runs away. Jack's group torture SamnEric to make them join them.
6	A dead parachutist floats on to the island. No one sees because the fire is out. When they awake, SamnEric light the fire and see him but they think it is the beast. Jack finds a rock and some boulders.	12	SamnEric are tortured into revealing Ralph's hiding place. Jack vows to burn down the forest to find him. The smoke attracts a boat. An officer finds the boys and asks if they are playing at war. All of the boys cry when the officer looks back at his ship.

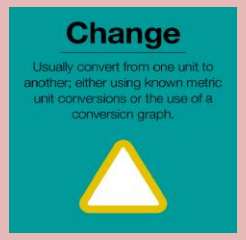
Year 9 Maths

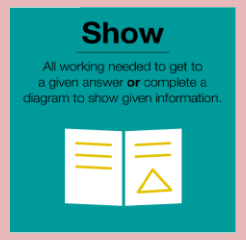
Command Words in Maths questions

These words are the clue to what the examiner expects you to do. Remember to always show your workings. You can get marks for it, even if you get the final answer wrong.

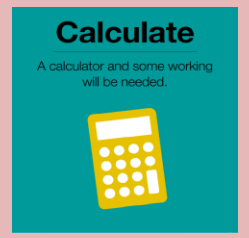


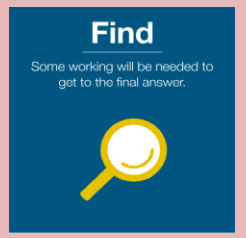


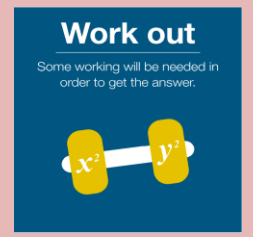


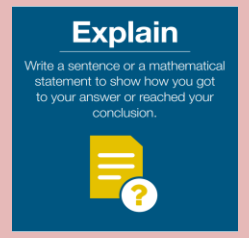


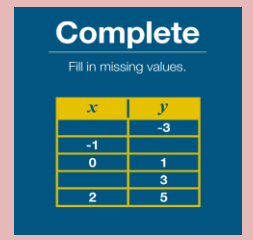
TECHNICAL VOCABULARY	
Factor	A number which divides exactly into another.
Multiple	A multiple is a number made by multiplying two other numbers.
Prime	A prime number has exactly two factors.
Integer	The positive and negative whole numbers.
Estimate	Usually a calculation where the numbers have been rounded before the operation is performed.
Index (indices plural)	An index is a power or exponent.
Square root	Is the number that was multiplied by itself to get the square number.
Square number	Is a number that has been multiplied by itself.
Cube number	Is a number that is multiplied by itself then again by the original number.
Cube root	Is the number that was multiplied by itself and itself again to get the cube number
Numerator	The number on the top of the fraction. Shows how many part there are.
Denominator	The number on the bottom of the fraction. Shows how many equal parts the item is divided into.
Common denominator	When two or more fractions have the same denominator.
Equivalent	Having the same value
Inverse	The opposite mathematical operation.
Reciprocal	The number produced by dividing 1 by a given number
Odd	An integer that cannot be divided exactly by two.
Even	An integer that can be divided exactly by two.

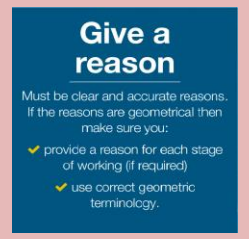


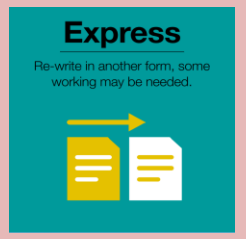












Websites to help you with understanding and revision

SparxMaths.com

CorbettMaths.com

Trafalgar Maths Site

Maths Genie

Maths Bot

Year 9 Maths Term1&2: Statistics and Handling Data

What do I need to be able to do?

- **Understand what is data and what are the different types of data**
- **What are the different ways of collecting and organising data?**
- **Understand what averages are and how to calculate the Mean, Median, Mode and Range**
- **Construct accurate statistical representations including Pictograms, Bar charts, Pie charts and Scatter graphs.**
- **How to interpret data from a table, graph and chart and make reasonable deductions**

Key words

Data

Discrete
Continuous
Primary
Secondary
Qualitative
Quantitative
Numerical
Primary
Secondary
Tally
Frequency
Class Intervals
Averages

Mean
Median
Mode
Range
Ascending
Correlation

What is Data and what are the different types of data?

Data – Information in the form of words, numbers or symbols collected together for reference or analysis.

If the data is **numerical** (in numbers) we call this **quantitative** data, think quantity like amount. Example: How many pets do you have? "4" the answer is quantitative.

If the data is in words we call this **qualitative** data, think quality like the quality of an essay. Example: What's your favourite food? "Curry" the answer is qualitative.

Quantitative data can be split into 2 types;
Discrete data is when the answer is counted. Example: How many computer games do you own? You count how many games you have "10 games" and your answer is specific and therefore discrete.

Continuous data is measured.
Example: What is your foot length?
You can never measure anything exactly, your answer might be different depending on the tool you use and the accuracy with which you measure. You might measure your foot with a ruler to be 18cm but in a shoe shop with more accurate tools might measure it as 186mm, therefore the answer is continuous.

Sparx U322

Collecting Data

Primary data – data you collect yourself. Questionnaires, surveys, observation, experiments, interviews etc.
Secondary data – Using data collected by someone else.
Research, books, internet, newspapers, articles, studies etc.

Sparx M597, M945

Organising Data

Once the data has been collected it needs to be organised so it can be be analysed.
I ask 67 people what their favourite colour is, their responses can be organised in a **tally** chart like this one. Tallys are recorded in groups of 5. Adding the tally gives the **frequency**. Frequency is the total number of times an answer has been selected.

Colour	Tally	Frequency
Red	𝍸 𝍸 |||	13
Blue	𝍸 ||||	9
White	𝍸 𝍸 𝍸 𝍸 ||||	24
Black	𝍸 𝍸 ||	12
Other	𝍸 ||||	9

When there are many options the answers can be grouped into **class intervals**, or groupings. Grouped frequency table:

Number of magazines	Tally	Frequency
0 - 4	𝍸 |||	8
5 - 9	𝍸	5
10 - 14	𝍸 ||	7
15 - 19	|||	3
20 - 24	𝍸 ||||	9
25 - 29	|||	3
30 - 34		0
35 - 39	𝍸	5
40 - 44		0
45 - 49	|||	3
more than 49		0

Analysing Data

Average – A number that best represents a set of data. A calculated "central" value of a set of numbers. There are 4 mathematical averages, the best type of average to use depends on the data set.
Mean – The most common type of 'average' It is easy to calculate: **add up** all the numbers, then **divide by how many** numbers there are.

Sparx M940

Example 1: What is the Mean of these numbers?

6, 11, 7

- Add the numbers: **6 + 11 + 7 = 24**
- Divide by *how many* numbers (there are 3 numbers): **24 / 3 = 8**

The Mean is 8

It is like you are "flattening out" the numbers

Mode – The ***"most common"*** or the appears most often. There can be more than one Mode.

Sparx M841

Example:

3, 7, 5, 13, 20, 23, 39, 23, 40, 23, 14, 12, 56, 23, 29

In order these numbers are:

3, 5, 7, 12, 13, 14, 20, **23, 23, 23, 23**, 29, 39, 40, 56

This makes it easy to see which numbers appear **most often**.

In this case the mode is **23**.

Range – The **difference** between the largest and smallest values in a data set.
Biggest – smallest = Range

Sparx M934

Analysing Data

Median – The ***"middle"*** of a sorted list of numbers.

Step 1 – Put the numbers in **ascending** order (smallest to biggest)

Step 2 – Find the **middle** number. **count how many numbers, add 1 then divide by 2.**

$\frac{n+1}{2}$ n = how many numbers in the data set

Example 1: Calculate the median of 3, 13, 7, 5, 21, 23, 39, 23, 40, 23, 14, 12, 56, 23, 29

Step 1 – Order the numbers
3, 5, 7, 12, 13, 14, 21, 23, 23, 23, 23, 29, 39, 40, 56,

Step 2 – There are 15 numbers

n =15 $\frac{n+1}{2}$ $\frac{15+1}{2}$ = 8th

The middle number is the 8th number:

3, 5, 7, 12, 13, 14, 21, **23**, 23, 23, 23, 29, 39, 40, 56,

The Median is 23

If the data set has an even amount of numbers then the median is mid-point between the 2 middle numbers.

Example: Calculate the median of 5, 7, 3, 9,

Step 1: Order numbers 3, 5, 7, 9,

Step 2: n =4 $\frac{n+1}{2}$ $\frac{4+1}{2}$ = 2.5th

The median is half way between the 2nd and 3rd number. The median is 6.

Sparx M738, M644

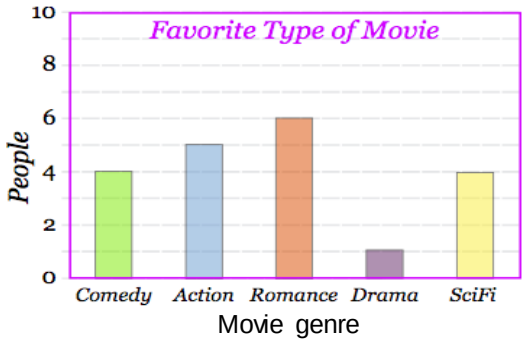
Presenting Data

The data has been collected, it has been sorted and now it can be presented.

Bar Chart:

Table: Favorite Type of Movie

Comedy	Action	Romance	Drama	SciFi
4	5	6	1	4

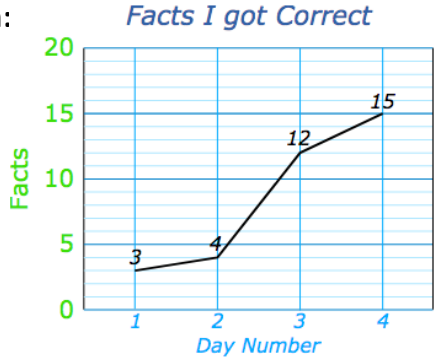


The perfect **Bar chart** must:

- Be drawn with a pencil and ruler
- Have a title
- Have spaces between the bars
- The axes must be labelled
- Have bars of equal width and equal sized spaces between the bars
- Have and even scale – equal sized space between the numbers

Line graph:

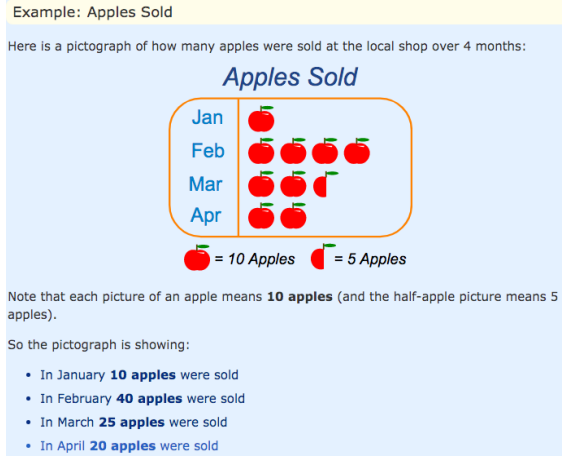
Same as a bar chart but data points connected by straight lines.



Pictogram/pictograph – showing data using images. Each image represents a specific value.

The perfect **Pictogram** must:

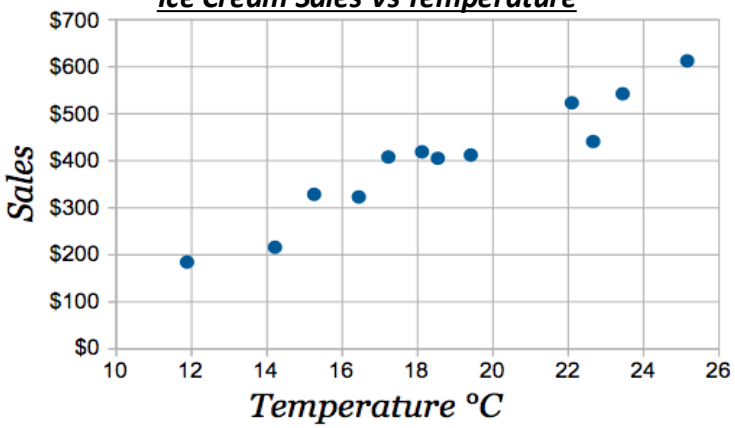
- Have a title
- Have a key showing the value of the image
- Have images of an equal size and shape with equal distance between each image



Scatter Graph – shows the relationship between two quantitative data sets.

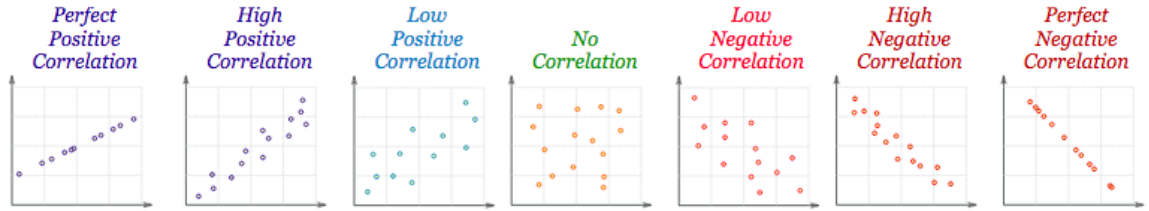
Ice Cream Sales vs Temperature

Temperature °C	Ice Cream Sales
14.2°	$215
16.4°	$325
11.9°	$185
15.2°	$332
18.5°	$406
22.1°	$522
19.4°	$412
25.1°	$614
23.4°	$544
18.1°	$421
22.6°	$445
17.2°	$408



This type of graph allows us to draw a conclusion about the relationship between two things, in this example we can say as the temperature increases, so does the number of ice creams sold. We call this a positive correlation as both values are increasing together.

There are others types of correlation/relationships:



Pie chart

Sparx M574, M165

Represents data in a way that shows the relative size of the category. A good way of displaying data if there are large differences between the categories but not accurate when interpreting the data.

Example: You survey your friends to find out their favourite genre of movie. The results are

Table: Favorite Type of Movie				
Comedy	Action	Romance	Drama	SciFi
4	5	6	1	4

Table: Favorite Type of Movie					
Comedy	Action	Romance	Drama	SciFi	TOTAL
4	5	6	1	4	20

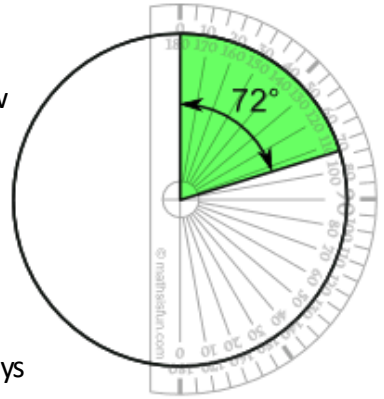
$\frac{360}{20} = 18°$

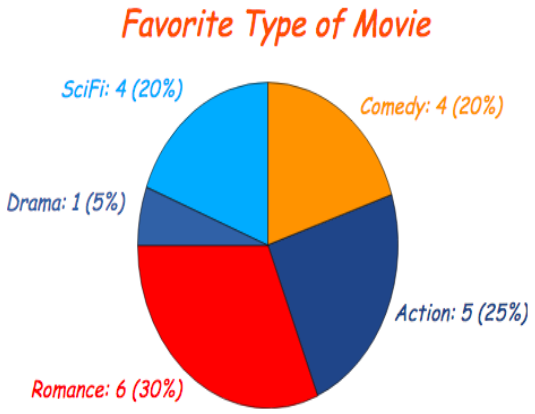
How to draw a pie chart:

1. Calculate the total frequency (add up all of the people in your survey)
2. There are 360º in a full circle, Divide 360 by the total frequency (the number of people in your survey) to calculate how many degrees each person is worth $\frac{360}{20} = 18°$
3. Multiply each frequency by the number of degrees per person to calculate the angle size of the sector (slice of the pie)

Table: Favourite Type of Movie					
Comedy	**Action**	**Romance**	**Drama**	**SciFi**	**Total**
4	**5**	**6**	**1**	**4**	**20**
4 x 18 = **72°**	5 x 18 = **90°**	6 x 18 = **108°**	1 x 18 = **18°**	4 x 18 = **72°**	20 x 18 = **360°**

4. Draw a circle using a compass and pencil
5. Draw a line from the centre of the circle to the edge, this is the base line
6. Line up a protractor with the base line, the centre of the circle positioned with the central cross of the protactor. Follow the base line to the edge of the protractor and counting up from zero, measure the angle of the first sector (slice). Make a mark, remove the protactor and draw a straight line to complete the first slice
7. Line up the protractor on the line you have just drawn and repeat the last step, this time measuring the slice to the angle of the next slice, repeat until complete. Remembering to always line up with the last line drawn.
8. Don't forget to add a title and Key.





Interpreting Data

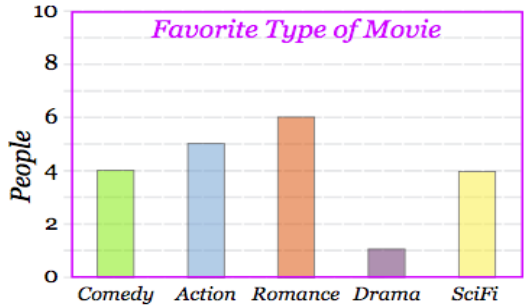
Sparx M738

To interpret data is to analyse data and make deductions and infer relationships.

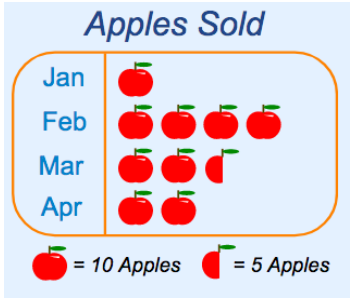
Examples:

Colour	Tally	Frequency
Red	𝍸 𝍸 |||	13
Blue	𝍸 ||||	9
White	𝍸 𝍸 𝍸 𝍸 ||||	24
Black	𝍸 𝍸 ||	12
Other	𝍸 ||||	9

By analysing this tally chart we can deduce that the most popular colour is white.



By analysing this bar chart we can deduce from the survey that the most popular genre of Movie is Romance and the least popular is Drama.



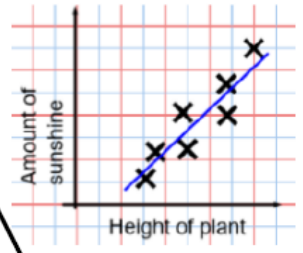
From this pictogram We can deduce that The most number of Apples were sold in February (40) and the least in January (10). The Range is 30.

The way in which the data is presented can show relationships and differences quickly and efficiently. Making analysis and interpretation easy depending on the type of graph/chart used.

Year 9 Maths Term 1&2: More Data Handling

The line of best fit (R)

The Line of best fit is used to make estimates about the information in your scatter graph



It is only an estimate because the line is designed to be an average representation of the data

It is always a straight line.

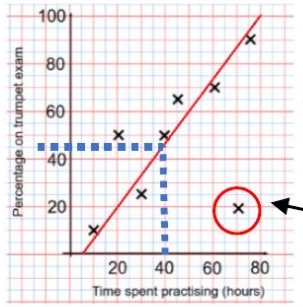
Things to know:

- The line of best fit DOES NOT need to go through the origin (The point the axes cross)
- There should be approximately the same number of points above and below the line (It may not go through any points)
- The line extends across the whole graph

Using a line of best fit (R)

Interpolation is using the line of best fit to estimate values inside our data point.

e.g. 40 hours revising predicts a percentage of 45.



Extrapolation is where we use our line of best fit to predict information outside of our data.
This is not always useful – in this example you cannot score more that 100%. So revising for longer can not be estimated

This point is an "**outlier**"
It is an outlier because it doesn't fit this model and stands apart from the data

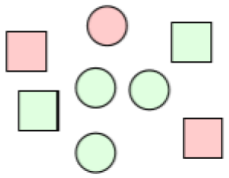
Sparx M596, M769

Comparing distributions

Comparisons should include a statement of average and central tendency, as well as a statement about spread and consistency.
Mean, mode, median – allows for a comparison about more or less average
Range – allows for a comparison about reliability and consistency of data

Representing data in two-way tables

Two-way tables represent discrete information in a visual way that allows you to make conclusions, find probability or find totals of sub groups



There are 2 green squares

There are 5 green shapes

	Squares	Circles	Total
Green	2	3	5
Red	2	1	3
Total	4	4	8

There are 8 items in total

Using your two-way table

To find a fraction
e.g. What fraction of the items are red? 3 red items
but 8 items in total $= \frac{3}{8}$

Interleaving: Use your fraction, decimal percentage equivalence knowledge

Sparx M899

Averages from a table (R)

Non-grouped data

Number of Siblings	0	1	2
Frequency	6	8	6
Subtotal	0	8	12

Overall Frequency: 20

Total number of siblings: 20

The data in a list: 0,0,0,0,0,0,1,1,1,1,1,1,1,1,2,2,2,2,2,2

Mean: total number of siblings / Total frequency $= 1$

Grouped data

x Weight(g)	Frequency	Mid Point	MP x Freq
$40 < x \leq 50$	1	45	45
$50 < x \leq 60$	3	65	195
$60 < x \leq 70$	5	65	325

Overall Frequency: 9

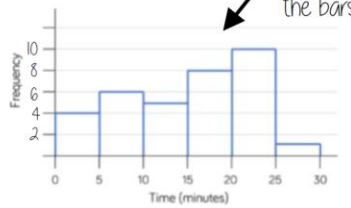
Overall Total : 565

Mean: 62.8g

The data in a list: 45, 55, 55, 55, 65, 65, 65, 65, 65

Grouped quantitative data

Time (minutes)	Frequency
$0 \leq t < 5$	4
$5 \leq t < 10$	6
$10 \leq t < 15$	5
$15 \leq t < 20$	8
$20 \leq t < 25$	10
$25 \leq t < 30$	1



This is a frequency diagram There are no gaps between the bars

"More than or equal to 25 and less than 30 minutes"

The use of inequalities shows that this will be a frequency diagram

Grouping the data is useful if there is a large spread of data to begin with

Sparx U312

Stem and leaf

A way to represent data and use to find averages

This stem and leaf diagram shows the age of people in a line at the supermarket

0	7 9
1	4 5 6 8 8
2	1 3
3	0

Key: 1|4 Means 14 years old

Stem and leaf diagrams:
Must include a key to explain what it represents
The information in the diagram should be ordered

Back to back stem and leaf diagrams

Girls		Boys
5	14	
7, 5, 5, 5, 4	15	3, 8, 9
8, 4, 2, 1, 0	16	2, 5, 7, 7, 7, 8, 8, 9
9, 8, 7, 6, 6, 4, 2, 1, 1, 0, 0	17	0, 2, 3, 6, 6, 7, 7
	18	0, 1, 4, 5

15 | 3, Means 153 cm tall

Back to back stem and leaf diagrams
Allow comparisons of similar groups
Allow representations of two sets of data

Sparx M648, M210

Year 9 Maths Term 2 Calculations Recap

Sparx M704

Place Value System

Millions	Hundreds of thousands	Tens of thousands	Thousands	Hundreds	Tens	Units	Tenths	Hundredths	Thousandths
1000000	100000	10000	1000	100	10	1	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$
M	HTh	TTh	Th	H	T	U			
5	2	9	7	8	2	1	6	0	3

Five million, two hundred and ninety seven thousand, eight hundred and twenty one point six zero three.

Rounding to the nearest..

Sparx M111, M994, M131

- Decide which is the last digit to keep, eg if you are rounding to the nearest ten, focus on the number in the tens column.
- Leave it the same if the next digit is less than 5 (rounding down)
- But increase it by 1 if the next digit is 5 or above (rounding up)

Example

Round 293 to the nearest 10

The 9 is in the tens column, the number after it is 3 which is less than 5 so we leave the 9 the same.

Answer: **290**

Example

Round 1 572 to the nearest 100.

The 5 is in the hundreds column, the number after it is 7, which is more than 5, so we increase 5 by 1.

Answer: **1 600**

Inequalities

$<$	less than
$\leqslant$	less than or equal to
$>$	greater than
$\geqslant$	greater than or equal to
$=$	equal to
$\neq$	not equal to

Examples

a) $342 > 339$

b) $1091 < 1909$

c) $-5 > -9$

d) $-4 < -1$

e) $2 < a \leq 7$

f) $c \neq d$

Keywords:

Place value
Decimal
Inequality
Round
Significant Figure
Estimate – Round to 1 s.f.
Integer = whole number

Examples with Decimals

a) 3.55 > 3.54

b) 0.909 < 0.91

c) 2.135 < 2.3

Although 2.135 has three decimal places, it only has 1 tenth, whereas 2.3 has 3 tenths and is therefore larger.

Rounding to a decimal place (d.p.)

Decimal places are the digits after the decimal point.

3 . 2 6 4

1st Decimal Place | 2nd Decimal Place | 3rd Decimal Place

3.264 to 1 dp = 3.3

The first decimal place is the first number after the decimal point, in this case the 2. After the 2 is a 6, which is bigger than 5 so we round the 2 up to a 3.

3.264 to 2 dp = 3.26

The second decimal place is 6. Because there is a 4 after, which is less than 5, we keep the 6 the same.

Rounding to significant figures (s.f.)

This rounds to the most important figure in a number. To round to 'so many' significant figures, we start at the first non-zero number and count from left to right.

7 639 to 1 sf = 8000

The 1st significant figure is 7, there is a 6 after it so we increase the 7 to an 8 to become 8000.

10 240 to 3 sf = 10 200

The 3rd significant figure is 2, there is a 4 after it, which is less than 5 so we keep the 2 the same.

0.0749 to 2 sf = 0.075

The 2nd significant figure is the 4 as the first zeros do not count. After the 4 is a 9 so we round up.

10 9 8 7 6 5 4 3 2 1 0 -1 -2 -3 -4 -5 -6 -7 -8 -9 -10

Year 9 Maths Term 2 Calculations Efficient Methods

Addition and Subtraction

Mental Methods

Complements

Group numbers that add to a multiple of 10 together to make numbers simpler to add or subtract:

3 + 4 + 26 + 17

20 + 30 = 50

Partitioning

Break down the number you are adding so you can do the calculation in stages:

54 + 68 =

50 + 60 = 110

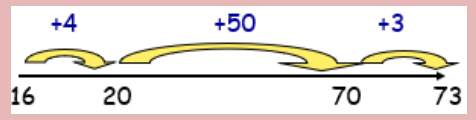
4 + 8 = 12

54 + 68 = 122

Counting on

Find the difference between two numbers by counting on from the smaller

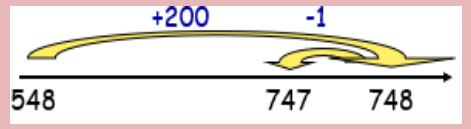
73 - 16 = 57



Compensation

Solve problems by adding or subtracting a near multiple of 10 then adjusting

548 + 199 = 747



Estimation

Sparx M878

When we estimate, we round to one significant figure. It is a good strategy to work out a rough size of a calculation.

Example

Estimate 0.724 + 0.849

Round each of them to 1 s.f.

Answer: **0.7 + 0.8 = 1.5**

Example

Estimate 374 + 297

Round each of them to 1 s.f.

Answer: **400 + 300 = 700**

Negative Numbers

Sparx M527, M106, M288

Same signs together give a positive: 3 + (+2) = 3 + 2 = 5

Same signs together give a positive: 3 – (-2) = 3 + 2 = 5

(+ +, – –) +

Different signs together give a negative: 3 + (-2) = 3 – 2 = 1

Different signs together give a negative: 3 – (+2) = 3 – 2 = 1

(+ –, – +) –

Careful! This changes sign of the middle operation NOT the answer

Column Method – Addition

(Trick: **Estimate** your answer first)

- Remember to line up the numbers in columns by place value.
- Use the decimal points as the marker to line up the columns
- Write numbers to the same number of decimal places, add zeros as needed
- Add columns from right - "carry" tens to next column over

  …. and remember to add onto total for that column

543 + 379 =

5 4 3
+ 3 7 9
9 2 2
1 1

5.4 + 3.79 =

5 . 4 0
+ 3 . 7 9
9 . 1 9
1

Column Method – Subtraction

(Trick: **Estimate** your answer first)

- Remember to line up the columns by place value

  … and to write the number to be taken away on the bottom
  - Use the decimal points as the marker to line up the columns
  - Write decimals with the same number of decimal places
  - Fill in with zeros as needed
- Subtract columns from right
  - If the bottom digit is bigger than the top, "take 10" from the next column over which has a digit > 0
  - Move "taken 10" back one column at a time to account for size!

543 - 379

4 13
5 4 13
- 3 7 9
1 6 4

9.1 - 2.76

8 10
9 . 1 10
- 2 . 7 6
6 . 3 4

5.04 - 3.79

4 9
5 . 0 14
- 3 . 7 9
1 . 2 5

Year 9 Maths Term 2 Calculations Methods

Multiplication and Division

Multiplying by powers of 10

x 10 = move digits 1 place to the left
x 100 = move digits 2 places to the left
x 1000 = move digits 3 places to the left….

Sparx M113

Example

54.2 x 10 = 542

100's	10's	1's	1/10	
	5	4	2	
5	4	2		×10

Dividing by powers of 10

÷ 10 = move digits 1 place to the right
÷ 100 = move digits 2 places to the right
÷ 1000 = move digits 3 places to the right….

Example

235 ÷ 10 = 23.5

100's	10's	1's	1/10	
2	3	5		
	2	3	5	÷10

Keywords:

Remainder	Order of Operations	Division
Power	Indices	Multiplication
Roots	BIDMAS	Addition
Brackets	Subtraction	Integer

Written Methods of Multiplication

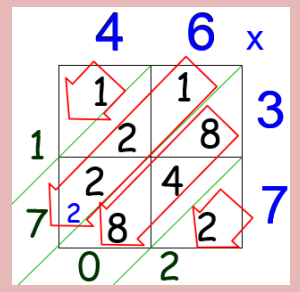
Work out 46 x 37

Sparx M187

Column Method

$$\begin{array}{r} 46 \\ \times\ 37 \\ \hline 322 \\ 1380 \\ \hline 1702 \\ {\scriptstyle 1\ \ 1} \end{array}$$

Lattice Method



Order of Operations

Sparx M521

B	(brackets)	$100 \div (2+3)^2$ $=100 \div 5^2$ $=100 \div 25 = 4$
I	indices ^{2}	
D	÷ division	Multiplication and division are performed whichever comes first from left to right 10 x 3 ÷ 5 = 6
M	multiplication x	
A	+ addition	Addition and subtraction are performed whichever comes first from left to right 20 – 4 + 7 = 23
S	subtraction –	

Multiplication	Division
(+) × (+) ⇒ (+)	(+) ÷ (+) ⇒ (+)
(+) × (−) ⇒ (−)	(+) ÷ (−) ⇒ (−)
(−) × (+) ⇒ (−)	(−) ÷ (+) ⇒ (−)
(−) × (−) ⇒ (+)	(−) ÷ (−) ⇒ (+)

Examples
a) 12 x 7 = 84
b) 7 x – 4 = -28
c) -30 ÷ 5 = -6
d) -4 x -6 = 24
e) -50 ÷ -10 = 5

Written Method of Division

Sparx M354

Division into an integer

2931 ÷ 3 = 977

$$\begin{array}{r} 0\,9\,7\,7 \\ 3\,)\,2^{2}9^{2}3^{2}1 \end{array}$$

Division into an integer with remainder

1985 ÷ 4 = 496.25

$$\begin{array}{r} 0\,4\,9\,6.2\,5 \\ 4\,)\,1^{1}9^{3}8^{2}5.^{1}0^{2}0\ 0 \end{array}$$

Division into a decimal

27.6 ÷ 6 = 4.6

$$\begin{array}{r} 0\ 4.6 \\ 6\,)\,2^{2}7.^{3}6 \end{array}$$

Division into a decimal with "remainder"

57.2 ÷ 8 = 7.15

$$\begin{array}{r} 0\ 7.1\ 5 \\ 8\,)\,5^{5}7.^{1}2^{4}0 \end{array}$$

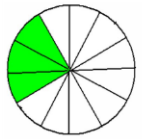
1/10	x 0.1	is the same as	÷ 10
	÷ 0.1	is the same as	x 10
1/100	x 0.01	is the same as	÷ 100
	÷ 0.01	is the same as	x 100
1/1000	x 0.001	is the same as	÷ 1000
	÷ 0.001	is the same as	x 1000

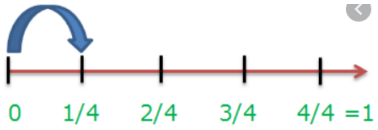
Get comfortable with your calculator now!! Look after it and familiarise yourself with all the shortcuts

Year 9 Maths Term 2 Fractions, Decimals and Percentages

Different ways fractions can be represented (all of these are "one quarter")

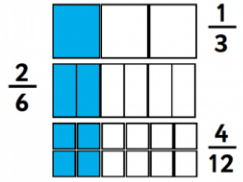
0.25 $\frac{1}{4}$ $\frac{3}{12}$



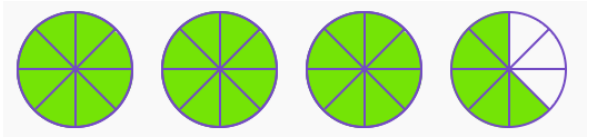


25%

These fractions are the same (equivalent). 1/3 is in the simplest form.

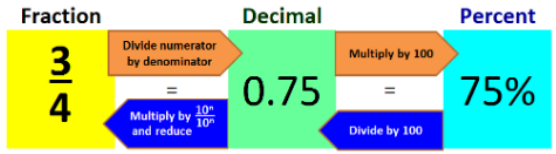


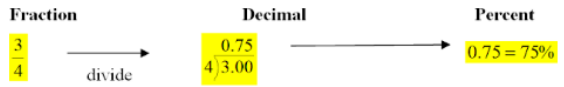
Each circle is split into 8, so there are $\frac{29}{8}$ *shaded (improper fraction). This can be written* $3\frac{5}{8}$ *(mixed number).*



Sparx M158, M410, M601, M671

Convert between fractions, decimals and percentages





0.5	50%	$\frac{1}{2}$
0.25	25%	$\frac{1}{4}$
0.1	10%	$\frac{1}{10}$
0.01	1%	$\frac{1}{100}$
0.2	20%	$\frac{1}{5}$
0.75	75%	$\frac{3}{4}$

Higher ONLY: convert recurring decimal to a fraction

Convert $0.3474747\ldots$ *to fraction*

Let $x = 0.3474747\ldots$

So $10x = 3.474747\ldots$

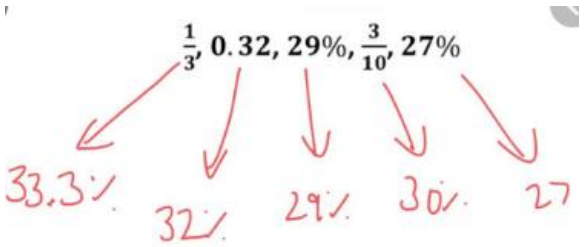
and $1000x = 347.474747\ldots$

by subtracting $990x = 344$

So $x = \frac{344}{990}$

$x = \frac{172}{495}$ *in simplest form*

Order fractions, decimals and percentages. Key fact: convert everything to the same representation (percentage is probably the easiest).



Sparx M264, M437, M905

To multiply:

1. *multiply numerators*
2. *multiply denominators*
3. *simplify*

To divide:

multiply by the **reciprocal of the second fraction** *(keep, flip, change)*

Work out

$\frac{3}{4} \times \frac{2}{7}$

$\frac{3 \times 2}{4 \times 7} = \frac{6}{28} = \frac{3}{14}$

Work out

$\frac{3}{4} \div \frac{2}{7}$

$\frac{3}{4} \times \frac{7}{2} = \frac{21}{8} = 2\frac{5}{8}$

Mixed numbers: change to improper fractions first.

Sparx M157, M197, M110, M265

To add and subtract:

1. *find equivalent fractions with same denominator*
2. *add/subtract numerators*
3. *Simplify*

Work out

$\frac{3}{4} + \frac{2}{7}$

$= \frac{21}{28} + \frac{8}{28}$

$= \frac{29}{28}$

$= 1\frac{1}{28}$

Work out

$\frac{3}{4} - \frac{2}{7}$

$= \frac{21}{28} - \frac{8}{28}$

$= \frac{13}{28}$

Mixed numbers: change to improper fractions first.

Sparx M835, M931,

Fraction of an amount

Find $\frac{2}{5}$ of 40

First we find $\frac{1}{5}$ of $40 = 8$ (by dividing by 5)

Then we find $\frac{2}{5}$ of $40 = 8 \times 2 = 16$ (by multiplying by 2)

This is logical! find one fifth (by dividing by 5), then double to find two fifths!

Remember: divide by the denominator, multiply by the numerator.

A percentage is simply a fraction with a denominator of 100.

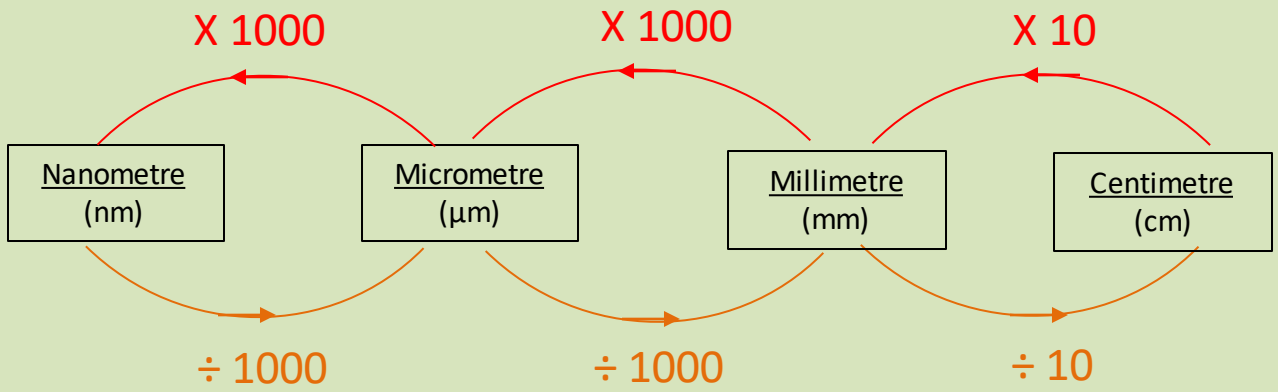
Sparx M695, M684

Science: Useful Information

Key Word / Term	Definition
Accuracy	Results are close to the true value
Precision	Results are similar to each other but not necessarily close to the true value
Repeatable	Similar results are obtained if the investigation is done again by the same person
Reproducible	Similar results are obtained if it is repeated by a different person
Resolution	Is the smallest change a measuring instrument can detect
Validity	A measure of how correct the results of an experiment are

Prefix	Number	Standard Form	e.g. metres
Giga	1,000,000,000	$1x10^{9}$	Gm
Mega	1,000,000	$1x10^{6}$	Mm
kilo	1,000	$1x10^{3}$	km
----------	1	1	m
milli	0.001	$1x10^{-3}$	mm
micro	0.000001	$1x10^{-6}$	µm
nano	0.000000001	$1x10^{-9}$	nm

Converting units of measure:



Variables:

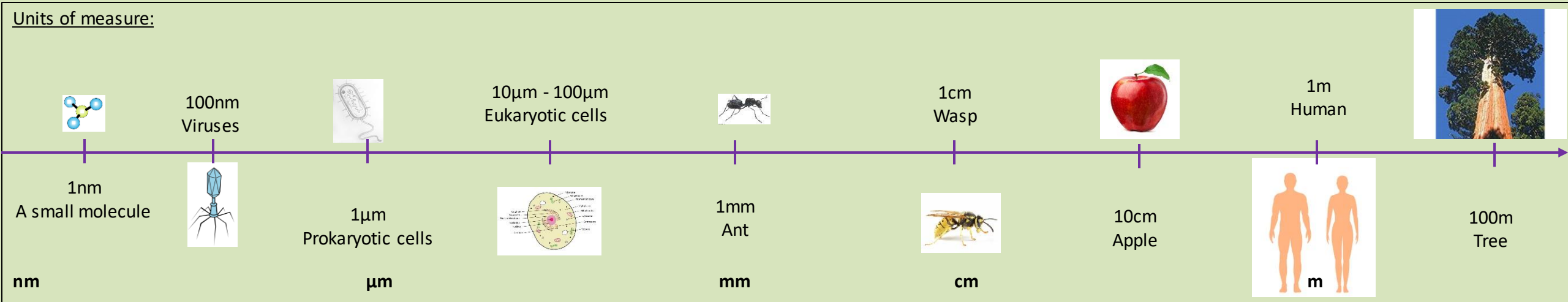
Independent: the variable that is being changed during the experiment

Dependent: the variable being tested or measured during the experiment

The independent variable affects the dependent variable, the others must be controlled

Control: Keep the same (there can be more than one control variable) so that they do not affect the independent variable

Units of measure:



KEY: RELATIVE ATOMIC MASS | Atomic Symbol (name) | ATOMIC (PROTON) NUMBER

The Periodic Table of Elements

1	2										3	4	5	6	7	0
							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 flourine 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 sulphur 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
[223] Fr francium 87	[226] Ra radium 88	[227] Ac* actinium 89	[267] Rf rutherfordium 104	[270] Db dubnium 105	[269] Sg seaborgium 106	[270] Bh bohrium 107	[270] Hs hassium 108	[278] Mt meitnerium 109	[281] Ds darmstadtium 110	[281] Rg roentgenium 111	[285] Cn copernicium 112	[286] Nh nihonium 113	[289] Fl flerovium 114	[289] Mc moscovium 115	[293] Lv livermorium 116	[293] Ts tenessine 117	[294] Og oganesson 118

*the Lanthanides (atomic numbers 58-71) and the Actinides (atomic numbers 90-103) have been ommited. Relative antomic masses for Cu and Cl have not been rounded to the nearest whole number.

KS4 Biology: B16 Adaptations, interdependence and competition

Key term	Definition
Ecosystem	The interaction of a **community** of living organisms with the non-living (**abiotic**) parts of their environment.
Biotic factors	Living components of an **ecosystem**. e.g availability of food, new predators/pathogens/competitors.
Abiotic factors	Non-living factors that affect living organisms e.g. light intensity, temperature, moisture levels, soil pH, wind intensity and direction, CO_2 for plants, O_2 for aquatic animals.
Community	Organisms that interact with each other in an **ecosystem**.
Interdependence	The network of relationships between different organisms within a **community** eg each species depends on other species for food, shelter, pollination etc.
Adaptations	Features that enable organisms to survive in the conditions in which they normally live.
Quadrat	A sample area used for measuring the **abundance** and **distribution** of organisms in the field.
Abundance	A measure for how common or rare a particular type of organism is in a given environment.
Distribution	Where particular types of organisms are found within an environment.
Transect	A measured line or area along which ecological measurements are made.
Extremophiles	Organisms that live in environments that are very extreme e.g. high temperature, pressure or salt concentration e.g. bacteria living in dead sea vents are extremophiles.

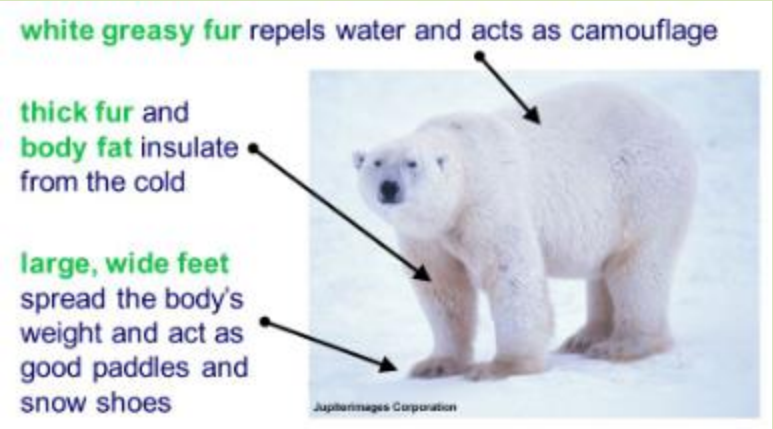
Adaptations

Functional adaptation: Any adaptation that helps an organism survive e.g. plants with spikes or horns on animals.

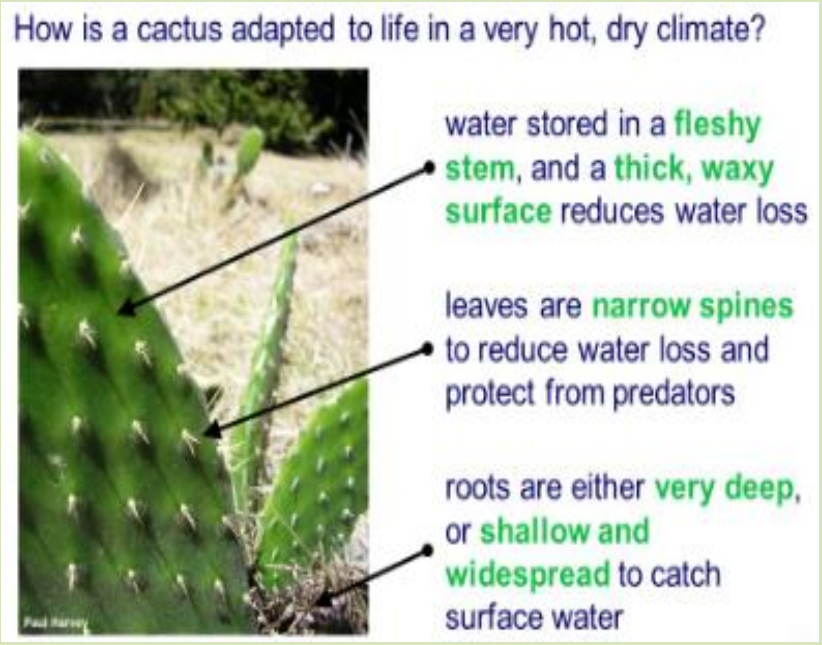
There are no case study adaptation organisms that you have to learn, you have to be able to apply your knowledge to the examples they ask you about.

Structural adaptation: Physical adaptations e.g. beak shape to crack nuts, fur colour for camouflage.
Behavioural adaptation: things that organisms do in order to survive e.g bird song to find a mate, hibernation to avoid the lack of food in winter.

You must link the **adaptation** to the **purpose of that adaptation**



Small surface area to volume ratio to conserve heat



Required practical: Measure the population size of a common species in a habitat

Random sampling using quadrats

Sampling of the area you are studying must be random. It must show no **bias** – for instance, choosing to sample where there are lots of plants.

1. When you have chosen a sampling area, first divide it up into a grid for example using tape measures on each side.
2. Use a suitable method – you could draw numbers out of a hat – to generate a pair of random coordinates on your grid.
3. Place the first quadrat on your grid using these coordinates.
4. Count the number of different species within this quadrat (the species richness).
5. Repeat steps 1-4 so that you have a total of **at least** 10 counts.

You can use this method to study:

1.Number of an individual species - the total number of individuals of one species (eg daisies) is recorded.

2.Species richness - the number of different plant or animal species is recorded but not the number of individuals within a species.

3.Percentage cover - the percentage of the quadrat area that is covered by one species (eg grass). Remember our quadrats are divided into 25 sections – each small square is worth 4%.

- Animals compete for mates, shelter, water, food. This may be with different species or within the same species.

- Plants compete for space, water, light.

Required practical: Use sampling techniques to investigate the effect of a factor on the distribution of species.

1. Lay a tape measure along the transect (between two points).
2. At regular intervals use a quadrat to sample the organisms **and measure any abiotic factors eg use a light meter.**
3. Repeat steps 1 and 2 along a different transect between the two points.

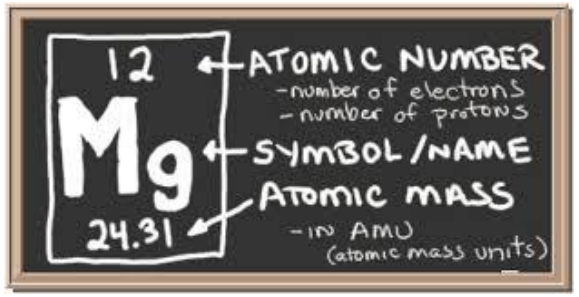
KS4 Chemistry:
C1 Atomic structure

Chemical symbols

All substances are made from tiny particles called **atoms**. An atom is the smallest part of an **element** that can exist.

Atoms of each element are represented by their own chemical symbol.

A chemical symbol:
consists of one or two letters
always starts with a capital letter,
with any other letter in lower case



Chemical formulae

Elements

A **chemical formula** is used to represent an element or compound in balanced chemical equations.

The formula for most elements is just its chemical symbol. E.g. helium, He

Some non-metal elements exist as molecules that are made up of two atoms joined together. The formulae of these elements are the element's symbol followed by a **subscripted** '2'. For example: iodine, I_2

Compounds

The formula shows:
the symbols for each element in the compound
the number of atoms of each element in a unit of the compound
E.g. sodium chloride, NaCl

It is not easy to split up a compound into its elements - the only way to do this is in chemical reactions.

Keyword	Definition
Atom	The smallest part of an element that can exist. All substances are made of atoms. No overall electrical charge. Very small, radius of 0.1nm.
Element	An element contains only one type of atom. Found on the Periodic Table. There are about 100 elements.
Compound	Two or more elements chemically bonded with each other. Can only be separated into the elements through chemical reactions.
Mixture	Contains two or more elements or compounds not chemically bonded. Can be separated using physical methods e.g. by filtration, crystallisation, distillation and chromatography.
Filtration	A process that separates mixtures of insoluble solids and liquids.
Crystallisation	A process that separates dissolved solids from liquids by evaporating the liquid to leave crystals.
Distillation	A process that separates a mixture of liquids based on their boiling points.
Chromatography	A process that separates mixtures by how quickly they move through a stationary phase (e.g. paper)
Isotope	An atom of the same element with different numbers of neutrons.
Relative atomic mass	An average value of mass that takes account of the abundance of the isotopes of the element.

Chemical equations

A word equation represents a chemical reaction using the names of the substances involved **Reactants** are substances that react together in a chemical reaction. In a chemical reaction, the atoms or ions in reactants separate from one another. They join back together in a different way to form **products**.

Word equations always take this form:
reactants → products
Sodium + chlorine → sodium chloride

Symbol equations use the formulae of the reactants and products. It shows the number of units of each substance involved.

$2Na + Cl_2 \rightarrow 2NaCl$

The law of conservation of mass states that no atoms are lost or made during a chemical reaction, so the total mass of the products is equal to the total mass of the reactants.

State symbols

Balanced equations often include state symbols, shown in brackets after each formula

An aqueous solution forms when a substance dissolves in water

State symbols are useful because they show what a substance is like.

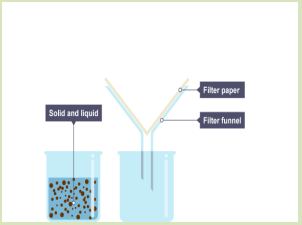
State symbol	meaning
(s)	solid
(l)	liquid
(g)	gas
(aq)	Aqueous solution

For example:
$H_2O(l)$ is liquid water but $H_2O(g)$ is steam and $H_2O(s)$ is ice

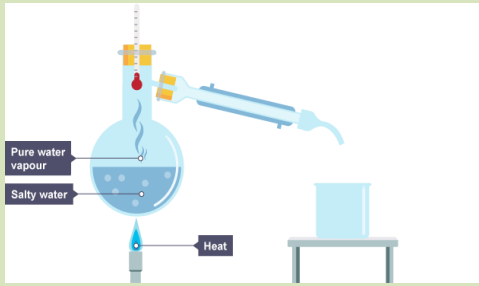
Mixtures

Mixtures can be separated by physical processes. These processes do not involve chemical reactions, and no new substances are made.

Filtration is used to separate an **insoluble** solid from a liquid. It is useful for separating sand from a mixture of sand and water, or excess reactant from a reaction mixture



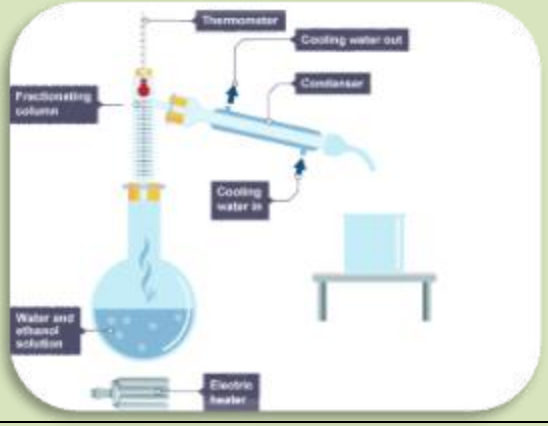
Simple distillation
is used to separate a solvent from a solution. The dissolved solvent has a higher boiling point than the solvent



Crystallisation is used to produce solid crystals from a solution. When the solution is warmed, some of the solvent evaporates leaving crystals behind

Fractional distillation is used to separate different liquids from a mixture of liquids.

It works because different liquids have different boiling points and will evaporate at different Temperatures



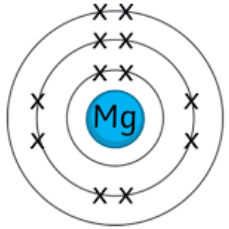
Paper **chromatography** is used to separate mixtures of soluble substances. These are often coloured substances such as food colourings, inks, dyes or plant pigments

stationary phase, which in paper chromatography is very uniform, absorbent paper

mobile phase is the solvent that moves through the paper, carrying different substances with it

An atom has a central **nucleus**. This is surrounded by **electrons** arranged in shells.

The nucleus is tiny compared to the atom as a whole

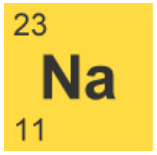


Calculating numbers of subatomic particles

The symbol for an atom can be written to show its mass number at the top, and its atomic number at the bottom.

To calculate the numbers of subatomic particles in an atom, use its atomic number and mass number:

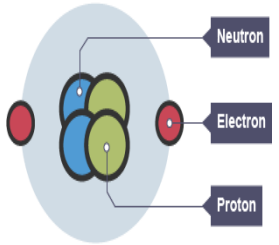
- number of protons = atomic number
- number of electrons = atomic number
- number of neutrons = mass number - atomic number



Isotopes

Atoms of the same element must have the same number of protons, but they can have different numbers of neutrons.

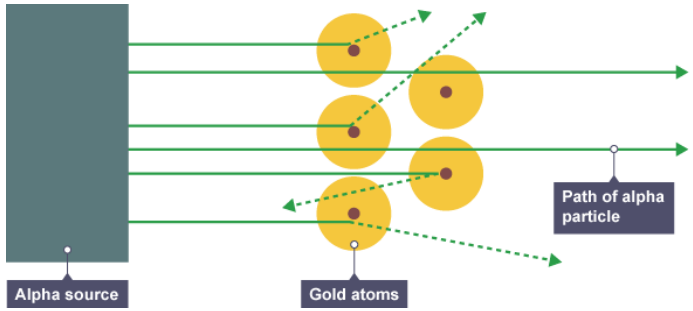
Development of Atomic Model

Plum Pudding 	The plum pudding model shows that the atom is a **ball of positive charge** with **negative electrons embedded** in it. Was **incorrect**.
Nuclear Model 	**Rutherford's** scattering experiment found a central area of positive charge. The nuclear model has a **positive nucleus** and **electrons in shells**. **Chadwick** later discovered **neutrons**. **Bohr** discovered the arrangement of **electrons in shells**.

Properties of Sub-Atomic Particles

Sub-atomic particle	Mass	Charge	Position in Atom
Proton	1	+1	Nucleus
Neutron	1	0	Nucleus
Electron	Very small	-1	Orbiting in shells

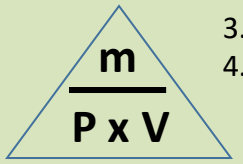
In 1909 Ernest Rutherford designed an experiment to test the plum pudding model. In the experiment, positively charged **alpha particles** were fired at thin gold foil. Most alpha particles went straight through the foil. But a few were scattered in different directions.



KS4 Physics:
P6 Molecules and matter

Density

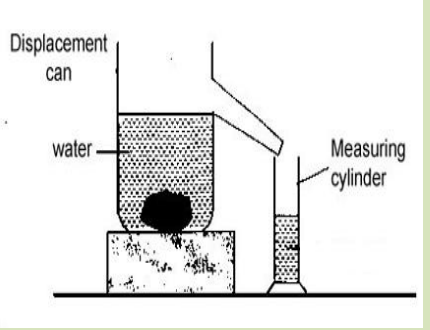
$$\text{Density (kg/m}^3\text{)} = \frac{\text{mass (kg)}}{\text{Volume (m}^3\text{)}}$$



Density: an objects mass per unit volume (how heavy an object is for its size)

To calculate the density of an irregular shape

1. Place the object into a displacement can
2. Record the volume of water displaced by the object with a measuring cylinder
3. Measure its mass on a balance
4. Calculate density using the equation



To calculate the density of a regular shape

1. Calculate its volume (e.g. measure each side and then do volume = **b**x**h**x**w**
2. Measure its mass on a balance
3. Calculate density using the equation

Converting units

This is tricky in this section

1m = 100cm

$1m^3$ = 100cm x 100cm x 100cm (1000000cm)

So 1cm = 0.01m, but $1cm^3 = 0.000001m^3$

States of matter and changes of state

Latent heat – the amount of energy transferred to a substance when it changes state

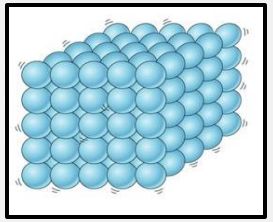
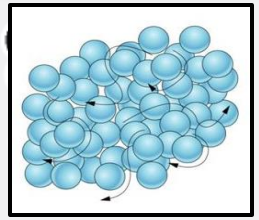
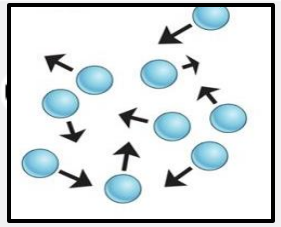
Specific latent heat – the amount of energy transferred to 1kg of a substance when it changes state

$$E = m \times L$$

- Energy E in Joules (J)
- Mass m in kilograms (kg)
- Specific latent heat L in joules per kilogram (J/kg)

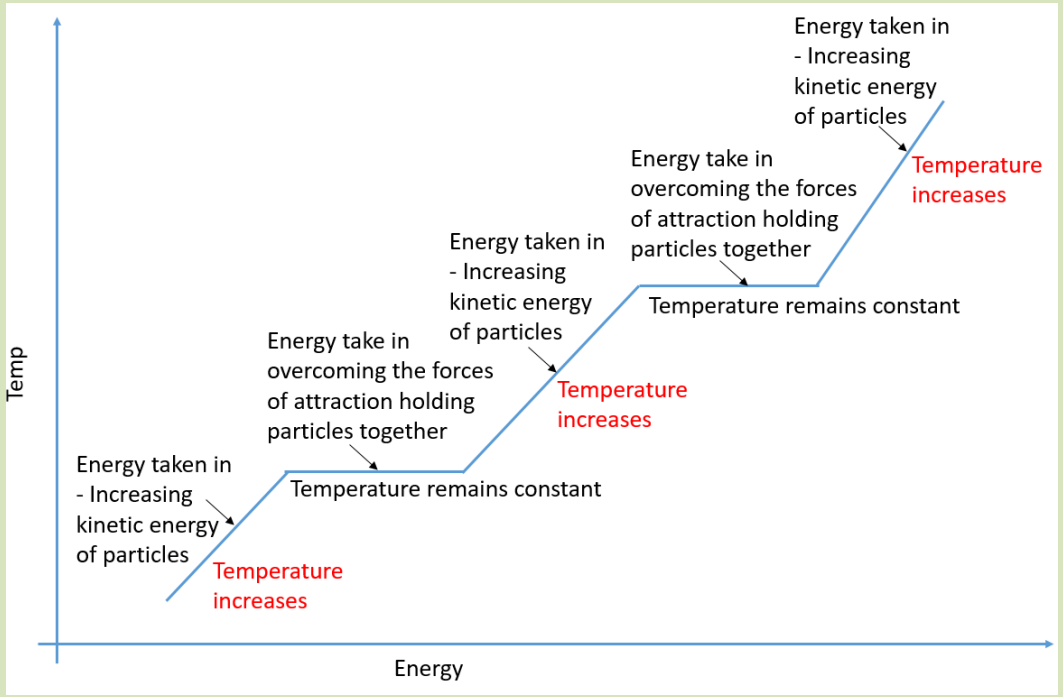
Specific latent heat of fusion, L_F – energy transferred during melting

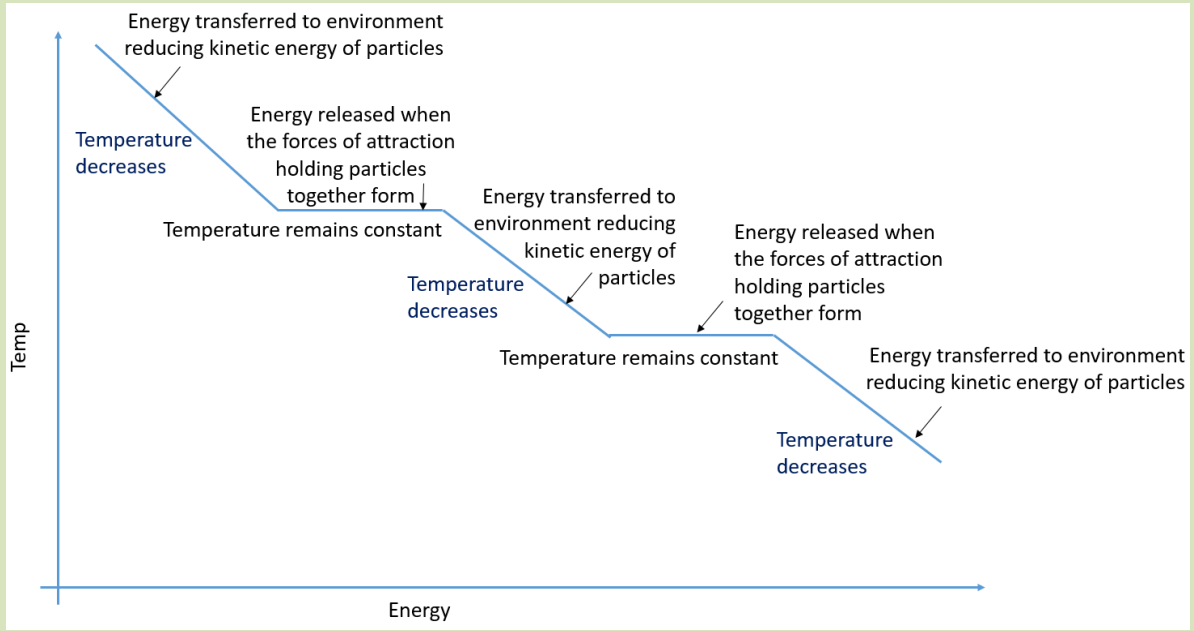
Specific latent heat of vaporisation, L_V – energy transferred during boiling

	Solid	Liquid	Gas
Arrangement of particles	Close together Regular pattern	Close together Random arrangement	Far apart Random arrangement
Movement of particles	Vibrate on the spot	Move around each other	Move quickly in all directions
Diagram			

Internal energy - the sum of a particles kinetic energy and potential energy

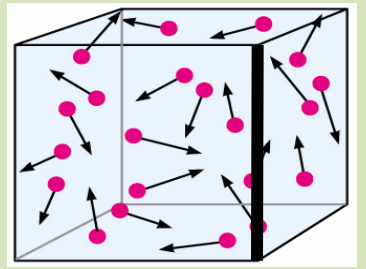
Energy changes during changes of state





Gas pressure

Pressure is caused by the gas particles colliding with the container and exerting a force



Gas pressure can be increased by:

- **Increasing the temperature** – this makes the particles move faster and causes more collisions per second and collisions with a greater force
- **Decreasing the volume** – this results in a higher frequency of collisions
- **Increasing the number of particles** in the system – this again results in more collisions occurring

Boyles Law

At a constant temperature

Pressure (Pa) x volume (m^3) = constant

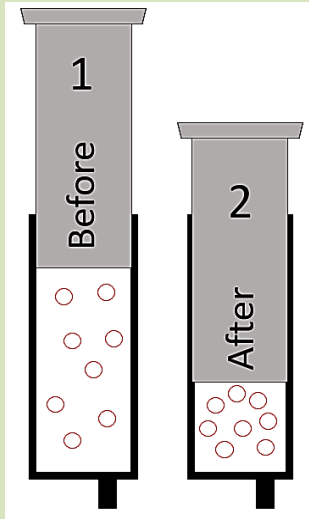
p x v = constant

If you double the volume the pressure will half

If a system is changed

Pressure x volume before must equal the pressure x volume after

$$P_1 \times V_1 = P_2 \times V_2$$



1. COMPUTER CRIME & CYBER-SECURITY

Smartphones 1.1

- Former City of London Police Commander Chris Greany, the national police lead for cyber protection, said:

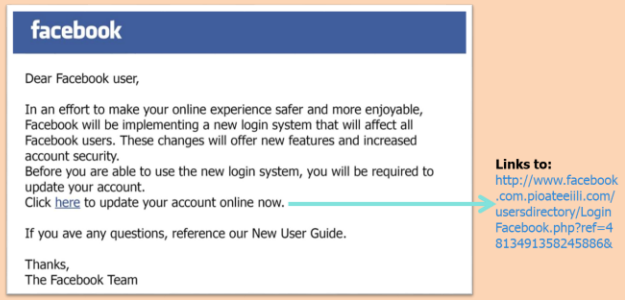
  "People who carry a mobile phone are actually carrying a mobile computer.

  It's not a phone with a computer attached. It's a computer with a phone attached and it is as risky using this as it is using the desktop at home."

Email scams 1.4

- There are many types of email scam, here are four common types:
  1. Phishing
  2. Trojan Horse / Malware
  3. Fraudulent requests for money or advance fees
  4. Virus-generated email

A typical phishing email 1.7



Tackling crime 1.2

- Many types of crime be carried out with the aid of a computer
- The victims can be governments, companies and organisations and you as individuals

Phishing – what's this? 1.5

- A phishing email is one that tricks you into handing over sensitive or personal information (login details, bank details, etc.)
  - You receive what looks like a legitimate email, for example from a bank or an organisation such as PayPal or eBay
  - The website urges you to visit a bogus website and enter your personal details, which are then captured by the Phishers

What to look out for 1.8

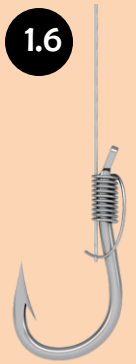
- **Greeting.** The phishers don't know your name – just your email address, so the greeting is not personalised
- **The sender's address** is often a variation on a genuine address
- **Forged link.** The link looks genuine, but it may not link to the website given. Roll your mouse over it to check
- **Request for personal information.** Genuine organisations never do this
- **Sense of urgency.** Criminals try to persuade you that something bad will happen if you don't act fast
- **Poor spelling and grammar**

Cybercrime 1.3

- Cybercrime is crime committed using a computer or a network. Which of these three statements do you think is true?
  - *"It makes more money for criminals than illegal drug trafficking"*
  - *"Someone's identity is stolen every 10 minutes as a result of cybercrime"*
  - *"An unprotected PC can become infected within four minutes of connecting to the Internet"*

Does it work? 1.6

- Phishers send out hundreds of thousands of emails that look as though they are from legitimate companies
- For phishing to be successful, the criminals must get you to click on a link in the email to go to a website
- A successful phishing campaign has around a 5% response rate – meaning 5% of recipients are conned!



Trojan Horse and malware 1.9

- Offers something tempting to look at, either an attachment or link – for example a funny video
- When you open the attachment or click the link, it installs a virus on your computer
- The virus might
  - Record your keystrokes and send them to the attacker
  - Provide someone else with access to your files
  - Use your computer to send spam to everyone in your address book

Example Trojan Horse email 1.10

Subject: You just received an E-Greeting!

Hello ,

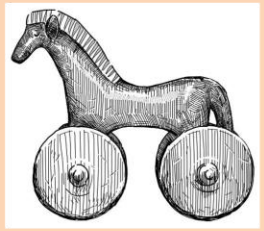
A Greeting Card is waiting for you at our virtual post office! You can pick up your postcard at the following web address:

http://www.allyours.net/u/view.php?id=a0190344376667

visit E-Greetings at http://www.all-yours.net/ and enter your pickup code, which is: a0190344376667

(Your postcard will be available for 60 days.)

Fake link! Link is disguised using HTML, so doesn't actually go to the web address as it appears in the email.



Advanced fee fraud 1.11

- Usually a long and desperate plea for help
- The sender will claim to need cash from you, in return they will send you millions of pounds
  - If it sounds too good to be true, it usually is!

Virus generated email 1.12

- Will appear to be sent from a friend
- Usually means your friend's email has been infected with a virus and has sent the email to their whole address book
  - Typically includes a product or shop recommendation, or asks for emergency cash
  - Encourages you to click a link to a sales website or transfer cash

Example virus generated email 1.13

From: James Miller

Subject: Amazing cheap electronics!

Hi,

Just had to share this – I just bought a super cheap mobile phone from this website – take a look!

http://www.amazingcheapdeals11611.com/k

From a friend's genuine email address

Link may download a virus, or lead you to a bogus website selling fake or non-existent products

Asks you to visit a website

Protecting yourself against email scams 1.14

- Use a SPAM filter to prevent common scams ever reaching your inbox
- Be suspicious! If you aren't completely certain it's genuine, NEVER click any links or download attachments.

What does the law say? 1.15

- It's illegal to look at or modify someone else's files without permission
  - Computer Misuse Act 1990

Hacking 1.16

Definition: **Hacking is illegally accessing or modifying computer files without permission**

Why do hackers do it? 1.17

Think of some examples for each of the reasons below:

- Some do it for pure mischief, or for a challenge
- To steal money
- To steal or modify information
- For political reasons, to expose wrongdoing, or to get revenge on people with opposing views

How do hackers do it? 1.18

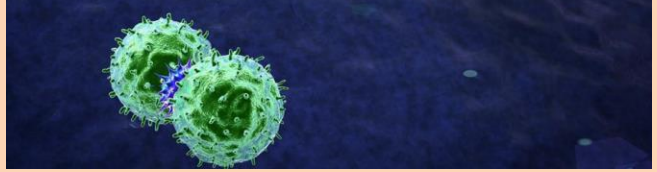
- Taking advantage of security weaknesses in older computer software such as Windows XP, which no longer receives automatic anti-virus updates from Microsoft
- Taking advantage of obvious / common usernames and passwords
- Tricking people into downloading **malware** onto their computer, which in turn gives the hacker access to view and modify your files

What is malware? 1.19

- **Malware** stands for "malicious software"
- It is a small program which enters a computer or network through a downloaded file or vulnerability in a network
- Malware might:
  - gather personal or sensitive data from your computer
  - modify or delete files on your computer

What is a computer virus? 1.22

- A virus is a type of malware
- A computer virus replicates and installs itself without your consent
- A virus can be spread to another computer through email or file sharing



Hackers steal passwords! 1.25

- In 2016 hackers stole the login details of 272 million passwords from Gmail, Hotmail and Yahoo
  - 17% of people used the password "123456"

Logic bombs 1.20

- A logic bomb tells the computer to execute a set of instructions at a certain date and time or under certain specified conditions
  - Used by, for example, blackmailers or disgruntled employees seeking revenge

Common types of malware 1.23

- Browser
  - Hijacks some browser functions, for example your default search page, or diverts you to particular websites. Also called **Spyware**
- File infector
  - The virus infects a particular file. It may completely or partially overwrite the file
- Macro virus
  - Embedded in the template files (for example, of Word or Excel). The virus spreads if the file is opened on a different computer

Password protection 1.26

- The most commonly used password is "password1"
- Suggest some guidelines for choosing a good password
  - Why should you not use the same password for everything?
  - Why should you change your passwords occasionally?

Ransomware 1.21

- Ransomware is software illegally installed on a computer so that the user cannot access their files until a ransom is paid
- In 2017 the NHS and tens of thousands of other organisations around the world suffered a ransomware attack called "**Wannacry**"
  - It was halted by an "accidental hero", a 22-year-old IT security blogger from Devon, who inadvertently activated a "kill switch"

How do you avoid malware? 1.24

- Avoid clicking on everything, e.g. offers that seem too good to be true (on both websites and email)
- Don't visit illegal sites, such as those that let you download copyright material
- Make sure your browser is configured to always ask before running files and downloading automatically
- Keep your browser software up-to-date
- Install up-to-date antivirus and anti-spyware software

What information does Google hold about you? 1.27

- If, for example, you use Google Chrome or have a Gmail address, Google typically holds:
  - your name, birthday, all your contact names and addresses, your calendar, what mobile devices you use, all your emails, the web addresses you have typed, the sites you have searched or bookmarked and the images you have looked at …
  - You can check what data Google holds about you on Google Dashboard

Identity theft 1.30

- If criminals can access your personal data, they can use it to steal your identity
  - They could apply for a job, a bank account or a loan, pretending to be you!

Protect your identity, don't be the weak point! 1.33

- Turn location sharing OFF when posting photos on social media
- Don't include personal data such as date of birth, address, phone number in your profile
  - No password clues: comments or photos of your favourite movie, or pet dog

Can anyone legally hold data about you? 1.28

- No – there are rules and regulations about collecting and holding personal data
  - If a company, school, club or other organisation wants to hold personal data about you, it has to **register** with the **Information Commissioner's Office** (ICO.org.uk)

Data harvesting tools 1.31

- Using legal and freely available data harvesting tools, information can be gathered about individuals
- A name, a social media profile and an email address can easily be collected
  - When you upload a photo to some sites, the GPS coordinates of your location may be included as a GeoTag by default
  - Combine that with a message "Here's me at home having a birthday supper" and what data can be collected?

Who can see my stuff? 1.34

- Social media sites provide tools to help protect your identity
  - Use them
- Be aware of your privacy settings
  - Don't add people to your network of "friends" unless you actually know and trust them
  - Restrict viewing of your newsfeed, never make it public
- Beware of 'shoulder surfing' – protect your passwords and PINs from 'casual viewers' and hidden cameras

General Data Protection Regulations (GDPR) 1.29

- Formerly the Data Protection Act, this EU ruling specifies the rules about collecting and holding data
- These include:
  - The data must be accurate and up to date
  - You have a right to see what data is held about you
  - The data must be protected from unauthorised access

Copyright law 1.32

- Copyright law protects the owner of a creative work from having it illegally copied
- When you see the symbol and text, e.g.

What is a creative work? 1.35

How long does copyright last? 1.36

- In the UK, copyright lasts for the author's lifetime plus up to 70 years after the author dies
  - However, if you record a performance of, say, a symphony by Mozart (who died in 1791), the performance itself is copyright

Online copyright infringement 1.37

- Types of infringement may include:
  - You receive an email with a copy of a copyrighted song, and you forward this to all your friends
  - You pay a fee to join a file-sharing network that is not authorised to distribute copyrighted material. Then you download unauthorised copies of music or films you want
  - You add a music track from a CD or MP3 to a home video and publish it on YouTube

When is it OK to download music or a movie? 1.38

- Streaming sites such as Spotify and Amazon Prime allow their members to download music and video content for personal use
  - Users pay a subscription
  - Download will expire after set length of time
- Buy the CD and get the MP3 version for free

What's the harm? 1.39

- Music theft or "piracy" is stealing from all those in the music industry – the songwriters, recording artists, audio engineers, computer technicians, producers, publishers and others
  - It is estimated that the illegal downloading of films, TV programmes and music could mean the loss of 30,000 British jobs
- Many artists have signed up with sites such as iTunes and Spotify to help deter piracy of their material

How do people get caught? 1.40

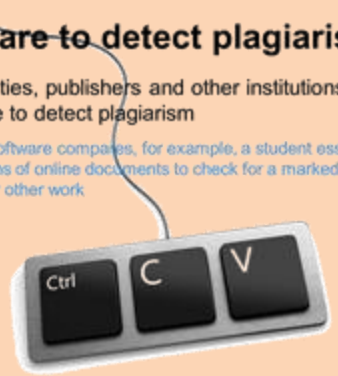
- Every online computer has an "IP address"
  - This is like a computer fingerprint
- Internet service providers (BT, Virgin, Sky) will send out advisory letters to those who download copyright material

Plagiarism 1.41

- Plagiarism means copying someone else's work and presenting it as your own
  - This could be ideas, words, images, music etc.
  - It has a lot in common with copyright infringement but is not the same thing
  - In general terms, plagiarism is an ethical offence and copyright infringement is a legal one

Software to detect plagiarism 1.42

- Universities, publishers and other institutions use software to detect plagiarism
  - The software compares, for example, a student essay with millions of online documents to check for a marked similarity to any other work



Computers and your health 1.42

- Headaches and eye strain from staring at a screen for too long
  - What advice would you give to someone who works long hours at a computer to avoid eye strain?

Computers and your health 1.43

- Back problems can arise from poor posture and sitting in one position for hours at a time

Computers and your health

1.44

- Repetitive Strain Injury (RSI) is caused by repeating the same actions over and over again
- Home and school habits and environments can become an RSI risk for children
  - There are cases of children as young as 7 with serious RSI conditions
  - Teenagers with RSI need support in class and exams

Health and safety regulations

1.45

- The law states that an employer must:
  - provide tiltable screens
  - provide anti-glare screen filters
  - provide adjustable chairs
  - provide foot supports
  - make sure lighting is suitable
  - make sure workstations are not cramped
  - plan work at a computer so that there are frequent breaks
  - pay for appropriate eye and eyesight tests by an optician

A well-designed workstation

1.46

A: 45cm between eyes & screen
B: adjustable screen at or slightly below eye level
C: chair supports lower back and shoulder blades
D: elbow angle between 90–120 degrees, keyboard within easy reach
E: wrist support for mouse hand to prevent wrist strain
F: chair is height adjustable
G: feet should touch the floor – add foot rest if too high

A well-designed environment

1.47

- Proper lighting
  - Not too bright or too dim
- Reduce glare on the screen
  - Make sure lights aren't reflecting directly off your screen
- Take regular breaks
  - Stand, stretch, or just look into the distance every 15 minutes or so

Other health effects of using computers

1.48

- Electronic Screen Syndrome
- TATT (Tired All the Time) Syndrome
- Blue Light Syndrome
- Text claw

What happens to old computers?

1.49

Hazardous waste

1.50

- Hazardous materials in electronic devices can leach into the earth and get into water supplies
- Incinerating them causes pollution in the atmosphere
  - There are laws governing safe disposal of electronics and 'e-waste'

Recycling options

1.51

- **Return to the Manufacturer** – Some companies offer a part exchange scheme to exchange old products for part payment towards newer products
- **Professional Waste Disposal** – Companies will collect and dispose of your items properly
- **Donate to charity** – A number of non-profit organisations collect items either for re-use or for recycling
- **Give to family or friends** – Help the environment too

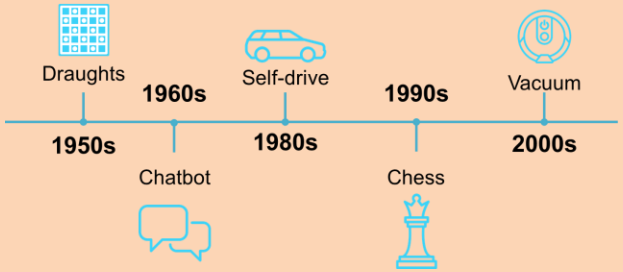
What about data on old hard disks?

1.52

- Using a data recovery program, someone can recover files from your hard disk, even if you have deleted them or reformatted your hard drive
  - What have you got on your computer that you would not want to be recovered by someone else?

AI Milestones

2.1



Examples of AI in use

2.2

- Facial and fingerprint recognition
  - AI is used to detect a face or fingerprint and give access to a phone or mobile device
- Language processing
  - Speech recognition is used by digital assistants, in online banking security and by chatbots
- Gaming – computer players
  - Describe a computer AI player in a game that you have played

Artificial intelligence

2.3

- Every year, computers become:
  - Faster
  - Smaller
  - Able to store more data
  - Better connected
- What do you think artificial intelligence means?

Do you think there will come a point when computers can **outperform** human brains, not just at calculating, but at **everything**?

Artificial intelligence

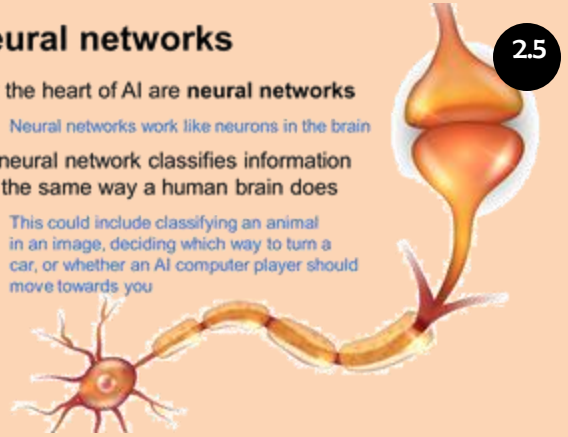
2.4

- What is artificial intelligence?
  - An artificial creation of human-like intelligence that can 'think' like humans with abilities such as learning or problem solving
- Will AI ever outperform human brains?
  - Even the top scientists don't yet know the answer to this
  - Some really difficult problems exist, such as whether a computer experience emotions such as embarrassment or kindness

Neural networks

2.5

- At the heart of AI are **neural networks**
  - Neural networks work like neurons in the brain
- A neural network classifies information in the same way a human brain does
  - This could include classifying an animal in an image, deciding which way to turn a car, or whether an AI computer player should move towards you



Food AI

2.6

- Picking an apple seems easy to us, but it is still difficult for AI
  - What rules could help a robot in deciding whether something is an apple?
  - What rules decide if the apple is ripe?

Self driving cars

2.7

- Self driving cars contain very complicated sensors and AI
- Imagine that you were creating a new children's toy that could self drive around a road indoors
  - A small embedded computer may be added to carry out AI
  - A camera could then see the road, and a push button could detect if an obstacle was hit

Rules for turning

2.8

- Some suggested AI rules could be:
  - If road ahead go forward
  - If no road forward and road left then go left
  - If road to left and right, pick one direction randomly
  - If road is left, right and forwards, go forwards
  - If push button pressed, then stop and turn around

Self driving decisions

2.9

- Some possible decisions the AI needs to make:

Decision	How often does this decision need to be made
Correct speed to drive at	Every second
Minor adjustments to stay in the correct position on the road	0.1 seconds
Turn left / right	0.5 seconds
Avoid an animal or pedestrian	0.1 seconds
Avoid car in front	0.1 seconds

Facts and rules

2.10

- A fact for classifying a person might be that:
  - People have a mouth
- A rule that helps to classify a person could be:
  - People might wear sunglasses
- What are **five** more facts and rules to classify a person

Facts and rules

2.11

- Examples of facts and rules to identify people

Facts	Rules
People have two eyes	Some people wear hats
People have a mouth	Mouths may be open
People have teeth	Teeth may not be shown
People have a nose	People normally have hair
Noses are the same colour as people's faces	Hair may also be on some people's faces

- Do your facts and rules identify this dog as a person?

Machine learning

2.12

- Artificial Intelligence is the artificial creation of human-like intelligence that can learn or think
- Machine learning (ML) is a part of AI
  - In machine learning, the machine will work out the rules for itself
  - It will be given a large amount of training data to work out these rules

Training Data → Machine Learning → Rules

Machine learning - Birds

2.12

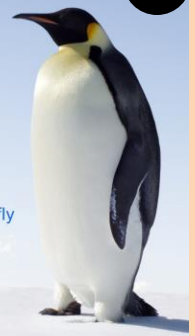
- A machine learning algorithm uses training data so that it can create rules for itself
  - What rules might the algorithm make to identify birds from the following training data?

Training Data

Machine learning - Birds

2.13

- Possible rules from the training data:
  - One eye
  - Two wings that are both open
  - Small head with a beak
- Problems with the rules:
  - Birds from the front have two eyes
  - Birds may have their wings shut, or cannot fly
- Machine learning therefore requires lots of data if it is to learn well



Structured data

2.14

- In structured data, the data has been organised
  - For example, a company's financial data may be organised by month; a weather station's data may be organised by hour
- Unstructured data has not been organised
  - For example, emails, newspaper articles, messages, social media posts are unstructured
- Machine learning is very powerful at finding patterns and information in unstructured data as it learns its own rules

ML and images

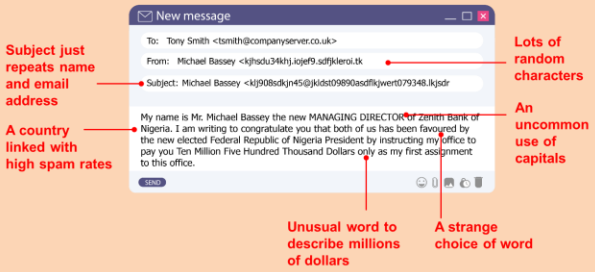
2.15

- Machine learning is used to classify images
- Applications include:
  - Screening medical scans and x-ray images
  - Quality control on production lines
  - Detecting hazards for self-drive cars
  - Face recognition
  - Fingerprint ID
  - Robot fruit pickers
  - Identifying spam email

Email and spam

2.16

- What rules do you think that spam filters have learnt that help them to identify this email as spam?



Strengths and weaknesses

2.17

- Strengths and weaknesses of machine learning

Strengths	Weaknesses
It can find patterns we did not know were there	It is only as good as the training data given to it
It can solve simple questions and leave skilled humans to deal with special or harder cases	It only gives a probability, not a certain answer
The machine improves with experience	Results may need careful interpretation
It can handle unstructured data	Errors can be hard to detect

Autonomous vehicles

2.18

- AI is used in self driving cars
  - These cars will often come up against ethical dilemmas
  - They may have to choose between an accident with a cyclist or an accident with many pedestrians
  - Moral or ethical rules will need to be programmed into the machines

Ethics of AI

2.19

- Ethical questions can be very difficult to answer
- It is important to consider the possible negative effects of new technologies by asking questions such as:
  - How reliable is the technology? Will there be cases of mistaken identity?
  - How secure is the system? Could evidence be tampered with?
  - Is it fair to be fined by a machine?
  - What happens if the AI is programmed to follow rules that aren't in the interests of the majority of people?

AI and jobs

2.20

- Robots have already replaced many jobs in:
  - Car manufacturing
  - Electronics production
- AI is used in ways that can replace jobs
  - For instance, online shopping can use AI to determine the best way to advertise and sell products
  - This leads to job losses on the high street
- What other jobs could be replaced by AI?

AI and jobs

2.21

- Up to 40% of jobs could be replaced by automation and AI by 2035
- Many jobs could be lost including:
  - Telemarketing
  - Taxi drivers and transportation
  - Receptionists
  - Proof reading
  - Retail sales

Wealth differences

2.22

- If a job is lost to AI or automation, then a company may get richer, whilst other companies or people may become poorer
- However, technology revolutions, such as electricity and IT have often created many new jobs

Wealth differences

2.23

- Wealth differences in a population can lead to:
  - Poor health in those less well off
  - Stress and anxiety for those who cannot afford their basic costs of living such as food and housing
  - Resentment towards those who have lots of wealth
  - An unfair society
- These problems can be reduced by:
  - Having a strong support system in society whilst the transition to a new technology takes place
  - Support and training for new jobs that are created

Bias in AI

2.24

- When using AI, it is important to consider bias
  - If the training data is bias, the AI may exclude certain minority groups or views
- Imagine that we are training an image search engine to understand what a shoe is
  - If the training data mostly has flat soled shoes, it may decide that high heels are not actually shoes
  - What problems could bias create in other areas?

Bias in AI

2.25

- Bias could occur in any area of AI
- Some areas that may be affected could be:
  - People tend to prefer sweeter fruit and vegetables, so AI could only pick or produce the very sweetest. This would affect people who don't like these
  - AI could use training data for job applications that makes it biased – for instance, if the training data was all from people with European names, it may reject someone who has a non-European name even though they could be very good at the job

Facial recognition problems

2.27

- Facial recognition can work by calculating the distances between points on a face
  - However, this has a problem if the face is not looking directly at the camera
  - If the head rotates, the distances of all the points will change too
  - What else could cause a problem for facial recognition?

Objects and disguises

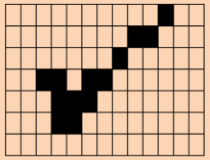
2.28

- Faces can be hidden by:
  - Objects in front of the face, such as a lamp
  - A hand or arm
  - Another person, animal or vehicle
  - A mask
- People can also make themselves look different with:
  - Makeup
  - A fake moustache or beard
  - A wig or haircut

Identifying a symbol

2.31

- What rules could be created that would determine whether the image is storing a tick?
  - There should be white all around the tick
  - A long line from bottom left to top right
  - Thicker at bottom left
  - Smaller line from bottom left to mid left
- By applying the rules, AI can give a probability that we have a tick

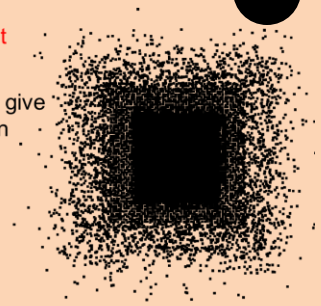


Fuzzy logic

2.34

- We cannot be certain what the image shows
- Instead, an AI system can give a probability of each option

Option	Probability
Square	90%
Rectangle	80%
Postage stamp	20%
Ants eating burnt toast	10%
Time warp	2%



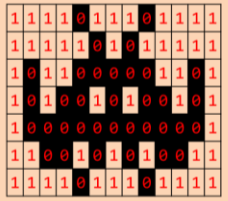
How are images built?

2.29

- Before analysing an image we need to consider how a computer represents an image
  - The image is divided up into squares called **pixels**
  - Each pixel is given a number in binary
- For the image shown, 1 represents white and 0 represents black
  - What binary data would represent the image?

```
1111011101111
1111101011111
1011000001101
1010010100101
1000000000001
1100101010011
1111011101111
```

  - How could you represent more colours than just black and white?

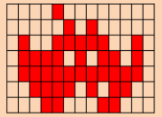


Detecting a monster

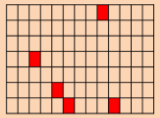
2.32

- Would the monster on the left match the pattern on the right?
  - We can compare each pixel of the monster photo with the monster pattern – half or more green matches a black pixel
  - The grid has 91 pixels and 5 are not matches
  - The match is therefore (91-5)/91 = 95%

Monster photo



Compare with pattern



Errors

Measuring intelligence

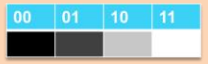
2.35

- We can compare hardware: processor speeds, size of memory or storage
- We can measure ability to perform tasks, e.g. playing chess, recognising faces, predicting weather
- BUT what about general behaviour such as:
  - Learning to peel an orange
  - Comforting an unhappy friend
  - Reviewing a film?
- Humans are often very good at this whilst machines find these problems very hard to solve

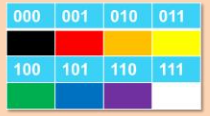
Colour resolution

2.30

- 2 bits (binary digits) allow you to store four different colours
  - This could be variations of grey or different colours
  - The number of options is calculated by: $2 * 2 = 2^2 = 4$



- 3 bits allow 8 colours
  - $2 * 2 * 2 = 2^3 = 8$ colours

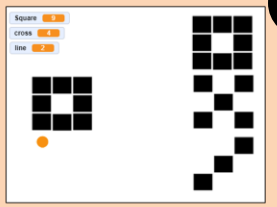


- 10 bits allow
  - $2^{10} = 1024$ colours

Detecting a shape in Scratch

2.33

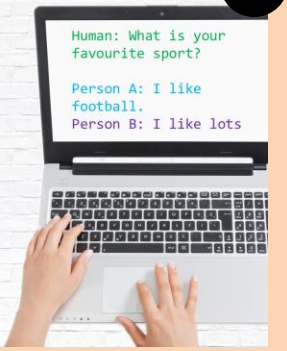
- How can we compare the square shape on the left with the three shapes on the right?
- A comparison can be made of each square/pixel with the example
- The shape that is the closest match will be the shape that we have found
- What are the variables *Square*, *cross* and *line* showing? These variables are showing how many pixels match the shape we are looking for



The Turing Test

2.36

- This test was created by Alan Turing in 1950
- A human sits in one room and asks questions through a computer
  - The questions go to a computer and a human
  - If the human cannot tell the difference between talking to a computer and a human, the computer passed the test



Computer or human?

2.37

- Which person is the human and which is the computer?
  - Person A is the human
- Why do you think this?
  - Person B has misinterpreted the question
  - The computer has seen the words primary and goal and thought the human was talking about scoring a goal in primary school

Thinking and doing

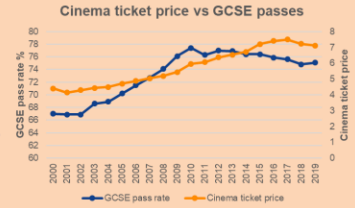
2.38

- We have seen before that AI and machine learning work as follows
  1. Start with some training data
  2. Learn patterns from them
  3. Classify new data with a best guess, based on step two
- However, this method can lead to problems

Problems with patterns

2.39

- AI and machine learning are very good at finding patterns
  - AI would easily be able to find the pattern that GCSE passes in the UK have gone up with cinema ticket prices
  - AI is not good at understanding why things happen though
  - Why do you think ticket prices and GCSE passes have increased?



Ticket price vs exam results

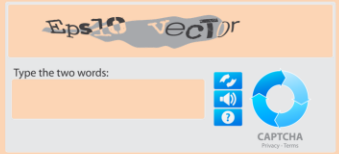
2.40

- Exam results are affected by:
  - How good schools are
  - How much students study
  - The difficulty of the exams
- Cinema ticket prices are affected by:
  - Inflation
  - The quality of films and cinemas
- Whilst these may rise together, neither one causes the other one

Captcha

2.41

- Computers use problems that are hard for other computers to solve to check that they are being used by a human
  - The text written in the capture below is hard to recognise as it is deformed and has many colour changes that break any AI rules or pattern recognition



Chatbots

2.42

- Where have you seen chatbots or virtual assistants being used?
  - They are often used on websites to help customers
  - More sophisticated virtual assistants will use AI and machine learning to answer voice queries
  - Examples include Amazon's Alexa, Apple's Siri and Google Assistant

Sentiment analysis

2.43

- Many companies and organisations want to know what people feel about something
- When we analyse how people feel about something, it is known as **sentiment analysis**
- Sentiment analysis can be used to:
  - Find a reaction to a product such as a film or TV series
  - Find out feelings to a fashion trend
  - Find how people feel about political issues or voting intentions

Which film is better

2.44

- The first film makes use of positive words such as:
  - Amazing, superb, best, incredible
- The second film makes use of negative words such as:
  - Terrible, waste, worst (twice), avoid

This film was amazing. The acting was superb, and the special effects were some of the best I've ever seen.

Forgot to mention, the story was incredible.

What a terrible waste of my time. Without a doubt the worst film of the year – perhaps the worst film ever.

Avoid this film at all costs.

How the program works

2.45

- The program works with the following algorithm
  - The phrase is separated into individual words which are stored in *WordList*
  - Each word is checked to see if it is in *GoodList*
  - If it is then it is multiplied by a corresponding value in the *Weights* list
  - The total score then determines the *Rating* for the film
  - Why do you think a program like this would be useful?

Problems with ratings

2.46

- At the moment, websites allow users to make judgements on social media posts and products
- Many of these are fake
  - For instance, in September 2020, Amazon deleted 20,000 fake reviews in the UK
  - These were generated by just seven UK reviewers who were profiting from five-star ratings – this is serious fraud
  - AI was used to identify fake posts
- The program you are developing looks generating star ratings from text reviews to help give more accurate ratings

2.48

Training the computer

2.47

- In the Scratch program, the lists can be expanded by typing it more key words and weighting them.
- More advanced AI programs can scan online sources automatically. Some review sites allow people to give a number or star rating.
- The AI program could use machine learning to read thousands of reviews – this is the training data
  - Each of these could be compared against the user's rating
  - Machine learning could then identify which words feature in positive reviews or negative reviews
  - It could also assign the a weight for different words – so words like 'amazing' would be more positive than 'alright'
  - Some reviews also get reviewed themselves as 'helpful'. The machine learning could give more value to those reviews that are most helpful, whilst ignoring reviews that are not helpful

Is the review really positive?

2.49

- Here is the full review:

"I had hoped to see a strong, compelling piece of work from this director who showed promise in her earlier films. Unfortunately this confusing and badly acted story fails to entertain on any level and is not even bad enough to be funny. I've had more fun putting out the rubbish or sorting socks."

- How could our algorithm improve its accuracy to reviews such as this?
  - Phrases such as "I had hoped" could have a negative rating and then cause the next part to be ignored
  - Phrases such as "not very" in "not very good" could turn a positive into a negative
  - Machine learning would be able to find patterns like this itself

KS3 CS Website

Year 9 CS

1. Crime & Cyber Security

2. AI & Machine Learning

Bitesize KS3 CS

IDEA.ORG

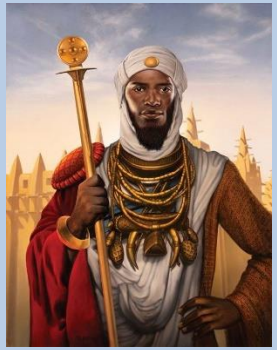
Africa before Transatlantic Enslavement

"The Transatlantic Slave trade not only distorted Africa's economic development it also distorted views of the history and importance of the African continent itself. It is only in the last fifty years that it has been possible to redress this distortion and to begin to re-establish Africa's rightful place in world history."
'Understanding Slavery' blog written for Black History Month Blog, 2019

Medieval Africa and Mansa Musa' Mali Empire

You studied this in year 8

Mansa Musa was the 10th ruler of the Mali Empire. During his reign the Malian Empire experienced it's Golden Age. Mansa Musa is the wealthiest individual in human history.



Empire of **Mali,** 1230 CE – 1460's CE

Greatest trading empire in Africa, provided half of the world's gold. 1,600km, ruled over 400 cities. Effective administration and semi-professional army.

Medieval traveller and writer, Ibn Battuta, who visited the Mali Empire records:

"Life in Mali was generally peaceful. He reported that there was very little crime and that the people were always friendly and welcoming"

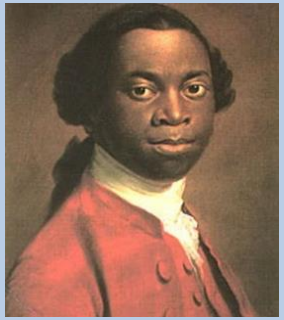
Education

By the end of Mansa Musa's reign Timbuktu had become a **centre** of **learning** and **knowledge**. The **Mosque** Mansa Musa built became a **university**. There were also 180 **schools**. In Timbuktu many **books** were **produced**. **Scholars** from across Africa and the Arab world often met here to discuss ideas.

Timbuktu Documents

A large collection of documents from the Mali Empire have been found by historians, stored at Timbuktu. They show a **complex legal system** with written **laws** and carefully **documented administration**. This shows the Mali government was **sophisticated** for its time.

Life of Africans before Enslavement



"The part of Africa, known by the name of Guinea, includes a variety of kingdoms. I had never heard of white men, or Europeans. Nor of the Sea. We are a nation of dancers, musicians, and poets. Every great event, such as a triumphant return from battle is celebrated in public dances. Each master of a family has a large square piece of ground, surrounded with a moat or fence. Within this are houses to accommodate his family and slaves. The roof is thatched with reeds. We live in a country where nature is prodigal [provides lots of] of her favours, are wants are few."

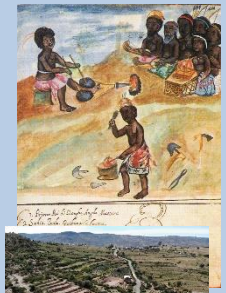
Olaudah Equiano, *captured and enslaved African who later purchased his freedom and published the story of his life as part of his abolition campaigning.*

Africa's Achievement

Art, **learning** and **technology** flourished and Africans were especially skilled in subjects like **medicine**, **mathematics** and **astronomy**. As well as domestic goods, they made fine luxury items in bronze, ivory, gold and terracotta for both local use and trade.

Technology

The Nok Culture in Nigeria was known for it's **ironworking**. They used bellows to increase the heat of the fire, and quenching to rapidly cool and harden the iron.



In Ethiopia they used the **terraced farming** technique to increase agricultural production. This involved cutting flat areas into hills which would otherwise be too steep to cultivate.

The Kingdom of Askum has advanced **textile** production including spinning wheels, looms and natural dyes.

Medicine

Africans were advanced in medical knowledge and practices back as far as ancient Egypt.

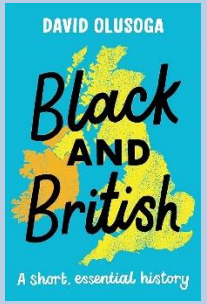
Could set broken bones, perform surgeries (removing tumours, treating fractures and Ancient Egyptians even performed brain surgery) and used herbal remedies (for example, the plant known as *'kanna'* was used to relieve hunger and thirst, and reduce anxiety).

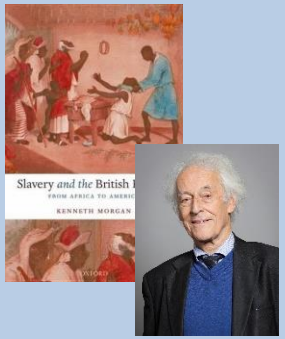
Scholars

Ahmed Baba made significant contributions to mathematics (particularly algebra and geometry and introduced new methods to solve equations).

David Olusoga, *Black and British: a short, essential history,* 2020

"Slavery was the best way of controlling the black population and making them useful. Many of the racist ideas that still exist today were invented by the enslavers and their supporters in the 18th century"





Kenneth Morgan, *Slavery and the British Empire,* 2007

"The forms of slavery in existence before the European discovery of America were radically different from the type of slavery that developed rapidly and on such a large scale on the Western shores of the Atlantic. One crucial difference was the latter was a radicalised version.

Africans were regarded as heathens, as racially and culturally different from Europeans, and as people lacking legal rights; they were prime candidates for enslavement."

Afua Hirsch, *Brit(ish): On race, identity and belonging,* 2018

"Britain's role in the transatlantic slave trade was not peripheral but central. It was not a sideshow, but a main event. The British economy was built on the backs of the enslaved Africans, and the wealth generated by the slave trade helped to fund the industrial revolution, which in turn made Britain the richest country in the world"

Language surrounding Slavery

Slave vs **Enslaved**	Today most historians speak of ***enslaved people*** instead of *'slaves'.* This language separates a persons identity from his/her circumstances and highlights what happened to these people.
Owner/Master vs **Enslaver**	The use of *'owner'* or *'master'* empowers the *enslaver* and **dehumanises** the enslaved person to a commodity rather than a person who has had slavery imposed upon them. *Enslaver* highlights the actions of those who purchased and kept slaves.

Key Words

Triangular Trade	Three part journey between GB, Africa and USA transporting goods and enslaved people.
Slave Forts	Forts built on the coasts and rivers of West Africa to store enslaved Africans, and prevent escape until their transportation.
Middle Passage	Journey of enslaved people between Africa and the Americas. It took 8-12 and 1 in 4 died in the awful conditions
Dysentery	A nasty form of diarrhoea killed many Africans on the journey.
Transatlantic	Going across the Atlantic ocean
Shackles	Iron chains used to fasten the legs or hands of a slave or prisoner.
Branding	To mark a person or animal with a hot iron to show ownership.
Cargo	Goods carried for trade
Zong Massacre	1781 slave ship Zong was carrying more than 470 enslaves people. The crew threw 132 people overboard.
Plantation	Large farm where one crop would be grown (typically cotton, sugar or tobacco)
Enslaved person	A person who is the property of another and is forced to work for little or no reward.
Overseer	The person in charge of the enslaved on a plantation
Abolition	Stopping a system, practice or institution by law
Abolitionist	Someone who campaigned to end the slave trade

Enslavement in Africa

The **Transatlantic Slave trade** involved the enforced **enslavement** of **12.5 million Black Africans** from the 16th to the 19th century leading to large profits for Imperial European Nations (Britain, Portugal, Spain)

Journey Part 1: European ships took cloth, guns, iron pots and swords to Africa. These were exchanged for enslaved African people.

Journey Part 3: In the Americas and West Indies enslaved people were sold to work on plantations and the money was used to purchase goods such as sugar, cotton and tobacco, to be returned to Europe and sold for large profits.

Journey Part 2: The Middle Passage- Enslaved were transported across Atlantic ocean. This journey was notorious for its brutality and overcrowded, unsanitary conditions.

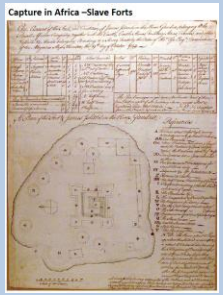
60 second video on the triangular trade

SCAN ME

YouTube

"One day, when all our people were gone out to their works as usual, and only I and my dear sister were left to mind the house, two men and a woman got over our walls, and in a moment seized us both, and, without giving us time to cry out, or make resistance, they stopped our mouths, and ran off with us"

Olaudah Equiano, *captured and enslaved African who later purchased his freedom and published the story of his life as part of his abolition campaigning.*



After capture, Africans were stored in **Slave Forts** or **barracoons** before the European traders arrived. These buildings were to prevent them escaping or fighting back.

Collars and **shackles** were used to keep control of enslaved peoples.

Why did African's Capture their own people?

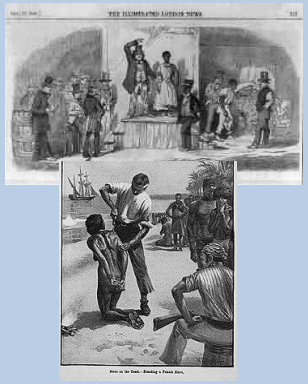
Africa was split into several kingdoms often at conflict and many enslavers did not view enslaved as their 'own people'. Enslaved people were exchanged for weapons to increase power and protect own people.

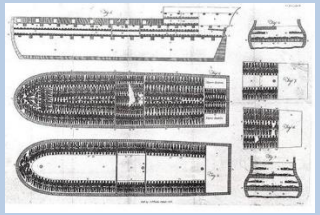
Many felt they had no choice, as they needed trade with and good relations with (more powerful) Europe.

Abolition of Slavery

Middle Passage

Ships carried between 150-600 enslaved Africans. Captives were chained together and forced into cramped lower decks. The average individual space was 6 feet long by 16 inches wide and 3 feet high. Food was rationed and limited. 25% of captives died of illness, starvation or stress during the journey. The British could claim back loss of cargo on their insurance!





Auctions

Enslaved would be washed and dressed up, then auctioned off to white Enslavers.
Africans would have to endure being poked, prodded and forced to open mouths for buyers.

"We were all pent up together, like so many sheep in a fold, without regard to sex or age… the buyers rush at once into the yard where the slaves are confined, and make choice of that parcel they like best… terrified Africans, relations and friends separated, most of them never to see each other again." **Olaudah Equiano**

Treatment of the Enslaved

Life on Plantations

The enslaved has to work long hours in the sweltering sun often without water. Work was physically difficult.
Enslaved were given little food and lived in poor conditions where disease and illness was common. On average 66% of enslaved children died.
Women also had to endure the risk of sexual exploitation.

Slaves lived in ***Slave shack's*** on plantations. Theses were small, dirty, had little or no furniture and were often in disrepair.

Punishments

Enslaved people were punished by whipping, shacking, hanging, beating, burning, mutilation, being sold on, …
Punishments would be given for: not working hard/fast enough, being late, defying authority, attempting to escape…
Punishments would be given out by an **overseer.**

"There have been instances of slitting of ears, breaking of limbs, so as to make amputation necessary, beating out of eyes, and castration… In short, in the place of decency, sympathy and, morality; slavery produces cruelty and oppression." **James Ramsay, Doctor working for several sugar plantations in the 1700's**

Timeline

1772- Somerset vs Stewart. English courts declare it is unlawful for enslaved African purchased in Virginia to be forcibly transported out of England

1787- The 'Society for Effecting the Abolition of the Slave Trade' was founded in England

1789 – Autobiography "The Interesting Narrative of the Life of Olaudah Equiano or Gustavus Vassa the African" was published

1791- The Haitian Revolution, led by Toussaint L'Ouverture results in Haiti becoming first independent black nation

1800- Enslaved Gabriel Prosser planned a large-scale rebellion against slave holders in Virginia. (Prosser was executed)

1807 – Slave Trade (not slavery) was abolished in England

1831- Autobiography "the History of Mary Prince, A West African Slave" published

1833- Slavery abolished in British Empire

1837 – Slave Compensation Act: £20 million in compensation awarded to over 40,000 slave owners. Britain was paying off this debt until 2015.

1865- End of the American Civil war leads to the abolition of Slavery in the USA.

1888- Brazil is the last country in the Western Hemisphere to abolish Slavery

Present – There are still countries where slavery is legal or common. The UN estimates there are currently over 40 million people living in some form of slavery.

Black people in Britain fought to end the Slave trade **Olaudah Equiano** campaigned for the end of slavery, along with **Mary Prince, Ottobah Cugoano** and many others.

White Campaigners such as **Sharp** and **Wilberforce** fought to change laws around the slave trade.

Furthermore, many enslaved people themselves **rebelled** to gain more rights and freedoms. Such as the rebellion in St Dominque and the Haitian revolution.

Jeffrey Boakye, 2022

"William Wilberforce is often seen as a great white saviour of the abolition movement, but the truth is that he was one of many people who fought for the abolition of slavery. He was not the only one, and he was not the first one. There were many black abolitionists who fought for the abolition of slavery and their contributions have been largely forgotten. We need to remember that the abolition movement was a collective effort and that many people, both black and white, played a role in ending the slave trade"

THE INDUSTRIAL REVOLUTION

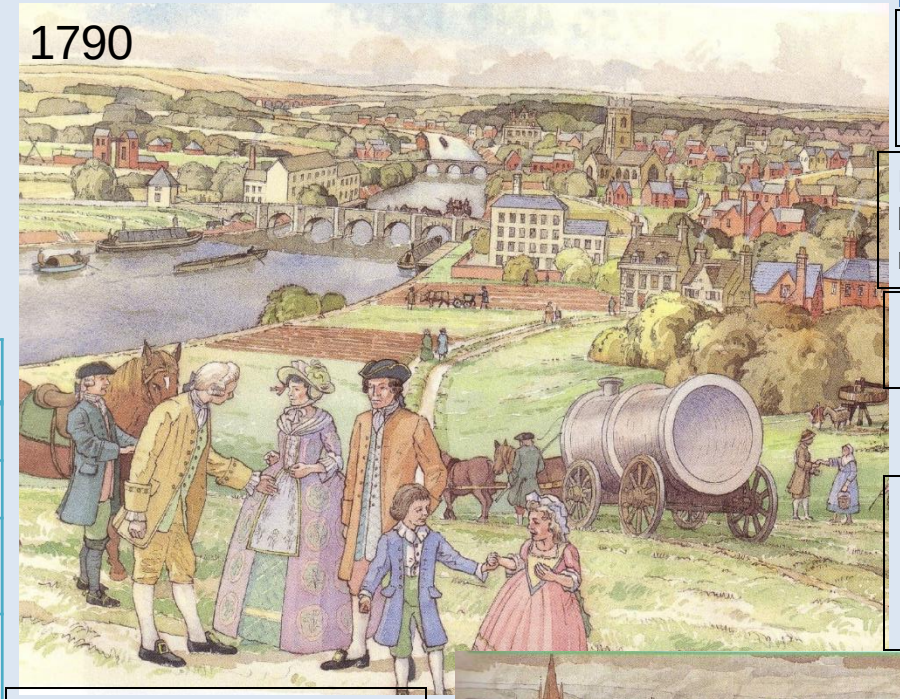
Year 9 Term 2

Industry	Processing raw material into manufactured goods in factories.
Economy	The system of how money is used within a particular country
Agriculture	The process of producing food by farming plants or raising animals
Cottage Industry	Before the industrial revolution: production in people's homes on a small scale. Slow and inefficient but goods were hand-crafted and unique
Poverty	The lack of basic human needs such as clean water, nutrition, healthcare, education and shelter
Sanitation	Sanitation is the system that disposes of human waste
Cholera	Infectious disease caught from infected water supplies. Causes severe vomiting, diarrhoea and often death
Urban Slums	Housing where people lack basic necessities to sustain a safe and healthy lifestyle.

The **industrial revolution** was a time of great change in Britain between 1750 and 1900. Britain's main source of income changed from **agricultural** to **industrial.**

How many differences can you spot from 1790 – 1900?

1790



Population increased from 10 – million to 40 million.

Improved transport: steam boats, canals and railway network over Europe.

Access to new materials: Iron and steel

People migrate from villages to towns

New energy source coal led to steam engine, internal combustion engine, electricity

With the growth of the British Empire, communication improves.

Move away from domestic system (goods made in the home) to the factory system (mass production)

Improved public health, free education for all under 12 and votes for all men by 1900.

Invention of new machines, such as the spinning Jenny and power loom

1900

Key Developments in the Industrial Revolution

1708 Jethro Tull's **mechanical** (seed) **sower** led to large-scale planting in rows, for easier cultivation between the rows.	**1709** Abraham Darby used coke to **smelt iron ore**, replacing wood and charcoal as fuel.	**1712** Thomas Newcomen's **steam engine**. Kept deep coal mines clear of water. New significant, reliable power source.	**1733** John Kay's **flying shuttle** invented, this sped up hand weaving of cloth.	**1761** James Brindley's Bridgewater **Canal** opens. Barges carried coal from Worsley to Manchester	**1765** James Hargreaves invented the **Spinning Jenny,** automated an aspect of weaving cloth.	**1779** First **steam powered** cotton **mills** developed. **Crompton's "mule"** fully automating the weaving process.	**1793- 1803** Thomas Telford built his two great **iron aqueducts**, over the Dee and the Cierog valleys.	**1801** Robert Trevithick demonstrated **steam locomotive**.	**1811-15 Luddite riots**: labourers attacked factories and broke up the machines they feared would replace them

Causes of the Industrial Revolution

Population
The population of Britain grew rapidly from roughly 10 million people in 1750 to 42 million people by 1900.

Attitudes
People of all classes were willing to accept change. For example, millions moved into crowded towns to work in new factories using machinery that had never been seen before.

Banking
Banks were confident that they could lend people money to start their own industry. There was more money available for the rich and for inventors to invest their money..

Transport
Canals and railways were built across Britain, linking key industrial towns and the countryside.
Railway stations were built in most areas of the country for the first time. Travel became quicker and transport carried vast weights of goods and resources.

Raw Materials
Iron, coal and tin were found across Britain and needed in most new machinery and factories. Cotton was imported from abroad and manufactured into goods in the north of England and Scotland.

Inventors
Britain had many inventors who created new ideas for machines and transport. For example:
James Watt's 'steam engine' in 1769
George Stephenson's steam powered train in 1814
Isambard Kingdom Brunel's engineering and construction techniques.
Alexander Bell's telephone
Thomas Edison's lightbulb

Peace
Although Britain still fought to gain land for its empire, Britain was one of the few European countries not directly involved in fighting a war.

Trade/Empire
Britain could sell its inventions and manufactured goods to other countries in its huge Empire such as India, Australia and East Africa. In return, Britain gained other luxury goods such as tea, spices, gold and silk.

Agriculture/Farming
Farmers found more effective ways of growing crops and breeding animals for the growing population. Farmers made use of new steam powered machinery to increase this further.

SCAN ME

A good overview of the I.R

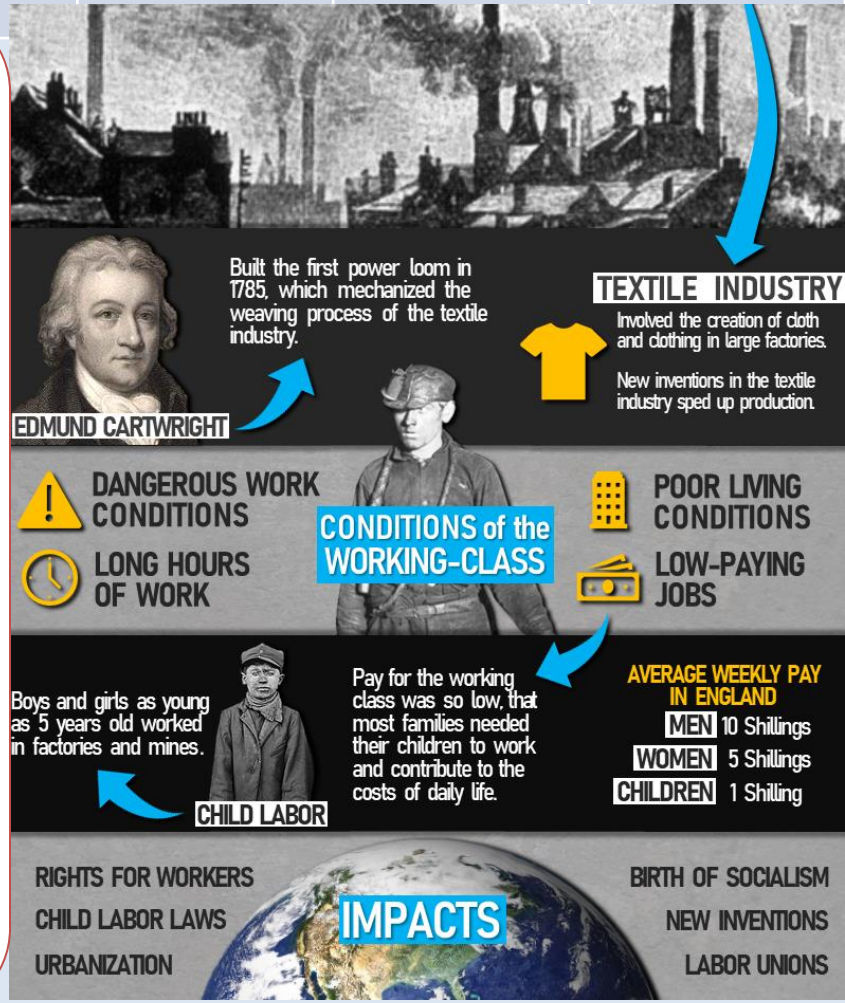
YouTube

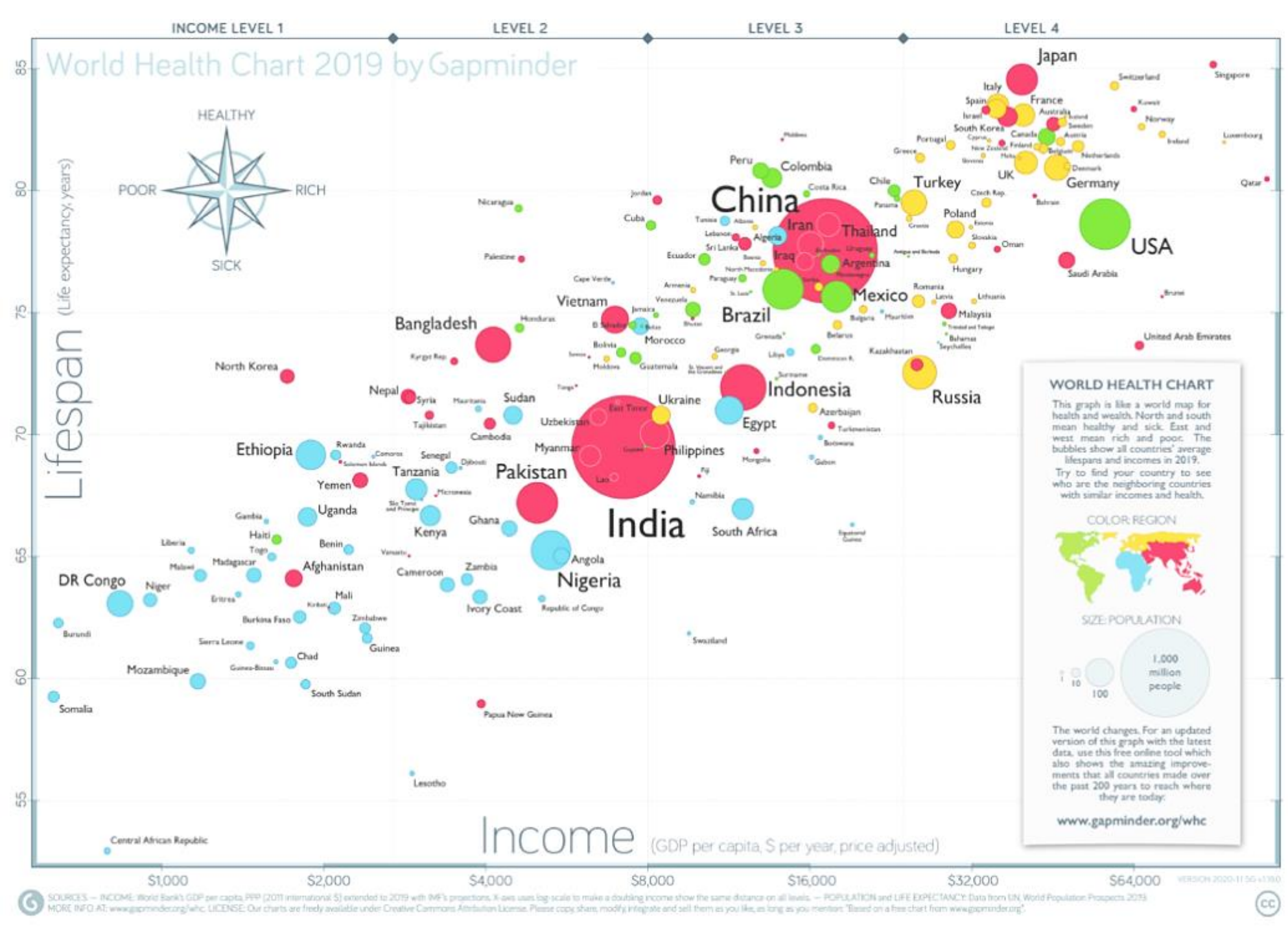
A more complex look at the changes and impact

SCAN ME

Factory working conditions

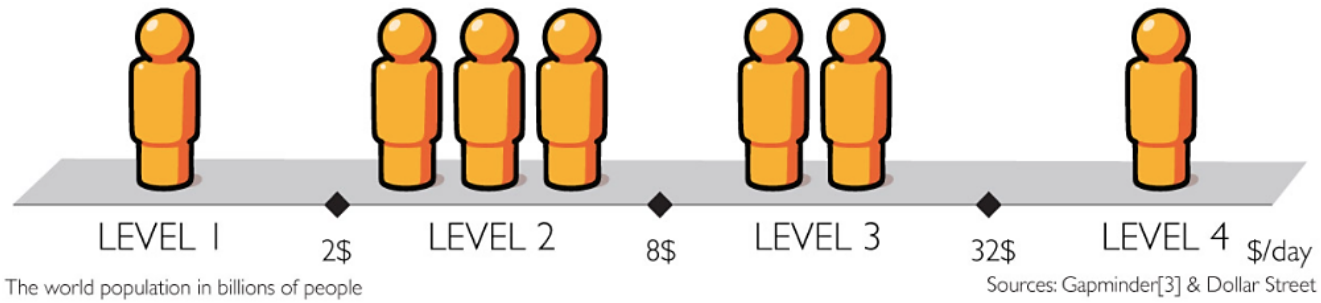
Long working hours: normally 12-14 hours a day (extra time required during busy periods)
Low wages: male workers average 15 shillings (75p) a week, women and children paid much less, with children earning three shillings (15p). Employers preferred to employ women and children.
Cruel discipline: frequent "strapping" (hitting with a leather strap). Other punishments included nailing children's ears to the table, and dowsing them in water butts to keep them awake.
Accidents: forcing children to crawl into dangerous, unguarded machinery led to many accidents and deaths.
Health: The air was full of dust, which led to chest and lung diseases. Loud machinery damaged workers' hearing.





Is the world as bad as we think it is?

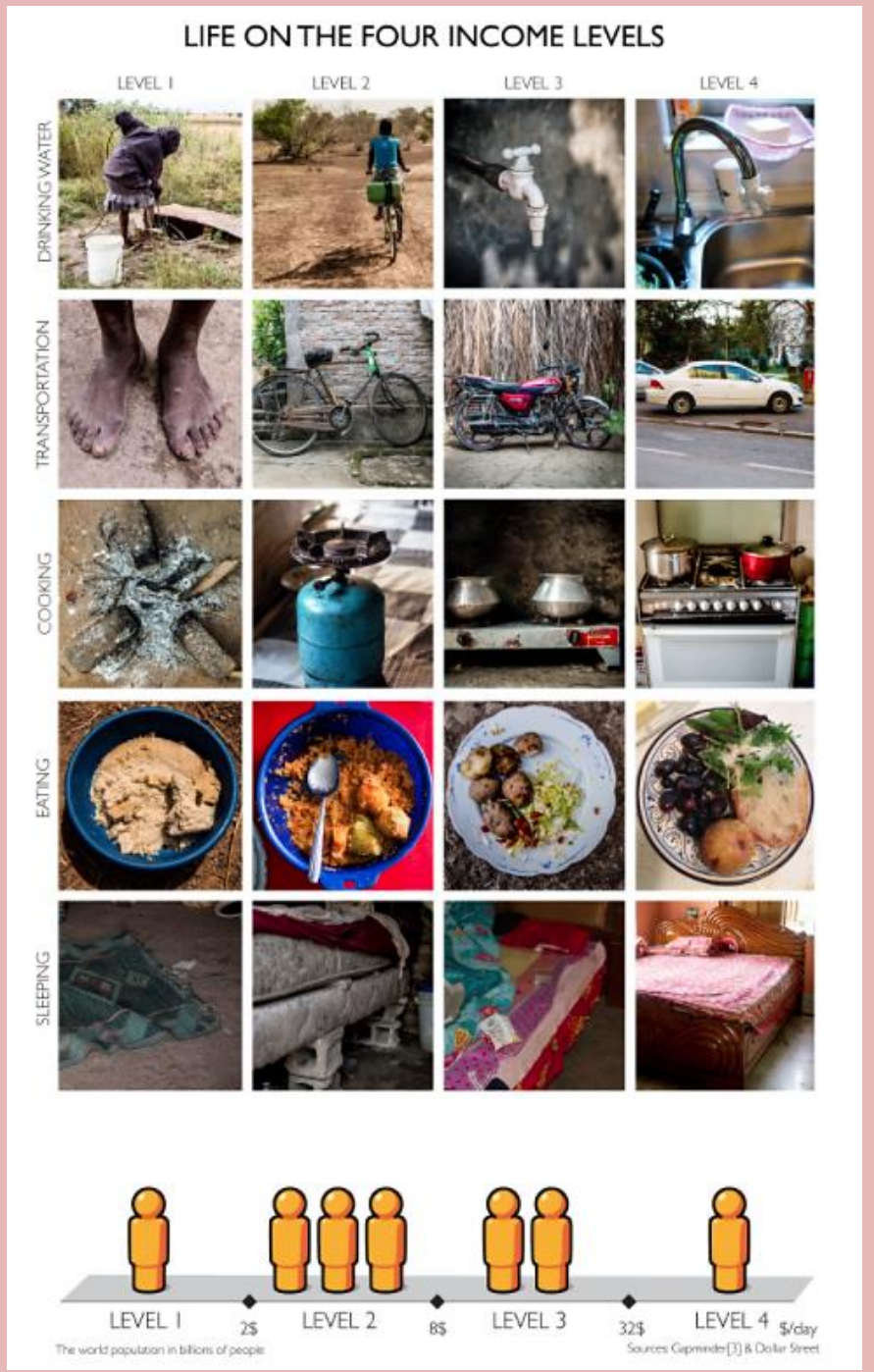
Income Levels



It's easy to fall into the trap of categorizing people as either "rich" or "poor". In reality, most people are somewhere in the middle. Their basic needs – food, water, shelter, etc. – are met.
To help build a more accurate view of how people live and how their lives change as they get more money, we prefer to divide the world into four income levels.
Level 1 is made up of people who earn less than $2 a day and live in extreme poverty.
At Level 2, people earn between $2 and $8 a day. Almost half the world's population lives at this income level.
Level 3 is made up of people who live on between $8 – $32 per day.
The richest billion people on earth live at Level 4, where their income is more than $32 a day

<u>Why doesn't everyone have the same wealth</u>

- **War** – destroys a lot of a country's infrastructure meaning people do not have access to important education or healthcare
- **Diseases** – a country with worse of healthcare means people are less likely to survive illnesses therefore killing more people
- **Education** – A lack of education means people cannot get qualifications to get better paid jobs and improve their quality of life
- **Unfair trade and debt** – Many countries are in a lot of debt and therefore cannot pay it off. This normally results in unfair trade between countries and the poorer countries not being able to make as much money
- **Gender inequality** – many less developed countries do not have gender equality and there are more stereotypes. This normally means women are not able to work and make money. This can lead to people's standard of living and quality of life decreasing



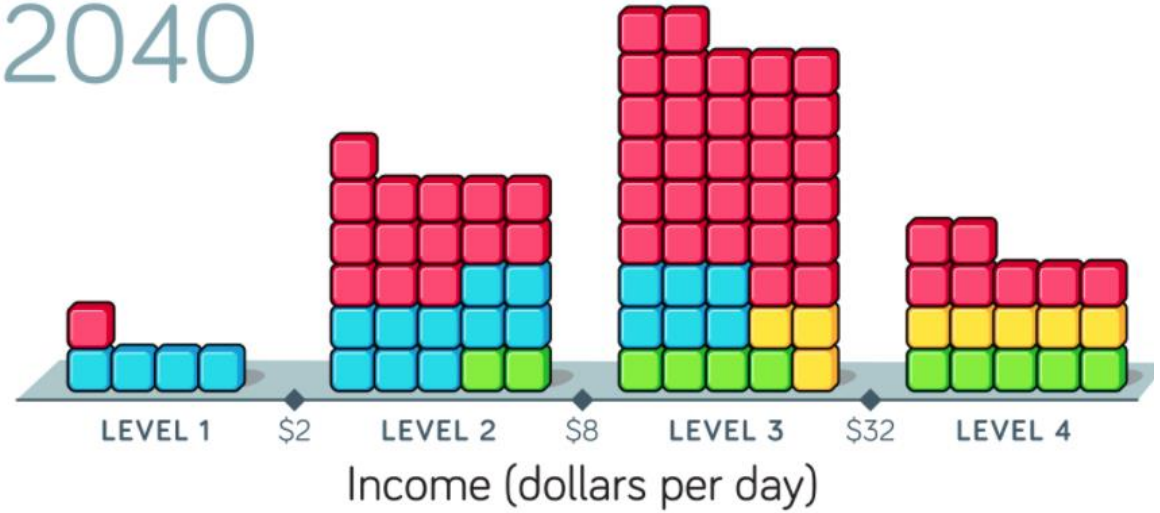
NUMBER OF PEOPLE BY INCOME AND REGION

Each cube is 100 million people, colored by region.

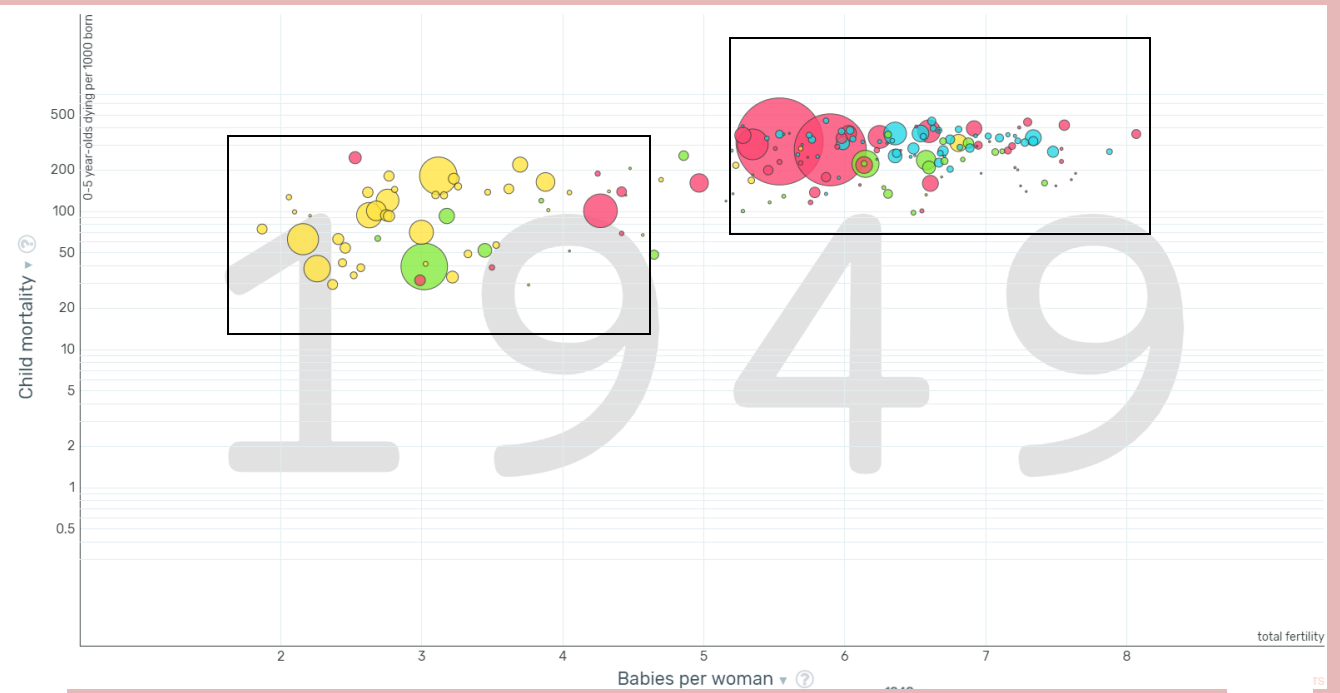
2017

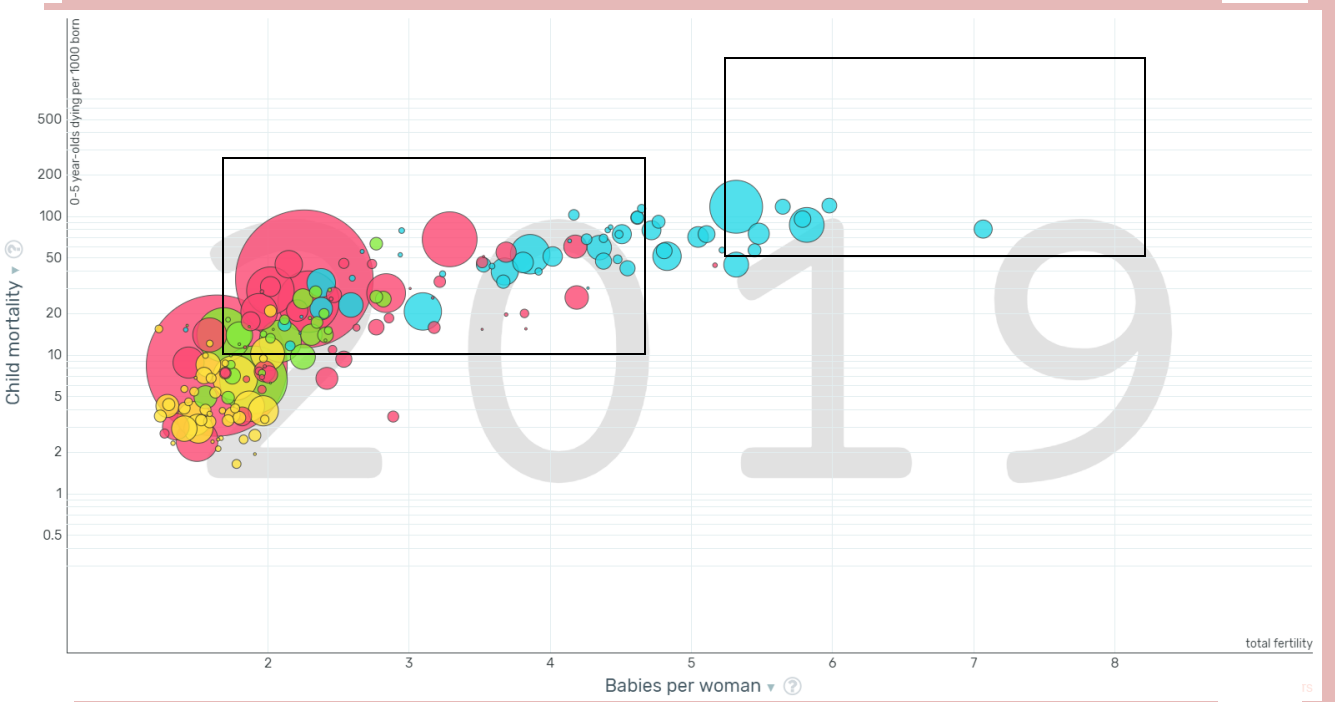
Assuming that current trends continue, this is what the world might look like in 2040.

2040



Dollars are adjusted for price differences and inflation. Sources: Gapminder based on PovcalNet, World Bank and IMF. See: gapm.io/i





Development Indicators

Development indicators are used to illustrate progress of a country in meeting a range of economic, social, and environmental goals.

Measures of Development

People per Doctor
The average number of people for each doctor

Gross Domestic Product per Head
The GDP divided by the population of a country. Sometimes called GDP per capita

Literacy Rate
The percentage of adults who can read and write

Death Rate
The number of deaths per year per 1000 people

Gross Domestic Product
The total value of goods and services a country produces in a year.

Birth Rate
The number of births per year per 1000 people

Access to safe water
The percentage of people who get access to clean drinking water

Human Development Index
This is number that's calculated using life expectancy, literacy rate, educational level (e.g. average number of years of schooling) and income per head. Every country has a positive value between 0 and 1)

Life Expectancy
The average age a person can expect to live to

Infant Mortality Rate
The number of babies who die under 1 year old per thousand babies born

Is money the best indicator?

We live in a money orientated world, so doesn't it seems fair to judge how developed a country is money? However, using economic indicators to judge development can actually mislead people for the following reasons:

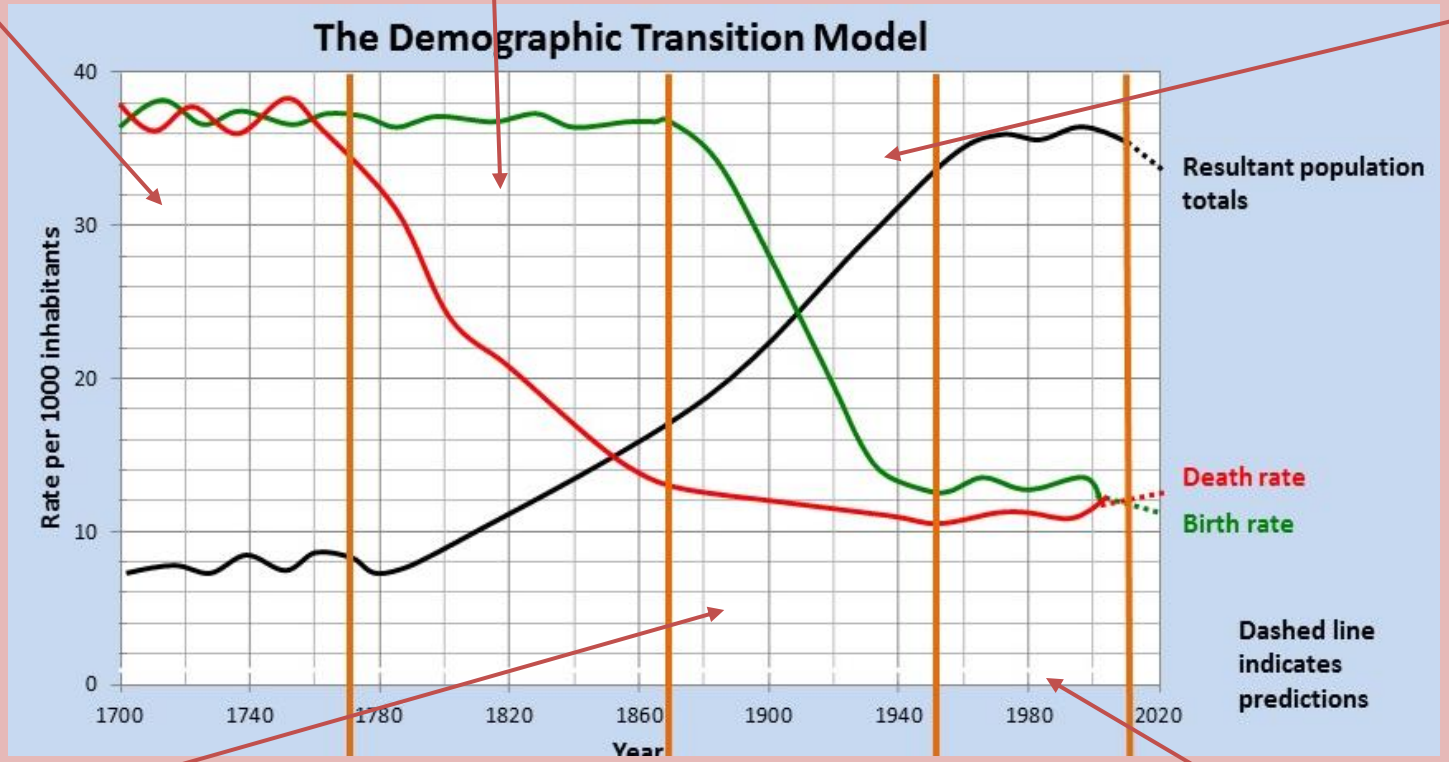
- Hides inequality of distribution
- Ignores all aspects of quality of life, eg well-being, education, life expectancy etc
- Does not acknowledge the cultural quality of life
- Does not count externalities - costs passed to others eg a polluting factory

Instead its recommended that we use a mixture of both economic indicators and social indicators to get a fair representation of development. One indicators that is considered to be more representative is called Human Development Index (HDI).

Stage 1
Birth Rate: High (lack of education, contraception)
Death rate: High (poor healthcare, war, famine, disease)
Population increase: Low
UK: Pre 1780
Present Example - Ethiopia

Stage 2
Birth Rate: High
Death rate: Lower (improvements in education)
Population increase: increasing
UK: 1780-1880
Present Example: Bolivia

Stage 3
Birth Rate: start to decline
Death rate: Continue to fall
Population increase: Low
UK:1880-1940
Present Example: China

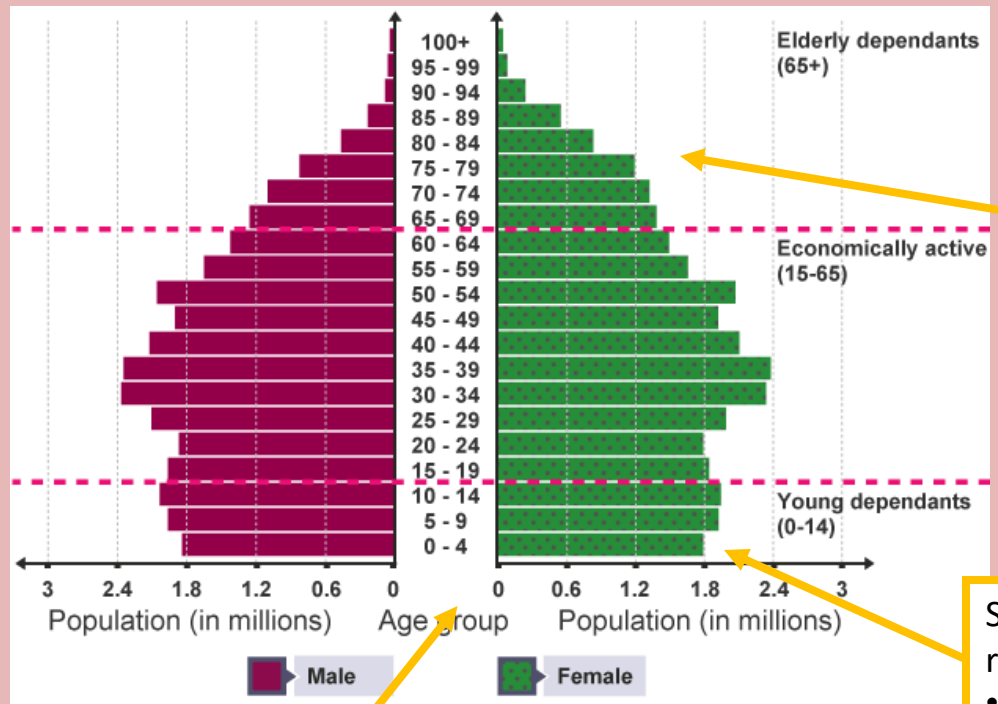


Stage 4
Birth Rate: Low
Death rate: Stay low
Population increase: Low
UK: Post 1940
Present Example: Canada

Stage 5
Birth Rate: Very Low
Death rate: slight rise
Population increase: Low
UK: 2000+
Present Example: Japan

Population Pyramids

A population pyramid is a graph that allows us to see the gender and age structure of a population. There are different shapes to the pyramids which tell us different things about the population of the country. They are useful because they give a really visual idea of what the birth and death rates are like in a country, and because they show the life expectancy. They can also help governments plan for the future because they show change over time.



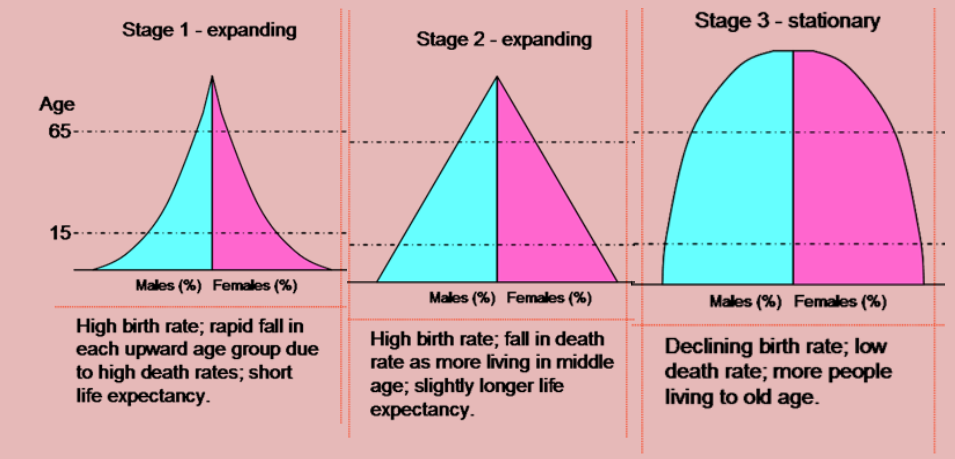
- A wide base means there are lots of young people, and suggests a high birth rate.
- A narrow base means a smaller proportion of young people, suggesting a low birth rate.
- A wide middle, tall pyramid means an ageing population, suggesting that there is a long life expectancy.

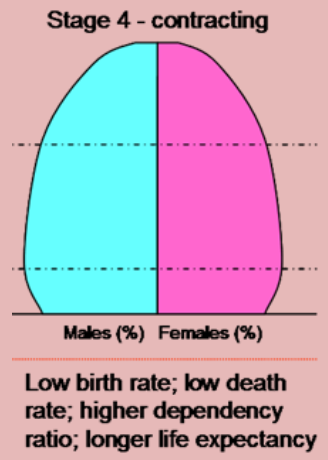
Some reasons for falling death rates include:

- increasing wealth
- better hygiene and improved healthcare
- better farming techniques
- Remember, though, that the shape of pyramids can also be affected by migration.

Some reasons for high birth rates include:

- need for large families, eg to work in rural areas
- lack of family planning
- people have many children because many infants die

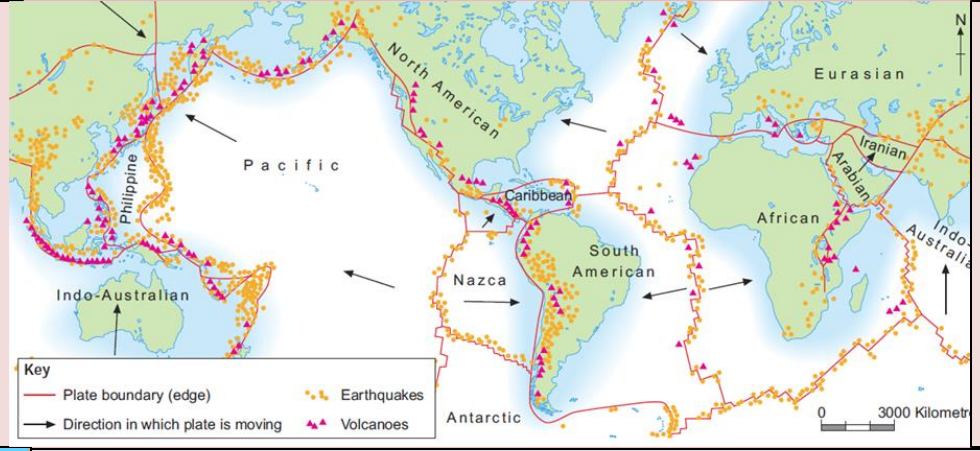




By looking at the population pyramid for a country, we can start to tell where it lies on the demographic transition model. This allows to determine what stage of development it is in and can also suggest what problems might happen in the future so nations can adjust accordingly

Tectonic theory

Tectonic plates move because the core of the earth is very hot and having heated the magma in the mantle, this then rises as it is less dense, before reaching the crust, travelling in each direction underneath it, cooling again which makes it denser, and sinking back towards the core. As this process happens, friction moves the plates with it. Evidence for this includes matching geology and fossils on different continents, from when they were joined.



Global distribution

Earthquakes are commonly found in thin narrow belts associated with a plate boundary. Most volcanoes are distributed along the plate boundaries, too, but only constructive and destructive boundaries/margins. Occasionally, volcanoes are found in the middle of plates (e.g. Hawaii). These are called hot spots.

Key terms and definitions for this topic

Inner core- solid centre of Earth; 5500°C; extremely dense, mostly made of iron and nickel.

Outer core-liquid around inner core due to lower pressures+ temperatures

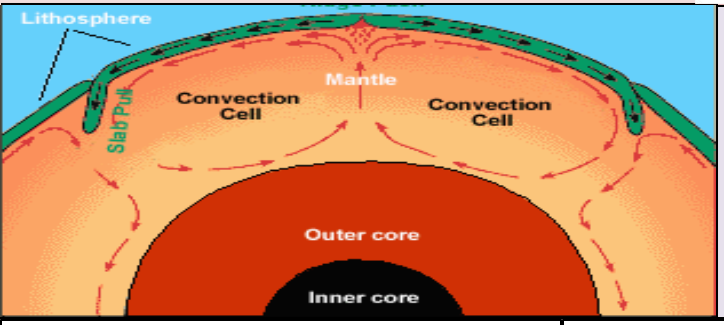
Mantle- made mostly of iron, magnesium and silicon, it is dense, hot and semi-solid.

Crust- outer layer, solid but fractured like a broken egg shell

Richter Scale- a numerical, logarithmic scale for expressing the magnitude of an earthquake on the basis of seismograph oscillations

Magnitude- the size of an earthquake measured on the Richter Scale

Subduction- the process of one plate being taken under, and destroyed under, another plate as they move towards each other



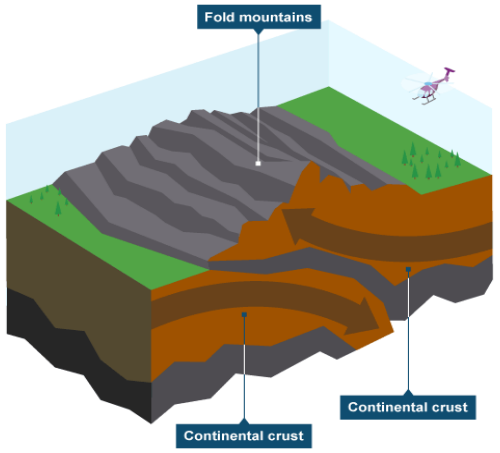
Types of plates

There are two types of tectonic plate: oceanic and continental. Continental plates are less dense and cannot be destroyed or renewed. The Eurasian, African and North American plates are all examples of continental plates.

Oceanic plates are denser and can be destroyed and renewed at plate boundaries. An example of an oceanic plate is the Pacific plate; found beneath the Pacific Ocean.

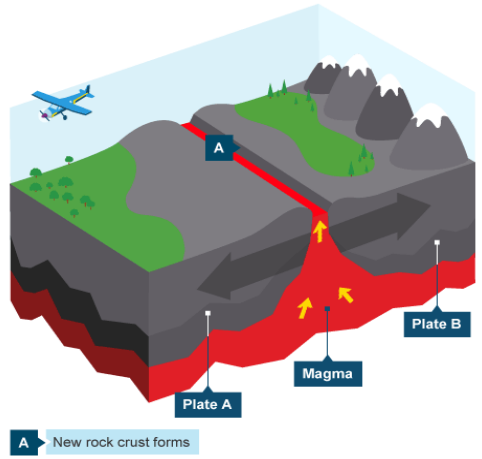
Collision plate boundary

Two plates of equal density collide and buckle to form Fold Mountains. Found in the Himalayas.



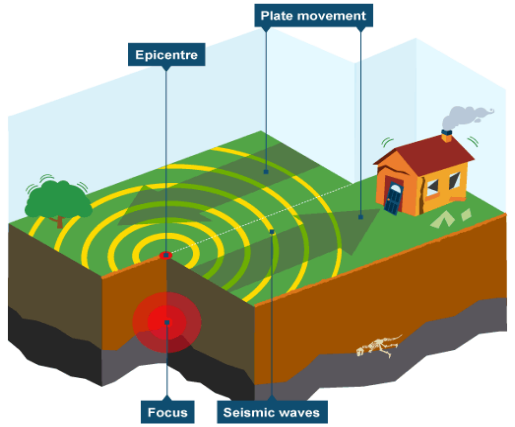
Constructive plate boundary

As 2 plates pull apart, eruptions occur and new crust is formed. Found in the mid-Atlantic ridge.



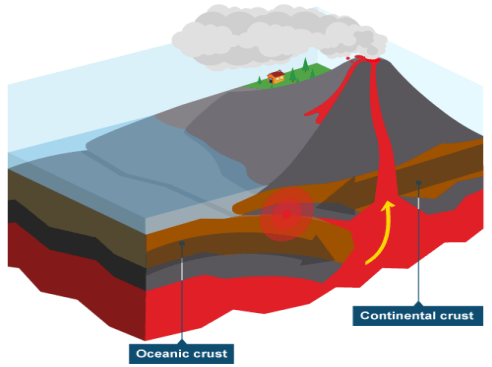
Conservative plate boundary

Two plates scrape past each other, causing violent earthquakes. Found in the San Andreas fault.



Destructive plate boundaries

Two plates of different densities move towards each other. The denser oceanic plate is subducted causing earthquakes, volcanoes and tsunamis. Found in the ring of fire.



BVT Buddhism

Origins of Buddhism

Buddha was born a prince of India called **Siddhartha Gautama** about 2500 years ago. He was prophesied to become a great leader or a saviour of the people. His father wanted him to become a great leader so showered him in gifts and luxury, but never let him leave his palace.

When Siddhartha was older he wanted to find out what was outside the palace walls and asked his father to go on a tour of the city. His father allowed this but made sure that his son only saw the best sights and healthy happy people. He wanted to spare him seeing the problems of the world.

When Siddhartha was on his tour, he walked off from his carriage and saw **4 sights** he had never seen before. These were **an elderly man, a sick man and a funeral of a dead man. He also saw a holy man**.

When Siddhartha returned to the palace, he could not believe all the **suffering and wanted to help**. So he left the palace, his wife and his young child for answers.

He tried to live with pain and suffering to experience what others felt. He came to realise that it was a **Middle Way** he must follow – not a life of luxury as he lived before or of suffering and poverty.

He listened to Holy men and tried to find meaning by sitting under a Bonhi tree. One day under this tree Siddhartha Gautama had a great realisation about the world . He found peace and harmony. This is what Buddhists call **enlightenment**.

When Siddhartha Gautama realized this, he became Buddha and taught others about his 4 sights and the **4 noble truths** in life. He followed eight steps to avoid suffering and keep him on the Middle Way. Buddha lived and taught for another 45 years before dying.

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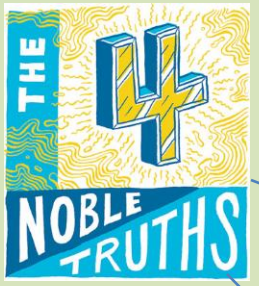
Key vocabulary

Siddhartha Gautama
4 Sights
Middle Way
4 Noble Truths
The Eightfold Path
The 5 Precepts
Enlightenment
Buddha



Central Buddhist Beliefs (details on following page)

- 4 Noble Truths in this world
- Buddhists follow a Middle Way – not living in extreme richness/luxury or poverty / suffering
- Buddhists follow beliefs called the Eightfold path and the 5 Precepts
- Buddhists have key beliefs about creation, life and our mental state. You may know Karma as one of these.
- These beliefs and guidelines were set up by Siddhartha Gautama – the Buddha.

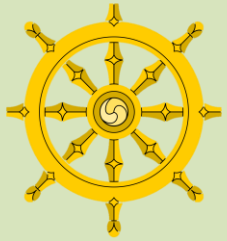
The 4 Noble Truths

- When seeing his 4 sights Buddha came up with 4 Noble truths about the world.
- The first was that **Suffering** exists.
- The others are why suffering exist.
- The 3 things that cause suffering are: Greed, Attachment (being attached to things created loss) and Craving (creates greed and necessity, often to harmful things)
- The **best way to avoid suffering is to free yourself from the 3 last truths.**

Key terminology and definitions

Key term	Definition
Middle Way	Living a balanced life: Not one of luxury/richness, but not one of poverty and suffering
The 3 marks of Life	These are 3 ideas about life; Anicca, Anatta and Dukkha
Anicca	The belief that everything in life is always changing
Anatta	The belief that we are always changing; we are never the same person and hold no permanent identity
Dukkha	The belief that we are never satisfied. This is because everything is always changing – we always want more and the next new thing.
Samsara	The belief of birth, death and rebirth (reincarnation). It is about the cycle of life.
Karma	The belief that our actions have consequences in life and between lives (after death for re-birth).
Nirvana	At the point of enlightenment – when Samsara ends.
Wesak	Buddhist Festival recognising Buddha and his teachings
Tripitaka	Buddhist religious text/scripture
Temple	Place of worship, medication and offering
Vihara	Where Buddhist monks live – the area in the temple

This is the Buddhist symbol of the **wheel.** It can represent Samsara – the cycle of life. Or the Eightfold Path actions to live by, by the 8 spokes of the wheel.



Buddhism

Key vocabulary

Middle Way
3 marks of Life
Anicca
Anatta
Dukkha
Samsara
Karma
Nirvana
The 5 Precepts
The Eightfold path

The 5 Precepts

The 5 precepts are **5 rules** Buddhists should live by to ensure they follow the **right action** of the Eightfold Path.

These 5 are:

1. I will not harm another living being
2. I will not take what is not given
3. I will avoid harmful sexual activity
4. I will not speak falsely e.g. I will not lie, gossip or hurt people with my words
5. I will not cloud my mind with alcohol or drugs

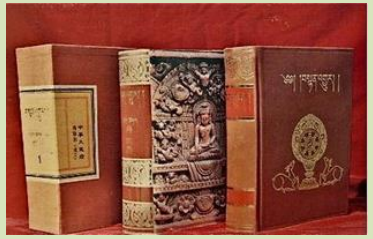
The Eightfold path

The Eightfold path are the **beliefs and principles Buddha decided** upon to live by. Buddhists **follow these guidelines through life** so they follow the Middle Way. These 8 guidelines affect how they behave to others, live their life and their mental state.

Most are beliefs that everyone could follow with some effort and you could find examples of these in your everyday lives. However, you may think they would be difficult to follow all of the time!

The Eightfold Path

Buddhism



Buddhist Practices

Worship:

- **Shrine room** – centre of worship. Often has a statute of Buddha
- **Offerings** are made in the shrine room to Buddha
- Offering which usually given are flowers, food, lighting a candle or burning incense
- The temple is open to all Buddhists to worship or take part in meditation and chanting
- Temples often have a **Vihara** (monastery) attached to them where Buddhist monks live
- Some temples have Halls for learning, where Buddhist monks train and learn. Monks can also give advise like other religious leaders do.

Religious Text:

The **Tripitaka** is the source of authority for Buddhists. It contains 3 sections:

1. Contains rules for how Buddhist monks and society should behave. These are chanted at worship
2. The teachings and sayings of Buddha
3. Teachings about the nature of life and reasons for being, including guidelines on how to reach enlightenment

Festival of Wesak:

Wesak recalls **the birth, enlightenment and death of Buddha**; it is every year on the full moon in May

During the festival Buddhists:

Decorate homes, light lanterns and eat vegetarian foods for the week
Attend Temple – listen to talks about Buddha
Make offerings to the temple but also to the poor and vulnerable
Meditation and follow the 5 precepts

Key Quotes from Buddha

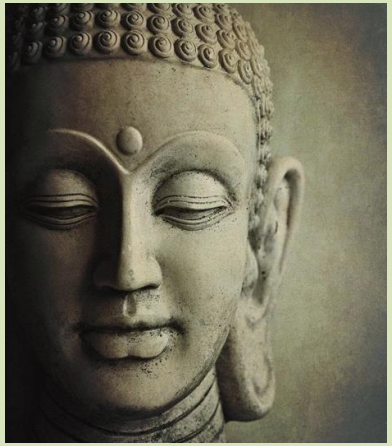
"Nothing is impermeable, strive on with awareness"

"happiness is a choice and suffering is optional"

"Contentment is the greatest wealth"

"Speak well of others, not of their faults"

"Self control is strength"



BVT: Human Rights

Human rights - the rights a person is entitled to simply because they are human

Human Rights Act - a law which protects the rights of all human beings and allows us to challenge when these are violated

Justice - getting fairness

Rights - entitlements, e.g. the right to education

UN Declaration of Human Rights - a statement adopted by the United Nations organisation to protect all human beings

Exploitation - misuse of power to treat people or things unfairly

Discrimination - actions based on prejudice, often negative

Homophobia - prejudice against someone on the grounds of their (perceived) sexuality

Positive discrimination - discriminating in favour of a per- son with a protected characteristic

Prejudice - pre-judging someone based on a characteristic they have, e.g. their looks

Racism - prejudice based on a person's racial/ethnic origins

Tolerance - acceptance of difference

Freedom of religion - the right to believe or practise whatever religion one chooses

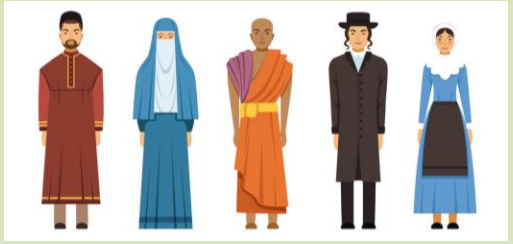
Freedom of religious expression - the right to worship, preach and practise one's faith in whatever way on chooses

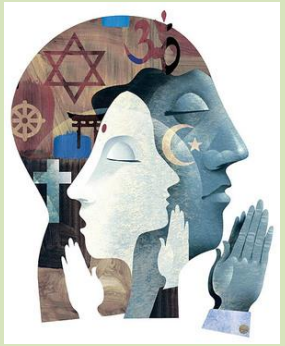
Examples of religious expression:

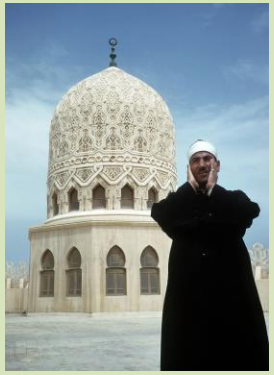
Islam – wearing Hijab or Niqab.

Christianity – freedom to worship or wear a cross

Sikhs – carrying the kirpan. This is worn by Sikhs, both men and women, and is one of their five articles of faith. As it is a reminder of their faith, it is symbolic and the knife inside is not used or taken out







BVT: Human Rights

Women

Women play an **important role** in Islam. They are mothers and wives and as family is very important to Allah, their role is very important.

- Islam says men and women are equal in the sight of Allah. They're accountable for their own actions and will be judged equally by Allah.
- *"Be you a man or woman, you are equal to the other"* Qur'an
- Men and women have different roles. Women are to look after children and the family. Men are to provide for the family.
- Women are not allowed to become an Imam (Islamic leader), nor are they allowed to pray at the front of the mosque

Muslim Women headscarf's

- In the Qur'an it says that women should cover their modesty. This means to hide their beauty in public; to be modest.
- *The Qur'an says "draw their veils over their body and not display their beauty except to their husbands and family".*
- Muslim women choose to cover their head, hair or face as they wish. However, in some countries this may be heavily influenced by male family members or even enforced by laws.

Key vocabulary

Morality police
Religious expression
Hijab
Niqab
Burka

In **Iran**, there have been laws about how women should express and cover themselves

1936	New monarchy, passed laws to force women to remove veils
1941-79	No laws. However many wore veils to protest against the previous monarchy's law. Many male family members influenced female family to cover their heads.
1979	"Hijab law" was protested by thousands of Muslim women
1983	Women in Iran were forced by law to wear the hijab
1990's	Punishments for the law introduced: fines and imprisonment time.
2018	Punishment changed: Women who broke the law were arrested and escorted to detention centres to be re-educated about Islamic values and importance of wearing the hijab.

In Europe some laws ban the use of head coverings

TERM 1 FRENCH – DISCUSSING MODERN TECHNOLOGY

KEY #LEARNING:

How to talk about / describe **your mobile**

How to talk about **what you do with modern tech**

How to talk about the **role of social media** in your life / modern society

Key questions for this term:

As-tu un portable? Que fais-tu avec?= Do you have a 'phone? What do you do with it?

La technologie est importante pour toi ? = Is modern technology important for you?

Que penses-tu des réseaux sociaux ?= What do you think of social media?

As-tu un portable? (Do you have a mobile phone) **Que fais-tu avec?** *What do you do with (it)?)* Oui, j'ai un portable... *(Yes I have a phone)* Il est ... *(it is) + description*	je l'utilise ... *(I use it...)* pour télécharger la musique*(to download music)* faire mes devoirs*(to do my homework)* regarder des vidéos *(to watch videos)* faire du shopping *(to do shopping)* faire des recherches *(to do research)* rester en contact avec ma famille *(stay in contact with my family)*
quelquefois *(sometimes)* des fois *(at times)* le matin *(in the mornings)* le soir *(in the evenings)* au collège *(at school)* quand je suis avec des amis *(when I'm with my friends)*	Je peux ... *(I can)* On peut... *(one can / you can)* prendre des photos *(take photos)* envoyer des textos *(send texts)* tchatter avec des amis*(chat with my friends)* aller en ligne *(go on line)* jouer aux jeux vidéos*(play games)*

Modal verbs
A modal verb is a word like 'can', 'must', 'should' etc. You use it with an **infinitive** verb.

Je peux aller en ligne = I can go on line
Je ne peux pas prendre des photos = I can't take photos
On peut faire du shopping= You can / one can do shopping
Je dois faire mes devoirs = I must / have to do my homework

Direct object pronouns.
The words for 'it', or 'them'. In English, 'I use it every day'; 'I like them'

Je **l'**utilise chaque jour
Je **les** aime
Notice it goes before the verb.

A reminder about French adjectives. Don't forget to make the adjective 'agree' with the noun. Is it masculine or feminine? Singular or plural?

Masculine Singular	Feminine Singular	Masculine plural	Feminine Plural	ENGLISH
vieux	vieille	vieux	vielles	***old***
nouveau	nouvelle	nouveaux	nouvelles	***new***
moderne	moderne	modernes	modernes	***modern***
mince	mince	minces	minces	***thin***
laid	laide	laids	laides	***ugly***
joli	jolie	jolis	jolies	***pretty***
utile	utile	utiles	utiles	***useful***
cher	chère	chers	chères	***expensive***
noir	noire	noirs	noires	***black***
petit	petite	petits	petits	***small***

TERM 2 FRENCH– DISCUSSING FILM, TV AND MUSIC

KEY #LEARNING:

How to talk about / describe **your tastes in film, TV and music!**

Describe a film / TV programme and explain why you like it

In Year 8, you first met the **'perfect tense'.** This is used to talk about what you ***'did'.***

The **imperfect tense** is used to talk about what you were doing / used to do...

I **watched** a comedy on Saturday
I **was watching / I used to watch** comedies on Saturday

je regard***ais*** ***= I used to watch***
tu regard***ais*** ***=you used to watch***
il regard***ait*** ***= he used to watch***
nous regard***ions*** ***= we used to watch***
vous regard***iez*** ***= you used to watch***
ils regard***aient*** ***= they used to watch***

Key questions for this term:

Que penses-tu de la musique française ? **= What do think of Spanish music?**

As-tu vu un film français ?= Have you ever seen a Spanish film?

Quelles sortes de film aimes-tu ? = What sort of programmes / films do you like?

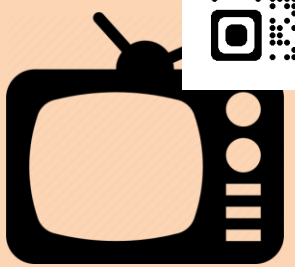
As-tu une émission préférée ?= Do you have a favourite TV programme?

Aimes- tu la musique / ... Do you like music / TV / films?)
Quelle sorte de ... aimes -tu? (What type of ... do you like?)
Mon film prefere , c'est... my favourite film is...)

j'adore / j'aime *(I love / Ilike)*
je n'aime pas *(I don't like)*
je ne supporte pas *(I can't stand)*
les films d'action / de guerre *(war)*
les émissions de sport *(sports programmes)*
les dessins animés *(cartoons)*
les feuilletons *(soaps)*
le rock
la musique classique
c'est
intéressant
ennuyeux

As-tu vu...? *(Have you ever seen...?)*
La semaine dernière... *(last week)*
Il y a deux semaines *(two weeks ago)*
j'ai vu... *(I saw)*

C'était ... *(it was)*
Je l'ai trouvé ... *(I found it...)*



TERM 1 SPANISH – DISCUSSING MODERN TECHNOLOGY

KEY #LEARNING:

How to talk about / describe **your mobile**

How to talk about **what you do with modern tech**

How to talk about the **role of social media** in your life / modern society

Key questions for this term:

¿Tienes un móvil? Que haces con él= Do you have a 'phone? What do you do with it?

¿La tecnología moderna es importante para ti?= Is modern technology important for you?

¿Qué opinas de las redes sociales?= What do you think of social media?

¿Tienes un móvil? (Do you have a mobile phone) **¿Qué haces con él?***What do you do with it?)* Sí, tengo un móvil*(Yes I have a phone)* Es… *(it is) + description*	Lo uso para *(I use it…)* descargar música *(to download music)* hacer mis deberes *(to do my homework)* ver videos *(to watch videos)* hacer compras *(to do shopping)* hacer investigación *(to do research)* mantenerme en contacto con mi familia *(stay in contact with my family)*
A veces *(sometimes)* algunas veces*(at times)* Por la mañana *(in the mornings)* Por la tarde *(in the evenings)* En el colegio *(at school)* Cuando estoy con mis amigos *(when I'm with my friends)*	Puedo …*(I can)* Se puede… *(one can / you can)* No puedo/ no se puede*(I can't / you can't)* sacar fotos *(take photos)* mandar mensajes *(send texts)* charlar con mis amigos *(chat with my friends)* ir en linea*(go on line)* jugar a los juegos *(play games)*

Modal verbs

A modal verb is a word like 'can', 'must', 'should' etc. You use it with an infinitive verb.

Puedo ir en linea= I can go on line
No puedo tomar fotos = I can't take photos
Se puede hacer compras = You can / one can do shopping
Debo hacer mis deberes = I must / have to do my homework
Debes hacer los deberes= You should go and see your cousins

Masculine Singular	Feminine Singular	Masculine plural	Feminine Plural	ENGLISH
alto	alta	altos	altas	***Tall***
bajo	baja	bajos	bajas	***Short***
debil	débil	débiles	débiles	***Weak***
delgado	delgada	delgados	delgadas	***Thin***
A reminder about adjectives (describing something)			**De estatura media**	***Medium height***
			De talla media	***Medium build***
esbelto	esbelta	esbeltos	esbeltas	***Slim***
feo	fea	feos	feas	***Ugly***
flojo	floja	flojos	flojas	***Weak***
fuerte	fuerte	fuertes	fuertes	***Strong***
gordo	gorda	gordos	gordas	***Fat***
guapo	guapa	guapos	guapas	***Good-looking***
hermoso	hermosa	hermosos	hermosas	***Beautiful***
moreno	morena	morenos	morenas	***Dark***
precioso	preciosa	preciosos	preciosas	***beautiful***
rubia	rubia	rubios	Rubias	***Blond***

TERM 2 SPANISH– DISCUSSING FILM, TV AND MUSIC

KEY #LEARNING:

How to talk about / describe **your tastes in film, TV and music!**

Describe a film / TV programme and explain why you like it

The imperfect tense

The first past tense that you learnt in Spanish was the preterite tense. This describes single completed actions that took place at a particular time in the past and had a clear beginning and end. You are now going to learn the imperfect tense. This has two main uses:

1. To say what someone used to do or what used to happen over a longer and vaguer time frame (i.e. when I was little)

2. To describe a scene or say what something was like. For example: Llovía mucho y la gente era antipática (It was raining a lot and the people were unpleasant).

The imperfect tense

Fortunately, the imperfect is fairly easy to form. It has two sets of endings and only three irregulars. The endings are as follows:

	hablar	comer	decidir
yo	hablaba	comía	decidía
tú	hablabas	comías	decidías
él/ella	hablaba	comía	decidía
nosotros	hablábamos	comíamos	decidíamos
vosotros	hablabais	comíais	decidíais
ellos/as	hablaban	comían	decidían

Key questions for this term:

¿Que piensas de la música española?= What do think of Spanish music?

¿Has visto una película española?= Have you ever seen a Spanish film?

¿Qué tipo de programas / películas te gustan?= What sort of programmes / films do you like?

¿Tienes un programa de televisión favorito?= Do you have a favourite TV programme?

¿Te gusta la música / televisión / películas?(Do you like music / TV / films?)
¿Qué tipo / qué tipo de películas te gustan? (What type of films do you like?)
mi película favorita es ...(my favourite film)
me encantan/ me gustan *(I love / Ilike)*
detesto/no me gustan *(I hate / Idon't like)*
no soporto
les.. películas policiacas, películas comicas, películas de guerra *(war films)*, películas del extranjero *(foreign films),* películas de espías *(spy films),* películas de d'aventura, películas dramáticas, películas de acción, películas animados *(animated films),* los westerns
un programa *(tv programme)* , un concurso *(games show)*
un dibujo animado *(cartoon),* las noticias *(news),* el tiempo *(weather forecast)* una telenovela *(soap opera)*
la música rock
la música pop
es
interesante *(interesting)* emocional *(moving)*
aburrido*(boring)* terrible *(rubbish)*

¿Has visto*? (Have you ever seen...?)*
La semana pasada *(last week)*
Hace dos semanas *(two weeks ago)*
ví... *(I saw)*
vimos *(we saw)*
mire *(I watched)*

Fue *(it was)*
Lo encuentro *(I found it...)*

The three irregulars are:	Ser (to be)	Ir (to go)	Ver (to see)
yo	era	iba	veía
tú	eras	ibas	veías
él/ella	era	iba	veía
nosotros	éramos	íbamos	veíamos
vosotros	erais	ibais	veíais
ellos/as	eran	iban	veían

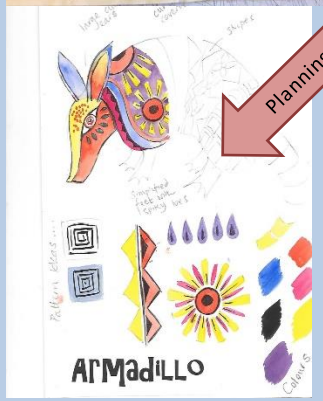
The Fundamentals of Art

ESSENTIAL EQUIPMENT:
- PENCIL PACK (2B, 4B, 6B ETC)
- ERASER
- SHARPENER
- SKETCHBOOK

OPTIONAL EQUIPMENT:
- DRAWING PENS
- WATERCOLOUR SET
- WATERCOLOUR PENCILS
- PAINTBRUSHES

Observational studies

Artist research



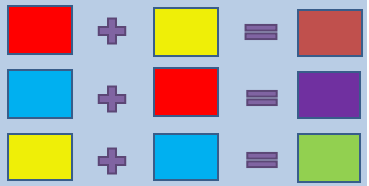
Planning


Final piece

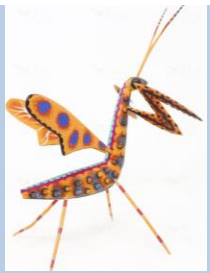
SENTENCE STARTERS

I can vary tone by…
- layering mark making
- using a range of pencils
- varying the pressure of my marks
- using an eraser to add highlights

My work is successful because…
I could develop my work further by…
My design was inspired by the work of…



ATTITUDE
Be positive and try your best!
RESPECT
Respect others, work and the room
THINK
Understand and demonstrate.
IMAGIINE
Be creative, use you imagination!
SPOTLESS
Tidy up after yourself.
TARGET
Follow directions.



COLOUR
BRIGHT
BOLD
VIBRANT
PRIMARY
SECONDARY
TERTIARY
RADIANT
VIVID
DULL
CONTRASTING
COMPLIMENTARY
HARMONIOUS
MONOCHROME
NATUARL
SATURATED
PASTEL
COOL
WARM

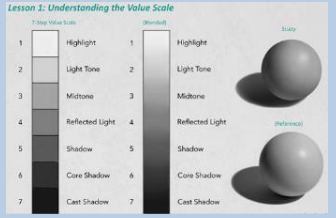
LINE
FLUENT
CONTINUOUS
CONTROLLED
LOOSE
POWERFUL
STRONG
ANGULAR
FLOWING
LIGHT
DELICATE
SIMPLE
THICK
THIN
BROKEN
OVERLAPPING
LAYERED
MARK MAKING

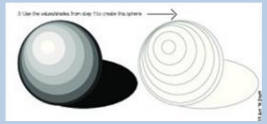
SHAPE/FORM/SPACE
CLOSED
OPEN
DISTORTED
FLAT
ORGANIC
POSITIVE
NEGATIVE
FOREGROUND
BACKGROUND
COMPOSITION
ELONGATED
LARGE
SMALL
2D
3D
TWISTED
JAGGED

PATTERN AND TEXTURE
REPEATED
UNIFORM
GEOMETRIC
RANDOM
SYMMETRICAL
SOFT
IRREGULAR
UNEVEN
ROUGH
BROKEN
GRID
FLAT
WOVEN
ORGANIC
SMOOTH
ABSTRACTED

TONE
BRIGHT
DARK
FADED
SMOOTH
HARSH
CONTRASTING
INTENSE
SOMBRE
STRONG
POWERFUL
LIGHT
MEDIUM
DARK
LAYERED
DEPTH
DEVELOPED
SOFT

TAKING ABOUT ART:
- What are you looking at?
- How was it made?
- Who made it?
- How will it inspire your work?
- Do you like it/dislike it? Why?





ALEBRIJES

TERM 1 and 2

LINE

A **LINE** is the path left by a moving point, eg. A pencil or a brush dipped in paint. A **LINE** can take many forms, eg.
Horizontal, diagonal or curved.
A **LINE** can be used to show contours,
movements, feelings and expressions.

TONE

TONE means the lightness or darkness of something. This could be a shade or how dark or light a colour appears.

TEXTURE

TEXTURE is the surface quality of something, the way
something feels or looks like it feels.
There are two types of
texture: **ACTUCAL TEXTURE** and **VISUAL TEXTURE**.
ACTUAL TEXTURE: really exists so you can feel it and touch it
VISUAL TEXTURE: created using different marks that
represent actual **TEXTURE**

COLOUR

There are 3 primary **COLOURS**: RED, YELLOW, BLUE

By mixing any 2 **PRIMARY COLOURS**
together you create **SECONDARY COLOURS**; ORANGE, GREEN, PURPLE

PATTERN

PATTERN is a design that is created by
repeating **LINES**, **SHAPES**, **TONES** or
COLOURS.

Patterns can be manmade or natural.

SHAPE/FORM

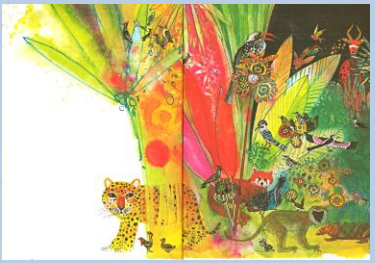
A **SHAPE** is an area enclosed by a **LINE**. It could be just an outline or it could be shaded in.
FORM is a three dimensional shape such as a sphere, cube or a cone.

Sculpture and 3D design are about creating **FORMS**

https://www.youtube.com/watch?v=LI4zIVtiq0I

https://www.youtube.com/watch?v=Kiveg3IW7mE

https://www.youtube.com/watch?v=VRmNOdekc0o



Artists you could research:

Manuel Jimenez Ramirez

Farid Rueda

Brian Wildsmith

Pedro Linares

Traditional Mexican patterns used on Alebrijes

Alebrijes are brightly coloured Mexican folk art sculptures inspired by mythical creatures.

Artist Pedro Linares invented the style of and name of the Alebrijes, which originated in Mexico City.

The story goes that Linares was very ill in 1936 and while in his sick bed, he dreamt of strange places and animals. He saw '*a donkey with butterfly wings, a rooster with bull horns, a lion with an eagle head and all of them were shouting one word, 'Alebrijes! Alebrijes! Alebrijes!'.*

Once recovered from his illness, Linares started to recreate the creatures he had dreamt about. Originally, the Alebrijes were made from a range of papers, and engrudo (a kind of glue made from wheat flour and water) to create a papier mache sculpture.

Today, most Alebrijes are made from wood (though some are still papier mache). In the 1980s Linares was invited to take part in a series of workshops with other Mexican artists and makers. Through the exposure of Linares creatures and style, other artists soon adapted their own carvings of creatures, adding more mythical elements to their own animal designs. Over the years the Alebrijes have spread from town to town.

Y9 ART GRAPHICS

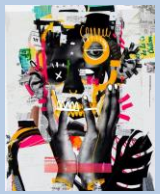
Graphic design is a craft where professionals create visual content to communicate messages

GRAPHIC DESIGN

- GAMES
- POSTERS & BILLBOARDS
- WEBSITES
- VIDEO & ANIMATION
- BOOKS & PUBLICATIONS
- FLYERS & BROCHURES
- CD'S
- BOOKS & PUBLICATIONS

What does a graphic designer do?

Graphic Designers create visual concepts to communicate information. They create everything from posters and billboards to packaging, logos and marketing materials. Graphic Designers use elements such as shapes, colours, typography, images and more to convey ideas to an audience.



Collagraph

Collagraph is a printing technique. 'Colla' means glue and 'graph' means draw in Greek. This means that a collagraph is a collage of materials or various textures that are glued to a printing plate or block (like wood or cardboard). Once attached to the printing block, the collagraph is inked up and printed. You can create multiple prints with a collagraph.

Formal Elements ...

LINE

A **LINE** is the path left by a moving point, eg. A pencil or a brush dipped in paint. A **LINE** can take many forms, eg.
Horizontal, diagonal or curved.
A **LINE** can be used to show contours,
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A **SHAPE** is an area enclosed by a **LINE**. It could be just an outline or it could be shaded in.
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Sculpture and 3D design are about creating **FORMS**

PATTERN

PATTERN is a design that is created by repeating **LINES, SHAPES, TONES or COLOURS.**

Patterns can be manmade or natural.

Health and Safety

When making a collagraph block you will likely need to use a craft knife.

- Always use a cutting mat
- If you need a straight edge, use a metal ruler
- Always roll the blade back when not using
- Always keep your hands out of the direction of the blade
- Move what you are cutting, do not bend your arm with the knife to try to get a section
- Ask a teacher for help if you need it!

KEY TERMS	DEFINITION
Graphic Design	The art or skill of combining text and pictures in advertisements, magazines, or books.
Design Process	An approach for breaking down a large project into manageable chunks.
Target Audience	A particular group at which a product is aimed towards.
Design Brief	Outlines the specifics of a design project which can include the design project overview, timelines, target audience information, and budget.
Research	A collection of new knowledge and/or the use of existing knowledge in a new and creative way so as to generate new concepts and understandings.
Colour Theory	The collection of rules and guidelines which designers use to communicate with users through appealing colour schemes in visual interfaces.
Typography	The art or practice of setting and arranging type.
Mood board	An arrangement of images, materials, pieces of text, etc. intended to present a particular style or concept.
Evaluation	Is a process that critically examines a design.
Modelling	Making a model allows designers to visualise and test how a product looks and performs in 3D and is a great way of checking a product's viability .

Y9 ART GRAPHICS

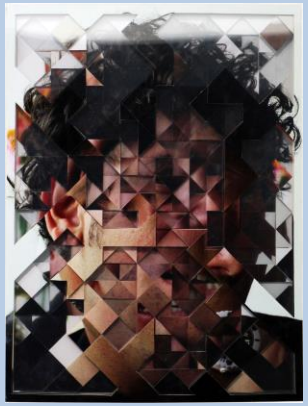
Graphic design is a craft where professionals create visual content to communicate messages

MOOD BOARDS

Mood boards are used to inspire us creatively.
Mood boards comparing colour combinations are a fantastic way to gain a visual understanding of colours which compliment each other.

Elements of a successful mood board:

- Colour swatches/blocks which explore colour themes
- Inspirational imagery
- Your own text, photos to support ideas
- Your own sketches to support ideas
- A theme as a starting point

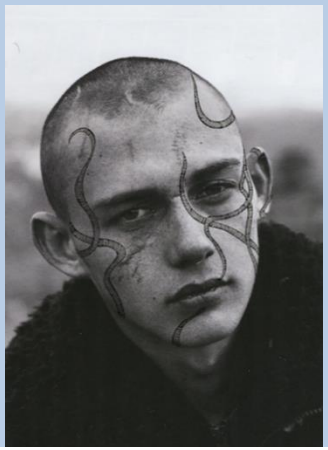


Lucas Simoes

- Brazilian photographer and artist.
- Creates artistic pieces from his photographs, burning, cutting and physically distorting his images to create an unrecognisable image.

Jean Faucheur

- Explores all techniques, all types of spaces, mixes and manipulates materials to produce works of all shapes and sizes.



Alana Dee Haynes

- American illustrator and photographer.
- She often creates work for magazines, particularly fashion magazines.
- She illustrates her images with intricate patterns that follow the contours of the image.

Luke Dixon

- English illustrator.
- Luke Dixon does most of his work in black and white. Effective, handmade and composed of lines.
- His work expresses his emotions and daily life.

Maxime Manga

- Graphic artist and illustrator.
- His motto is "using diversity to create uniqueness."
- It's why his art often features portraits from underrepresented communities, in a digital collage of geometric shapes and stardust shades.

Welcome to Year Nine Music at Trafalgar

Module Learning Objectives

"Dance music takes an explorative look into rhythm, chords and metre in a variety of different types, styles and genres of dance music. By exploring the characteristic musical features of dance music from different times and places"

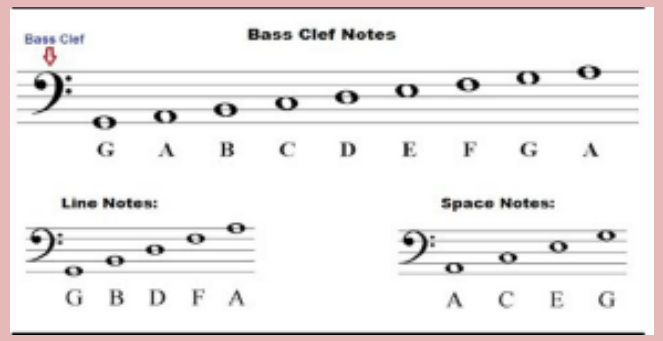
#Understand the connection between the steps, movement and formation of dances and the inter-related musical features within the music that accompanies them.

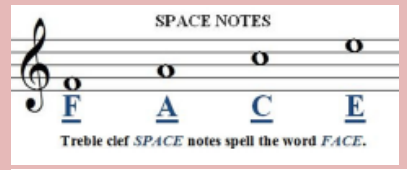
#Understand how different dance music genres use different time signatures and metres and how these relate to the dance.

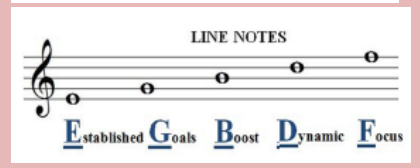
#Understand how dance music is chiefly made up of primary chords, using chords I, IV, V, V7 and seventh chords in a range of simple major and minor keys.

#Understand how different dances use characteristic dance rhythms within their music.

#Describe the different accompaniment patterns and textures in dance music from different times and places.







Dance Music

Exploring Rhythm, Chords and Metre in Music for Dance

Language for Learning/Music Theory

PULSE/BEAT – A regular beat that is felt throughout much music.

RHYTHM – A series of notes of different lengths that create a pattern..

METRE – The repeating pattern of beats and how they are grouped SIMPLE TIME – 2/4, 3/4 and 4/4 time signatures

COMPOUND TIME – 6/8, 9/8 and 12/8 time signatures

COMMON TIME – Another way of referring to a 4/4 time signature, shown in staff notation by a curly "C".

PRIMARY CHORDS – Chords constructed on the first (tonic: chord I), fourth (subdominant: chord IV), and fifth (dominant: chord V) notes of a scale consisting of the root, third and fifth.

TIME SIGNATURE – Tells us how many beats (and what type of beats) there are in each bar of music and is made up of two numbers – the top numbers tells us how many beats and the bottom number tells us what types of beats.

BAR – How music is divided up into different units called "bars".

BAR LINE – a single line to divide music up into sections adding up to a certain number of musical beats shown by the time signature.

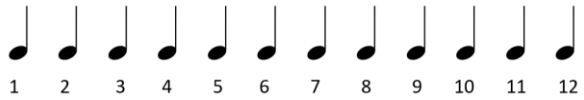
Dance Music

Exploring Rhythm, Chords and Metre in Music for Dance

The **RHYTHMS** of dance music always match the **STEPS** of the dance: the two are inter-related. Dance music is based on **CHORD PATTERNS**: mainly **PRIMARY CHORDS (I, IV & V(7))** and has a clear **MELODY** with an **ACCOMPANIMENT (HOMOPHONIC TEXTURE)**. Different dances and their music use different **METRES/TIME SIGNATURES**.

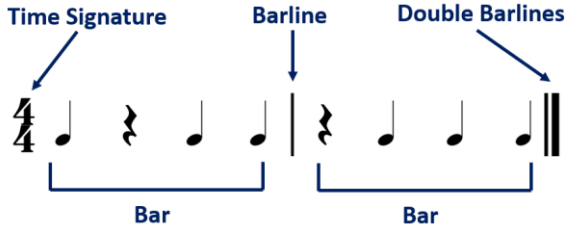
A. Pulse, Time and Metre in Dance Music

The **BEAT** or **PULSE** of dance music is always **REGULAR**. Here is a regular crotchet pulse of 12 beats:



A single **BEAT** is a basic unit of musical time. In dance music, beats are grouped together to make a repeating pattern – normally made up of either twos, threes or fours.

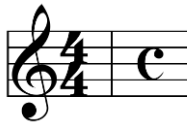
The repeating pattern of beats gives us the **METRE** or the **TIME** of the music, shown by the **TIME SIGNATURE** at the start of a piece of music. Each repetition of the beat-pattern is called a **BAR** and bars are separated by vertical lines called **BARLINES**. A **DOUBLE BARLINE** always comes at the end of a piece of music or section of music.



The **TOP NUMBER** of a time signature tells you how many beats there are in each bar. The **BOTTOM NUMBER** tells you what types or note values these beats are (as divisions of a semibreve = 1):

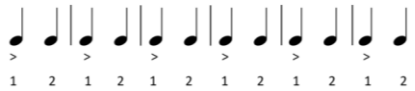
1 = Semibreve
2 = Minim
4 = Crotchet
8 = Quaver
16 = Semiquaver

4/4 can also be shown by a "C" meaning **COMMON TIME**



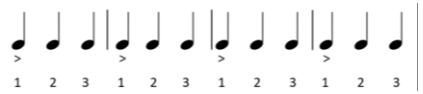
B. Simple Time in Dance Music

SIMPLE DUPLE METRE: Two beats to a bar



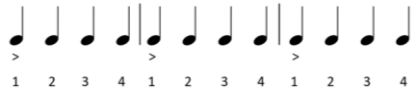
Dance music such as **MARCHES**, the **TANGO** and **IRISH REEL** often use simple duple metre.

SIMPLE TRIPLE METRE: Three beats to a bar



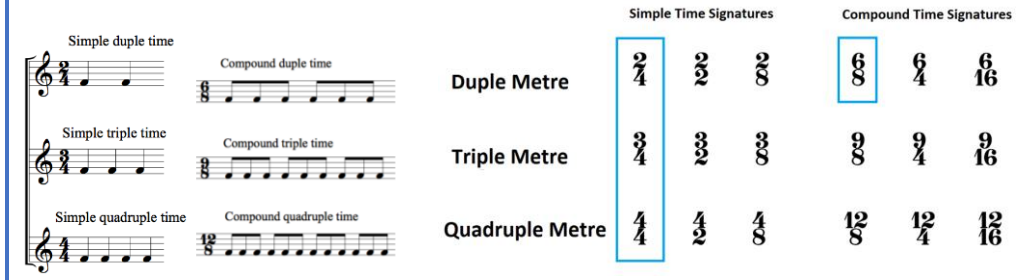
Dance music such as **WALTZES** and the **MINUET, COURANTE** and **SARABANDE** from the Baroque Dance Suite often use simple triple metre.

SIMPLE QUADRUPLE METRE: Four beats to a bar



Dance music such as the **TANGO**, the **IRISH REEL**, the **ALLEMANDE** from The Baroque Dance Suite, **AMERICAN LINE DANCE MUSIC** (Country and Western), **DISCO** and **CLUB DANCE** often use simple quadruple metre.

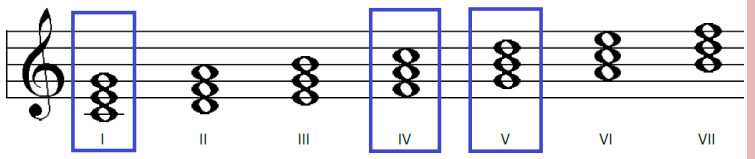
C. Simple and Compound Time

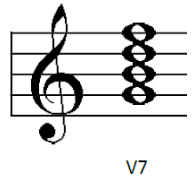


Dance music such as the **IRISH JIG** and the **GIGUE** from the Baroque Dance Suite often use compound duple metre (6/8) with a "**ONE** and a **TWO** and a" feel to the music.

D. Chords in Dance Music

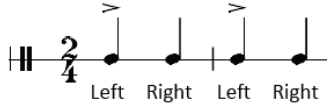
Dance music is based on **CHORD PATTERNS**. **PRIMARY CHORDS**: **CHORD I**, **CHORD IV** and **CHORD V** are most commonly used in dance music with **SEVENTH CHORDS** featuring in popular dance music such as **DISCO** and **CLUB DANCE** (adding a note seven notes above the root of a chord, such as and **DOMINANT SEVENTH CHORD**). All seventh chords have 4 notes. Chords are often performed in different ways as an **ACCOMPANIMENT** in dance music.



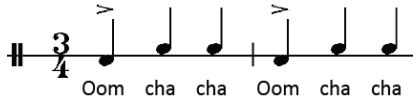


E. Characteristic Rhythms in Dance Music

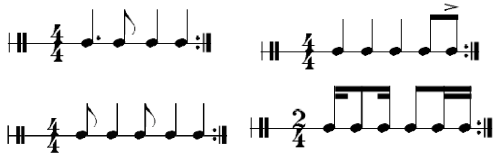
The **MARCH** has a strong **LEFT**, right, **LEFT**, right rhythm:



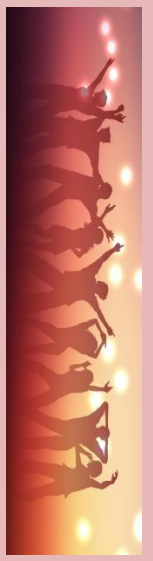
The **WALTZ** has a strong **OOM**-cha-cha, **OOM**-cha-cha rhythm:



The **TANGO** has several rhythms:



FOUR-ON-THE-FLOOR is a common rhythm in **DISCO** and more modern dance music:



Exploring Rhythm, Chords and Metre in Music for Dance

F. Marches

Often with military connections or performed at ceremonies by large groups together.

SIMPLE DUPLE METRE (2/4 time signature), although some marches can be in 4/4).

Strong emphasis on the first beat of the bar (**LEFT**, right, **LEFT**, right).

Clear **MELODY** and **ACCOMPANIMENT** (**HOMOPHONIC TEXTURE**).

Uses mainly **PRIMARY CHORDS (I, IV & V)**.

Often performed by **MARCHING BANDS** featuring **BRASS**, **DRUMS** and **PERCUSSION**.

G. The Waltz

A **PAIRED DANCE** with couples close, arms around and facing each other. Popular in Vienna and became a fashionable **BALLROOM DANCE**.

SIMPLE TRIPLE METRE (3/4 time signature).

Emphasis on first beat of the bar.

Clear **OOM**-cha-cha, **OOM**-cha-cha rhythm. Clear **MELODY** and **ACCOMPANIMENT** (**HOMOPHONIC TEXTURE**).

REGULAR 4-BAR PHRASES.

Slow **HARMONIC RHYTHM** using **PRIMARY CHORDS (I, IV & V)**.

Performed by **ORCHESTRAS**.

STRINGS (occasionally **WOODWIND**) normally have the **MELODY LINE**.

H. Latin Dance: The Tango

Originated in Argentina and became a popular **LATIN BALLROOM DANCE**. A dramatic and sensual **PAIRED DANCE** with close contact, serious expressions, and quick, jerky movements.

Characteristic crisp "**TANGO RHYTHMS**" (see E.) often **DOTTED/SYNCOPATED RHYTHMS**.

SIMPLE DUPLE METRE (2/4) or **SIMPLE QUADRUPLE METRE** (4/4).

Often **MINOR TONALITY** (sometimes **MAJOR** for contrast).

Clear **MELODY** and **ACCOMPANIMENT** (**HOMOPHONIC TEXTURE**).

Uses mainly **PRIMARY CHORDS (I, IV & V)**.

Instruments such as **BANDONEON, VIOLIN, CELLO, DOUBLE BASS** (often plucked – **PIZZICATO**), **SPANISH/ACOUSTIC GUITAR, PIANO**.

I. The Baroque Dance Suite

Popular between 1600-1750, a collection of shorter dances (**MOVEMENTS**) grouped together to form a **SUITE**.

Dances included:

- **ALLEMANDE** (German, 4/4, Stately)
- **COURANGE** (French, 3/4, Lively, Dotted Rhythms and Disjunct melody)
- **SARABANDE** (Spanish, 3/2, Slow and Stately, emphasis on 2nd bear of bar)
- **MINUET** (3/4, Elegant, Stately)
- **GIGUE** (6/8, Fast, Lively, Triplet Rhythms)

All dances in **BINARY FORM (AB)** with each section repeated **(AABB)**.

Performed by a group of instruments such as **HARPSICHORD, LUTE, VIOLIN, CELLO, OBOE, RECORDER, FLUTE**.

J. American Line Dance

GROUP SYNCHRONISED DANCE.

All dancers face same way standing in lines performing steps at the same time without touching.

Accompanied by **COUNTRY AND WESTERN MUSIC:**

CATCHY MELODY, CROTCHET BASS LINE, **SIMPLE HARMONY (CHORDS I & V)** in crotchets.

SIMPLE QUADRUPLE METRE (4/4)

POPULAR SONG FORM

MAJOR TONALITY

Instruments such as **GUITARS (Electric and Acoustic), STEEL GUITAR, DRUMS, BANJO, FIDDLE, HARMONICA, ACCORDION**.

K. Irish Jig and Reel

Traditional **FOLK DANCES** from Ireland with intricate footwork and arms by sides.

REEL:

COMPOUND TIME (6/8); **JIG: SIMPLE TIME** (2/4 or 4/4) both with "two in a bar" feel, continuous bouncy quaver or semiquaver rhythms, fast tempo and **DECORATED** melodies. **BINARY FORM**.

MAJOR/MINOR or **MODAL**.

L. Disco

Appeared in 1970's as an individual, **IMPROVISED DANCE** in clubs from a mix of jazz, funk and soul.

SIMPLE QUADRUPLE METRE (4/4)

FAST TEMPO (around 120 BPM)

FOUR-ON-THE-FLOOR RHYTHM (see E.)

SYNCOPATED bass line parts.

Simple **CHORD PATTERNS** using **CHORDS I** and **V** and **SEVENTH CHORDS.**

POPULAR SONG FORM with a strong **GROOVE** (long repeated rhythm section) and fade out endings, and catchy **HOOKS/RIFFS**.

GUITARS, VOCALS, DRUMS, STRING/BRASS SOUNDS, SYNTHESISERS, SAMPLES.

M. Club Dance

Influenced by **MUSIC TECHNOLOGY:** samplers, synthesisers, sequencers and drum machines.

Various genres: House, Techno, Drum and Bass, Garage, Trance, Ambient. Dancing in individual and **IMPROVISED** on one spot.

SIMPLE QUADRUPLE METRE (4/4).

Use of **ELECTRONIC SOUNDS.**

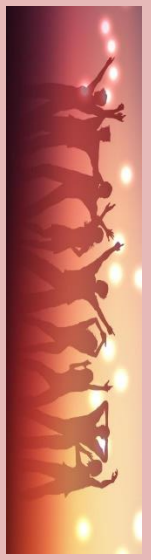
A **STRONG BEAT** emphasised by the **DRUM** and **STRONG BASS LINES**.

SHORT PHRASES and **REPETITIVE SECTIONS**.

FAST TEMPO (Ambient is slower/chilled)

Complex, layered drum patterns.

Inclusion of **SAMPLES**.



Exploring Rhythm, Chords and Metre in Music for Dance

SOUNDTRACKS

Module Learning Objectives

The unit investigates the purpose of film music and the decisions and challenges a composer of film music faces.

#How music can enhance the visual images and dramatic impact of film and can reflect the emotional and narrative messages of the drama.

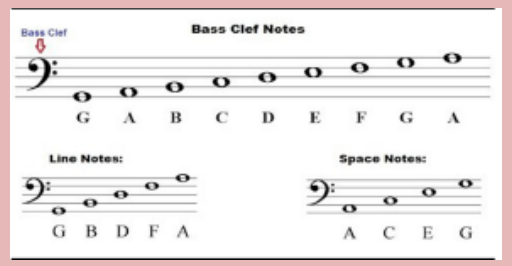
#How timing is a crucial factor in the composition and performance of music for film.

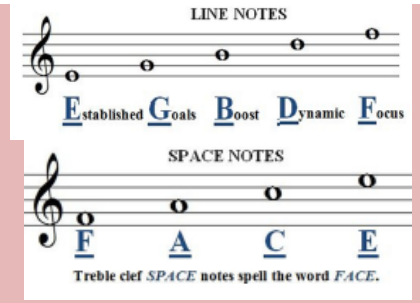
#How film music can change the viewer's interpretation of a scene.

#How to create an effective musical narrative for a film scene, using appropriate techniques to create an intended effect.

Key terminology for Composing Film Music

homophonic: parts moving in chords
monophonic: single melody line
polyphonic / counterpoint: two or more melodies interweaving
Unison: many parts singing the same melody
canon: same melody repeated after overlapping
layered: loops building up over each other





Language for Learning/Music Theory

LEITMOTIF – A frequently recurring short melodic or harmonic idea which is associated with a character, event, concept, idea, object or situation which can be used directly or indirectly to remind us of one not actually present on screen.

SOUNDTRACK – The music and sound recorded on a motion-picture film.

THEME SONG – Often a song in the popular song genre frequently performed over the opening or closing titles of a film.

MICKEY-MOUSING – When the music fits precisely with a specific part of the action in a film e.g. cartoons.

CONCORD/DISCORD – Concords sound calm and complete, discords create tension and suspense.

SEQUENCING – The repetition of a leitmotif often rising in pitch – **CHROMATIC SEQUENCING**.

INTERVAL OF A FIFTH – Two notes which are 5 notes apart – often used by film music composers to create an empty feeling of outer-space in Sci-Fi soundtracks.

MUSICAL CLICHÉ – Devices used by film music composers that are "associated with" a particular character, event or situation often used in cartoons *e.g. using a bassoon to represent a foolish character*.

Exploring Film Music

SOUNDTRACKS

Exploring Film Music

A. The Purpose of Music in Film

Film Music is a type of **DESCRIPTIVE MUSIC** that represents a **MOOD, STORY, SCENE** or **CHARACTER** through music, it is designed to **SUPPORT THE ACTION AND EMOTIONS OF THE FILM ON SCREEN**. Film Music can be used to:

- Create or enhance a mood (though the **ELEMENTS OF MUSIC**) ->
- Function as a **LEITMOTIF** (see D)
- To emphasise a gesture (**MICKEY-MOUSING –** when the music fits precisely with a specific part of the action in a film e.g. cartoons)
- Provide unexpected juxtaposition/irony (using music the listener wouldn't expect to hear giving a sense of uneasiness or humour!)
- Link one scene to another providing continuity
- Influence the pacing of a scene making it appear faster/slower
- Give added commercial impetus (released as a **SOUNDTRACK**) – sometimes a song, usually a pop song is used as a **THEME SONG** for a film.
- Illustrate the geographic location (using instruments associated with a particular country) or historical period (using music 'of the time').

D. Leitmotifs

LEITMOTIF – A frequently recurring short melodic or harmonic idea which is associated with a character, event, concept, idea, object or situation which can be used directly or indirectly to remind us of one not actually present on screen. Leitmotifs can be changed through **SEQUENCING, REPETITION** or **MODULATION** giving a hint as to what may happen later in the film or may be heard in the background giving a "subtle hint" to the listener *e.g. the "Jaws" Leitmotif*

E. History of Film Music

Early films had no soundtrack **("SILENT CINEMA")** and music was provided live, usually **IMPROVISED** by a pianist or organist. The first **SOUNDTRACKS** appeared in the 1920's and used existing music **(BORROWED MUSIC –** music composed for other (non-film) purposes) from composers such as Wagner and Verdi's operas and ballets. In the 1930's and 1940's Hollywood hired composers to write huge Romantic-style soundtracks. **JAZZ** and **EXPERIEMENTAL MUSIC** was sometimes used in the 1960's and 1970's. Today, film music often blends **POPULAR, ELECTRONIC** and **CLASSICAL** music together in a flexible way that suits the needs of a particular film.

B. How the Elements of Music are used in Film Music

PITCH AND MELODY – **RISING MELODIES** are often used for increasing tension, **FALLING MELODIES** for defeat. Westerns often feature a **BIG THEME**. **Q&A PHRASES** can represent good versus evil. The **INTERVAL OF A FIFTH** is often used to represent outer space with its sparse sound.
DYNAMICS – **FORTE (LOUD)** dynamics to represent power; **PIANO (SOFT)** dynamics to represent weakness/calm/resolve. **CRESCENDOS** used for increasing threat, triumph or proximity and **DECRESCENDOS** or **DIMINUENDOS** used for things going away into the distance. Horro Film soundtracks often use **EXTREME DYNAMICS** or **SUDDEN DYNAMIC CHANGES** to 'shock the listener'.
HARMONY – **MAJOR** – happy; **MINOR** – sad. **CONSONANT HARMONY OR CHORDS** for "good" and **DISSONANT HARMONY OR CHARDS** for "evil". **SEVENTH CHORDS** often used in Westerns soundtracks.
DURATION – **LONG** notes often used in Westerns to describe vast open spaces and in Sci-Fi soundtracks to depict outer space; **SHORT** notes often used to depict busy, chaotic or hectic scenes. **PEDAL NOTES** – long held notes in the **BASS LINE** used to create tension and suspense.
TEXTURE – **THIN/SPARE** textures used for bleak or lonely scenes; **THICK/FULL** textures used for active scenes or battles.
ARTICULATION – LEGATO for flowing or happy scenes, **STACCATO** for 'frozen' or 'icy' wintery scenes. **ACCENTS (>)** for violence or shock.
RHYTHM & METRE – 2/4 or 4/4 for Marches (battles), 3/4 for Waltzes, 4/4 for "Big Themes" in Westerns. **IRREGULAR TIME SIGNATURES** used for tension. **OSTINATO** rhythms for repeated sounds *e.g. horses.*

C. Film Music Key Words

SOUNDTRACK – The music and sound recorded on a motion-picture film. The word can also mean a commercial recording of a collection of music and songs from a film sold individually as a CD or collection for digital download.
MUSIC SPOTTING – A meeting/session where the composer meets with the director and decides when and where music and sound effects are to feature in the finished film.
STORYBOARD – A graphic organiser in the form of illustrations and images displayed in sequence to help the composer plan their soundtrack.
CUESHEET – A detailed listing of **MUSICAL CUES** matching the visual action of a film so that composers can time their music accurately.
CLICK TRACKS – An electronic **METRONOME** which helps film composers accurately time their music to on-screen action through a series of 'clicks' (often heard through headphones) – used extensively in cartoons and animated films.
DIEGETIC FILM MUSIC – Music within the film for both the characters and audience to hear *e.g. a car radio, a band in a nightclub or sound effects.*
NON-DIEGETIC FILM MUSIC – Music which is put "over the top" of the action of a film for the audience's benefit and which the characters within a film can't hear – also known as **UNDERSCORE** or **INCIDENTAL MUSIC**.

F. Film Music Composers and their Soundtracks

Jerry Goldsmith
Planet of the Apes
Star Trek: The Motion Picture
The Omen
Alien

John Williams
Star Wars
Jaws
Harry Potter
Indiana Jones
Superman, E.T.

James Horner
Titanic
Apollo 13
Braveheart
Star Trek II
Aliens

Ennio Morricone
The Good, The Bad and The Ugly
For a Few Dollars More
The Mission

Danny Elfman
Mission Impossible
Batman Returns
Men in Black
Spider Man

Hans Zimmer
The Lion King
Gladiator
Dunkirk
Blade Runner 2049
No Time to Die

Bernard Hermann
Psycho
Vertigo
Taxi Driver

Exploring Film Music

Term : 1 & 2

Persuasion

How do we get what we want ?

Part 1 - **The Psychology & Morality of Persuasion.**

Part 2 - **Persuasion & the Actor's Objective.**

The verb – '**To Want**' is one of the oldest words in any language

Things that you will learn in this scheme

- How to identify the techniques & strategies we use to get what we want.
- How to apply these strategies as the basis of a **theme based drama**.
- How using these themes can create **depth in the scenarios** you devise and ***richness* in your characters**.
- How a proper investigation of **context** and **consequence** can develop your scenarios adding **substance** and **depth**.
- What are the **rights and wrongs** of persuasion- how characters can **avoid the techniques** and still get what they want.
- How the idea of persuasion **connects with Stanislavski's idea** of the **actor's objective** and other elements of his **Psychological Technique.**
- How to apply three elements of the psychological Technique to make a deep connection with your character and their situation.
- How making a deeper connection with character contributes to convincing & powerful drama in the Naturalistic genre.
- Some ways in which **advertising** works on us.
- How **montage** can be used to explore and communicate themes with variety and imagination.

Study Focus

An overview of terms one and two

We will study the idea of the ways in which characters persuade others to give them what they want. We will look at the ways that persuasive techniques are used in advertising and in our daily lives; in our relationships and in our conduct. We will explore the times where these techniques 'work' and the times when we need to find something more, something else, something less. **Persuasion** will be the basis for some advanced montage work, some highly focussed duologues in the **Naturalistic genre.** We will make links between the theme of persuasion and the acting techniques of a major modern practitioner, Constantin Stanislavski.

I want.. You want.. he wants ...she wants .. we want...you want.. They want.. I wan.

How do we get what we.. How do we get what we .. How do we get...

Improvisation & exploration

We begin this topic with a simple pair exercise where we try to get our partner to do a simple task. From here we watch and identify all the different ways that characters try to get what they **want** or, seek to get others to do what they **want**. We put these techniques under the umbrella term of persuasion. The usual techniques that come up are; **bribery, blackmail, emotional blackmail, guilt trip, flattery, 'the fear of God' and sympathy bid**. You will be asked to define them.

You explore how playwrights use these techniques in their plotlines.

You use improvisation and role play to explore the different ways that these techniques are used in peoples lives. You will take these ideas to develop a five scene **montage** on persuasion.

Skills and ideas to assist your study of persuasion

Key Previous learning that you will need to draw on when you are exploring the persuasive techniques and when you are devising your 5 edited scene montage of, Persuasion…

The 6 **Ingredients of A Play**

The 6 things to remember in a **Freeze Frame**

Internal & External **MIME** technique

Remember to use <u>Evaluative Vocabulary (EV)</u> when you are evaluating in class and when you are doing written evaluations at home. Here's the list again with a few additions now that you are more experienced.

These are a collection of words that enable you to evaluate drama work specifically instead of saying something is, 'good' or 'bad' which doesn't mean very much in drama.

Inventive Intelligent **Imaginative** Creative **Skilful** Exciting **Informative** Dull **Inspiring** **Clear** Unclear **Muddled** Confused **Misguided** Shallow **Compelling** Moving **Heart - Wrenching** Pedestrian **Emotionally - Draining** Spirited **Believable** Credible **Convincing** Powerful **Entertaining** Riveting **Gripping** Captivating **Engaging** vapid **vacuous** **Harrowing**

**** three ideas to assist you in finding depth and detail in your work****

<u>Context</u>

Everything happens in a context. The context affects the way a character is behaving, what they are feeling. The context is the situation that the scene comes out of. We can understand why a character is being in such a bad mood if we know that a moment or two earlier, before this scene, they discovered that their house had been burgled and all their special things smashed. You will be asked to think up the pre scenes to the scenarios that you devise so that you extend your work and put the scene, characters and their behaviour, 'into context'.

<u>Consequence</u>

All our actions, all our words and all behaviours have consequences. Same for the characters that we play. In this scheme of work you will be asked to invent scenes that show the outcome of the characters actions- in the example above, you would need to work out a logical and creative consequence to the character's bad mood and devise a scene to show it.

<u>Montage</u>

This is the technique of splicing together a number of short scenes all connected by the same theme or issue. A bit like a collage that you do in art. You first met this technique way back in Y7 when you produced a collection of scenes around the **'Joys and Jubilations, the Trials & Tribulations'** of your first few weeks at a new school. It is a technique much admired at GCSE and A level by the examination boards. We will deepen our knowledge and sharpen our skills in this technique in this SOW.

Part 2; Devising 3 emotionally charged duologues;
The Care Home, 'School', I love you, but..

Key Theatre Practitioners:
Constantin Stanislavski

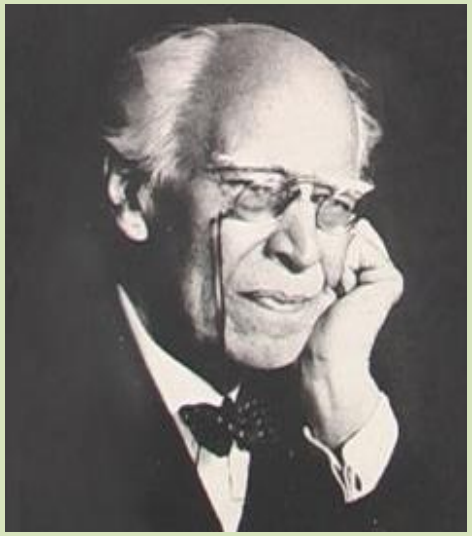
Stanislavski's acting ideas are contained in his Psychological Technique (Psycho- Technique.) Together, they assist an actor in creating their role and beginning to live the life of the character on stage- that is to think, feel and behave **as** the character.

In this scheme we consider four of **Stanislavski's** ideas; **The Given Circumstances, Objectives, Emotion Memory** and the **Creative If**. They are taught here so that you can make your acting believable and truthful.

Most actors that you know from TV, cinema and the stage will have been affected and influenced by his ideas. Drama Schools and by many directors. He can be thought of as the Father of modern acting even though he was a Russian who lived a hundred years ago.

We may never stray from the main purpose of our work which is to love our art with the whole of our heart and love it unselfishly.

Constantin Stanislavski



Constantin Stanislavski

1863-1938

The father of modern drama

Undoubtedly, there is no one who has contributed more to developing the creative art of the actor, than Constantin Stanislavski. He worked as an actor and theatre director as well as a theatre teacher. The majority of his life and work were dedicated to finding ways to assist actors in playing their roles creatively, truthfully. In his time he was one of Russia's finest actors and directors. He founded the Moscow Art Theatre (MAT) and was a pioneer of Naturalistic theatre – the style that we in the west are most familiar with today. His ideas on actor training are contained in several readily available books.

Key theatre theory: Stanislavski's Psychological Technique:

The (character's) Given Circumstances.

You first met this idea in the ***Walking On Ice*** Exercise. The character's Given Circumstances are everything about the character and their situation that are relevant to the scene/ play. They include their age, mood, relationship status, financial situation, class, status, the situation they have come from, the situation that they are going to, what they want, what they want in this particular situation. The more you know about your character, the more rounded and detailed your portrayal of them will be.

The Actor/character's Objective

What a character wants from a situation is called their **objective**. Their objective is what they want to achieve from a situation. We make a link between the ways characters use, bribery, flattery and other persuasive techniques to get what they want and Stanislavski's idea of the character's objective which is also about what the character wants. **An objective should always begin, 'I want...'** Some objectives are straightforward; 'I want a drink because I am thirsty', others involve a bit more psychology, 'I am taking a drink because I want time to think of a good excuse...'

Key theatre theory continued

Stanislavski's Psychological Technique:

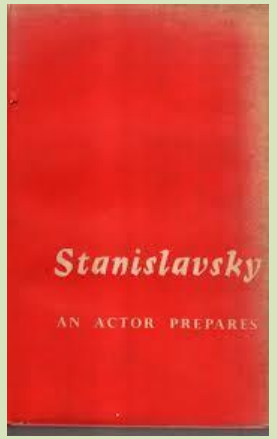
Emotion Memory

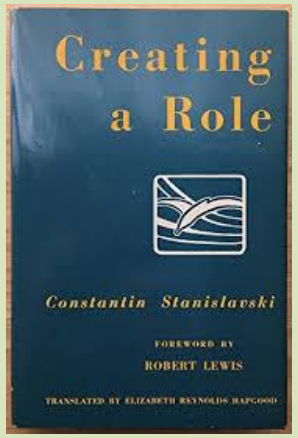
Often actors have to play characters in situations that they have never been in themselves and characters who have feelings that they have never felt exactly themselves. If this is true then an actor can remember feelings that are similar to the ones that the character is experiencing.

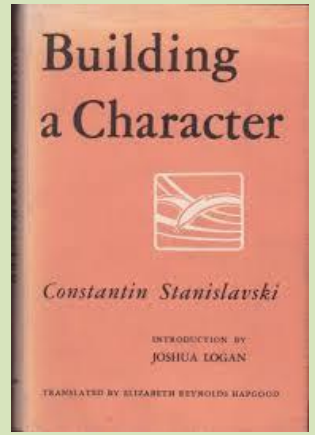
The Creative if

This is a good technique for keeping everything above board and honest- this helps our creative self to have faith, trust and believe. An actor can say to themselves,' I know that I am not a new teacher on their first day in a rough school looking for the school office (***4th Year Are Animals***) but what would I do, what would I think, how would I behave,'**if I was**'. Using the creative If properly will be like using a lever to," ***lift you from your everyday life and onto the plane of the Imagination***." Stanislavski.

Towards the end of his life, Stanislavski laid out the results of his, near 50 years, research into an actors craft in writing. They were translated into English in 3 volumes by Elizabeth Hapgood

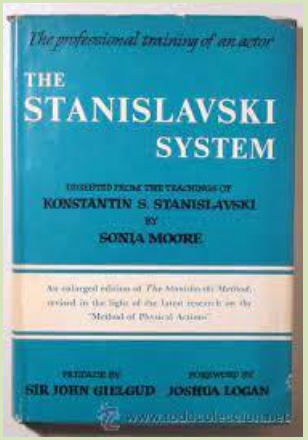






Images of two vintage copies of the original translations of Stanislavski's ideas into English. I still have the one on the right.

Sonia Moore's book is the clearest and most accessible book on Stanislavski's ideas on acting. It has recently been reprinted and is readily available



This work if designed to assist you in making a significant step forward with your internal acting technique. The intention is for you to learn how to act naturally and truthfully on stage

GCSE drama & Theatre Studies students use these ideas increasingly in their final performance exam.

You will develop your ability to use these Psychological techniques of Stanislavski's in two or three structured improvisations. These will all be in pairs and increasingly challenging on a number of levels. You will particularly practise Stanislavski's idea of character motivation and the actors objective

The *Actor's Objective* in a scene and how it fits in with other techniques

An actor's training is in 2 parts- training to develop imagination and feeling on the one hand, and voice and body training, on the other. The chart below compares the two different aspects of an actors training –Actors use techniques to **discover the way** a character feels and thinks. They also do physical and vocal exercises so that they can express their character **clearly** and **creatively**.

Internal & External Acting Technique

(Psychological technique & Physiological technique)

Internal Technique (psychological)

Emotion Memory

Creative 'If'

Given Circumstances

Actor's Objective

External Technique (physiological)

Vocal Training

(Accent, Projection etc.)

Physical Training

(Dance, body work, Posture work, mime)

Applying previous knowledge & Past Learning

The Ingredients of a Play- (IOP)

Character, Plot, Setting, Theme, Speech & Genre.

Can you define all of these now?

Devise/ Devising-

Meaning, **'to plan & make'** –You will draw heavily on your devising skills and learn how to create greater depth, imagination and credibility in your characters, relationships and scenarios.

Freeze Frame

You will explore more of the potential of this simple technique to brainstorm ideas physically and how a proper consideration of **space** and **levels** will make your situations more **imaginative, convincing and entertaining.**

To remind you, a freeze frame is a **still image** like a photograph. You will notice I frequently refer to them as **tableau(x)**

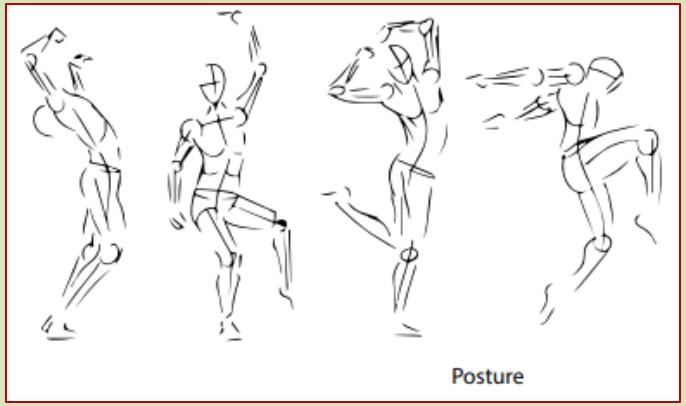
You made a poster, way back in Y7, of all the other things that you need to consider when making a freeze frame. Can you remember them? If not you can look again at your, ***Devising*** Knowledge Organiser. And in case you don't have that to hand, they are; **gesture, posture, facial expression, body language, space & levels.**

Personal & Interpersonal Skills (PIPS)

Keep practising these !!!

Working with others doesn't get any easier. Even though you know your classmates much better now, some may have different ideas to you, they still may not have any ideas at all, they might not listen to you etc. It can be tricky.. but it is an ideal opportunity for you to practise using your personal and interpersonal skills so that you continue to grow emotionally and be part of a solution and less of the cause of the problem.
They include; **tolerance, courage, resilience, kindness, honesty** and many more.
Do you remember when you designed your PIPS poster for home work? What skills and qualities are you bringing to your group work? What skills and qualities are you still working on?

Here is a reminder of the ways you can communicate what your character is like and what they are feeling.
As our focus at present is on your learning & using the **Psychological Technique** (Internal), it is worth noting that all the following (External techniques) are **physiological techniques**. I am including a chart (page 6) for you to help you see the link, because it is important


Posture

The Actor's Use of Body

Facial Expression (FE) - This can show a character's thoughts, feelings and mood.

Posture- This is a word to describe the way we sit or stand. A poor posture could show laziness or 'attitude'. An upright posture can show the character is interested & engaged.

Gesture- We make gestures with our hands and head mostly. Gestures can 'say,' 'everything is okay' or, a pointed index finger at someone can show that the character is telling that person off.

Body Language (BL) - In life, we are often unaware of the way our body is 'talking'. For example, we may not be aware that our fidgeting shows we are nervous or our folded arms show that we are feeling a bit defensive. Drama students have to be aware of what their body is saying to make sure it is showing what their character is like and what they are feeling at the time.

Tempo rhythm in movement
This is the speed and manner in which a character acts and moves. A fast, erratic movement can show someone is flustered or over excited. A slow, measured gesture or movement can show a character is confident, assured and reassuring to the audience. It is an important idea when interpreting and communicating a character.

Bribery .. Blackmail . Emotional Blackmail .. Guilt Trip .. Sympathy Bid ..Flattery .. Putting The *Fear of God* in Someone

Assessment in this SOW

We will continue to use two different types of assessment and their posh names; **formative assessment** and **summative assessment. Formative assessment** is where we look at your work and suggest things that you can do or stop doing which would improve your rate of progress. In **summative assessments**, we simply make a judgement about the quality of your work and usually give it a grade or level. **Formative assessment** of your practical and written work is given often. Sometimes you may receive lots in one lesson, particularly if you are at a place where you are ready to make lots of progress. It is a good idea to write down the **formative assessment comments** that you receive in your book. You should certainly **remember** them and **work** on them. **Summative assessments** are given once a term.

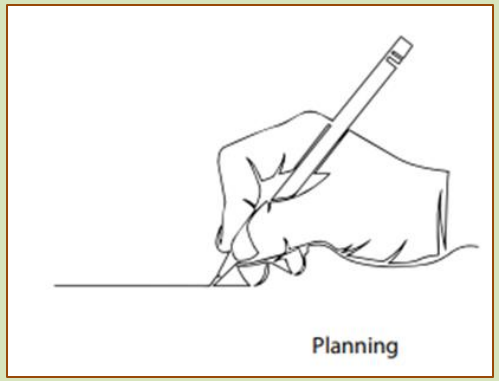
You will be assessed on your;

- Understanding of the **persuasive techniques** and the meanings of the **Psychological technique.** (in class discussion, rehearsal, devising & written homework)
- Practical application of the **persuasive techniques** and the meanings of the Psychological technique. (Rehearsal and performance).

Homework Tasks

These may include;

1) Scripting scenes. For the montage performance, duologues, TV advertisement
2) Defining the persuasive techniques we identify in class using the definitions that we agree on in class.
3) Line learning
4) Producing a detailed product description
5) Producing a detailed scenario for a 30 second prime time TV advertisement.
6) A sales pitch.
7) An evaluation of a class performance using EV.



The central themes of persuasion and the way that an actor can identify these in a script and work out what objective to play when acting the scene will be very important in our next two schemes of work; Performing From Text & Plays In Context. Take time at the end of this unit to reflect and absorb the information. Remember to ask in class if you need clarification on any of these ideas.

Advertising

In our daily lives, we are bombarded on an almost consistent basis by advertisements aimed at persuading us to part with our hard earned cash and buy their product. The stream of adverts follow us through all sections of the media and social media. In most countries now it is almost impossible to avoid it. Our studies in Persuasion investigate the many techniques that companies use to get us to buy their product. We explore the rights and wrongs of these methods and the impact that it has on our lives and relationships

You will take part in a variety of **role plays** in the exploration of these ideas and the development of this work. It is important that you do not mix up the different roles and it is very important that you appreciate the different requirements of the two key parts that you **role play** in the planning part of the devising process…

The **Multi National Executive** & the **Advertising Agency Executive** are <u>different</u> characters with <u>different</u> responsibilities in this work. Don't get mixed up !!!

Some key terms that we use

Pitch – this is the ideas the advertising agency for **marketing** the product and delivering the **brand's** message – it is the key strategy in their **bid** to win the contract to make the TV advert.

Brand – anything that brings about awareness of a specific product or business while separating it from other establishments.

Corporate Identity

New Product Development – the creation of a new product that involves research, development, product testing and launching

Market

Role 1 - Advertising executive

You will also get to play the role of an advertising executive – someone whose job it is to come up with ideas and develop ideas for a television advert that will 'sell' the new product that the multi national Innovations team has come up with.

Role 2 -Executive in a multi - national company.

You will work with others in small groups to imagine a new and revolutionary product – it will be either a new telecommunications

The 40 second prime time TV advertisement

You will work I a group of 5 or 6 and devise your own TV advert to perform to the rest of the class. In this assessed piece of work you will be able to demonstrate the range of persuasive techniques that you have learned. You will be ale to apply knowledge of persuasive language that you have used in other subject areas. You will have the opportunity to show case your devising & performance skills

You get to **plan, make** and **perform** your own 90 second prime time Televisio n advert.

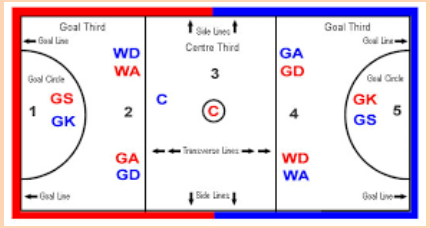
7 Most Powerful Words in Advertising

Favourite words used by advertisers

'You'
Guarantee
Safe
Best
Proven

See if you can work out and/ or find out why these words are so useful when trying to sell someone something.(notice the alliteration there?

Expectations and Routines



Netball

Effort and Engagement

Physical Ability and Technique

Positional Warm-up:
- Should the different positions of a Netball Team complete different sections of the skills warm-up?
- Can you give some examples of what activities each position could do to prepare fully for the game? (Think about the shooters and defenders)

Netball Court & Positions:

Goal Keeper (GK): Defends the goal. Sections 1 & 2 only.
Goal Defence (GD): Defends the goal. Sections 1,2&3
Wing Defence (WD): Helps to defend attacking plays. Sections 2&3
Centre (C): Controls centre court, links attacking & defensive play. Sections:2,3,4
Wing Attack (WA): Helps to link attacking play to the shooters. Sections 3&4
Goal Attack (GA): Scores goals for the team. Sections 3,4&5
Goal Shooter (GS): Scores goals for the team. Sections 4&5

Game understanding:
- How confident are you to umpire?
- How easily can you create space and lose your defender?
- When should you be involved in play?
- How would you prevent your opponent from getting the ball?
- Can you implement set plays effectively?

Implementation of the Academic Standards to the PE Environment:
- Arrive promptly and change within the allocated time.
- Always have the correct PE kit.
- Fully engaged throughout the lesson, striving to improve performance of skills and techniques at every opportunity.
- Motivated and contributes 100% effort.
- Can work independently to complete a warm-up, drills and competitive situations.
- Perseveres and doesn't give up, demonstrates resilience when practicing and applying skills to different situations/ game scenarios.
- Participates in regularly outside of school either for a club, going to the gym or other regular physical activities.

Ball Handling skills:
- One and two handed catching
- Moving into space to receive a pass
- Jumping to catch
- Changing direction

Signalling: Used to show a teammate that you are ready to catch the ball and the direction you want them to throw into. *Signal by pointing your arm in the direction you are going to move to catch the ball just before you start moving.*

Driving into space: Used to move into a better position to catch the ball effectively. *Sprint towards the ball hands out ready to catch.*

Pivot: Turn on your landing foot to step around and find the best possible pass. *Turn and step around your landing foot*

Dodging: Used to outwit you defender and get free into space to receive the ball
Basic dodge: Pretend to go one way and change direction to go the other using a signal to show your team mate your intention

Shooting: Only GS and GA can shoot when their landing foot is inside the D. *Face the post, turn elbow, ball on finger tips, bend & flick. Aim for the point of an imaginary cone on top of the hoop*

Expectations and Routines

Rugby

Physical Ability and Technique

Leadership and Communication:
- What are these skills and how important are they when leading a warm-up?
- Can you support your peers when they are practicing and developing their skills and techniques?

Basic Rules
1. Game is started by kicking the ball from the centre spot forwards.
2. The U14 game has 15 players and 25 min half.
3. Referee and two assistants will officiate the game.
4. The ball must be passed backwards
5. If a ball goes over a touch line an uncontested lineout is taken.
6. To score the ball must cross the opposition's goal line.
7. Tackling – Must be below the shoulder.
8. 8 player scrum –strike and push. Number 8 pick up and run.
9. Ruck and maul – unlimited.
10. Fend-off below armpits.

Game understanding:
- What are the different types of tackle and when would you use them?
- What player positions are used in an 8 player scrum?
- What are the different ways to kick at goal and how many points are on offer?
- Why might the number 8 pick up and run at a scrum?

Effort and Engagement

Implementation of the Academic Standards to the PE Environment:
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- Motivated and contributes 100% effort.
- Can work independently to complete a warm-up, drills and competitive situations.
- Perseveres and doesn't give up, demonstrates resilience when practicing and applying skills to different situations/ game scenarios.
- Participates in regularly outside of school either for a club, going to the gym or other regular physical activities.

Passing: The pass must go backwards. Passes can be [illegible]ed to cover ground quickly), short (often softer pass due to close support) or special e.g. loop (this will involve teammates changing direction and tight passing to outwit your opponent).
Tackling: There are different types of tackle. These are front on, side on and from behind. They all require the tower of power, cheek to cheek and ring of steel, however they will need to be adapted depending on the position.

Maul – A maul occurs when the ball carrier is held by one or more opponents and one or more of the ball carrier's team mates holds on (binds) as well (a maul therefore needs a minimum of three players). The ball must be off the ground.

The team in possession of the ball can attempt to gain territory by driving their opponents back towards the opponents' goal line. The ball can then be passed backwards between players in the maul and eventually passed to a player who is not in the maul, or a player can leave the maul carrying the ball and run with it.

Scrum: 8 players in the scrum. Crouch, bind, set will be instructed by the referee and players can only push when the ball has entered the scrum. Players must maintain their tower of power, the must also maintain their bind. Number 8 can pick up and run.
Uncontested Lineout: 3 players from each team stand in a line opposite each other with space between them, team throwing in the ball must retain possession.

Expectations and Routines

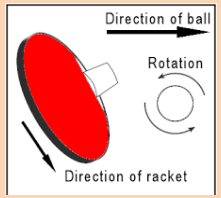
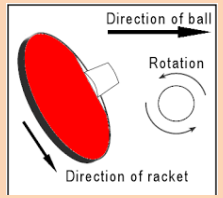
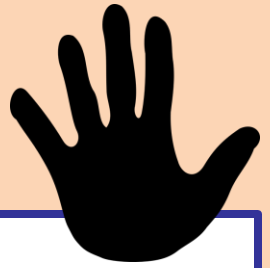


Table Tennis



Physical Ability and Technique



Developing tactical practices to outwit your opponent:

- Using targets as part of your skills practice to develop accuracy and directional control.

Basic Rules of Table Tennis

1. To start a point, the server must stand at the back of the table and can serve either forehand or backhand. The ball must be thrown up either equal to or above the height of the net before striking the ball and the ball must be thrown from an open palm to stop finger spin.
2. A serve must hit both your side of the table and your opponent's side to be seen as a 'good' serve.
3. If the ball hits the net on a serve but continues over the other side then a 'let' is played.
4. There are no second serves.
5. Service must can be straight or diagonal in singles but can only travel diagonal in doubles.
6. Players are allowed to hit the ball around the side of the net.
7. The ball must bounce on a player's side of the table before playing their shot.
8. During play, competitors are not allowed to touch the table.

Game understanding:

Applying a slice

1. You only slice when you're far in the back court.
2. Raise the racket. Let the ball come to you and strike down and forward as though you were trying to slice off a piece of the ball.
3. Keep the ball low.

Effort and Engagement

Implementation of the Academic Standards to the PE Environment:

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- Perseveres and doesn't give up, demonstrates resilience when practicing and applying skills to different situations/ game scenarios.
- Participates in regularly outside of school either for a club, going to the gym or other regular physical activities.

Doubles

Service must be diagonal, from the right half court (marked by a white line) to the opponent's right half court.

Service changeover in doubles is as follows:

- At the start of a game, the serving team will decide which player will serve first. The first player to serve is A1 and;
- A1 serves to B1 (2 services)
- B1 then serves to A2 (2 services)
- A2 then serves to B2 (2 services)
- B2 serves to A1 (2 services)
- Repeat until one team wins the game.

Rotation rules for doubles

In doubles, you should alternate hitting the ball with your partner. So, for example, A1 serves the ball to B1, who serves the ball. A2 then hits the ball and B2 returns this. A1 hits to B2, A2 hits and B1 returns…and so on.

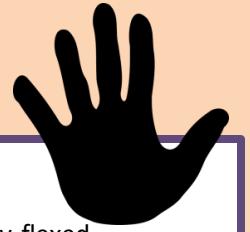
Examples of tactics played in Table Tennis

- Play to opponents crossover point (playing elbow)
- Use wide angles
- Add spin to your shots
- Keep everything tight and short so opponents cannot attack
- Always try to attack first
- Vary your serves
- Keep ball away from your opponents strongest side

Analysis

Volleyball

Technique



What skills do you think you should focus when warming up for a match?

1. Pulse Raiser
2. Dynamic stretches
3. Skill practice/ Drills
4. Mental Preparation

Analysis of Performance:

- What are the key teaching points for each of the 6 main skills of volleyball?
- What are the strengths of the player?
- What are the areas to improve?

Basic Rules:

- The server stands at the back of the court and can serve either over- or under-arm into the opponent's side of the court
- The opposing team is allowed a maximum of three touches on their side of the court before they must send the ball back over the net
- The player cannot touch the ball twice in two consecutive touches but could on the first and third contact.
- The ball must be hit - not caught
- Whichever team wins the point then goes on to serve
- Every time your team wins the serve from the other team your players rotate their position on court – clockwise so that everyone gets a chance to serve

Leadership

Implementation of the Academic Standards to the PE Environment:

- Arrive promptly and change within the allocated time.
- Always have the correct PE kit.
- Fully engaged throughout the lesson, striving to improve performance of skills and techniques at every opportunity.
- Motivated and contributes 100% effort.
- Can work independently to complete a warm-up, drills and competitive situations.
- Perseveres and doesn't give up, demonstrates resilience when practicing and applying skills to different situations/ game scenarios.

Set/ Volley:

Stage one

- Stand in position on the balls of your feet, with knees slightly flexed.
- Drive off from legs to get towards the path of the ball.
- Call for the ball.
- Get in line with the ball's path.
- Keep your eyes on the ball at all times.

Stage two

- Move towards the ball.
- Extend your elbows so that your arms are out in front of you at head height.
- Slightly flex your elbows.
- Have your palms facing up and fingers spread.
- Keep your eyes on the ball.

Stage three

- Watch the ball.
- Face the ball in ready position with knees slightly flexed.
- Hands are held above the head, palms up.
- Move body underneath the ball and push the ball into the air with your fingertips.
- Extend knees to help with the push into the air.
- Follow through with fingers pointing at the sky

Dig:

Stage one

- Stand in position on the balls of both feet, with knees slightly flexed.
- Drive off from legs to get towards the path of the ball.

Stage two

- Keep both eyes on the ball.
- Place the back of the right hand on top of the palm of the left hand.
- Bring both thumbs together and place them side by side.
- Keep fingers and thumbs close together.
- Lock your elbows together.
- Hold arms out straight in front.

Stage three

- Hands start low in front of the body and swing up to strike the ball upwards.
- Strike the ball with the lower forearms.
- Follow through with the hands pointing towards the intended target or the sky.

Design and Technology

Key terms

Input device: something that can give an input signal to the system.

Output device: something that responds to an instruction of change in control elements.

Input signal: information given to the system by an input device.

Output signal: an instruction the system gives to an output device.

Program: a set of instructions the system controller has been given to make the electronic system do what it is supposed to do. If a transistor (see page 34) is used, there is no program, just a simple switching action due to the rise in voltage on the base of the transistor above 0.6 volts.

Resistance: an electrical quantity that is a measure of how the device or wire reduces the electric current flow through it.

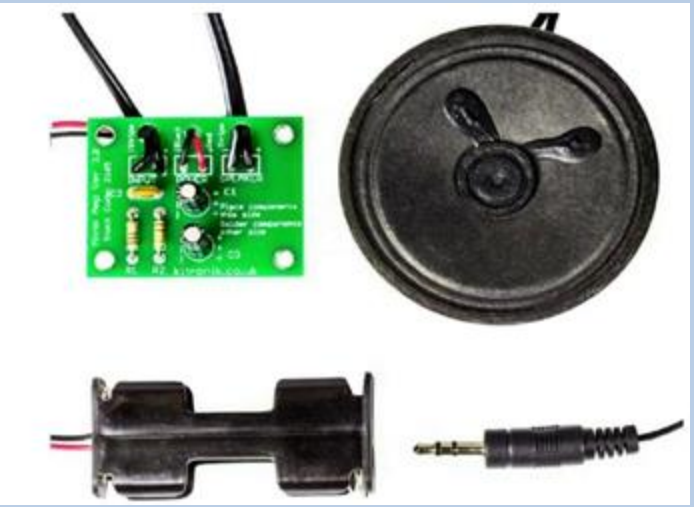
Component: an individual piece of a circuit.

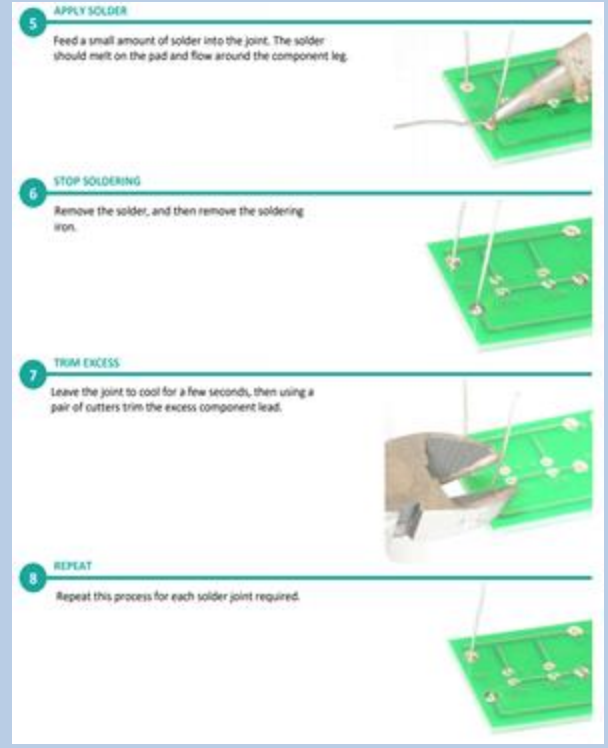
Circuit: individual components are joined up with a conductive material so electricity can flow through them and perform a task.

Voltage: the amount of potential electrical force available that could make electricity flow.

Current: the amount of electricity that is flowing through a circuit.

Semi-conductor: a material that allows electricity to flow under certain conditions. It can behave as an insulator or conductor.

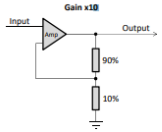




How the Amplifier Works

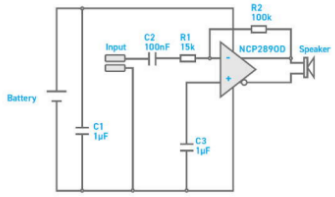
At the centre of the circuit is an audio amplifier Integrated Circuit or IC. Inside the IC are lots of transistors, which are connected together to allow the small input signal to be amplified into a more powerful output that can drive a speaker.

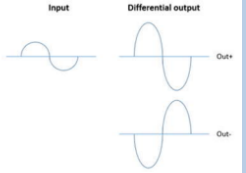
All amplifiers need to use feedback to ensure the amount of gain stays the same. This allows the output to be an exact copy of the input just bigger. The gain is the number of times bigger the output is compared to the input, so if an amplifier has a gain of 10 and there is 1 volt on the input there will be 10 volts on the output. Before looking at how the feedback works, we first need to understand how a standard amplifier works. An operational amplifier has two inputs these are called the inverting (-) and non-inverting (+) inputs. The output of the operational amplifier is the voltage on the non-inverting input less the voltage on the inverting input multiplied by the amplifiers gain. In theory an operational amplifier has unlimited gain so if the non-inverting input is a fraction higher than the inverting input (there is more + than -) the output will go up to the supply voltage. Change the inputs around and the output will go to zero volts. In this format the operational amplifier is acting as a comparator, it compares the two inputs and changes the output accordingly.



With an infinite gain the amplifier is no good to amplify audio, which is where the feedback comes in. By making one of the inputs a percentage of the output the gain can be fixed, which allows the output to be a copy of the input but bigger. Now when the two inputs are compared and the output is adjusted, instead of it going up or down until it reaches 0 volts or V+, it stops at the point when the two inputs match and the output is at the required voltage.

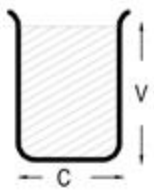
Looking at the circuit diagram for the audio amplifier, R2 is the feedback resistor. For a standard (single ended) amplifier the gain would be calculated by R2 / R1, giving a gain of 100k / 15k = 6.66. However this amplifier is a differential amplifier, which means the second output is an inverted version of the first output (see diagram below) and results in twice the gain, so the overall gain is 13.33





The rest of the components are needed as follows:
C1 is connected across the supply to make sure that it remains stable.
C2 forms a high pass filter, with R1, to block DC voltages which could damage the amplifier.
C3 provides a controlled start to the amplifier, to prevent speaker damage.

What is a capacitor?

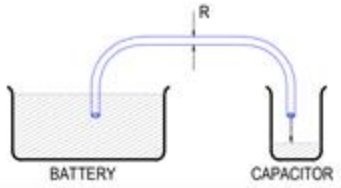


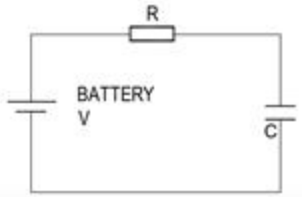
A capacitor is a component that can store electrical charge (electricity). In many ways, it is like a rechargeable battery.

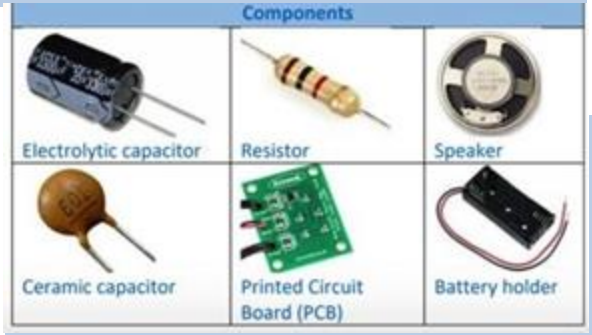
A good way to imagine a capacitor is as a bucket, where the size of the base of the bucket is equivalent to the capacitance (C) of the capacitor and the height of the bucket is equal to its voltage rating (V).

The amount that the bucket can hold is equal to the size of its base multiplied by its height, as shown by the shaded area.

Filling a capacitor with charge

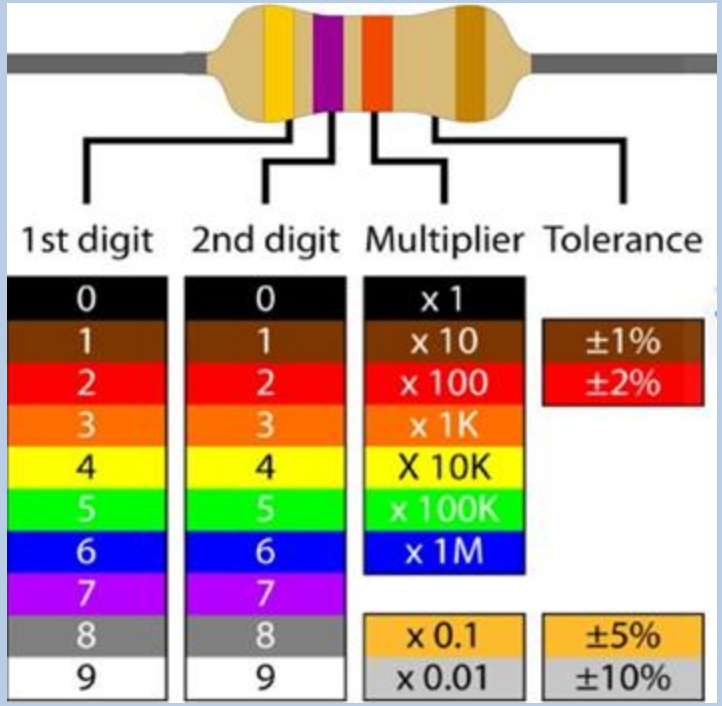






Resistor Values

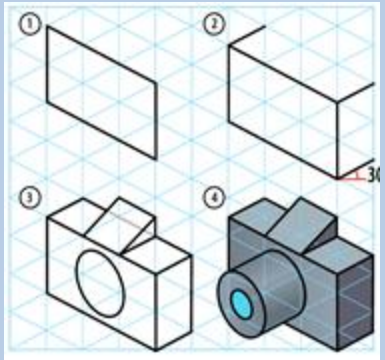
A resistor is a device that opposes the flow of electrical current. The bigger the value of a resistor, the more it opposes the current flow. The value of a resistor is given in Ω (ohms) and is often referred to as its 'resistance'.



Capacitor circuit symbol

Resistor circuit symbol

Speaker circuit symbol



Isometric

Isometric drawings look more realistic than oblique ones and are based on 30-degree lines. For support, use isometric grid paper to guide your angles:

1. Instead of drawing the 2D front view in oblique, you begin with an edge of the product – draw this as a vertical straight line.
2. From this line, create **construction lines** going off at 30 degrees.
3. Fill in the next vertical lines.
4. From these vertical lines, draw your next construction lines going off at 30 degrees (repeat steps 3 and 4 depending on the complexity of your drawing).
5. Within these construction lines, draw your product.

Picture	Description	Voltage	Capacity	Battery life	Max power
	Polymer Lithium Ion Cell	3.7 V	500 mAh	2 days	0.7 W
	Polymer Lithium Ion Cell	3.7 V	1000 mAh	5 days	0.7 W
	2x AAA	3V	1000 mAh	7 days	0.45W
	3x AAA	4.5 V	1000 mAh	4.5 days	1 W
	2X AA	3V	1500mAH	10 days	0.45W
	3x AA	4.5 V	1500 mAh	6 days	1 W
	3x C cell	4.5 V	3000 mAh	13 days	1 W

You will have to decide which of these is most important and select your choice of batteries accordingly:

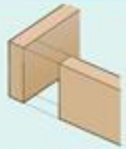
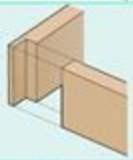
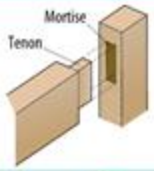
- Compact case.
- Higher volume.
- Long battery life.

Please note that the estimated battery life has been calculated running the amplifier on standard alkaline batteries at full power, hence the higher power choices have a shorter battery life. Obviously if you don't run your MP3 player at the maximum volume, the batteries will last longer.

Alternating current supplied to the loudspeaker creates sound waves in the following way:

1. a current in the coil creates a magnetic field
2. the magnetic field interacts with the permanent magnet generating a force, which pushes the cone outwards
3. the current is made to flow in the opposite direction
4. the direction of the magnetic field reverses
5. the force on the cone now pulls it back in
6. repeatedly alternating the current direction makes the cone vibrate in and out
7. the cone vibrations cause pressure variations in the air - which are sound waves

The variety of methods used to join timbers
The advantages and disadvantages of a range of surface finishes that can be applied to timber

Name	Appearance	Advantages	Disadvantages
Butt		Easy to make, it is just square ends glued together	• Weak: there is no mechanical strength, just the glue • Not aesthetically pleasing
Dowel		Automated machines can drill the dowel holes quickly and accurately	Hard to line up the dowels accurately by hand
Lap		Quite easy to cut	Not very strong
Housing		• Holds a shelf or divider securely in the middle of a carcass (frame) • Pairs well with corner lap joints	• Can be tricky to cut neatly on a wide board • Very accurate marking out and cutting required to ensure a shelf is exactly level
Mitre		• Looks good because no end grain shows • Good for picture frames	Weak, it is only a butt joint at 45°
Mortise and tenon		• A strong joint • Good for joining a table or chair frame to legs	Time consuming to cut by hand
Dovetail		• A very strong joint – the dovetails lock together securely • Good for a drawer front that will get pulled hard	Very tricky to cut accurately by hand

Type	Description	Advantages	Disadvantages
Paint	A coloured pigment in liquid that dries out	Available in a range of colours	Covers up the natural woodgrain
Stain	A coloured liquid that soaks into the wood surface	Makes a pale coloured wood like pine a darker colour to mimic more expensive woods like oak or mahogany	Does not look quite like another wood as the pine grain still shows
Varnish	A clear coating that dries to shine	Gives a hard wearing finish that shows the grain of the wood Can be a high gloss or a matte finish	Can scratch or chip and expose the wood
Wax	A soft solid that is rubbed into the surface with a cloth	Easy to apply Gives a plain natural look	Rubs away and needs reapplying Not a glossy finish
Oil	Is rubbed onto the surface and soaks in	Good waterproofing for timber Vegetable oil on kitchen ware is non toxic	Surface feels oily
Shellac	A cloudy liquid made from a resin secreted by a beetle Lots of layers are rubbed on and polished to a finish called French polish	Traditionally used on expensive furniture for its glossy lustre	Easily damaged by water and heat
Veneer	A thin layer of wood glued onto the surface	An expensive decorative wood like mahogany can be put onto a cheaper wood like pine or chipboard	The veneer is natural wood so it still needs a finish applied

Knowledge Organiser – Year 9 Food

Macro and Micro nutrients

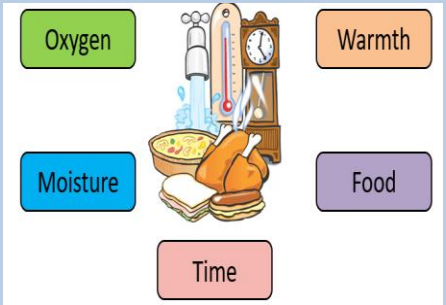
There are 5 main groups of nutrients. These 5 groups can be divided into 2 groups

Macronutrients which are needed by the body in large amounts.

Micronutrients which are needed by the body in small amounts.

Food Poisoning

Living organisms (including bacteria) need certain "things" or conditions to survive:



What are Nutrients?
Nutrients are the building blocks that make up food and have specific and important roles to play in the body. Some nutrients provide energy while others are essential for growth and maintenance of the body.

Macronutrients

Macro Nutrient	Role in the body	Food Example
Carbohydrate	The main source of energy for the body.	Bread, rice, pasta, potatoes
Protein	Provides the body with growth and repair.	Meat, poultry, beans, eggs, lentils, tofu, fish
Fat	Provides the body with insulation and a small amount protects vital organs. Provides essential fatty acids for the body.	Butter, oil, cheese, cream, nuts, oily fish, crisps

Micronutrients

Vitamin	Role in the body	Food examples
A	Helps to keep the eyes healthy and strengthen the immune system.	Dark green leafy vegetables, carrots, liver
B	Helps to release the energy from the food we eat.	Bread, milk, cereals, fish, meat
C	Help with skin healing and healthy skin. Help with the absorption of Iron.	Fresh fruit, broccoli, tomatoes
D	Important for absorbing calcium and help with healthy bone structure	Oily fish, eggs, butter, Sunshine
Mineral	**Role in the body**	**Food Examples**
Calcium	Important for strong teeth and bones. It also helps with blood clotting.	Milk, yoghurt, soya, dark green leafy vegetables
Iron	Needed for red blood cells which help to transport oxygen around the body.	Nuts, whole grains, dark green leafy vegetables, meat, liver

Hygiene

Personal
Hair up – Reduces the risk of bacteria transferring to food through hair dropping in
Aprons on – Protects you from spillages and reduces risk of bacteria transferring to food from everyday clothing
Washing hands - regularly using hot soapy water to reduce the bacteria on your hands
Blue plasters – Blue plasters should be used to cover cuts and grazes as they will be easily seen if they accidentally fall into food.

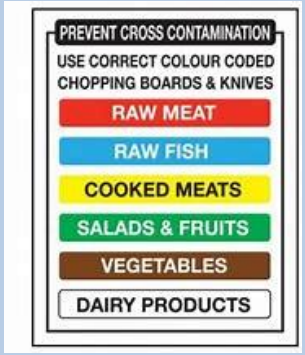
Food – Understanding the 4 C's Concept
Cooking – thorough cooking kills bacteria so ensure food is cooked to 75°c to make sure all bacteria are killed – check this by using a food probe.
Cleaning – effective cleaning removes harmful bacteria and stops them spreading so ensure all work tops, utensils and equipment are cleaned thoroughly with hot soapy water.
Cooling – effective chilling prevents harmful bacteria multiplying so ensure all food is stored at the correct temperatures, ensure cooked food is cooled within 90 minutes.
Cross contamination – Good hygiene practice prevents Cross contamination so when raw food comes into contact with ready to eat food. For example raw meat juices spilling onto salad.

Knowledge Organiser – Year 9 Food

Hospitality and Catering providers fall under two main categories

Commercial → Makes money as a business

Non-Commercial → Does *not* make money as a business



Personal Attributes

Hospitality and catering providers will look for certain personal attributes in people who want to work for their business, these can include:

- Honesty
- Team player
- Self motivation
- Initiative
- Patience
- Personal presentation

Factors **affecting food choice**	
Biological	Hunger appetite and taste
Economic	Cost of food, income, availability
Physical	Access to shops, food skills, education, time
Social	Family, culture, meal patterns
Attitudes	Knowledge about food and beliefs
Seasonality	The food is locally grown at certain times, cheaper
Religion	Certain religions restrict certain foods
Ethical	Your beliefs prevent you from eating some foods
Medical	Some illnesses dictate your diet like diabetes
Age	Activity levels and mobility affect requirements

Allergies

Itchy skin · Itchy mouth · Swelling · Vomiting

Are immune system reactions (symptoms of a reaction can include)

Red rashes · Swollen throat

In extreme cases, it can cause *"anaphylactic shock"*

Intolerances

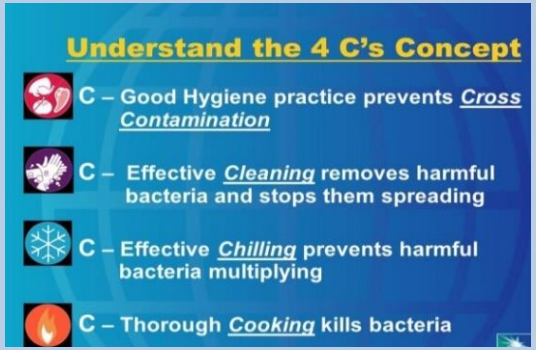
A food intolerance is not the same as a food allergy.
It is not an immune system response.
It is a chemical reaction in the gut.

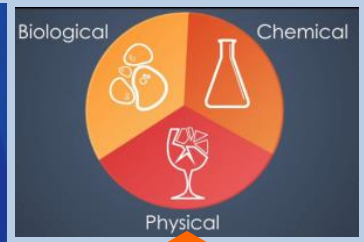
What are some of the symptoms?

Cramping gut · Bloating · Diarrhoea · Migraine

Fridge Storage

You should store meat and poultry on the bottom shelf of the fridge to prevent liquid dripping on to other food. Store in a clean, sealed container. Keep cooked and raw meats separate to avoid cross contamination. The fridge temperature should be between 1°c - 5°c.





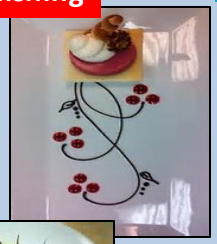
Types of contaminant

Food Styling

Food styling is where a chef creates a dish and then uses a range of presentation techniques, these can include:

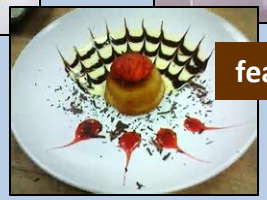
- Different textures
- Different flavours
- Different shapes/colour
- Interesting to look at
- Appetising

smearing



garnishing

drizzling



feathering

Organoleptic = using the senses

Customer Demographic

A profile showing what particular groups of people want, need and expect.

Technology · Tastes · Opinions · Money /Costs · Age · Gender · Choice · Nationality · Fashions

Wider thinking/further reading: www.foodafactoflife.org.uk www.wjec.co.uk/qualifications/hospitality-and-catering www.food.gov.uk

YR9 Textiles Knowledge Organiser

The fashion and textiles industry today has been transformed by the advent of new technologies and the development of computers and processors has led to the automation of a lot of areas within manufacturing processes.

CAD – Computer Aided Design

Computer Aided Design – allows designers to draw, design, plan and model on screen using a computer.

Advantages of CAD	Disadvantages of CAD
Designs can be created, saved and edited easily, saving time.	CAD software is complex to learn.
Designs or parts of designs can be easily copied or repeated.	Software can be very expensive. Upgrades may be necessary.
Designs can be worked on by remote teams simultaneously.	Compatibility issues with software.
Designs can be rendered to look photo-realistic to gather public opinion in a range of finishes.	Security issues - Risk of data being corrupted or hacked or get a 'virus'
CAD is very accurate.	
CAD software can process complex stress testing and model materials and components.	
Designs can be presented easily with the client or other members of the team.	

CAD Software

CAM – Computer Aided Manufacture

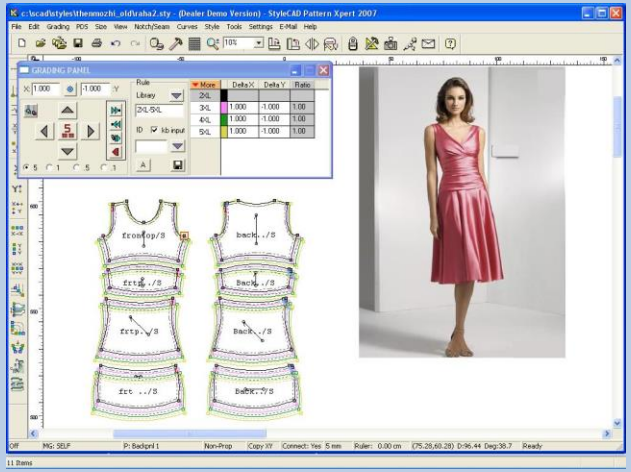
Computer Aided Manufacture is the manufacturing of products designed using CAD. CAM can create a faster production process.

Advantages of CAM	Disadvantages of CAM
Quick – Speed of production can be increased.	Training is required to operate CAM. This can add to cost.
Consistency – All parts manufactures are all the same.	High initial outlay for the machines.
Accuracy – Accuracy can be greatly improved using CAM.	Production stoppage – If the machines break down or there's a power cut, the production would stop.
Fewer Mistakes – There is no human error unless pre programmed.	Social issues . Areas can decline as human jobs are taken. This will lead to unemployment.
Cost Savings – Workforce can be reduced.	

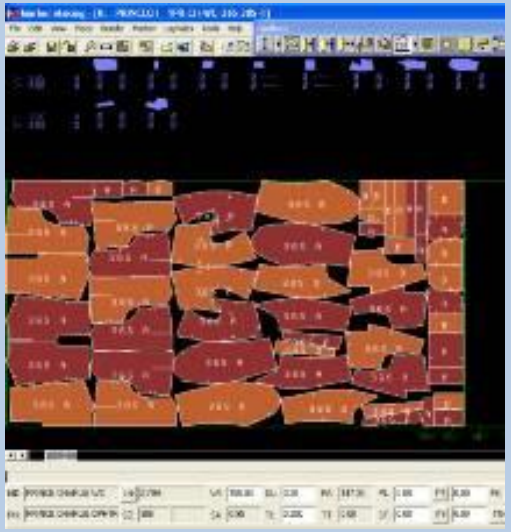
If you are designing products and they are made in another country you need to talk to the factory ALL the time.
E-mail used to be THE THING but now that's moved on to virtual 'cloud based' sites where product information can be uploaded to and which can be accessed from anywhere on the globe. So it's quick and easy. Designs can be worked on
by remote teams simultaneously

3D Modelling

With a good CAD program you don't need to be able draw at all – a CAD program will do it for you! You can also see what the fabric for the product looks like, how it drapes and whether it is the correct material for the product.



Drawing patterns and layplans



CAD is also used in planning how to cut out the fabric pieces. This is called a **layplan** or **layout**. It makes sure you are using the fabric economically – so there's no wastage.

Cutting out of materials

Once you have created the layplan/layout you can use CAM to follow this and cut out the fabric. Many layers are usually cut out at the same time.

Below are some of the main types of machines used in the manufacture of textile products.

Digital jet printer

Digital Knitting machine

Laser Cutter

Multi-head embroidery machine

Digital Printing is the process uses a computer to print directly onto fabric that have been coated with a special chemical wash. The fabric is steamed to set the design on the fabric. This can be used on natural fabrics.
Transfer or **Direct printing** is the process of applying designs directly to a paper. The designs are then transferred to fabric using heated rollers for mass-produced designs or a heat press for small scale designs. This works best on synthetic or synthetic blend fabrics.

Scales of Production

One off/Bespoke: when you make a unique item.
Batch: when a limited number of the same product is made.
Mass: when a large quantity of the same product are made over a long period of time. This typically uses a production line.
Just-In-Time: a form of stock control when goods are delivered 'just in time' to use on the production line.

Production Line

In Industry products are usually made by passing each stage of making down a line: this is known as a **production line**. At each stage of making, a specific operator carried out a required task then passes it on to the next machine or person to continue making the product.

Planned Obsolescence

Sometimes manufacturing companies plan or design products to have a short useful life. They do this so the product will become obsolete or unfashionable or they will no longer function after a certain period of time and new products will have to be purchased. This is called **planned obsolescence**.

The following table explains how these production methods are used in the textile industry:

System	Product market	Design and production	Skill Level and Cost
Bespoke	Made-to-measure, eg suit, wedding dress;	Made-to-measure garments are made to fit the measurements of an individual client [client: person or organisation that wants a product manufactured - eg a retailer.]; the garment design is developed from a basic block pattern [basic block pattern: pattern made with standard-sized pattern pieces] and a toile [toile: a prototype garment made from low-cost fabric.] is made to test the fabric drape, the fit [the fit: how well the size and shape of a garment fits a human body.] and order of assembly	Very high-level skills in design and manufacture; high-cost materials; high labour costs
One-off	Haute Couture, eg made by fashion houses	Fashion designers such as Vivienne Westwood design Haute Couture garments for individual clients. These designers have catwalk shows which set trends for high street shops.	Very high-level skills in design and manufacture; high-cost material and labour costs
Batch production	Ready-to-wear (RTW) designer label, eg Designers at Debenhams	Garments are designed to fit a range of standard sizes and shapes. Garment patterns are developed from a basic block using CAD: Computer Aided Design - a system which helps the user produce accurate drawings.. A sample garment is made up in a medium size, from the intended fabric. Once the design has been approved it is put into production in a range of standard sizes. They are sold through up-market retailers.	High-level design, pattern making and sampling skills; cost-effective materials and lower manufacturing costs
Mass production	Mass-market retailers, e.g. Top Shop	Similar production methods to batch production: garments produced in limited range of sizes; standardised production methods are used to produce a wide range of styles. Most fashion products are batch produced in large batches e.g. 20,000. Some classic products like jeans are mass produced for a world market.	High-level design, pattern making and sampling skills; cost-effective materials; products often made overseas where labour costs are low

Technical Textiles

A 'Smart material' is one which reacts to an external stimulus or input. This means that it can alter its functional or aesthetic properties in response to a changing environment. This group of materials can react to stimuli such as heat, pressure, moisture, stress, PH level, light (including UV) and electricity.

Name and **stimulus**	Characteristics	Uses
Thermochromic pigments **Heat**	Pigments embedded into the thermochromic material respond to temperature changes by changing colour. They normally change as they heat up and cool down, but some versions are irreversible.	Flexible thermometers, temperature indicators, clothing, novelty goods, over-heating or over cooling indicators. 
Photochromic pigments **UV light**	The pigments that are embedded into photochromic material respond to changes in the UV light levels by changing colour or darkening. Once the UV light is taken away they change back or lighten.	Novelty products, paints and clothing that change colour in UV light 
Shape Memory Alloy (Nitinol) **Heat or electricity**	A shape can be programmed when heated to 540°C; it can be deformed and will return to the memory shape when reheated to 70°C.	Frames for glasses, dental braces, self-expanding stents used In surgical procedures to open capillaries. 
Hydrochromic	Hydrochromic inks change colour (become transparent) when wet or if moisture is present.	Often used on novelty products to bring out the colours of text or an image – e.g. an umbrella.
Hydrophobic	Hydrophobic finishes **REPEL** water and cause water to form nearly perfect spheres that roll off coated materials.	Products that require waterproofing –outdoor items such as tents and awnings.
Photo luminescent (Glow-in-the dark) **Light**	Glow in the dark materials carry inorganic phosphors that absorb light in the visible and ultra violet wavelengths and then re-emit visible light, or a "glow".	Toys, stickers, paints, clock face/dials, emergency signs. 

Modern materials are materials that are constantly progressing as well as new ways of working with materials.

Name	Characteristics	Uses
Polylactic acid PLA	Widely used in 3D printers as reels of filament, it is non-toxic, easily moulded and fully biodegradable.	Bottles, pots, disposable food and drink containers, pens, phone cases and 3D printed items
Polyhydrox y-butyrate PHB Biopol	Stable, stiff, quite brittle, non-toxic, easily processed and moulded, has limited chemical resistance, fully (but slowly) biodegradable.	Bottles, pots, household items, disposable food containers.
Flexible MDF	Flexible in one direction along the cut groove, easily shaped into natural curves and waves, easily finished, can be laminated and veneered, not good in wet conditions	Modern furniture, curved and wave-shaped forms for interior spaces, interior walls and room dividers.
Titanium	High strength to weight ratio, anti-corrosive, can be easily formed and welded, hypoallergenic.	Jewellery and watches, medial uses such as joint and dental implants, aircraft, spacecraft and sports car parts.
Fibre optics	Flexible cable capable of transferring digital data at extremely fast speeds, light and images can be sent and received.	Data transfer cables, endoscopic cameras, novelty and bespoke lighting displays
Graphene	Highly conductive, flexible, stretchable, incredibly strong yet lightweight, impermeable to all known substances.	To be developed but potential use in the medical, electronic and energy industries amongst many others.
Metal foams	Strong, lightweight, electrically and thermally conductive, very porous, good sound absorptions.	Medical implants, aircrafts, aircrafts and car parts, lightweight load-bearing structures, impact absorption in vehicles.

Technical textiles are textiles that have been developed with enhanced properties to withstand specific uses.
The function is vastly more important that the aesthetics.

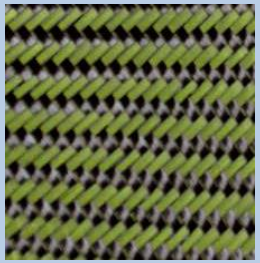
Name	Characteristic	Uses
Gore-Tex	Waterproof, wind proof, breathable fabric, moisture vapour can escape.	Outdoor clothing from skiwear to mountain wear, walking boots, cross country trainers, gloves sportswear.
Kevlar Poly-paraphenylene terephtalamide	Extremely strong and hard-wearing, excellent cut and tear resistance, high thermal protection, non-flammable, good chemical resistance.	Personal armour, helmets, bullet-proof vests, motorcycle safety clothing, extreme sports equipment, audio equipment, musical instruments.
Conductive fabrics and threads	The thread or fabric can pass an electrical current along its length, linking electronic components. It allows for flexible and wearable control of electronic products for entertainment, safety health and fitness.	Connecting wearable inputs, processes and outputs, such as switches, lights, Bluetooth connectivity and speakers in technical clothing, children's soft electronic toys, wearable electronic sports equipment and anti-static clothing.
Fire resistant fabrics	Resists heat and ignition from the naked flame to protect the wearer.	Fire blankets, firefighting or safety clothing such as gloves, aprons and boiler suits. Protection for racing car drivers.
Microfibres & Micro-encapsulation	Very depending on the specific textile, can be statically charged to pick up dust and filter particles, can be absorbent yet fast drying.	Medical textiles, fabrics, cloths and towels. High-tech clothing which can be anti-bacterial, heat regulating or insect repelling.

Composite Materials are formed when two to more distinctly different materials are combined together to create a new material with improved properties and functionality.

Name	Characteristics	Uses
Glass Reinforced Plastic (GRP)	Lightweight, good strength to weight ratio, good corrosion, chemical and heat resistance, waterproof, high VOCs/resins used. Can be trimmed with rotating blade. Labour intensive to produce.	Boat hulls, car and truck parts, liquid storage tanks, pipes, helmets, seating.
Carbon-fibre reinforced plastic.	Very high strength to weight ratio, good tensile strength but not good compressive strength, stiff and rigid, very expensive, high VOCs/resins used, waterproof, and resistant to chemicals. Manufacture is labour-intensive and skilled process.	Supercars and sports cars, top-end sports equipment, bespoke boats and musical instruments, increasingly developed for prosthetic uses.

Gore-Tex

Kevlar



Design Strategies

You can use design strategies to come up with initial design ideas without getting you on a bad one. Designing is a really complex process and there are several different ways of doing it:

Systems approach: This means breaking down the process into a number of different strategies and doing each in turn.

User-Centred design: The wants and needs of the client are prioritised- their thoughts are given a lot of attention at every stage of design and manufacture

Iterative design: Centred around the design process of evaluation and improvement at each stage of designing.

When you are designing a product it is easy to get stuck on a particular idea. This is called design fixation and it can stop you thinking creatively and coming up with innovative ideas.

Following the design strategy can help you avoid design fixation and encourage you to look at your design in a critical way to make improvements.

A= Aesthetics
C= Cost
C= Customer
E= Environment
S= Size
S= Safety
F= Function
M= Materials

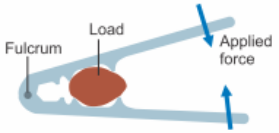
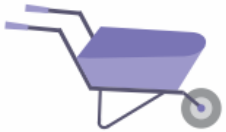
You can also annotate your designs to fully explain further using ACCESSFM

- Different people and cultures have different needs. Technology and design affects and can have an impact on culture.
- The culture of a particular country or a group of people covers everything from their religion, beliefs and laws to their dress and traditions.

- If you're designing a product aimed at a specific target market, you'll need to take into account their views and feelings of people from that particular culture.
- New technology can also impact fashion and trends.
- Fashion itself is continually affected by new materials and techniques. Technology can also have an impact on fashion trends. The internet allows people to find out about fashion trends that are happening all over the world and new clothes can be seen by a global audience e.g. social media and blogs.
- Products can be designed to avoid having a negative impact on other people by being sensitive to their needs.

Eyelet Press

An eyelet press is a hand tool that uses a lever arm that converts your simple movement into enough pressure to crimp and press a mental eyelet and washer together securely. This creates a neat and strong hole for cord to pass through.

First class lever	Second class lever	Third class lever
Lever in which **fulcrum is situated in between load and effort** is called first class lever. e.g. pair of scissors, see-saw, pliers	Lever in which **load is situated inbetween fulcrum and effort** is called second class lever. e.g. nut cracker, wheel barrow, bottle opener	Lever in which **effort is situated inbetween the fulcrum and the load** is called third class lever. e.g. fishing road, pair of tongs, stapler
 Scissor	 Nut cracker	 Pair of tongs
 See-saw	 Wheel barrow	 Fishing rod

A lever is used to lift a load with the least amount of effort. Placing the fulcrum (the point which the lever turns) in different places effects where the load can be lifted.

The table on the left shows you the three different classes of lever.

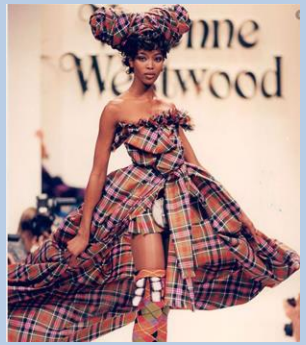
Design Culture

GCSE Preparation.

"Design creates culture. Culture shapes values. Values determine the future." Robert L Peters.

Vivienne Westwood (1941-2022)

Her iconic clothing became popular during the punk rock movement in the 1970s. She has since become a world famous fashion designer. Her designs often take inspiration from traditional British clothing and historical paintings.

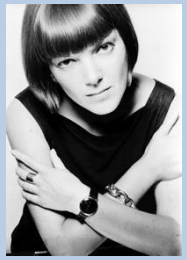


Coco Chanel (1883-1971)

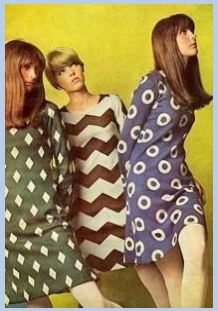
A fashion designer known for introducing practical casual-chic clothing for women who had traditionally worn corsets and long skirts.

Mary Quant (1934-2023)

A fashion designer who popularised the mini skirt, hot pants and OVC in the sixties. Her clothing often featured white collars, simple shapes and bold colours.



MARY QUANT



Alexander McQueen (1969-2010)

An influential fashion designer known for his theatrical, well tailored clothing and dramatic catwalk presentation displaying his collections.

Rei Kawakubo (1942 - Present)

Rei Kawakubo is a self-taught Japanese fashion designer based in Tokyo and Paris. She is the founder of Comme des Garçons

COMME des GARÇONS

Pierre Davis

The founder of gender-neutral fashion label No Sesso (Italian for No Gender). Their belief is fashion is about pursuing art and inclusivity.

William Morris (1834-1896)

A wallpaper, furniture and furnishings designer. His designs were often based on nature and repeat patterns. He is one of the founders of the Arts and Crafts movement

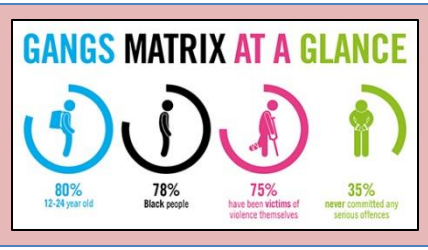
Joe Casely-Hayford OBE (1959-2019)

A renowned British fashion designer known for his innovative designs and contributions to men's fashion. Early in his career he dressed The Clash and U2 whilst working on his eponymous brand for men and women.

Year 9 PSHCE Term 1 Peer pressure, Gangs, Grooming and Radicalisation.

Quote from Jo Cox MP's maiden speech to Parliament which inspired the #MoreInCommon movement after she was killed by a far right extremist.

"We are far more united and have far more in common with each other than things that divide us."



Knife Crime

- 99% of 10-29 year olds do not carry a knife
- A person can get up to 4 years in prison for possession of a knife, even if it is never used
- People who carry a weapon are more likely to be hospitalised with a violence-related injury, and in many cases their own weapon has been used against them
- Many young people who carry a knife say that they would prefer not to

Crimestoppers 0800 555 111. www.crimestoppers–uk.org
National Council for Voluntary Youth Services www.ncvys.org.uk
NSPCC 0808 800 5000. Email: help@nspcc.org.uk Web: www.nspcc.org.uk/gangs
ChildLine 0800 1111

Key Term	Definition
Extremism	Vocal or active opposition to commonly held values, particularly British values such as democracy and the rule of law.
Fundamentalism	The strict following of (often religious) principles.
Echo chamber	A typically online platform where beliefs and views are repeatedly reinforced and amplified without challenge.
Radicalisation	A process by which s person comes to support terrorism and extremist ideologies
Terrorism	The unlawful use of violence or threat of violence and intimidation to bring about political, religious or ideological change.
Propaganda	Information, especially of a biased or misleading nature, used to promote a political point.
Keyboard warrior	A person who makes aggressive or abusive comments online (that they would not say in an offline setting).
Peer Pressure	Peer pressure is the direct influence on people by peers, or the effect on an individual who is encouraged and wants to follow their peers by changing their attitudes, values or behaviours to conform to those of the influencing group or individual.
Gang	consisting of at least three people defined as having one or more characteristics that enable its members to be identified as a group by others.
Grooming	Grooming is when someone builds a relationship, trust and emotional connection with a child or young person so they can manipulate, exploit and abuse them. Children and young people who are groomed can be sexually abused, exploited or trafficked.
County Lines	gangs and organised criminal networks involved in exporting illegal drugs into one or more importing areas within the UK, using dedicated mobile phone lines or other form of "deal line". They are likely to exploit children and vulnerable adults to move and store the drugs and money and they will often use coercion, intimidation, violence (including sexual violence) and weapons."

Knife Crime

Most young people and adults do not carry a knife or weapon; it is not a normal thing to do. However, a small number of people do find themselves involved in knife crime. Although the number of incidents is small the ripple effects of knife crime can reach a lot of different people. Innocent bystanders can get caught in the middle of other people's disputes and suffer trauma, serious injuries or worse. A wound in the arm or leg can still be life threatening.

The Legal Bit…

Carrying a knife is illegal in the UK and consequences are tough. If you're found with a knife in your possession, even if it is not yours, you can be sentenced to up to four years in prison.

- It is illegal to carry a knife, blade/sharp point or offensive weapon in a public place.
- If someone is injured or killed by a knife in your presence, even if you are not the one using the weapon, you too could be prosecuted and sent to prison for murder in what is referred to as 'joint enterprise'.
- It is illegal for a shop to sell any kind of knife to someone under the age of 18. This includes kitchen knives and even cutlery.
- It is illegal for shops to sell imitation guns or air weapons to anyone under 18 years old, or to sell realistic imitation guns to anyone. It is also an offence to buy imitation guns

#knifefree

The offensive Weapons Act 2019 – Some recent changes

It is illegal to possess certain weapons in private places, including your home. This includes items such as knuckledusters, flick knives and telescopic truncheons.

There has also been changes to the process of buying knives online with enhanced age verification checks at point of sale and collection/delivery.

Age of criminal responsibility …

In England and Wales, the age when you are criminally responsible for your actions is 10 years old. Children between 10 and 17 can be arrested and taken to court if they commit a crime.

Children under 10 who break the law are treated differently to adults or youths under the age of 18 that commit a criminal offence. Although they can not be charged, they can be given a ***Local Child Curfew, Child Safety Order*** and in some cases if a child regularly breaks the law they can be ***taken into care or their parents are held responsible.***

If parents do not take reasonable steps to support their children to make the right decisions when it comes to the law then they can be asked to attend a parenting programme, asked to sign a parenting contract or be given a parenting order by the court.

Stop and Search.

- Police can stop and search anyone they believe to be carrying a knife or weapon.
- Police can come into school and search for knives if they believe the law is being broken.
- Head Teachers have the power to search pupils for weapons in line with the violent Crime reduction Act 2006

For more information and support Visit

- https://www.Wiltshire.police.uk-searchoffensiveweapons
- https://www.knifefree.co.uk
- http://noknivesbetterlives.com

Call:

Childline 08001111

Victim Support 08081689111

Report an incident or share information about knife crime.

Call police on 101 or 999 if it is an emergency.

Report anonbymously and speak to some one in confidence at Crime stoppers 0800 555 111

Drugs, Alcohol, Tobacco and Vaping misuse.

What is a drug?

A drug is "a substance which people take to change the way they feel, think or behave." (World Health Organisation).

How does it achieve this?

It is all to do with altering chemical reactions in your body. There are several different ways in which this can occur:

Why do young people try drugs?

We will be looking at the stories of three young people and discussing the effects on them, their prospects and those around them.

What should I look out for as a signal that my friend may be misusing drugs?

Who do I ask for help?

Parents/Carers, Teachers, TA's, Support staff, The School Nurse, Your Doctor, Childline, NSPCC.

Alcohol and tobacco.
Volatile substances including gases (e.g. butane), glues and aerosols.
The whole range of illegal drugs such as cannabis, heroin, ecstasy or cocaine
Medicines such as paracetamol or cough mixture.

Some drugs are illegal, or must only be prescribed by a doctor. Some prescription drugs are misused and taken for recreational use, rather than for medical reasons. They become illegal under these circumstances.

Illegal drugs are classified from Class A to Class C. Class A drugs are the most dangerous, with the most serious penalties for possession or dealing. Class C are the least dangerous, with the lightest penalties, but this does not mean they are safe to use.

The Misuse of Drugs Act (MDA) regulates what are termed controlled drugs.

Class	Drugs	Possession	Supply
A	cocaine and crack (a form of cocaine), ecstasy, heroin, LSD, methadone, methamphetamine (crystal meth), magic mushrooms containing ester of psilocin and any class B drug which is injected	7 years + fine	Life + fine
B	amphetamine (not methamphetamine), barbiturates, codeine and cannabis	5 years + fine	14 years + fine
C	anabolic steroids, some painkillers and minor tranquillisers	2 years + fine	14 years + fine

There are two main Laws regulating the availability of drugs in the UK:

1. The Misuse of Drugs Act,

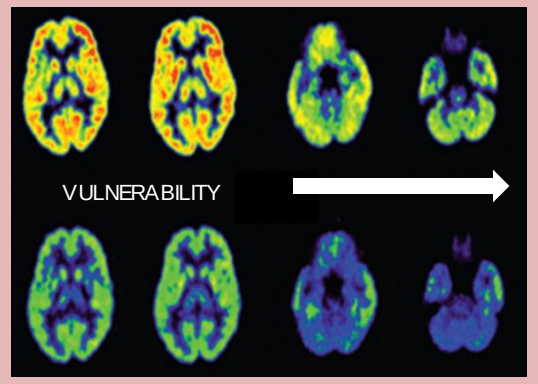
2. The Medicines Act.

All of these substances are a drugs. So why are some of them legal and others not?

Alcohol: Fancy a Beer?

These lessons will help give you some facts about alcohol and let you discuss some of the key issues and so provide you with the knowledge and skills needed to hopefully make safe and responsible choices.

Alcohol is a DRUG and **All** drugs affect how your body works. As soon as alcohol enters a person, their body and brain will be affected. It is a drug that reduces a person's ability to think rationally and distorts judgment. A decision you would make sober will often be very different to a decision you will make drunk.



Alcohol is classed as a depressant, meaning that it slows down vital functions; resulting in slurred speech, unsteady movement, disturbed perceptions and an inability to react quickly.
The brain will begin to be affected after 1 unit of alcohol.

What is an alcohol unit?

One unit is 10ml or 8g of pure alcohol. Because alcoholic drinks come in different strengths and sizes, units are a way to tell how strong your drink is.
It takes an average adult around an hour to process one unit of alcohol so that there's none left in their bloodstream, although this varies from person to person

Alcohol is sadly the cause of so many serious problems in society that can change people's lives forever.

Some of those things are:

- Teenage pregnancy
- Drug use and taking drugs for the first time.
- Violent and sexual crimes
- People getting criminal records
- Accidents and life changing injuries
- Approximately 8000 deaths a year within the UK.

Almost 65,000 young people every year need treatment in hospital A&E departments because of alcohol.

UK teenagers are amongst those most likely in Europe to report frequently drinking heavily and being intoxicated

Being aware of the risks are important but unfortunately many young people will still drink to an excess before they are legally allowed to.

SO HOW DO YOU KEEP YOU AND YOUR FRIENDS SAFE?

Always tell an adult where you are going and what time you will get there and be home.
Have someone with you who is not going to drink.
Be aware of how much you are drinking and drink water as well.
Make sure you have eaten
Don't let others mix you a drink.
Be aware of what a unit of alcohol is.
Make sure your friends know how to contact your family.
Never walk home alone.

Alcohol and underage drinking – the law

If a person is under 18 and drinking alcohol in public, they can be stopped, fined or arrested by police.
If they're under 18, it's against the law:

- For someone to sell you alcohol
- To buy or try to buy alcohol
- For an adult to buy or try to buy alcohol for you
- To drink alcohol in licensed premises (eg a pub or restaurant)
- However if someone is 16 or 17 and accompanied by an adult, they can drink (but not buy) beer, wine or cider with a meal.

It's not illegal for a child aged five to 16 to drink alcohol at home or on other private premises. This does not mean it is recommended. We strongly advise an alcohol-free childhood, as recommended by the Chief Medical Officers.
It's illegal to give alcohol to children under 5

What have I learnt about drugs and alcohol from our Guest speaker from Motiv8?

What have I learnt about County lines from our Guest speaker from the Police Force?

Places that you can get support should you need it for any of the issues we are covering.

Talk to your Parents/ Family

Lead Child protection teachers are Mrs Faulkner and Mrs Dawson

shout 85258 here for you 24/7

www.giveusashout.org

A coach, Leader of your uniformed organisation or community you belong to.

YOUNGMiNDS fighting for young people's mental health

www.youngminds.org.uk

Whatever you're facing We're here to listen

Call free day or night on 116 123

Email jo@samaritans.org

SAMARITANS

www.Samaritans.org

Phil Roades Local Baptist Minister

We're supporting mind for better mental health

www.mind.org.uk

CEOP A National Crime Agency command

www.ceop.police.uk

Anna the School Nurse on Monday Lunchtimes

THINK U KNOW .co.uk

www.thinkuknow.co.uk

ChildLine 0800 1111

www.childline.org.uk

Talk to your Tutor or HOH

Makayla and Carmen in Student Wellbeing

Emma Lawson the School Counsellor

CAMHS Child & Adolescent Mental Health Services

www.oxfordhealth.nhs.uk/camhs/wilts

Stonewall Youth

www.stonewall.org.uk

THE RISE TRUST †REGISTERED CHARITY NO. 1114446

www.therisetrust.org

Lewis the school Chaplin

NSPCC HELPLINE 0808 800 5000 help@nspcc.org.uk

THE MIX Essential support for under 25s

www.themix.org.uk

A member of school staff you find it easy to talk to

Always know that you are not alone. We are all here for you and it is always best to TALK!