

The Trafalgar School at Downton

# Knowledge Organiser

Year 9: Terms 5 and 6

2022/2023



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Name.....House.....

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# 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.





## WHAT WE EXPECT FROM YOU

## BE ON TIME 🔴

PEN, PENCIL, RULER, KNOWLEDGE ORGANISER& EXERCISE BOOK (AS A MINIMUM)

LISTEN TO STAFF AND ALWAYS COOPERATE

DO NOT INTERRUPT LEARNING TIME .

COMPLETE ALL WORK SET BEST WORK, FIRST TIME

## SHOW RESPECT

WEAR UNIFORM **PROPERLY** AND WITH **PRIDE** 

MOBILE DEVICES/SMART WATCHES TO BE IN **YONDR** CASE

# 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!

GREAT PEOPLE - GREAT TEACHING - GREAT OUTCOMES

## 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

You'll never put a better bit of butter on your knife



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.



That's one small step for man, but a giant leap for mankind.

'Let us never negotiate out of fear, but let us never fear to negotiate.'

Think about the poor, defenceless animals that suffer due to our rubbish!

'Group chat can often be a source of upset,' warned psychologist Dr Linda Pappadopolis.



The witches in Macbeth are used to foreshadow that Macbeth is not innocent: 'Fair is foul and foul is fair', remainded aheadl a line he echoes in his first appearance when he says 'so foul and fair a day I have not seen'.

Chill out! Do as I say! Don't eat the daisies! Please be guiet! Be guiet!

'The sun in the west was a drop of burning gold that slid near and nearer the sill of the world.'

You must be home by midnight. You could be tired if you're any later. E.g. mustn't, can, might, shouldn't, may, will etc.

In Macbeth, the night the King is murdered 'has been unruly ... in th' air, strange screams of death .... Some say the Earth was feverous and did shake.'

Wind swirled around the beach house, whistling loudly. He felt the snowflakes melting on his skin, their liquid trickling down his neck, cold, wet, seeping into his clothes.

Without warning, Lionel gave one of his tight little sneezes: it sounded like a bullet fired through a silencer.

You only have a 20% chance of surviving a 60mph crash if you don't wear a seatbelt!

This is the worst day of my life but at least we're in the finest café in London.

The dog knocked over the vase with a crash!

'As my grandfather went, arm over arm, his heart making sour little shudders against his ribs, he kept listening for a

sound, the sound of the tiger, the sound of anything but his own feet and lungs.'



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 Fuse visited.

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.



modal verb: pathetic fallacy:

alliteration:

antithesis:

chiasmus:

emotive language:

experts:

extended

metaphor:

anecdote:

sensory description: simile: statistics: superlative: onomatopoeia: personification:

repetition:











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 **<u>bright red</u>** 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*.

# SENTENCES

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,

Anna.				*
Fu 1) Ca 2) Sai →	<b>Full Stops</b> I stops are used to: mark the end of a sentence. refully, he kicked the ball into the goal. show when a word has been breviated. int Peter's Road is on the High Street. St. Peter's Road is on the High Street.	Commas are used to separate: 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 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 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 stor rather than a question mark: I'd like to know what you've been doing all this time. I wonder what happened.
Exe em exe Do do Th 'Hi 'Oł	<b>Bace and the set of t</b>	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.	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!	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.
Da ph aft gra Las – ov	<b>Dash</b> – shes are used for parenthesis: a word or arase inserted as an explanation or terthought into a passage which is ammatically complete without it. E.g. st year, they roasted the winning brisket the size of a pillow — in a mighty clay en. Paul felt hungry – more hungry than 'd ever been.	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 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	Text for a Speech
	'Address to Nation on the Challenger' by Ronald Regan (28th January, 1986)
Stay Safe and Sound Online       clear/apt/original title         Manage your online reputation       subtitles         Anything that you upload, email or nessage 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 settings         Wake sure you set high privacy settings       effectively/fluently settings         never share or put online any of your persol, al 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	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.
riendly WiFi symbols when you're out and about.	··· throughout
Forms       Remember:     bullet       make sure you know how to block abusive comments and report worrying content;     bullet	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.'
don't arrange to meet people in real life that you've only talked to online;"	Indnk you. Zer listening'
Andy Murray's Appliance of Science By Jim White by-line f the Caledonian superman wins Wimbledon this year, it will be thanks to pattern of such a day, a magic potion and a battalion of experts.	Writing in the Essay Form         clear title       Zoos Should be Banned       effective introduction         In America, approximately 175 million people visit a zoo each year. That's half of America's population. Clearly this suggests that zoos remain popular places for people to visit for entertainment and to learn about wild animals. However, although some people are of the opinion that zoos can provide a source of educational entertainment and a sanctuary for endangered animals. Logicy that the crueity the last radius suffer outweight this benefit, and
f 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!	that they should be shut downl. effectively/fluencly linked paragraphs has some oorweights this benefit, and on the surface, zero to sequence a range of ideas On the surface, zero to sequence a range of ideas out in the sun, looking an animals, and eating overpriced junk food. But what most people don't
Sample Check Today, before he even steps out on to the Centre Court for his Wimbleds (sen, iew) paragraph hitting Pole Jerzy Janowicz, Murray with sive been subject to several of these. He does and a filme he pops to playatory. The osmolarity of eck is conducted by one of his staff, its purpose to gauge the percent sign of the second provides in his urine, to show whether his body is correctly hydrated. The fact is, f Murray wins to second provide and the player of the bloke who inspects his wee.	know is that zoos are far more sinister than selling small bottles of water for £5.00. Statistics show that in all zoos, fifteen percent of animals die every year due to living in captivity. Obviously then, zoos must be an unsuitable environment for wild animals and should, therefore, be abolished. How can zoos justify their existence by claiming animals in captivity provide people with the experience of observing wildlife they wouldn't otherwise experience, when it a cost to their life?
Daily Diet At 7.30 this studentig, while many or phs arriving at Wimbledon's press restaurant will have begun their day assaulting a titering Himalaya of fried starch, Murray will have eaten yogurt, fruit and a bagel smeared in began t butter	a range of ideas (no room to reproduce the other two paragraphs here) In conclusion, a zoos only purpose is to make as much money as possible to only wing thousands of people per day to gawk at animals and spend far too much money convenirs and junk food. Zoos do not protect or help to repopulate animals, nor do they educate people on the specifics of these animals, and therefore should be abolished.



Green limbs tangled above the decaying shells of long-abandoned vehicles, forming a canopy that barely permitted the harsh rays of the sun to burn through. The stealthy fingers of squat oak trees reached out tenaciously towards them. The vehicles themselves were coated in a thick layer of reception four of bur so copper – and were battered and bruised through years of exposure to toolle. Personification

copper - and were battered and bruised through years of exposure to the personificant of the forest. Specks of light from the midday sun, which had successfully fought their way through the overhead canopy, lit up their broken bodi to Their trunks gaped open worfully and their shattered eye sockets stared blindly forward get sensory description

The aroma of rust and decay occupied the clearing: it was choking, corrosive. No fresh breeze could infiltrate the thick shrubbery to provide relief. The cars lay there, suffocating on their own putrid stench. It was overpowering. Meanwhile, the squawks of blackbirds echoed like sirens around the clearing. The chilling sound was relentless. It echoed through the car's hollow bodies, feel using way through the cracks in windows and doors stroking the unbelstery of the rotting seat as it passed.

Spread over the floor of the clearing, a thick blanket of autumn leaves hid the earth beneath. They had turned a shade of burnt red and had bleached edges that resembled torn parchment. They were brittle and cracked for a conjectives are clearing. Amongst them, all manner of insects scuttled- manoeuvring themselves between moments of shade, before the unforgiving rays of sun could scorch their exposed bodies.

#### 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.

#### **Journey Description**

Sitting in my seat – aisle, two rows from the front – I look out. Illuminating a town engulfed in darkness, lights flash past me: shop lights, street lights, car lights, and as the clouds part just enough for the moon to penetrate through the smog, moonlight!

Inside it's silent. No one speaks. The bus windows shut, lulled by the rocking motion, side-to-side, backand-forth, up-and-down, my eyes feel heavy. Outside, I'm mesmerised by the noise I can only see, only imagine: mouths asking, replying, laughing, traffic screeching, angry drivers honking, shop doors opening and closing.

Once more the bus door opens and, as if I've lifted my head out from underwater, I can hear the street bustle, smell the takeaways, taste the diesel fumes. <u>Climax (problem at its worst)</u> • Use exciting/dynamic verbs; • Quicken pace; • Show characters feelings through action; • Attempts to solve problem fail/intensify problem. • Vary sentence length: short for action, longer for description.

Rising Action (build up/conflict)

- Build on character, setting and plot;
- · Introduce a problem/conflict/dilemma;

 Build tension/excitement using interesting adjectives, metaphors, similes etc.

 <u>Exposition</u> (introduction)
 Use a story hook to grab attention e.g. atmosphere, sudden event etc.;

Use descriptive vocabulary to set the scene and describe the main character;

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

Falling Action (fix problem)
Character/s solving conflict/dilemma/
problem.

Fail to Plan Plan to Fail

Resolution/Dénouement (ending)

Link back to the start.
What has the character learned?

Is there an exciting twist?

Is there a cliff-hanger ending?

Conclusion: To conclude. repeat RQ. Yes. Yours Sincerely Counter: oldfashioned tradition. so easier to continue Argument: other traditions - burnt witches, slept on straw, walked barefoot – now discontinued so ... Reasons to: anecdote, use experts

Intro: My address right hand side, + date, school address left, Dear Mr Curtis 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: all look same

so no

prejudice/bullying over

clothes.

Argument: no

individualism, learning

who we are

Reasons to: 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?



Counter: cost cheaper as not designer or from shops making huge profit Argument: 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, Reasons to: 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

P3

Personify train - a
victim moving along
railway line, past
houses, towards
destination -
metaphor: caterpillar
train sways and pitches
precariously along the
track to its daily
destination. Snatching
bites, the sea salt nips
at its metal skin as
passes, gnawing at it,
killing it. Rattles. Will it
survive?

houses , like soldiers standing to attention - defending their inhabitants. Diff pastel colours of a seaside town: prawn pink, salmon peach, oyster grey, seaweed green ...

canopy of sky above threatening Adjectives for mood: grey sky, stuffed clouds full of cold, sharp rain, Vero: beating down, attacking!

> waves engulfing and devouring the sea side town noisy and disruptive, onomatopoeia: Crash! whip, smash personify so violent/ threatening movement.

> > zoom in - one carriage window. Windows hit by spray that's 'like a tame cat turned savage'. Passenger pitched side-to-side; bubbling sickness, rising bile from stomach!

Plan describing pictures by boxing/framing parts of the image to help you to focus <u>description</u> on specific areas, zooming in on minute detail, and out again to another area. Each boxed area = a paragraph.

Intro: Here you will find everything you need to know about buying	а
goldfish. Follow this advice to	

First of all, research the fishes needs and best fish breeds ...

Next, decide where to put ... bedroom could be best habitat for your fish because ... However, it might be better to ...

After this, it's back to the research. Make a list of ... Don't .... Do ...

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	ʻing' start verbs (pres part)	!;
2: train victim moving across railway line past houses towards destination Fail to Plan Plan to Fail!	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!	Most Often	
Inform: tell the reader what they want/need to know.	<ul> <li>Use interesting facts details;</li> <li>use brackets to explain technical terms.</li> </ul>	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).	Miss	oelled words
<b>Explain:</b> tell the reader <u>how</u> and <u>why.</u>	<ul> <li>Use connectives: 'as a result', 'because', 'so that', when;</li> <li>use sequence discourse markers: Eventually, Another, Furthermore.</li> </ul>	<b>Often, when</b> in need of comfort or reassurance, or in stressful situations, people crave chocolate. Primarily, this is <b>because</b> dopamine is released into your brain <b>when</b> you eat chocolate, and <b>as a result</b> it can lower levels of anxiety	amateur basically beginning	miniature noticeable occurred
<b>Describe:</b> help the reader to <u>picture</u> it and <u>magine</u> the <u>experience</u> .	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.	blasphemy changeable	official possession
Narrate: tell the reader <u>a tale</u> that will have them <u>hanging on your</u> <u>every word</u> .	<ul> <li>Use the mountain/ pyramid structure;</li> <li>use some description;</li> <li>use a few lines of direct speech.</li> </ul>	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?	collectible colloquial definite(ly)	receive relevant
Persuade: try to <u>get the</u> <u>reader to do as you</u> <u>ask</u> /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.	environment exceed	success twelfth propaganda
Argue: present two sides, but ensure your side appears strongest so reader agrees with you.	<ul> <li>Use sequence discourse markers;</li> <li>use 'Some believe', 'However, most people would agree that';</li> <li>use APE FOR REST (above).</li> </ul>	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!	grateful immediate	publicly success
Advise: help <u>warn</u> and <u>guide</u> reader, but <u>reassure</u> with carefully considered advice.	<ul> <li>Use imperative verbs (stop, do, don't, wait etc.), and modal verbs (if, could, might, should).</li> <li>use second person (you, your).</li> </ul>	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.	judgement library	ultimate unfortunately

DEADING LITEDADY EICTION TEXTS	LANGUAGE FEATURES
	Pronouns
KEY THINGS TO CONSIDER ABOUT THE SOURCE TEXT YOU ARE GIVEN	Direct speech
<b>Genre</b> : What type of story is it? Is it horror? Romance? A mystery? What makes you recognise it as that genre? Which conventions does the story include that make it fit into that genre? Why has the writer chosen this genre?	Terms of address
<b>Reader</b> : How is a reader supposed to respond to this text? Are they meant to be scared? Happy? Confused? How does the writer achieve this? What would you say was the writer's <b>intention</b> ?	Noun phrase
Atmosphere: What type of mood or tone does the writer create in their story? How do they achieve it? Characters: Which characters are named? What are they called? Which characters are <u>not</u> named? Why might this be? Why might their names by important?	Subordinate/ main cause
<b>Description of character</b> : How are the characters described? What does this information reveal to us about them?	Narrative voice
<b>Dialogue</b> : Do characters speak to each other? Why? Why do they talk about? What does this tell us about character, theme or plot? What do characters say about each other? How might this influence a reader? <b>Archetypes</b> : What <b>types</b> of characters do we have in this story? Villains? Heroes? Antiheroes? Comedic characters?	Simple/compound/co mplex sentences
<b>Description of setting:</b> How is the setting described? Why is this important? Is the setting as important as character?	Accent /Dialect
PACE AND TONE – HOW SENTENCES HAVE AN IMPACT ON THE READER	Utterances
• Sometimes students can feel a little confused when asked to consider 'sentence forms', but there is an easier way to	Ellipsis
look at them. Every writer wants to establish a pace and a tone to their writing. Pace is how fast or slow a text is meant	1 <sup>st</sup> /3 <sup>rd</sup> person

to be read, and tone is the kind of sound or mood you want to give to a piece of writing.

- If you use lots of short sentences together it can build tension, but it can also speed up a text as a reader becomes more desperate to find out what happens as tension builds. Alternatively short sentences can make a reader stop and reflect on specific ideas.
- Longer, more complex sentence forms can be used to aid description or to help a reader build up an understanding of setting or character.
- So whenever you read a text, think about what kind of tone and pace is created and how the writer uses sentences to achieve that effect on the reader.

## **(NOW YOUR BASICS!**

Noun/verb/adverb/adjective/simile/metaphor/question

**STRETCH YOURSELF!** Look at the bigger picture – not just individual quotes/ Consider genre and form/narrative

Hyperbole

Imperatives

Exclamations

RES

Make sure you learn these

kev terms and understand

what they mean

TEXTS	LANGUAGE FEATURES YOU SIMPLY NEED TO LEARN THESE!						
most important language good writing/extracts – nt on it – e.g. Light/dark; of people; day/night; etc	IMAGERY	<b>Imagery</b> is language used by writers to create images in the mind of the reader. <b>Imagery</b> includes figurative and metaphorical language to improve the reader's experience & understanding through their senses. E.g. simile, metaphor, personification & alliteration	9 READI				
arn for writing about personification, &	SIMILE	Similes help readers to picture a particular object, person or place by <b>comparing something they don't know to something they do</b> . They can also be used for <b>exaggeration.</b>	MGL				
jectives patterns – often colours or	METAPHOR	Metaphors help readers to picture a particular object or place by <b>transforming them into something they understand better</b> . They can also be used for <b>exaggeration.</b>	JNSEE				
	PERSONIFICATION	Personification gives inanimate objects a sense of life or human characteristics	IN T				
ideas) fect of this is' & 'the 't be afraid of sounding	ALLITERATION	Alliteration creates a memorable sound in the readers' head that means they notice that particular line more or they can remember it quite well. <b>This means it can be used to</b> <b>emphasise a particular point, idea or feeling</b> .	EXTS				
for your comments on for style!) east one complex to find this and refer to it	NOUNS AND VERBS	Nouns are people, places or objects. Verbs are actions or 'doing words'. Both can be used carefully to evoke or give off certain emotions or feelings.	These				
and discuss their effect	ADJECTIVES AND ADVERBS	Adjectives are words that <b>describe</b> <u>nouns</u> . Adverbs are words that describe <b>verbs</b> . These are both used to add to <b>descriptions</b> and help <b>build</b> <b>specific images or feelings in the readers' heads</b> .	are used to have				
evice <u>underline</u> it – so the 'verb' etc. Track	MOTIF	A motif is a symbolic image or idea that appears repeatedly in a piece of writing. Motifs can be symbols, sounds, actions, ideas, or words. Motifs are used to give subtle clues or reminders about a theme present throughout the writing.	same effects in all writing				

# **READING LITERARY FICTION TEXT**

low does the vriter use <b>ANGUAGE</b> o?	<ul> <li>CONTRAST is the number 1/most important language technique – it is <u>always</u> in all good writing/extracts – so always look for &amp; comment on it – <i>e.g. Light/dark; small/big; 1 person/crowds of people; day/night; etc</i></li> <li>There are 10 key terms to learn for writing about</li> </ul>	
o answer: Read	language:	
nd highlight key vords in the	Imagery = Simile, metaphor, personification, & alliteration	
uestion	Nouns, verbs, adverbs & adjectives Motif – repeated images or patterns – often colours or	
Analysis of anguage' means	ideas – freedom/flight/light	
ou <b>must</b> write bout	And use the phrase 'perhaps' (allows you to speculate & offer alternative ideas)	
YMBOLISM	And also the phrases: 'the effect of this is' & 'the effect of the motif is' (don't be afraid of sounding	
ick your uotations <b>first</b>	repetitive, the marks here are for your comments on the 'effect' of languagenot for style!)	
nen consider evices	<ul> <li>And there will usually be at least one complex sentence used as a list – try to find this and refer to it – this will be the only comment on sentence forms you need to make.</li> </ul>	

**Top tip:** Pick out individual words afterwards and discuss their **effec** (not meaning). When you pick out a word/device <u>underline</u> it – so the examiner knows you know which word is the 'verb' etc. Track through the extract from start to finish.

# **READING LITERARY FICTION TEXTS**

<ul> <li>How far do you <u>agree</u> with a statement about the text?</li> <li>To answer: Read and highlight key words in the question</li> <li>Two stages: recognising how the writer tries to achieve effects and deciding how effectively this has been done.</li> </ul>	<ul> <li>The best answers <i>mostly</i> agree with the statement</li> <li>"I agree with except when"</li> <li>CONTRAST – does the writer use this?</li> <li>Narrative voice – Who is talking? 1<sup>st</sup> 2<sup>nd</sup>/3<sup>rd</sup> person - Why this person/viewpoint?</li> <li>Use this phrase to frame your answer: <i>The writer uses</i></li> <li>Then add: <i>the word/phrase/personification/metaphor/simile/alliteration</i></li> <li>Then add: <i>a</i> quotation</li> <li>Then add: <i>this method shows that/suggests/implies</i></li> <li>End by evaluating: <i>although/however/but</i></li> <li>Then: repeat until you run out of time (literally repeat the above frame)</li> </ul>	A DIFFERENT OUR TO ILIGHT THE RMATION FOR ERENTUCTURE STIGNS tive perspective/voice Flash-forward/				
You may also be asked to make a comment about STRUCTURE. What	The 5Cs of structure [+ HOW & WHY] Construction – how has the writer 'built' the text? Is it simply <i>chronological</i> or more <i>complex</i> –	Flash-back				
could you include?	flashbacks, single/multiple narratives, repetition, patterns, motifs					
	Light/dark; small/big; 1 person/crowds of people; day/night; etc	Discourse marker				
	Camera / Cinema – imagine this is a film - where are we positioned? What do we see?					
	<b>Changes</b> = paragraphs! Look at each para – <b>how</b> has it changed? <b>why</b> has it changed? [TiPToP]	Foreshadowing				
	Summary statement = one sentence overview of how the structure changes across the text					
	Always write about the ending Check you've commented on each change of focus/perspective/paragraph					

**MAKE SURE YOU HAVE** 

**Top Tip:** Comment on the writer's techniques like a film maker using phrases like: **focusing, zooming, narrowing, widening, introducing, developing, changing focus, concluding, foreshadowing, contrasting.** E.G. 'We start to see things through the father's eyes as if we are searching with him' or 'We <u>zoom-in</u> to a close-up focus as if we are getting inside the father's mind'

# **READING LITERARY NON-FICTION TEXTS**

BEFORE YOU BEGIN READING, ALWAYS READ THE SUMMARY INFORMATION ABOUT THE TEXT You are trying to show you can identify the techniques the writer has used and the effect these have on the reader. HOW the writer has constructed the text. WHAT you think their intention was and WHY.

How does the writer use LANGUAGE to... (in a single text)

writing a lot

about a little

EE

## HOW TO DO THIS: Read the text first

## MAKE SURE YOU HAVE SOME HIGHLIGHTERS!

Highlight key words in the question – what specific focus are you being asked to identify?
 Read the text again and highlight any techniques you find – these can be words or sentences
 Start your answer with an overview sentence that includes the technique you have spotted, E.g. *"The writer uses personification ..."*

## Then add evidence = a short quotation,

followed by the specific effect of the technique (how does it guide/influence the reader?)
 Don't just do this once - identify as many TEEs [techniques/evidence/effect] as you can identify or write about in the time you have

□ Write **a lot about a little** - e.g. "The writer uses <u>personification</u> in the phrase, 'Death stood at my bedside,' to create an intense feeling of fear for the reader, suggesting the writer felt death was imminent; it was a threatening being, about to take his life."

# TECHNIQUE EVIDENCE EFFECT

YR 9

READIMG

UNSEEN

Learn the following techniques

Personification

*Giving inanimate objects human or lifelike qualities* 

Adjectives/adjectival phrases

Descriptions chosen to create a bias or influence a viewpoint

Lexical Field

Words linked to a topic share the same 'lexical field'

## Semantic Field

Words with a similar meaning share the same 'semantic field'

### Colloquialisms

Commonly used alternatives to standard language

**Tone/Register** 

This could be humorous, formal, self-deprecating, sceptical, sarcastic, ironic...

## TECHNIQUE: personification

**EVIDENCE:** quotation shows use of personification– Death is standing

EFFECT: explain why the writer uses this technique + how it works – Be specific...DON'T just generally say what the technique means

## Example:

"The writer uses <u>personification</u> in the phrase, 'Death stood at my bedside,' to create an intense feeling of fear for the reader, <u>suggesting</u> the writer felt death was imminent; it was a threatening being, about to take his life."







# Pythagoras or Trigonometry?: Pythagoras only deals with sides; Trigonometry MUST INVOLVE AN ANGLE

A common way to remember the ratios is: "SOH CAH TOA".... but make up your own mnemonic to remember the <u>order</u> of letters e.g. from one former pupil: "sunny on holiday, cloudy at home, today only average!"



## **METHOD**

- STEP 1:Label the sides you need or know (only 2 out of the 3!)Remember to label according to the known/wanted angle
- STEP 2: Identify the trig ratio needed from the sides involved
- STEP 3: Draw out the required calculation triangle Cross out the item you need to find
- STEP 4: Write down the required calculation times or divide?



## Year 9 Maths Term 5/6 - Trigonometric Graphs



Minimum value -1 Maximum value +1 Lines of symmetry at 90° and 270° Pattern repeats every 360° so within every  $360^{\circ}$  there are 2 angles with same sine ratio e.g.  $\sin^{-1}(\frac{1}{2}) = 30^{\circ}$  AND 150°



Minimum value -1 Maximum value +1 Lines of symmetry at  $180^{\circ}$ Pattern repeats every  $360^{\circ}$  so within every  $360^{\circ}$  there are 2 angles with same cos ratio e.g.  $\cos^{-1}(-\frac{1}{2}) = 120^{\circ}$  AND  $150^{\circ}$ 



Minimum value  $-\infty$  Maximum value  $+\infty$ Asymptotes at 90° and 270° - no tan value for these angles.

Pattern repeats every  $180^{\circ}$  so within every  $360^{\circ}$  there are 2 angles with same tan ratio e.g. tan<sup>-1</sup>(1) =  $45^{\circ}$  AND (45+180=)  $225^{\circ}$ 

Exact Values:
Some
trigonomotrio

trigonometric values need to be learnt BY HEART Exact Values of Trigonometric Functions

Angle (θ) Degrees	<b>0</b> °	30°	45°	60°	90°
sin(θ)	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1
$\cos(\theta)$	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0
an(θ)	0	$\frac{1}{\sqrt{3}}$	1	√3	Not Defined

Exact trig values can be calculated using properties and known angles in a "unit" equilateral triangle (60° and 30°) and a right angled isosceles triangle (45°) -Pythagoras is applied to find the 3<sup>rd</sup> side....

## two famous triangles



## Year 9 Maths Term 5/6 -Trigonometry in non-right angled triangles ("wonky trig")



28	28	27	28	25	24	23	22	21	20	19	18	17	18	15	14	13	12	11	10	9	8	T	8	5	4	ω	2	1	0	Angle	
0485	0.489	0.454	0.438	0.423	0.407	1600	0375	0358	0.342	0328	6060	0292	0.278	0259	0242	0225	0.208	0191	0174	0158	6610	0122	0105	0.087	0/0/0	0.052	0.035	0.017	0.000	Sine	es fo
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0515	0530	0545	0559	0574	0588	0.002	0.61.6	0.629	0.643	0.858	6660	0.682	0.695	0.707	0.719	0.731	0.743	0.755	0.788	0.777	887.0	667.0	0809	6180	6280	6280	0.848	0.857	0.888	Cosine	betwe
1664	1.600	1540	1.483	1.428	1378	1327	1.280	1235	1192	1150	1111	1072	1036	1000	0.966	0.933	0.900	0.889	0.839	01810	18//0	0/754	0.727	0.700	0.875	0.849	0.825	0.601	0577	Tangent	en 0 ar
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0.017	0.035	0.052	0/00	0.087	0105	0122	0139	0156	0174	1610	8020	0225	0.242	0250	0/2/18	0292	0.309	0.328	0.342	8580	5/20	1600	0.407	0.423	0.438	0.454	0.469	0.485	0500	Oosine	(to 3
57290	28.830	19081	14.301	11.430	9.514	8144	7115	6.314	5.671	5145	4,705	4.331	4.011	3732	3,487	3271	3.078	2904	2/147	2805	2475	2356	2246	2145	2050	1983	1881	1804	1732	Tangent	율

• Your pinky is the x-axis, your thumb is the y-axis

 $+ \times$ 

• Each finger represents an angle

+ X

-~

• Find Cosine coordinate of an angle by counting fingers to the left

The left hand trick for Sine and Cosine

cos(30°)

3

 $sin(30^\circ)$ 

sin (330°)

2

8

100

800

V

-X

 $+\gamma$ 

-× -Y

- Find Sine coordinate of an angle by counting fingers to the right
- Switch the charge to represent the coordinates
- Fill in your circle using your hand trick

Year 9 Maths	Term 5 and 6: Functions and Formula	Sparx : U585	Substitution into Expressions and				
Example:	Glossary : Key terms and concepts explained	I	<b>Substitution</b> is when an unknown (varia For example, you are asked to find the a				
a, b, <i>x</i> , y	VARIABLES – are letters or symbols used to repre-	sent numbers.	You know the formula for area:				
4a + 2b xy 5(x + 3) $x^2 - 4$	<b>EXPRESSIONS</b> – are formed from variables and nu operation signs and brackets. Each part of an expression is called a <b>TERM</b> , terms operators. Eg. $3n + 5$ has two terms $3n$ and 5 separations. An expression does NOT have an equa	You now know actual values: So you can substitute these in and calculate the Area: Things to note when substituting: • Be careful of algebraic notation – real					
$A = \frac{1}{2}xy$ 5(x+3) = 8 $x^2 - 4 = 0$	<b>EQUATIONS</b> – are mathematical statements show equal value, indicated by the equals symbol =. Eg. $5x + 4 = 29$ , the = symbol shows that $5x + 4$ has <b>An equation MUST have an equals sign</b>	ving two expressions have as the same value as 29. 1.	<ul> <li>Be careful when substituting negative particular</li> <li>Write out the new calculation in full</li> <li>When calculating the final answer, fo Examples: if a = 2, b = 3</li> </ul>				
a < 2 5(x + 3) > 8 $x^2 - 4 \le 0$	INEQUALITIES – are mathematical statements show value of one expression to the other. Instead of = Greater than (>); Greater than or equal to (≥); Lest equal to (≤) the other. Like equations, inequalities may be "solved" but us solutions of an inequality will be a random values. For example, the inequality a<2 indicated may take any value as long as it is less than 2.	owing the comparative the two sides might be ss than (<); Less than or Inlike equations, <b>ge of possible</b> tes that the variable a	<b>abc</b> $\Rightarrow 2 \times 3 \times (-5)$ = -15 <b>a - b - c</b> $\Rightarrow 2 - 3 - (-5)$ = 2 - 3 + 5 = 4 <b>Real life formulae and substitutio</b> Example 1: Using given formula $F = \frac{9C}{5} + 32$ This is the formula to change degrees Celsius (°C) to degrees Fahrenheit (°F) Use the formula to convert 21°C to °F Substitute in C = 21: $F = \frac{9 \times 21}{5} + 32$				
$d = 2r$ $A = \frac{1}{2}xy$ $v = u + at$	<b>FORMULA (pl. formulae or formulas)</b> – are equativariables and explains the relationship between the Eg. $\mathbf{d} = 2\mathbf{r}$ has two variables (d and r) and explain circle (d) is equal to twice the length of the radiu <b>Formulae cannot be solved without suvalues.</b> For instance, the formula $v = u + at$ , has 4 linked v the values of three variables are known, can the formulae formulae formulae formulae are known, can the formulae formulae formulae are known, can the formulae formulae formulae formulae are known, can the formulae formulae formulae formulae formulae are known, can the formulae form	ions linking at least two nem. ns that the diameter of a s (r). <b>bstituting in known</b> ariables (v, u, a, t). Only if ourth value be calculated.					
$ab \equiv ba$ $x+2 \equiv 2+x$	Identities – are expressions which are <i>identically</i> of same just written in a different way). Such express symbol =. Identities cannot be solved as lequal in value.	equal (in other words the ssions are linked with the both expressions will be	$F = \frac{1}{5} + 32$ F = 37.8 + 32 Temperature of 21°C is equal to <b>69.8</b> °F				

## ons and Formula

own (variable) is replaced with a known value (number). find the area of this rectangle....

You know the formula for area:	Area = Length
You now know actual values:	(L) = 5cm (W)
So you can substitute these in	A = 5 x 3
and calculate the Area:	A = 15cm <sup>2</sup>

x Width = 3cm



ng: tion – remember number problems need multiplication signs!

- g **negative numbers** it is best to write them in a bracket particularly if you are going to use a calculator
- ion in full replacing the variables with their new known value
- nswer, follow BIDMAS rules for order of operations **2**, **b** = **3** and **c** = **-5**, find the value of the following expressions:

abc	a - b - c	<u>ab + c</u>	ac²	(ac) <sup>2</sup>
⇒ 2 x 3 x (-5)	⇒ 2 - 3 - (-5)	2	⇒ 2x(-5)x(-5)	⇒ 2x(-5)x2x(-5)
= -15	= 2-3+5	⇒ <u>2x3+(-5)</u> = <u>1</u>	= 2 x 25	= -10 x -10
	= 4	2 2	= 50	= 100

Example 2: Writing formula

## ostitution examples

la degrees enheit (°F). 1°C to °F  $\frac{21}{5}$  + 32  $\frac{89}{5} + 32$ 

## Sparx : U144

The cooking time for a turkey is 35 minutes per								
Kilogram plus an	Kilogram plus an extra 20 minutes.							
a) Write a form	Write a formula for this problem							
b) Use your form	Use your formula to calculate the cooking time							
for a turkey w	veighing 5kg in hours and minutes							
Define variables:	Cooking Time (C); Weight (W = 5)							
Write formula:	Cooking Time = 35 x Weight + 20							
a) Formula:	C = 35W + 20							
b) Substitute: C = 35 x 5 + 20								
	C = 195 minutes							
	C = 3hours and 15 minutes							



Input must be 2 for output of 11 so if y=11 then x = 2

 $x = \frac{y-c}{m} \qquad \qquad x = 2(y+b)$ 

## **Function Notation**

More mathematically, a function is a relation between a set of **INPUTS** (the "**DOMAIN**") and a set of **OUTPUTS** (the "**RANGE**") such that each input is related to an output.

Functions can be named. The most common name is "f", but others, "g", "h" etc can be used to distinguish between different functions in a problem.



Here the function "f" has been applied to the input x producing the result f(x) which can be said "f of x". As you can see, we are using f(x) where previously we have used y to represent the output ... the two are EXACTLY THE SAME – it's just using different notation!

More commonly , function are written:

 $function name \qquad function nam$ 

**Sparx : U673** 

..and just like functions machines, we may be given different parts (input or output) of the problem and asked to find the other – the trick is to work out which you have been given...

Example 1: Given that the function Example 2: Given that the function f(x) = $f(x) = x^2 + 1$ 2x + 7(i) Find f(x) = 3 and (ii) f(x) = (-2)Find f(3)and (ii) f(-2)(i) The values given are **INSIDE** the bracket. The values given are **OUTSIDE** the bracket. They are the **INPUTS** into the function. They are the **OUTPUTS of** the function. **SUBSITUTE** to find the output **SOLVE** the equation to find the input  $f(3) = 3^2 + 1$ (i)  $f(x) = 3 \Rightarrow$ 2x + 7 = 3(i) f(3) = 102x = -4x = -2 $f(-2) = (-2)^2 + 1$ (ii) (i)  $f(x) = (-2) \Rightarrow 2x + 7 = -2$ f(-2) = 52x = -9Get into the habit: Remember negatives in x = -4.5brackets may be a MUST if you are **SQUARING using your calculator!** 

**Inverse Functions** The inverse of a function f(x) is written  $f^{-1}(x)$ 

$$f(x) = \frac{f(x)}{f^{-1}(x)}$$

Given the function g(x) = 4x - 3Find  $g^{-1}(x)$   $g(x) = 4x - 3 \implies y = 4x - 3$  y + 3 = 4x  $\Rightarrow g^{-1}(x) = \underbrace{(x+3)}_{4}$ Rewrite your answer using x as the input for the new function

**Note :** Most be not all functions will produce different inverse functions. Exceptions:

- (i) A function can be its own **self inverse** for example if  $f(x) = \frac{1}{r}$  then  $f^{-1}(x) = \frac{1}{r}$
- (ii) A function may not have a inverse <u>function</u> without further definition. For example, if  $f(x) = x^2$  then the inverse would  $\pm \sqrt{x}$  but a function is such that each input must map to a single output... with two

possible outputs from square rooting this would not be the case. Therefore, it is sometimes important to "restrict the domain" for inverse function i.e. here for  $f(x) = x^2$  then  $f^{-1}(x) = \sqrt{x}$  where  $x \ge 0$ 

Identifying inverse functions graphically For any given function f(x) and its inverse  $f^{-1}(x)$ , the graph of  $f^{-1}(x)$  is a reflection of f(x)in the line y = x Sparx : U996

If a function maps the input x to an output y then the inverse function will map the output y to the input x

To calculate the inverse function of f(x), remember "f(x)" is the same as "y", so simply rewrite the function as an equation and rearrange to make x the subject of the formula. However, using function notation, the inverse function  $f^{-1}(x)$  will still need x as the named input variable so rewrite your answer simplify replacing "y" with "x"





## **Composite Functions**

Composite functions are a combination of functions where the output of the first function applied becomes the input to the second; the relationship between original input and final output can then be simplified into a single composite function. The order in which the functions need to be applied are shown in the composite function notation - simply put, work back way from the input (x)...

**Sparx : U448** 

fg(x)

## Examples: Given that $f(x) = x^2$ and g(x) = 2x + 1, ....

a) Find gf(x)(1) Find f g(x) $(\Rightarrow apply "f" first then "g" to its output)$  $(\Rightarrow apply "g" first then "f" to its output)$ g(x)The output of f(x) is  $x^2$ . This becomes The output of g(x) is 2x + 1. This the input for g(x) so... becomes the input for f(x) so... square –  $\Rightarrow gf(x) = 2x^2 + 1$  $\Rightarrow gf(x) = (2x+1)^2$ Number in  $\Rightarrow gf(x) = (2x+1)(2x+1)$ bracket  $\Rightarrow$  input  $\Rightarrow gf(x) = 4x^2 + 4x + 1$ b) Find gf(5)(2) Find fg(-2)If  $gf(x) = 2x^2 + 1$ , then Check: If  $gf(x) = 4x^2 + 4x + 1$ , then  $gf(5) = 2 \times 5^2 + 1$  $f(5) = 5 \times 5 = 25$  $gf(2) = 4 \times (-2)^2 + 4 \times (-2) + 1$ = 51 $g(25) = 2 \times 25 + 1$ Number outside = 9= 51 bracket  $\Rightarrow$  output (3) Find gf(x) = 36 where  $x \ge 0$ c) Find gf(x) = 19 where  $x \ge 0$ If  $f g(x) = 4x^2 + 4x + 1$ , then If  $gf(x) = 2x^2 + 1$ , then  $4x^2 + 4x + 1 = 19$  $2x^2 + 1 = 19$  $(2x+1)^2 = 36$ Check: Substitute answer  $2x^2 = 18$ 2x + 1 = 6into functions...  $x^2 = 9$ 2x = 5 $f(3) = 3 \times 3 = 9$ x = 3 $g(9) = 2 \times 9 + 1$ x = 2.5= 19

Example: Given that f(x) = 2x - 3 and  $g(x) = x^2 + 1$ Solve gf(x) = 2fg(x)

 $gf(x) \Rightarrow$  apply "f" first then "g" to its  $\Rightarrow gf(x) = (2x-3)^2 + 1$ Step 1: Find gf(x)output. The output of f(x) is 2x - 3. This becomes input for g(x) so (2x - 3) $\Rightarrow gf(x) = (2x-3)(2x-3) + 1$ needs to be squared then 1 add  $\Rightarrow gf(x) = 4x^2 - 12x + 10$ **Step 2:** Find  $2fg(x) \Rightarrow fg(x) = 2(x^2 + 1) - 3$  $fg(x) \Rightarrow$  apply "g" first then "f" to its output then times 2. The output of g(x) $\Rightarrow gf(x) = 2x^2 + 2 - 3$ is  $x^2 + 1$ . This becomes input for f(x) so  $\Rightarrow qf(x) = 2x^2 - 1$ needs to be x2 then subtract 3. Finally 2fg(x) means  $2 \times fg(x)$ ...  $\Rightarrow 2gf(x) = 4x^2 - 2$  $\Rightarrow 4x^2 - 12x + 10 = 4x^2 - 2$ Step 3: Form and solve equation  $(-4x^2)$  $\Rightarrow -12x + 10 = -2$ (-10)  $\Rightarrow -12x = -12$ Sparx : U741, U315, (÷ -12)  $\Rightarrow x = 1$ U377, U669, U477, U848, U898 **Functions and Graphs** Every straight line has an equation in the form of: All straight line graphs with  $\mathbf{v} = \mathbf{m}\mathbf{x} + \mathbf{c}$ Linear equations in the form y = mx + cthe steepness of the line where the line cuts the y axis The GRADIENT The y-INTERCEPT are functions as they represent the relation between a single x –coordinate and a single y-coordinate To plot functions, substitute your inputs into the function to generate linked coordinate pairs Record your pairs in a table of values : **example**: for f(x) = 2x + 1Remember f(x) and 2 3 5 r 5 3 mean same thing y = x + 3 7 9 11 13 the final output value (0,1) (1,3) (2,5) (3,7) (4,9) (5,11) (6,13) 1 2 3 4 5 6 7 8 9 1 0

The Vertical line test: If an equation (relationship) produces a vertical line for any part of the line – it is NOT a function as it has produced MORE THAN ONE output value for an input so y = 2 IS a function but x = 9 IS NOT a function

Sparx : U895

v = 2x + 1

v = 2

Science: Usefu	l Information						
Key Word / Term	Definition						
Accuracy	Results are close to	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 o	btained if the investigation is done again by the same person					
Reproducible	Similar results are o	btained if it is repeated by a different person					
Resolution	Is the smallest chan	ge a measuring instrument can detect					
Validity	A measure of how c	orrect the results of an experiment are					

#### Converting units of measure:



_	Prefix	Number	Standard Form	e.g. metres
	Giga	1,000,000,000	1x10 <sup>9</sup>	Gm
	Mega	1,000,000	1x10 <sup>6</sup>	Mm
	kilo	1,000	1x10 <sup>3</sup>	km
		1	1	m
	milli	0.001	1x10 <sup>-3</sup>	mm
	micro	0.000001	1x10 <sup>-6</sup>	μm
-	nano	0.00000001	1x10 <sup>-9</sup>	nm

### 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



KEY:	RELAT Ato Atomi	TIVE ATOMIC N Omic Symb name Ic (proton) NU	The Pe			riod	lic T	able	e of	Eler	nen	ts					
1	2											3	4	5	6	7	0
							1 H hydrogen 1										4 He <sup>helium</sup> 2
7	9											11	12	14	16	19	20
Li	Be beryllium											B	C	N	O	<b>F</b> fluroine	Ne
3	4											5	6	7	8	9	10
23	24											27	28	31	32	35.5	40
Na												Al	Si silicon	P	S sulfur	<b>Cl</b> cholorine	Ar argon
11	12											13	14	15	16	17	18
39	40	45	48	51	52	55	56	59	59	63.5	65	70	73	75	79	80	84
<b>K</b> potassium		Sc scandium	<b>Ti</b> titanium	V vanadium	Cr	<b>Mn</b> manganese	Fe	Co	Ni nickel	Cu	Zn zinc	<b>Ga</b> gallium	<b>Ge</b> germanium	As arsenic	<b>Se</b> selenium	Br bromine	Kr krypton
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
85	88	89	91	93	96	[98]	101	103	106	108	112	115	119	122	128	127	131
Rb rubidium	<b>Sr</b> strontium	Y	Zr	Nb	Mo molybdenum	Tc technetium	Ru	Rh	Pd palladium	Ag	Cd cadmium	<b>In</b> indium	Sn	<b>Sb</b> antimony	Te tellurium	iodine	Xe
37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
133	137	139	178	181	184	186	190	192	195	197	201	204	207	209	[209]	[210]	[222]
Cs caesium	Ba barium	La* Ianthanum	<b>Hf</b> hafnium	Ta tantalum	tungsten	Re	Os osmium	lr iridium	Pt	Au gold	Hg	thanllium	Pb lead	Bi bismuth	Po	At astatine	Rn radon
55	56	57	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86
[223]	[226]	[227]	[267]	[270]	[269]	[270]	[270]	[278]	[281]	[281]	[285]	[286]	[289]	[289]	[293]	[293]	[294]
Fr francium	Ra	Ac* actinium	<b>Rf</b> rutherfordium	<b>Db</b> dubnium	Sg seaborgium	Bh	Hs	Mt meitnerium	Ds darmstadtium	Rg	Cn	Nh	Fl	Mc	Lv livermorium	Ts tenessine	Og oganesson
87	88	89	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118

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

KS4 Biology: B2 Cell division			The Cell cycle and Mitosis       Chromoson         Your body needs to make new cells to do the following;       Chromoson			<u>Chromosomes</u>	<u>nes</u>		
KeywordDefinitionMitosisCell division where one set of chromosomes are pulled to each end of the cell and the nucleus divides			<ul> <li>Growth and development as an organism</li> <li>Replace damaged or worn out cells</li> <li>In the nucleus of a human cell there are 23 pairs of chromosomes. These contain a double belix of DNA</li> </ul>						
			division is part of the cell cycle, part es cells into genetically identical ce sis	of the cell cycle lls- this is called					
Differentiation	When a cell becomes a	Cell division							
	specialised cell		Stage 1	Stage 2		Stage 3			
Cell Cycle	The process in which a single cell grows and divides	- Loi cyc - Ce	<ul> <li>Longest stage of the cell</li> <li>Cycle</li> <li>Cells grow larger- increase in</li> <li>Cells diagent increase in</li> </ul>	- ulled to -	<ul> <li>The cell divides to form two cells</li> <li>These are diploid cells</li> </ul>				
Chromosomes	A thread like structure of coiled DNA found in the nucleus of eukaryotic cells.		as mitochondria and ribosomes - DNA replicates into two	nucleus then divi	il – the des	chromosomes			
DNA	The genetic material of eukaryotic cells. A polymer made up of two strands forming a double helix.								
Meristem	Plant tissue found in the growing tips of roots and shoots					Stage 3			
Cloning	Creating a genetically identical copy of a cell or organism		Stage 1		cells				
					5	Stage 2- Mitosis			



Type of cell	Properties	Clinical use				
Human embryonic stem cell	Can be cloned and forced to differentiate into any cell type	Therapeutic cloning using the same DNA so the body does not reject the cells				
Adult stem cell	Can form any cell related to its origin. Very few types of cell can be formed	Can be used to replace cells and tissue such as blood, skin and muscle. Must be match to avoid rejection				
Plant Meristems	Can differentiate into any plant cell type throughout the life of the plant.	Can be used to produce genetic clones quickly and economically- can save rare species and provide disease resistance				
stem cells co stem cells made to differentiate into different tissues	Pros of ste - Can be of and use - Potentia organs t <u>Cons of st</u> - People ob most stem	<u>m cells</u> cloned to treat diseases such as diabetes same DNA to avoid rejection al in the future to be used to grow whole to transplant <u>cem cells</u> oject on religious and ethical reasons as cells come from aborted foetuses and the				
spinal the feat the potential risk of viral transfer from the cells organs or transplant of the potential risk of viral transfer from the cells organs or transplant of the potential risk of viral transfer from the cells <u>Further reading</u> <u>https://www.bbc.co.uk/bitesize/guides/z2kmk2p/revision/1</u> <u>https://studyrocket.co.uk/revision/gcse-biology-triple-aqa/triple-cells</u>						

## KS4 Biology: B3 Organisation & the digestive system

Keyword	Definition
Enzyme	Protein with an active site of a specific shape which speeds up reactions
Villi	Finger like projections in the small intestine that increase surface area, helping with absorption
Catalyst	A molecule/chemical that speeds up the rate of reaction
Lock and key mechanism	Only one type of substrate can fit into the active site of an enzyme, like a key fits into a lock.
Active site	The part of the enzyme that helps break down the substrate
Substrate	The specific molecule that binds to an enzyme's active site
Rate of reaction	The speed at which a reactant is converted into a product
Denatured	When the active site of an enzyme changes shape and the substrate can no longer fit in. Can be caused by pH or temperature
рН	How acidic or alkaline a substance is. Enzymes are very sensitive to pH.
Bile	Alkaline substance produced in the liver and stored in the gall bladder. It neutralises stomach acid and breaks down fats into small droplets
Emulsification	Mixing two liquids such as oil and water that would not normally mix

Organisation Organisms like you and I are organised from our smallest units (cells)



Enzymes are proteins and function in many reactions in the body as a biological catalyst- this means they do not change the reaction but they do <u>speed it up</u>



Most enzymes are specific, meaning that only one type of substrate will only bind to the enzymes active site- like a key fitting a lock



Carbohydrates, lipids and proteins make up the cell's structure-and are needed in a balanced diet- we can test food for these using the following tests

Molecule	What is it made from	Chemical test	Positive result looks like
Sugar	Carbohydrates with one or two sugar units	Benedict's reagent and heat	Small amount= green Large amount = yellow/red
Starch	Is a complex carbohydrate made from long chains of simple sugars bonded together	Iodine	Turns blue/black
Protein	Made from long chains of amino acids	Biuret reagent	Turns purple
Lipid/fat	3 fatty acids bonded to a glycerol molecule	Ethanol	Dissolve in ethanol and then turn <u>white/cloudy</u> when water is added

The digestive system uses several enzymes which work on different organs of the system- the three main sites are the mouth, stomach and small intestine

			Digestive enzyme	e Where is it produced	Site of action	substrate	product
			Carbohydra (e.g amylas	se Salivary glands, pancreas and small intestine wall	Mouth and small intestine	Complex carbohydrates - e.g. starch	Simple sugars - e.g. glucose
ller			Protease (e.g pepsir	Stomach, pancreas, small intestine wall	stomach	Proteins	Amino acids
)	Lipase works over the surface of the drop	Lipase works over the su of each of the droplets	Lipase	Pancreas, small intestine wall	Small intestine	Lipids	Glycerol and fatty acids
g one			<u> </u>				
				Bile (not an o	enzyme)		

A drop of lipid

Emulsification breaks the drop

into tiny droplets of lipid

- Produced by the liver this is transported to the small intestine to neutralise stomach acid.
- It also emulsifies fat, increasing its surface area for lipase to work on

	KS4 Chemistry:
<b>C3</b>	Structure and Bonding

es of matter				
three states	State			
natter are	Closeness of particles			
resented by	Arrangement			
ole models.	of particles			
ere particles are	Movement of particles			
wn as solid	Energy of			
eres and no	particles			
es are shown	2D diagram			
ween				
se particles				

	Solid	Liquid	Gas
ess of s	Very close	Close	Far apart
ement cles	Regular pattern	Randomly arranged	Randomly arranged
ent of B	Vibrate around a fixed position	Move around each other	Move quickly in all directions
of s	Low energy	Greater energy	Highest energy
ram			•

(limitations of this model). The amount of energy required to change state depends on the strength of the force between the particles of the substance.

#### lons

All atoms are more stable with a full outer shell of electrons. Some atoms will lose electrons to get a full outer shell: these are metals. Some atoms will gain electrons to get a full outer shell: these are non metals.

An ion is an atom with a positive or negative charge, these are formed by an atom gaining or losing electrons.

For example, sodium has one electron in it's outer shell, it therefore loses one electron to form a Na<sup>+1</sup>ion.

We represent ions with square brackets around the ion and the charge in the top

right corner.



The group number indicates how many electrons an atom would loose or gain to form an ion. e.g. group two elements loose two electrons, forming <sup>2+</sup> ions

	Keyword	Definition
	Alloy	a mixture of two or more elements, at least one of which is a metal
	covalent bond	the bond between two atoms that share one or more pairs of electrons
	covalent bonding	the attraction between two atoms that share one or more pairs of electrons
	delocalised electron	bonding electron that is no longer associated with any one particular atom
	dot and cross diagram	a drawing to show only the arrangement of outer shell electrons of the atoms or ions in a substance
	fullerene	form of the element carbon that can exist as large cage-like structures, based on hexagonal rings of carbon atoms
	giant covalent structure	a huge 3D network of covalently bonded atoms, such as the bonding in silicone dioxide
	giant lattice	a huge 3D network of atoms or ions
	intermolecular forces	the relatively weak attraction between the individual molecules in a covalently bonded substance
	ionic bond	the electrostatic force of attraction between positively and negatively charged ions
	metallic bonding	The bonding that occurs in metals, due to the electrostatic force between positive metal ions and negative electrons
	nanoscience	the study of very tiny particles or structures between 1 and 100 nanometres in size, where 1 nanometre = 10 <sup>-9</sup> metres
	polymer	a substance made from very large molecules made up of many repeating units

#### **Ionic Bonding**

When a metal atom reacts with a non-metal atom electrons in the outer shell of the metal atom are transferred to the non metal atom. This means the metal has a positive charge and the non metal has a negative charge. This means there is an electrostatic attraction between the two ions, this is what forms an ionic bond. Both atoms will have a full outer shell (this is the same as the structure of a noble gas) see example below of sodium chloride.



lon formation: When a metal atom reacts with a non-metal atom electrons in the outer shell of the metal atom are transferred. Metal atoms lose electrons to become positively charged ions. Non-metal atoms gain electrons to become

negatively charged ions.



## Formula of Ionic Compounds

In sodium chloride, 1 sodium atom gives an electron to a chlorine atom, therefore the empirical formula is NaCl. However there are some examples where the ratio of atoms is not 1:1. For example when sodium bonds with oxygen, sodium only wants to lose one electron but oxygen needs to gain two. So you need two sodium atoms for every oxygen so the **empirical formula is Na<sub>2</sub>O.** 

#### **Ionic Bonding- Models**

There are a number of ways we can represent ionic bonding all; of these have advantages and limitations. For example all the diagrams below show ways we can represent sodium chloride 1. Dot and cross diagrams- These show clearly how the electrons are transferred. It does not, however, show the 3D lattice structure of an ionic compound or that this is a giant compound.

2. 2D ball and stick model of ionic bonding



Sodium ions

3. 3D Ball and Stick model of ionic bonding This clearly shows the 3D structure of the ionic lattice and how different ions interact with other ions in all directions to create an ionic lattice.

## **Properties of Ionic compounds**

Ionic compounds have high melting points, due to

strong electrostatic forces between the oppositely charged ions. This means a lot of energy is required to break these bonds. For example the melting point of sodium chloride is 801 °C. Ionic compounds do not conduct electricity as a solid. They do conduct electricity if they are dissolved in water (aqueous) or in the liquid state. This is because the ions are free to move, carrying the electric charge.

Ionic Lattice ionic compounds have regular structures (giant ionic lattices) in which there are strong electrostatic forces of attraction in all directions between oppositely charged ions.



#### **Covalent Bonding**

Covalent bonding occurs between non metals. Electrons are shared between the atoms, so that they have a full outer shell. Covalent bonds are strong and require a lot of energy to break. The simplest example is hydrogen: both hydrogen atoms have one electron in their outer shell. Therefore both hydrogen atoms share one electron each, to give them both a full outer shell, we can show this bond on a dot and cross diagram.



When drawing covalent molecules we use dot cross diagrams" as we do with ionic compounds. It is important to represent the electrons on one atom with a dot and on the other atom with an X. The first five examples, **hydrogen, chlorine, water, hydrogen chloride and ammonia (NH<sub>3</sub>)** all share one electron per atom in a to make a full outer shell of electrons on each atom.



N

Nitrogen needs three electrons to complete its outer shell, this forms a triple bond between the two nitrogen atoms, to make a nitrogen molecule.

Covalent bonds are strong because there is a attrac and the positively charged nucleus. This means a lo



rons in the covalent bond to break a covalent bond.

#### **Properties of Simple Covalent Compounds**

Simple covalent compounds have low melting points and are often gases at room temperature, for **example oxygen and carbon dioxide.** Although the covalent bonds between the atoms are strong, the **intermolecular forces between the molecules are weak. It is very important to remember that covalent bonds are strong but the intermolecular forces are weak .** This means that only a small amount of energy is required to overcome these weak forces.

The size of the intermolecular force between molecules increases as the molecules get larger. This is because a force called the van der Waals force increases (you do not need to know that for GCSE).

For example as you go down group 7, the boiling points increase because **the molecules get larger**.



As well as having low melting points, covalent compounds **do not conduct electricity**. This is because they have no free electrons or ions and therefore there is nothing to carry the electric charge. Remember pure water does not conduct electricity, only when it has ions dissolved in it will it conduct.

Additional information https://www.bbc.co.uk/bitesize/topics/zq6h2nb https://www.youtube.com/watch?v=YpEQ-NWxKBc https://www.youtube.com/watch?v=o\_jDaUe9p5o https://www.youtube.com/watch?v=9bbCFUyluWg

# **Representing Covalent Compounds** Like ionic compounds, there are variety of ways that scientists use to represent covalent compounds. 1. Dot cross diagram •• H<sub>x</sub>N<sub>\*</sub>H

#### 2. Ball and stick model

#### **Giant Covalent Compounds**

In a giant covalent structure all atoms are bonded to each other by strong covalent bonds. Giant covalent compounds have a high melting point because many strong covalent bonds need to be broken and this requires a lot of energy. There are three examples you need to know, diamond, graphite and silicone dioxide - often called silica (see table)

## **Chemistry only - Polymers**

Polymers are large covalent compounds which can be many thousands of atoms in length. They are made from small molecules known as monomers.

Rather than drawing out all the atoms in a polymer we draw a repeating unit which is the structure of the monomer in square brackets, with a n representing a very large number of atoms. Polymers have higher melting points than smaller covalent compounds like carbon dioxide as the intermolecular bonds are stronger. However the bonds are not as strong as they are in ionic or giant covalent compounds so the melting points are lower than those compounds.



#### **Graphene and Fullerenes**

There are other forms of carbon which have been discovered recently: graphene is a single layer of graphite so it is 1 atom thick. Fullerenes are molecules of carbon with hollow shapes. The most famous example is

Buckminsterfullerene (C60).

Fullerenes have use in drug delivery and as cata otubes are cylinder shaped fullerenes, these are strong and are excellent conductors of both heat and electricity.



Substance	Diagram	Description	Properties
Diamond		Each carbon is covalently bonded to four other carbons	Very hard, very high melting point, due to strong covalent bonds. Does not conduct electricity – no free electrons/ions.
Graphite		Each carbon is covalently bonded to 3 other carbons, there are weak (non covalent) bonds between the layers.	High melting point, conductor of electricity due to <b>delocalised</b> <b>electrons which can carry a charge.</b> Slippery as layers can slide over each other
Silica	, it is a second	Every silicon atom is bonded to 2 oxygen atoms and vice versa	High melting point
Alloys Alloys are mixtures of 2 or more elements, one of which is a metal. Examples of alloys include brass and steel. Metals are alloyed so that the regular structure of metals is changed and the layers of ions can no longer slide over one another; therefore making it much stronger.	Metallic Bonding Metals form giant structures. The metal atoms form a regular pattern and the of "sea of delocalised electrons". These electrons are free to move. The 2D struct this: This would be the structure of a group 1 metal like sodium, if it were a group 2 metal like magnesium then the charge on the ions would be Mg <sup>2+.</sup>	Ionate their outer electron to the ture of metallic bonding looks like	
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------	
<u>Chemistry only</u> - Nanoparticles Nanoparticles have a diameter <b>between 1 nm and 100 nm</b> , this means they are only a few hundred atoms in size. Nanoparticles have an <b>extremely large</b> <b>surface area to volume ratio</b> , this gives them a variety of useful properties.	Properties of Metals Metals are good conductors of electricity, due to the delocalised electrons, which can carry the electric charge. Metals are also good conductor transfer the heat energy through the metal. Metals are also malleable (bendy) as the layers of ions can easily slide over one pure metals are too soft for uses such as building.	<b>s of heat</b> as the free electrons can e another. This means that many	
<ul> <li>The targeted delivery of drugs- they are more easily absorbed into the body and therefore could be use to deliver drugs to specific tissues.</li> <li>Making synthetic skin <ul> <li>Silver nanoparticles have antibacterial properties. These can be used</li> <li>in things like clothing, deodorants and surgical masks.</li> <li>Some nanoparticles are electrical conductors, these can be used to make components in very small circuit boards.</li> <li>cosmetics, to make them less oily</li> <li>sun creams, they provide better</li> <li>protection from UV than conventional sun creams. They also provide</li> </ul> </li> </ul>	Reactivity of metals When a metal reacts it forms a positive ion. The easier it is for a metal to form a positive ion, the more reactive it is. This is shown in the reactivity series; you should memorise the position of different elements:         Chemistry only - Dangers on Nanomaterials         The long term affects of nanomaterials on the body have not been well	potassium most reactive K sodium Na calcium Ca magnesium Al aluminium Al carbon C zinc Zn iron Fe tin Sn lead Pb hydrogen H	
Detter skin coverage.	researched. For example when using sun cream, nanoparticles are absorbed through the skin. The affects of long term exposure to these has not been well researched. Some people believe anything containing nanoparticles should be clearly labelled.	copper silver Ag gold Au platinum least reactive Pt	

#### KS4 Physics: P3 Energy resources

Background: It is hard to imagine a World without electricity. It reaches into every aspect of our lives. But where do we get the energy to make it from? Will they run out? Have we got a backup plan?

Keyword/term	Definition	World energy demands and sources (2015)	Hydroelectric power:
Carbon neutral	Balancing carbon emissions with carbon removal e.g. by photosynthesis OR simply eliminating carbon emissions altogether.	oil coal	Hydroelectricity can be generated when rainwater that is collected in a reservoir
Dissipate	To scatter in all directions or to use wastefully. When energy has been dissipated it means we cannot get it back. The energy has spread out and heats up the surroundings.	gas 24% hydroelectricity	(or water in a pumped storage scheme) flows downhill. The flowing water drives turbines that turn electricity generators at the
Non-renewable energy resources	Energy resources which will run out, because they are finite reserves, and which cannot be replenished.	other 7% renewables 3%	bottom of the hill.
Renewable energy resources	Energy resources which will never run out and (or can be) replenished as they are used.	A coal-fired power station Steam is cooled in cooling towers Generator makes electricity Coal prime by Coal prime by Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Con	
Alternative energy resource	Resources other than fossil fuels. The resources may or may not be renewable. Nuclear power is not a renewable energy resource, but tidal power is. Alternative energy resources do not contribute to global warming.		
	Fuel produced from biological material. Biofuels are provided by trees	train or truck Coal is t in the fu	burned voltage
Biofuel	such as willow that can be grown specifically as energy resources.	Wave power: A wave generator is used for a floating	to make a Tidal power: Tidal power stations trap water from each
National grid	The network of cables and transformers used to transfer electricity from power stations to consumers (i.e. homes, shops, offices, factories etc.)	generator move up and down, turning a generator to create electricity.	<ul> <li>high tide behind a barrage. The high tide can then be released into the sea through turbines.</li> <li>These turbines drive generators.</li> </ul>
Geothermal energy	Energy released by radioactive substances deep within the Earth	Mans	In some coastal areas, electricity generated by tidal flow passing through undersea turbines, placed on the sea bed.
Nuclear fuel	Substance used in nuclear reactors that releases energy due to nuclear fission	buoyancy chamber axle connected to generator	balancing float

Decourco	Ponowahla?		Advantages	Disadvantages	
Resource	Renewabler	Uses	Auvantages	Disadvantages	Geothermal energy: This comes from the
Fossil Fuels	Non-Renewable	Electricity, transport, heating	Reliable – electricity can be generated all of the time. Relatively cheap way of generating electricity.	Produces carbon dioxide, a greenhouse gas that causes global warming. Can produce sulphur dioxide, a gas that causes acid rain.	<ul> <li>energy released by</li> <li>radioactive sources</li> <li>deep in the Earth.</li> <li>The energy transferred</li> <li>from these substances</li> <li>heats the surrounding rock</li> </ul>
Nuclear Fuel	Non-Renewable	Electricity	Produces no carbon dioxide when generating electricity. Reliable – electricity can be generated all of the time.	Produces nuclear waste that remains radioactive for thousands of years. Expensive to build and decommission power stations.	- The hot rocks are used to turn water into steam Geothermal
Bio Fuel	Renewable	Heating, electricity	Carbon neutral. Reliable – electricity can be generated all of the time.	Production of fuel may damage ecosystems and create a monoculture.	power station
Wind	Renewable	Electricity	No CO <sub>2</sub> produced while generating electricity.	Unreliable – may not produce electricity during low wind. Expensive to construct.	Solar water heating solar heating panel hot water out
Hydroelectricity	Renewable	Electricity	No CO <sub>2</sub> produced while generating electricity.	Blocks rivers stopping fish migration. Unreliable – may not produce electricity during droughts.	solar panel SOLAR ENERGY
Geothermal	Renewable	Electricity, heating	Does not damage ecosystems. Reliable source of electricity generation.	Fluids drawn from ground may contain greenhouse gases such as CO <sub>2</sub> and methane. These contribute to global warming.	Solar heating panels use solar energy
Tidal	Renewable	Electricity	No CO <sub>2</sub> produced while generating electricity.	Unreliable – tides vary. May damage tidal ecosystem e.g. mudflats.	to heat water that flows through the panel. You can use the equation $\Delta E = m \ c \ \Delta \theta$ from Topic P2.4 to estimate the temperature increase of mass <i>m</i> of water that flows through
Waves	Renewable	Electricity	No CO <sub>2</sub> produced while generating electricity.	Unreliable – may not produce electricity during calm seas.	the panel, where <i>c</i> is the specific heat capacity of water and <i>E</i> is the solar energy absorbed by the panel.
Solar	Renewable	Electricity, heating	No CO <sub>2</sub> produced while generating electricity.	Unreliable – does not produce electricity at night. Limited production on cloudy days. Expensive to construct.	<u>Further reading</u> <u>https://www.bbc.co.uk/bitesize/guides/zchgdxs/revision/1</u>

#### **CS KS3**: HARDWARE COMPONENTS THAT MAKE UP COMPUTER SYSTEMS

Term	Definition
CPU	Central Processing Unit: "The main part of the computer, consisting of the registers, ALU and control unit."
Fetch-decode-execute cycle	"The complete process of retrieving an instruction from storage, decoding it and carrying it out. Also known as the instruction cycle."
ALU	Arithmetic Logic Unit: "Performs calculations (e.g., x = 2 + 3) and logical comparisons (e.g., IF x > 3) in the CPU."
cu	Control Unit: "Decodes instructions. Sends signals to control how data moves around the CPU."
Cache	"Memory in the processor that provides fast access to frequently used instructions and data."
Register	"Tiny areas of extremely fast memory located in the CPU, normally designed for a specific purpose where data or control information is stored temporarily – e.g., MAR, MDR, etc."
Von Neumann architecture	"Traditional computer architecture that forms the basis of most digital computer systems. Instructions are fetched, decoded and executed one at a time."
MAR	Memory Address Register: "Holds the address of data ready to be used by the memory data register or the address of an instruction passed from the program counter. Step two of the fetch-decode-execute cycle."
MDR	Memory Data Register: "Holds data fetched from or to be written to memory. Step three of the fetch-decode-execute cycle."
Program counter	"Holds the address of the next instruction to be executed. Step one of the fetch-decode-execute cycle."
Accumulator	"Holds the result of calculations."
Clock speed	"Measured in hertz, the clock speed is the frequency at which the internal clock generates pulses. The higher the clock rate, the faster the computer may work. The clock is the electronic unit that synchronises related components by generating pulses at a constant rate."
Cache size	"The larger the cache, the more data that can be stored without having to go back to main memory (RAM) – this has a significant impact on processing speed."
Cores	"Part of a multi-core processor, a single component with two or more independent CPUs that facilitate the fetch-decode-execute cycle."
Embedded system	"A computer built to solve a highly specific problem. Not easy to change. For example, the operating system placed inside a washing machine, microwave or set of traffic lights."
Primary storage	"Comprised of random-access memory (RAM) and read-only memory (ROM). It holds data and instructions that the CPU can access more quickly and easily than from secondary storage devices."
RAM	Random-Access Memory: "Volatile (data is lost when the computer is powered off). Read-and-write. Purpose: Temporary storage of currently executing instructions and data – e.g., applications and the operating system."
ROM	Read-Only Memory: "Non-volatile (data is retained when the computer is powered off). Read-only. Purpose: Stores startup instructions, otherwise known as the bootstrap."
Virtual memory	"Using part of the hard disk as if it were random-access memory. Allows more applications to be open than physical memory can hold."
Secondary storage	"Permanent storage of instructions and data not currently in use by the processor. Stores the operating system, applications and data. Read-and-write and non-volatile."
Optical storage	"CD-R, CD-RW, DVD-R, DVD-RW. Use: Music, films and archive files. Low capacity. Slow access speed. High portability. Prone to scratches. Low cost."
Magnetic storage	"Hard disk drive. Use: Operating system and applications. High capacity. Medium data access speed. Low portability (except for portable drives). Reliable but not durable. Medium cost."
Solid-state storage	"Memory cards and solid-state hard drives (SSD). Use: Digital cameras and smartphones. Medium capacity. High portability. Reliable and durable. No moving parts. Fast data access speed. High cost."
Storage capacity	"The amount of data a storage device can store."
Storage speed	"The read/write access speed of a storage device."
Storage portability	"How easy it is to transport a storage device – e.g., solid-state and optical storage are highly portable, whereas magnetic storage is designed to stay in place."
Storage durability	"How resistant a storage device is to damage and wear. Devices with low durability are likely to fail earlier."
Storage reliability	"A relative measure of confidence that a storage device will function correctly and allow you to write, read, delete and modify data."
Storage cost	"The relative price of a storage device – e.g., per megabyte of data."



CD

HDD

SSD

DVD

**BLUE-RAY** 

#### **CS KS3**: SOFTWARE COMPONENTS AND REPRESENTING NUMBERS USING BINARY



We tend to count using Base 10/Denary (because we have 10 digits across our hands).

#### **Denary Number System place values**

104	10 <sup>3</sup>	10 <sup>2</sup>	<b>10</b> <sup>1</sup>	<b>10</b> °	
10,000s	1,000s	100s	10s	1s	←Denary values Base 10↓
0	0	0	6	5	65

Computers do not use fingers, but they do use electricity. Electricity has two states on or off. If we use switches in sequence to turn off/on electricity (shown here as 1 for on and 0 for off) we can make a number in binary that is the same in denary (shown here we are making 65). This switch is worth 32 This switch is worth 1

g OFF OFF OFF OFF OFF OFF **2**<sup>5</sup> 2<sup>3</sup> 2<sup>2</sup> **2**<sup>1</sup> **2**<sup>0</sup> 27 26 **2**<sup>4</sup>

←Binary values 128 64 32 16 8 4 2 1 Base 10 4 0 0 0 65 1 0 0 0 1

**Binary Number System place values** 

16 <sup>3</sup>	16 <sup>2</sup>	<b>16</b> <sup>1</sup>	<b>16</b> <sup>0</sup>	
4096s	256s	16s	<b>1</b> s	←Hex values Base 10↓
0	0	4	1	65

Hexadecimal Number System place values

Hexadecimal	Denary	Binary	You r
0	0	0000	_ ( I ) syme
1	1	0001	made
2	2	0010	Software is the instruction
3	3	0011	to a computer. These instru written in programming la
4	4	0100	
5	5	0101	
6	6	0110	
7	7	0111	Operating
8	8	1000	System
9	9	1001	
A	10	1010	Utilities
В	11	1011	Drivers
С	12	1100	
D	13	1101	
E	14	1110	Binary Addition
F	15	1111	Rule 1: 0 + 0

Computer Scientists found that writing out binary numbers was quite time consuming and long! They found that if they used a Base-16 system then they could represent 4 binary numbers in one character (handy!). This system is known as Hexadecimal. You will see it in MAC addresses, HTML colour codes, and it is used in Assembly and Machine Code.

#### **Computer Science Joke:** You may have seen this symbol before? It is the **on/off** switch which is \* I never said it was funny made up of a 1 and a 0. Software is the instructions that we give Software to a computer. These instructions are written in programming languages. Application System

Memory management

Peripheral management

User management **File management** 

Anti-virus software Disk management tools

Disk defragmenter Compression Backup

Computer printers

Graphic cards

Network cards

Sound cards

Modems

= 0

= 1

= 1

= 0

User interface

Multitasking

Rule 2: 1 + 0

Rule 3: 0 + 1

Rule 4: 1 + 1

Rule 5: 1+1+1 = 1

There are many more examples of application software

"There are **10** types of people in the world. Those who understand binary and those who don't!"\*

Browser

Spreadsheet

Word

Processing

2 shifts left/right will

and shift right to

divide.

Shift left to multiply

multiply/divide x 4

**Binary Multiplication / Division** 

1 shift left = multiply x 2

 $0100\,0001 = 65$ 

 $0100\ 1010 = 74$ 00100101 = 37

1 shift right = divide x 2

Carry the 1 into

- the next column

Carry the 1 into

1 the next column

 $1000\,0010 = 130$ 

#### CS KS3: REPRESENTING TEXT, SOUND, AND IMAGES USING BINARY

#### **Representing data**

All data inside a computer is transmitted as a series of electrical signals that are either **on** or **off**. Therefore, in order for a computer to be able to process any kind of data (including text, images and sound) *they must be converted into binary form*. If the data is not converted into binary – a series of 1s and 0s – the computer will simply not understand it or be able to process it.





#### **Representing text**

When any key on a keyboard is pressed, it needs to be converted into a binary number so that it can be processed by the computer and the typed character can appear on the screen. A collection of binary codes assigned to characters is known as a **Character Set**. The most common ones are **ASCII (American Standard Code for Information Interchange)**, and the (now) more commonly used **Unicode**. ASCII is a 7-bit (128 characters) was then extended to an 8-bit (256 characters) character set. This was fine for English, but inadequate when trying to represent other world languages and so Unicode was created and could store characters in 16-bits (65,536 characters).

#### **Representing sound**

Sound needs to be converted into binary for computers to be able to process it. To do this, sound is captured - usually by a microphone - and then converted into a digital signal (see first image  $\rightarrow$ ).

An analogue to digital converter will sample a sound wave at regular time intervals (called the **Sample Rate** and is measured in *Hz*). The samples are converted to binary and recorded to the nearest whole number. If we examine the sampled amounts compared to the original wave, we can make a judgement about the quality of the sound (**see second image**  $\rightarrow$ ). If a sound has a *high* **sample rate**, more snapshots have been captured and it will be closer to the original sound. We also need to concern ourselves with the amount of space we have to store these samples, again called the **bit depth**. A *high bit depth* + *a high sample rate* = *a high quality sound*. The opposite would also be true.

#### **Representing images**

Digital images are made up of grids of **Pixels (Pic**ture **El**ements). Each pixel is made up of a binary numbers. If we allocate **1 bit** to 1 pixel we can represent 2 colours. 1 (on) for White and 0 (off) for Black. The amount of bits allocated to a pixel is called the **bit depth**. A simple table below shows bit depth to colour amounts.



1	0	0	0	0	0	1
0	1	1	1	1	1	0
0	1	0	1	0	1	0
0	1	1	1	1	1	0
0	1	1	0	1	1	0
0	0	1	0	1	0	0
1	0	1	0	1	0	1
1	1	0	0	0	1	1

The quality of an image can be judged by the amount of pixels in a given area (**the resolution**) and the amount of space allocated to storing colours (**the bit depth**). The more of each, the better the quality.





#### **Representing video** Video is just lots of images displayed per second with sound underneath.

A high quality video would have all the features of a high quality image and a high quality sound played at a high frame rate (such as 24fps).

Image size calculation → width(px) x height(px) x bit depth Sound size calculation → sample rate x bit depth x duration (secs)

#### CS KS3: COMPUTER NETWORKS, AND THE INTERNET

#### **Compressing data**

Data can become quite large. By reducing its size it takes up less space on secondary storage, and it will also reduce the time it will take to upload/download the data over networks. There are two types of compression: **lossy** and **lossless**.

LOSSY	LOSSLESS	
Lossy compression removes some of a file's original data in order to reduce the file size. This might mean reducing the numbers of colours in an image or reducing the number of samples in a sound file. This can result in a small loss of quality of an image or sound file.	Lossless compression doesn't reduce the quality of the file at all. No data is lost, so lossless compression allows a file to be recreated exactly as it was when originally created. There are various algorithms for doing this, usually by looking for patterns in the data that are repeated	
image: JPEG audio: MP3, AAC video: AVC, HEVC, MPEG	image: GIF, RAW, BMP, PNG audio: WAV, FLAC general: ZIP	
<ul> <li>Some algorithms used in lossy compression include:</li> <li>Transform Coding</li> <li>Discrete Cosine Transform</li> <li>Discrete Wavelet Transform</li> <li>Fractal Compression</li> </ul>	Some algorithms used in lossless compression include: • Run Length Encoding • Lempel-Ziv-Welch (LZW) • Huffman Coding • Arithmetic Encoding	



#### What is a network?

A network is two or more computers (or other electronic devices) that are connected together, usually by cables or Wi-Fi.

Some computer networks will have a **server**. A **server** is a powerful computer that often acts as a central hub for services in a network, e.g. emails, internet access and file storage. Each computer connected to a server is called a **client**.

A computer that is not connected to a network is called a **standalone computer**.

#### Benefits of a network

- Using a network allows you to share:
  - hardware, such as a printer
    software, allowing multiple users to run the same programs on different computers
  - data, so that other people can access shared work and you can access your data from any computer on the network
- Networking is critical if you want to use your computer to communicate. Without it you couldn't send an email, a text or an instant message.

#### Packet Switching

The Internet uses Packet Switching to send data. This means it splits it up into little envelopes called packets and sends it on its way via different routes (scan the QR-Code to see 'A Packet's Tale').

## Problems with a network

- If the network breaks, this can make a number of tasks it is used for quite difficult.
- If computers and devices are networked together, we can expose ourselves to hackers and viruses. Most viruses are spread over a network and most hackers use a network to access other people's computers. Without a network connection, a hacker would have to physically get to your computer.







#### CS KS3: COMPUTATIONAL THINKING, ALGORITHMS AND PROGRAMMING

list.

**Computational Thinking** is the thinking a Computer Scientist does in order to produce an algorithm (which can then often go on to be programmed). The four main pillars of it are: **Pattern Recognition**, **Decomposition**, **Abstraction**, and **Algorithm** design.

#### Algorithms for searching and sorting:



The **linear search** examines one item at a time until it finds what it is looking for or it reaches the end and it hasn't found it.



The **binary search** examines the middle item in a list. If the middle item is:

a) the correct item it stops

b) smaller than the item it is looking for, it then gets rid of everything from the midpoint and lower and starts again at a the midpoint of the now smaller list

c) larger than the item it is looking for, it then gets rid of everything from the midpoint and higher and starts again at a the midpoint of the now smaller list

```
A binary search will only work if the original list is sorted.
```



down into smaller, and more manageable parts. Abstraction: removing unnecessary detail. Algorithm: putting together a stepby-step set of instructions to solve a specific problem. The **bubble sort** examines the first item and compares it with the next. If it is larger it swaps. It continues this action until the largest item has 'bubbled' to the end of the list. This is called **the first pass**. It repeats this process again until the second largest item is now in place. This is called **the** 

Pattern recognition: looking for

**Decomposition**: breaking a problem

patterns.



**Programming** is what we do when we need to give instructions to a Computer. We can use high-level languages (like Python, Java, C#, or even Scratch) or low-level-languages (like Assembly or Machine Code). High-Level languages are easier to work with as they look a lot like structured English.



**Flowcharts** are a great way of depicting algorithms. Below are the common symbols.



#### CS KS3: PROGRAMMING & LOGIC, E-SAFETY & CYBERSECURITY

#### **Programming Constructs**

All Programming languages have the same constructs (illustrated below). Once you understand what each one of them does, you can then learn the syntax in any programming language to get going. It's like learning about nouns and adjectives in languages or notes in music.

#### **Data Types and Structures**

All Programming languages have the ability to handle different data types and can store the data in different structures. The most common types are illustrated below. The structures are shown below in green. The data types are split into numbers (blue), characters (orange), Boolean (purple) and the special Data/Time (red).







LEARN TO CODE

www.scratch.mit.edu www.python.org http://www.w3schools.com/ https://code.org

n python





#### Specific Effects of World War 1:

•WW1 caused the downfall of four monarchies: Germany, Turkey, Austria-Hungary and Russia.

•The war made people more open to other ideologies, such as the Bolsheviks that came to power in Russia and fascism that triumphed in Italy and even later in Germany.

•The war changed the economical balance of the world, leaving European countries deep in debt and making the U.S. the leading industrial power and creditor in the world.

•With all the new weapons that were used, WW1 changed the face of modern warfare forever.

Due to the cruel methods used during the war and the losses suffered, WW1 caused a lot of bitterness among nations, which also greatly contributed to WW2 decades later.
Social life also changed: women had to run businesses while the men were at war and labour laws started to be enforced due to mass production and mechanization. People all wanted better living standards.
After WW1, the need for an international

body of nations that promotes security and peace worldwide became evident. This caused the founding of the League of Nations.

•The harsh conditions of the Treaty of Versailles caused a lot of dissent in Europe, especially on the side of the Central Powers who had to pay a lot for financial reparations

#### 'The Big Three'







Territory



#### Wilson's aims:

- to end war by creating a League of Nations based on his Fourteen Points
- to ensure Germany was not destroyed
- not to blame Germany for the war he hated the Guilt Clause

#### Clemenceau's aims:

- to punish Germany and seek revenge
- to return Alsace-Lorraine to France
- no League of Nations
- an independent Rhineland
- huge reparations
- to disband the German army so that Germany would never be strong enough to attack France again

#### Lloyd George's aims:

- a 'just' peace that would be tough enough to please the electors who wanted to 'make Germany pay', but would leave Germany strong enough to trade
- land for Britain's empire
- to safeguard Britain's naval supremacy

Germany to lose 13% of land and all overseas territory Germany to pay \$6.6 billion

Reparations Army reduced to 100,000 men, no tanks, no Armaments submarines, no air force, only 6 battleships Germany to accept complete blame for the war War Guilt Germany forbidden to join the League of Nations. League of Nations

The **Paris Peace Conference**, was the meeting in 1919 and 1920 of the victorious Allies after the end of World War I to set the peace terms for the defeated Central Powers.

#### The Treaty of Versailles dealt specifically with Germany



#### Find out more about the treaty:



## https://youtu.be/TViVAmSILG4

#### Germany

The Germans hated **everything** about the treaty:

- They were angry that they had not been allowed to negotiate.
- 'Deutsche Zeitung', a German newspaper, vowed: "We will never stop until we win back what we deserve."
- Count Brockdorff-Rantzau, leader of the German delegation at Versailles said Article 231 - the war-guilt clause - was "a lie".
   Germany officially denied the war-guilt clause in 1927.
- There was a revolution (the Kapp Putsch) against the treaty in Berlin in 1920.
- Germany hated reparations, and was forced to begin paying them in 1921. They defaulted in 1923 and eventually Hitler refused to pay altogether.

#### Britain

Britain gained some German colonies and the German navy was destroyed **but**:

- Lloyd George thought the treaty was too harsh, saying: "We shall have to fight another war again in 25 years time."
- The British diplomat Harold Nicolson called it "neither just nor wise" and the people who made it "stupid".
- The economist John Maynard Keynes prophesied that reparations would ruin the economy of Europe.

#### France

France got Alsace-Lorraine, German colonies, harsh reparations and a tiny German army **but**:

- Many French people wanted an independent, not a demilitarised, Rhineland.
- Most French people did not think the League of Nations would protect them against Germany.

#### America

Woodrow Wilson got the League of Nations, and new nationstates were set up in Eastern Europe **but**:

- Wilson thought the treaty was far too harsh.
- Self-determination proved impossible to implement neither Czechoslovakia or Yugoslavia survived as united countries.
- Many Americans did not want to get involved in Europe, and in 1920 the American Senate refused to sign the Treaty of Versailles, or join the League of Nations.





In Nov 1918,the German King abdicated and a new German government was formed called the Weimar Republic. This new government faced many opponents from the outset.

Many people in Germany felt that this new government had betrayed them by signing the Treaty of Versailles



Key outcomes of the treaties were the separation of the Central Powers into independent countries. Many of these new countries struggled to create security and economic prosperity.

Germany and Austria were forbidden from uniting again, German territory was given to other nations.

#### Term 5 – The Weimar Republic



<u>9th November 1918</u>: Kaiser Wilhelm II abdicates his throne, there are several protests and a mutiny of German sailors in Kiel.

<u>11th November 1918</u>: The Armistice is signed.

<u>5th-12th January 1919</u>: The Spartacist Uprising in Berlin. Leaders include Karl Liebknecht and Rosa Luxemburg. The Freikorps suppress the rebellion.

<u>February-June 1919:</u> Weimar National Assembly established. Friedrich Ebert is elected President.

<u>28th June 1919:</u> Germany signs the Treaty of Versailles - the peace treaty that ends the First World War.

<u>13th March 1920</u>: The Kapp Putsch - A revolt in Berlin led by Wolfgang Kapp supported by the Freikorps. A strike brings the Putsch to an end.

<u>11th January 1923</u>: Occupation of the Ruhr - French and Belgian troops occupy the Ruhr industrial region as Germany had stopped paying reparations.

<u>1923: Hyperinflation begins</u> - Prices begin to rise rapidly made worse by the printing of money to pay striking workers in the Ruhr. The Reichsmark becomes worthless.

13th August 1923: Gustav Stresemann becomes Chancellor and Foreign Minister

<u>8th November 1923</u>: The Munich Putsch - The Nazis attempt a failed putsch in Munich. Hitler is sent to Landsberg prison for his role in it.

<u>August 1924</u>: The Dawes Plan - The agreement helps Germany with its reparations.

<u>18th July 1925</u>: Mein Kampf, Hitler's book is published with his ideas for Germany.

16th October 1925: The Locarno Pact - Germany agrees to the border set out in the Treaty of Versailles.

<u>14th February 1926</u>: The Bamberg Conference - Hitler meets with leading Nazis to reorganize the party and cement his authority.

<u>8th September 1926</u>: Germany is admitted to the League of Nations. This had been prohibited under the Treaty of Versailles.

<u>27th August 1928</u>: The Kellogg-Briand Pact is agreed, binds nations into an agreement not to use war as a method of solving disputes.

<u>31st August 1929</u>: Young Plan agreed, significantly reduces German reparations and gives Germany longer to pay them.

<u>3rd October 1929</u>: Gustav Stresemann dies

<u>29th October 1929</u>: Wall Street Crash - US Stock market crashes triggering events that lead to the Great Depression in the 1930s.

<u>31st July 1932</u>: The Nazis win 230 seats in the Reichstag election making them the largest party. 37% of voters support Hitler and the Nazis.

30th January 1933: Hitler appointed Chancellor of Germany



#### Term 6 – The Road to War

1920s	Hitler forms his foreign policy – he aimed to: Destroy the Treaty of Versailles, create Lebensraum, unite all German speakers and to defeat communism
1935	Hitler begin the rearmament programme and introduces conscription
March 1936	Hitler marches into demilitarised Rhineland, breaking the Treaty of Versailles. Soldiers are told to retreat if they are stopped by France or Britain, but they are not
Feb-Mar 1938	Hitler completes the Anschluss (uniting) with Austria. Austrian Nazis demand a union with Germany. Hitler sends troops in to intimidate - 99% of Austrians vote for Anschluss
Sept 1938	Hitler tries to take the Sudetenland. Chamberlain & Hitler meet - Hitler is given the Sudetenland in return for promises he has no more territorial ambitions
March 1939	Hitler invades and takes the whole of Czechoslovakia. Britain begins to prepare for war, appeasement is abandoned.
Aug 1939	The Nazi Soviet Pact between Germany and Russia, they agree to split Poland between them and to remain friends.
Sept 1939	Hitler invades Poland on 1st September. Britain declares war on 3rd September. The Second World War begins.

After the First World War, the League of Nations had been set up to enforce the peace treaties and prevent war. In the 1930s it began to crumble, politicians turned to a new way to keep the peace - appeasement. This was the policy of giving Hitler what he wanted to stop him from going to war. It was based on the idea that what Hitler wanted was reasonable and, when his reasonable demands had been satisfied, he would stop.

Although historians recognise appeasement in the actions of Britain and France before 1938, the Sudeten Crisis of 1938 is the key example of appeasement in action. Neville Chamberlain was the British prime minister who believed in appeasement.

In 1938, Germans living in the border areas of Czechoslovakia (the Sudetenland) started to demand a union with Hitler's Germany. The Czechs refused and Hitler threatened war. On 30 September during the Munich Agreement - without asking Czechoslovakia -Britain and France gave the Sudetenland to Germany.

> Appeasement in an international context is a diplomatic policy of making political or material concessions to an aggressive power in order to avoid conflict



**British Prime Minister Neville** Chamberlain meeting Hitler in 1938



Watch this short clip to see how the news reported the agreements at the time:





#### In 1963, Historian A. J. P. Taylor said...

"Hitler had no plan. He waited to see what the other countries did. Noone tried to stop him. Britain let him take Czechoslovakia. Hitler did not think that Britain would go to war over Poland. Others provided Hitler with the opportunities and he took them. The leaders of Europe are as much to blame for war as Hitler."





"Hitler said the German people needed living space in Eastern Europe. He knew this would lead to war. He wrote about going to war in his book 'Mein Kampf.' He always intended to go to war, no matter what anyone did to try to stop him."

On 15 March 1939, German troops marched into Czechoslovakia. Hitler's invasion of Czechoslovakia was the end of appeasement for several reasons:

• it proved that Hitler had been lying at Munich

• it showed that Hitler was not just interested in a 'Greater Germany' (the Czechs were not Germans)

• on 17th March, Chamberlain gave a speech saying that he could not trust Hitler not to invade other countries

• on 31st March, Chamberlain guaranteed to defend Poland if Germany invaded



#### World War Two

#### Axis Germany Japan

Adolf Hitler Leaader of the Nazi party and German Chancellor, 1933-1945

**KEY COUNTRIES AND PEOPLE** 

Italy

USA

Benito Mussolini Italian Prime Minister, 1922-1943

Neville Chamberlain

UK Prime Minister,



1937-1940 Winston Churchill UK Prime Minister. 1940-1945 (and again from 1951-1955)

Franklin D. Roosevelt US President, 1933-1945

Harry S. Truman US President, 1945-1953

Joseph Stalin General Secretary of the Communist Party in Russia and Leader of the USSR, 1929-1953



# https://www.youtube.com/watch?v=HUqy-OQvVtI

**Key Events** 

#### The Phoney War (September 1939–April 1940)

Hitler conquered Poland. There was no other major activity on land, although there were actions at sea. Historians believe that this period saw very little action as all countries involved were biding their time and waiting for the other to make the first move. The governments of Germany, Britain and France began to issue propaganda. The British government even flew over Germany but, rather than dropping bombs, they dropped propaganda leaflets. Very little of military significance happened that was noticeable. However, all countries were developing their military bases and new technologies. People began to get frustrated and some evacuated children were sent home because people felt there was no point staying in the countryside when there were no bombs to worry about.

#### Blitzkreig (April 1940–June 1940)

The Nazis conquered Denmark, Norway, Holland, Belgium and France. The British Expeditionary Force was trapped at Dunkirk, but managed to withdraw by sea back to Britain. On 4th June, 1940, Winston Churchill delivered one of the most famous speeches of all time to the House of Commons in Westminster. In it, he warned about the possibility of a German invasion of Britain and said to the inspiration of many: "We shall defend our island, whatever the cost may be. We shall fight on the beaches, we shall fight on the landing grounds, we shall fight on the fields and in the streets, we shall fight in the hills; we shall never surrender."

#### Britain and the empire stands alone (July 1940–June 1941)

•Britain withstood the German Airforce, called the Luftwaffe, in the Battle of Britain (July–September 1940).

•But Britain was alone, and in great danger of losing the war.

•The Luftwaffe bombed London for 76 nights running (the Blitz), then other cities such as Coventry. People took cover in air raid shelters; some were made of corrugated iron in gardens; others were located inside train stations and tunnels.

•The British were driven out of Greece and most of North Africa.

•The British ran out of money, and had to sign the Lend-Lease Agreement with America (America sold arms to Britain, to be paid back after the war).



## Here is a link to an overview of WW2:

#### The tide turns (1941–1943)

•In June 1941, Hitler invaded Russia, known as Operation Barbarossa. This brought Russia back into the war, this time against Germany. The failure of Operation Barbarossa was the first major German defeat.

•In December 1941, the Japanese bombed Pearl Harbour. This brought America into the war.

•As a result the Allies gradually began to win the war:

- •In June 1942 the Americans defeated the Japanese at the Battle of Midway.
- •In November 1942 the British won the Battle of El-Alamein in Egypt.
- •In January 1943 the Russians defeated the Nazis at the Battle of Stalingrad.

#### Victory (1943–1945)

•In 1944, the Nazis launched V-1 rockets, known as doodlebugs, which fell randomly in southern Britain. But:

- •After D-Day on 6 June 1944, Germany was gradually driven back in Western Europe by the British, Americans and their allies.
- •The Americans and British continued the strategic bombing campaign on German cities.
- •The Russians advanced in Eastern Europe and in April they reached Berlin. Hitler committed suicide.

•Germany surrendered and war came to an end in Europe shortly afterwards and VE Day was announced on 8 May 1945. Winston Churchill announced this with caution: "We may allow ourselves a brief period of rejoicing; but let us not forget for a moment the toil and efforts that lie ahead". He was speaking of Japan, where the war would continue for three months more.

•On 6 August 1945, the Americans dropped the atomic bomb on Hiroshima, and again on Nagasaki on 9 August. Within weeks Japan surrendered, and VJ Day was announced 15 August 1945. By this stage, Winston Churchill was no longer Prime Minister. Clement Attlee had taken over following a general election in which the majority of people voted for a Labour government believing that they would help them more in recovering from the destruction of war. Attlee said, at midnight, "The last of our enemies is laid low".

#### World War Two created a new world:

It has been estimated that 50 million people died in World War Two.

The old empires of France and Britain were ruined. A 'wind of change' meant that by the end of the 1960s

- almost all the old colonies of the British Empire had gained their independence.
- America and Russia were the new 'superpowers', and immediately started on a Cold War.
- The dropping of the atomic bomb on Hiroshima and Nagasaki created a world which was terrified by the threat of atomic war.

Germany was divided, and remained so until 1990.

The League of Nations was disbanded. Instead, a new United Nations was declared.





#### Should the bomb have been dropped?





A good analysis of WW2:





After 1919, Jewish people in Germany were free and legally equal and often felt more German than Jewish. Many were wealthy and successful.

But there was an undercurrent of anti-Jewish racism, called '**anti-Semitism**', in Germany. Hitler appealed to this anti-Semitism by blaming the Jewish people for Germany's defeat in the First World War. Nazi race-scientists incorrectly claimed that the Jewish people were sub-human.

As soon as Hitler came to power he introduced a programme of **persecution**. The Nuremberg Laws (1935) deprived Jewish people of many of their civil rights. On 9 November 1938, Kristallnacht or the 'Night of Broken Glass' took place. Jewish businesses, synagogues and homes were attacked and destroyed. This was a response to the assassination of a German diplomat by a Polish Jewish man in Paris. After the outbreak of World War Two in 1939, the Nazis stepped up the persecution of the Jewish people:

•They were herded into over-crowded 'ghettos'.

•After 1941, following the invasion of the Soviet Union, Nazi deathsquads, called 'einsatzgruppen', murdered more than a million Jewish people in eastern Europe.

•In 1942, a Nazi conference at Wannsee decided on the 'Final Solution' – the Jewish people were to be systematically taken to camps such as Auschwitz and gassed.

Nobody knows how many Jewish people died during the Holocaust, but the usual figure given is 6 million.

1933Hitler's 'brownshirts' s boycott them.		Hitler's 'brownshirts' stood outside Jewish shops and persuaded Germans to boycott them.
	Summer 1935	'Jews not wanted here' posters began to go up around Germany.
	September 1935	The Nuremberg Laws deprived Jewish people of their civil rights. They were forbidden to vote and they were not allowed to marry Germans. Other laws were passed forbidding them to go out at night or own a bicycle, among other things.
	9 November 1938	Kristallnacht was when Jewish businesses, synagogues and homes were destroyed. Many Jewish men were killed or put in concentration camps.
	January 1939	Hitler accused the Jewish people of stirring up other countries against Germany. He threatened them with annihilation if a war broke out.
In many towns, Jewish people were forced to1940in Jewish areas, or 'ghettos', where they werestarved to death.		In many towns, Jewish people were forced to leave their homes and go to live in Jewish areas, or 'ghettos', where they were forbidden to earn a wage. Many starved to death.
	1941	All Jewish people were forced to wear a yellow Star of David.
	1941	In eastern Europe, Nazi Einsatzgruppen rounded up and murdered over a million Jewish people.
	1942	Wannsee Conference: In January, the decision was taken for a 'Final Solution to the Jewish Problem' – to exterminate all the Jewish people in Europe. Camps were built at places such as Auschwitz and Jewish people were rounded up and sent there to be gassed. Jewish prisoners were organised into Sonderkommando units to burn the bodies in the crematoria. Others were worked to death in labour camps to help the war effort.
	Winter 1944–1945	The 'Death Marches'. As the Russians advanced, the SS guards marched the Jewish people to concentration camps in the west. Many Jewish people died on the marches. Many were killed because they could not keep up. When they reached camps such as Bergen-Belsen in West Germany, they were crammed in in such numbers that they died of starvation or disease.





#### How do waves form?

Waves are created by wind blowing over the surface of the sea. As the wind blows over the sea, friction is created - producing a swell in the water.

The size of the wave is determined by:

- **1.** Fetch how far the wave has travelled
- 2. Strength of the wind

1

3. How long it has been windy

#### Why do waves break?

Waves start out at sea.

- 2 As waves approaches the shore, friction slows the base.
- 3 This causes the orbit to become elliptical.
- 4 Until the top of the wave breaks over.



#### YEAR 9/GCSE Geography - Coasts

#### **Constructive waves**

- Low and long waves.
- Low frequency of waves (6-8 waves a minute).
- The swash is more powerful than the backwash, so sediment is deposited on the beach.



#### **Destructive waves**

- Steep and high waves.
- High frequency of waves (10-15 waves a minute).
- The backwash is more powerful than the swash, so sediment is eroded away from the beach (destroying the beach).



#### Types of erosion

**Hydraulic power** – As the powerful waves smash into the cliff face, air is compressed in the small cracks of the rock and breaks fragments off. Attrition – eroded material in the sea bumps into other and eventually wears down – materials becomes smaller and more rounded.

Abrasion/corrasion – strong waves picks up rocks and pebbles. These are then smashed into the cliff face which breaks new rock fragments off. **Solution** - when certain types of cliff dissolve as a result of weak acids in the sea.



Stage One - Water seeps into cracks and fractures in the rock.



Stage Two - When the water freezes, it expands about 9%. This wedges apart the rock. Water can travel deeper into crack



Stage Three - It thaws and the water seeps further into the cracks. With repeated freeze-thaw cycles, the rock breaks off.



<u>Chemical weathering</u> is the breakdown of rock through changing its chemical composition. When rainwater hits rock it decomposes it or eats it away. This is known as **carbonation**. This occurs when slightly **acidic (carbonic) rain** or sea water comes into contact with sedimentary rock, such as **limestone or chalk**, it causes it to **dissolve**.

A chemical reaction occurs between the acidic water and the calcium carbonate and forms calcium bicarbonate. This is soluble and is carried away in solution.

#### Mass Movement

Mass Movement is the downhill movement of cliff material under the influence of gravity and extreme weather changes.



#### Wave-cut platform

A wave-cut platform is formed when (1) The sea attacks a weakness in the base of the cliff. For example, this could be a joint in chalk. (2) A wave-cut notch is created by erosional processes such as hydraulic power and abrasion. (3) As the notch becomes larger the cliff becomes unstable and collapses as the result of gravity. (4) The cliff retreats inland. (5) The material from the collapsed cliff face is eroded and transported away. This leaves a wave-cut platform. (6) The process repeats over time as the cliff collapses and retreats repeatedly.

#### **Bays and Headlands**

Headlands form along discordant coastlines where bands of soft and hard rock outcrop at right angles to the coastline (see image below). Due to the different nature of the rock erosion occurs at different rates. Less resistant rock (e.g. boulder clay) erodes more rapidly than more resistant rock (e.g. chalk).

The bands of soft rock, such as sand and clay, erode more quickly than those of more resistant rock, such as chalk. This leaves a section of land jutting out into the sea called a headland. The areas where the soft rock has eroded away, next to the headland, are called bays. Sandy beaches are often found the sheltered bays where waves lose energy, and their capacity to transport material decreases resulting in material being deposited.



notch through hydraulic

action and abrasion.

#### cut Backwash transports materi from the base of the cliff forming a wave cut platform.

#### Discordant and Concordant Coastlines

Where coastlines vary in bands of soft and hard rock are called discordant coastlines. A concordant coastline is where the same rock runs along the length of the coast and normally has fewer bays and headlands. Along the coastline of Dorset, there are both – the concordant coastline runs from west to east along the south coast, but the discordant coastline runs from Studland Bay to Durlston Head as the geology changes from clay and sands, to chalk and limestone.



#### Longshore Drift

Longshore drift is the movement of material along the shore by wave action. It happens when: (1) waves approach the beach at an angle, (2) the swash (waves moving up the beach) carries material up and along the beach. (3) the backwash (waves moving back down the beach) carries material back down the beach at right angles. This is the result of gravity. (4) This process slowly moves material along the beach and provides a link between erosion and deposition. Material is transported through suspension, traction, solution and saltation. Longshore drift provides a link between erosion, transportation and deposition.



#### **Coastal Deposition**

Deposition is when material that is being transported is dropped by constructive waves, as the waves lose their energy.

Deposition happens when the swash is stronger than the backwash and is associated with constructive waves.

Deposition is likely to occur whenever wave energy is reduced, such as where:

- waves enter an area of shallow water;
- waves enter a sheltered area, e.g. a bay;
- there is little wind;
- a river or estuary flows into the sea;

• or, where there is a good supply of material and the amount of material being transported is greater than the wave energy can transport.

#### **Depositional Landform - Beaches**

The beach is the area between the lowest spring tide level and the point reached by the storm waves in the highest tides. Every beach is different but they are usually made up of material deposited on top of a wave-cut platform and are formed from sand, shingle or pebbles, or mud and silt.

A sandy beach is usually formed in sheltered bays, where constructive waves with low energy transport material onto the shore: The swash is stronger than the backwash so the material is moved up the beach.

However, a pebble beach is usually found where there are waves of high energy (destructive waves) and this causes a steeper gradient as the strong backwash erode away the beach, leaving only the largest material (pebbles).



#### **Depositional Landforms – Spits and Bars**

A spit is a landform of coastal deposition and is formed when longshore drift moves material along a coastline. Where the coastline changes direction, or the power of the waves is reduced because it meets a river or estuary, material being transported by the sea is deposited. The sediment which is deposited usually builds up over the years to form a long ridge of material (usually sand or shingle) called a spit. An example of this is Hurst Castle Spit in Hampshire, or Mudeford Spit in Dorset. Over time, the shape of the spit can change, often due to changes in wind directions or river discharge during storms. This can cause it to become hook shaped, trapping sediment to form a salt marsh habitat.





Protecting our coastline Our coastlines need to be protected for many economic, social and environmental reasons, though it is important to remember we cannot protect everything. In order to protect coastlines from constant erosion and weathering, people have used 2 different groups of engineering methods to minimise change. These are:

- 1. Hard Engineering methods involves building and using structures made of solid materials such as steal concrete or rocks. The main idea is to stop the waves eroding the coast. However, they can be very costly and could cause visual pollution
- 2. Soft engineering methods these work with the physical and natural processes within an area rather than building large man made structures to protect the land from wave attack. These methods are usually based on preserving and managing the beach or dunes.

Take a look at the table to find out different examples of each type...



Type of engineering method		Advantages	Disadvantages
	Sea wall	Have a recurved shape to minimise wave energy and reduce erosion. Stops erosion in a small area.	Very expensive to build and maintain. Look quite ugly and might destroy habitats. Stops people accessing the beach.
Hard engi	Groynes	Groynes are fences which stick out perpendicular to the sea. They stop the movement of sediment through longshore drift and help build beaches. This is particularly good if you rely on a beach for tourism or protecting habitats.	As they stop the movement of sediment from one area, this could cause more erosion down the coast. Older looking groynes might not look as attractive and could also be hazardous.
neeri ng	Rock armour	These are large rocks dumped in certain positions on a beach to absorb and reflect wave energy. As they absorb a lot of the waves energy, this stops erosion from taking place, but also causes sediment to be deposited so helping to build the beach.	These are very expensive, especially as the rocks need to be transported from very far away. Many of the rock armour we have in the UK has rocks from Norway. They might not fit in with the local scenery and look ugly.
	Gabions	Gabions are wire cages filled with smaller rocks that form a wall to reduce power of waves. They are significantly cheaper than a sea wall and easy to build. They can also last for a long time in the right conditions	As the wire corrode, they can become quite dangerous to people and animals as well as looking unappealing.
Soft	Beach Nourishment	This is where sediments is taken from offshore or from a different area and dumped onto the beach making it wider. The wider beaches reduce erosion and flooding.	Can be very expensive as special equipment is needed to dredge sediment from offshore. They might not last for a very long time as the sediment is eroded after extreme weather.
neeri ng	Dune Stabilising	This involves creating/restoring sand dunes through beach nourishment or planting vegetation to stabilise sand. This provides a barrier between land and sea, prolonging the effects of erosion. Looks more natural and provides habitats for plants and animals	Although they look more natural, they require a lot of maintenance to keep the dunes from eroding
	Managed retreat	This involved removing all defences from an area and giving up the land to the sea. This could allow for salt marshes to form and prevent flooding happening in another area. This is a very cheap method as you do nothing.	Normally means that buildings, houses and habitats will be lost, so you might have to give out compensation.



#### What work is taking place at Bournemouth Beach?

A phased programme of work is planned over 17 years. This is to replace the existing 53 groynes and install an additional three, as well as replacing the groyne at Hengistbury Head known as the Long Groyne.

The first phase involved the replacement of 30 groynes. These are along the coast from Southbourne to Hengistbury Head. Beach replenishment has taken place between Bournemouth and Boscombe Piers and to the east of Boscombe Pier. 320,000 m<sup>3</sup> of sand was replaced during autumn/winter 2015/16. There will be beach replenishment taking place once every five years. The first phase ran from autumn 2015 until 2020. The second and third phases (up to year 2032) will replace the remaining 29 groynes. These are along the seafront from Southbourne to Alum Chine. There will also be a further two beach replenishment operations. The locations of the future beach replenishments will be determined nearer the time, by continually monitor beach levels and assessing which areas need attention.

#### How is the beach replenished of sand?

Sand is dredged from a licensed area of seabed, for example, to the South East of the Isle of Wight. It is brought by dredger close to the section of beach where it will be deposited. The sand is then pumped through a long pipe on to the beach. The sand is mixed with water to assist it being pumped. As the mixture exits the pipe the water flows back in to the sea leaving the new sand behind. The beach is then levelled using bulldozers.

#### How much will it cost?

The total cost of the entire project (phases 1 – 3) is £50m approximately. The majority is funded by the Environment Agency and a small proportion by Council funding and local levy.

#### Protecting our coastline – Case Study – Bournemouth

Bournemouth Beach Management Scheme is a programme of work, planned from 2015 to 2032 to:

- Replace Bournemouth's existing 53 groynes
- Construct an additional three new groynes
- Replace the groyne at Hengistbury Head known as 'Long Groyne'
- Replenish the beach every five years

#### Why is the work necessary?

The work is required to ensure that Bournemouth's coastline continues to be protected from coastal erosion in the future.

Groynes were originally installed along the coastline in 1915. Groynes control beach material and prevent undermining of the promenade seawall. Groynes interrupt wave action and protect the beach from being washed away by longshore drift. Longshore drift is the wave action that slowly erodes the beach.

The sea wall and groynes alone will not protect the coastline. The beach is eroded over time by wave action and the longshore drift. The sand must be dredged and pumped back on to the beach to maintain it.

It is important that the beach is maintained as it is one of the UK's biggest attractions: There is an estimated 4.5 million visitors per year as well as being enjoyed by thousands of residents.

#### What would happen if we did not do the work?

The life span of a groyne is around 25 years. They must be replaced periodically to ensure the coastline continues to be protected. The process for removing and replacing each groyne can take up to two months. The groynes would eventually deteriorate and no longer be effective, if not replaced. The beach would eventually be washed away. The sea wall would become exposed and disintegrate, exposing the cliffs to further erosion.

Key questions for this topic. Use the command word to help answer them appropriately when instructed to do so. This could also be used as a revision activity, getting someone else to ask you the question and confirm the answer against your 'master' answer.

1. What are the 2 types of waves? How do they create different beach profiles?(describe-4)Constructive waves are...they form...Whereas, Destructive waves are...and create....

2. What are the 5 types of erosion? (describe - 4)

Corrasion is.... Abrasion is...

Attrition is...

Solution is...

Hydraulic Action is...

3. What are the processes of mass movement? **(describe - 4)** *Rockfalls occur when... Landslides... Mudflow... Rotational slumps...* 

4. Explain how the process of deposition leads to the formation of distinctive coastal landforms (**explain – 4**) Longshore drift is the process by which.... This creates landforms such as...

5. Explain how coastal landforms are created by erosion (explain - 6) *Headlands and bays are formed by...* 

Caves, arches and stacks are formed when...

Wave-cut platforms ...

<u>Key questions for this topic. Use the command word to help answer them appropriately when instructed to do so.</u> This could also be used as a revision activity, getting someone else to ask you the question and confirm the answer against your 'master' answer.

6. Describe the coastal process operating at Swanage (describe - 4)

The indented coastline at Swanage is known as a 'discordant' coastline, this creates...

by....

Whereas the south facing coastline is 'concordant', this means that ...

7. Using your own knowledge, discuss the advantages and disadvantages of hard engineering at the coast? (discuss – 6)

In Bournemouth £\_\_\_\_\_million is being spent over \_\_\_\_\_years to protect the coast, this is done by...

Advantages of this include...

Whereas, disadvantages...

8. To what extent do soft engineering strategies actually 'protect' the coast? (to what extent-6)

One example of a soft engineering strategy is \_\_\_\_\_. While it has benefits, such as...

Downsides include ...

...overall...

#### **BVT: Human Rights**



#### **Death Penalty**

#### **Derek Bentley case:**

On 2 November 1952, Derek Bentley and a sixteen year old companion, Christopher Craig, attempted to burgle a warehouse.

Craig armed himself with a revolver and carried a number of rounds for the revolver. Bentley carried a sheath knife and a spiked knuckle-duster, both of which Craig had given to Bentley.

When the police arrived, one of the police officers, Detective Sergeant Frederick Fairfax, climbed the drainpipe onto the roof and grabbed hold of Bentley. Bentley broke free of Fairfax's grasp. Bentley then called across to Craig "Let him have it Chris!" The police officer was shot.





#### **Religion that agrees** with the Death penalty **Death penalty**

#### "An eye for an eye" – old testament

The Bible teachers **God is Just** – the story of Original Sin - Adam and Eve show God's punishment. Also parables such as Lazarus and the Rich man.

Islam believe in the law of retribution. There is capital punishment for murder, adultery and homosexuality under Shari'ah Law in some Islamic Countries. The Qur'an says "Life for life".

# **Religion that disagrees with the**

God teaches the Sanctity of Life – all life is sacred and only God has the right to take a life "I your God, give life and take it away" Bible.

Christians teach to forgiveness "We may forgive those who trespass against us". Teaching of the parable the Prodigal Son also shows forgiveness.

Buddhists follow the Dali Lama where he says "Hatred will not cease by hared but by love alone", showing forgives and love. Also Buddhists 1<sup>st</sup> of the 5 Precept is not to harm living things.

In the Qur'an it says *"Those that pardon*" (forgive) are rewarded by God" and "The greatest sin is to take another mans life"

#### The Death penalty in the USA

**RIGHT:** Figures for the **USA** of number killed using the death penalty between 1976-2014. 32 states have the death penalty, Texas is responsible for over a 1/3 of all executions

Lethal Injections	1194
Electrocution	158
Lethal Gas	11
Hanging	3
Firing Squad	3

Top ten countries by number of executions Numbers with '+' indicate the figure calculated is a minimum

China	1,000+			
Iran	251+			
Saudi Arabia	184			
Iraq	100+			
Egypt	32+			
US	22			
Pakistan	14+			
Somalia	12+			
South Sudan	11+			
Yemen	7			
' Note: Data for China is unavailable but Amnesty estimates thousands are executed				

BBC



Source: Amnesty International 2019 report

This term in BVT you will be involved in a debate.

You will need to follow a format and it will involve some research as well.

You can choose what topic you do, from choosing one of the statements below.

# R

#### Year 9 BVT: Debate it!

E

A

T

#### Written Format

Some people will agree with this statement (peoples reaction)

because... (explain reasons)

For example ... (add evidence). This is supported by religion who believe....

The impact of believing this could be ... (consider the impacts) However... is there a limitation to the argument?

Therefore I mostly agree / disagree because... (conclusion)

#### **Research:**

#### You will need to:

- Look into your topic what is it about? Why do people have different beliefs and opinions about it?
- Look into reasons FOR and AGAINST the statement •
- Look at examples or case studies ٠
- **Research statistics** •





#### Statements to choose from:

- "Abortion is always wrong"
- "Euthanasia should be legalised in England"
- "Religion is the cause of war"
- "No war is justified"
- "Peaceful protest never works"
- "Countries should not have Weapons of Mass destruction"
- "We are abusing our power over animals and the environment"
- "There will always be discrimination in the world"
- "Men and women are equal in Britain"
- "Same sex couples should not be allowed to get married in a church"
- "Prisons are a waste of money"
- "Religion is the root of all evil"
- "Buddhism is not a real religion"

#### **Religious Beliefs about Life**

#### Sanctity of Life

No human has the right to take away life "Thou shall not kill" – 10 Commandments "I your God, give life and take it

away" Bible "The greatest sin is to take another mans life" Qur'an



#### Quality of Life

Buddhists are against human suffering as part of their 5 precepts, so find ending life acceptable if suffering is ended The Dali Lama said "Where a person is going to die and keeping them alive leads to more suffering, then termination of their life is permitted".

Buddhists show compassion and love for other humans

#### **Religious Beliefs about Environment / Animals**

Protecting environment and animals rights	Humans are more important than animals
"The earth is the Lord's and everything in it" Bible "The world is green and beautiful and Allah appointed us stewards over it" Qur'an God appointed humans with dominion (responsibility) to look after the world – called stewardship Animal testing is cruel and does not show stewardship Pope John Paul wrote "We must abandon these factories of death" talking about animal testing labs Many religions are vegetarian	God gave humans dominion (power) over animals. God created animals for humans to eat Animal experimentation can be used to help humans such as advances in medical procedure or cures for diseases. Sikhs believing SEWA – meaning service to other humans. For this reason they are pro animal testing for medical reasons to help other humans Humans life is sacred and should be preserved at whatever cost

# **BVT:** Debate it! Religious Beliefs

#### **Religious Beliefs about war, violence and peace**

#### Violence / war is justified

"An eye for an eye, a tooth for a tooth" Old testament

"Declare a Holy War, call in the troops" Old testament

"Fight in the name of Allah, those that fight you" Qur'an

JUST war for Christians and Muslims: If no innocent people are harmed and it is for a just cause "Stand up firmly for justice" Qur'an

#### Violence and war is never justified

"We forgive those who trespass (sin) against us" Lord's Prayer "Those who pardon... are rewarded by God" Qur'an "Love you enemies and pray for those that persecute you" Jesus

"Those that live by the sword, die by the sword" Jesus "Hatred with no cease (end) by hatred, but by love alone" Dali Lama

Buddhists follow the 5 precepts to not harm anything living



#### **Religious Beliefs about Inequality: Gender, Race and homosexuality**

#### Equality

God made man in his image therefore we are all equal God is all loving

"Neither Jew or Greek, male or female, for you are all one in Christ Jesus" Old Testament

Muhammad said "I command you to be kind to women" The parable of the Good Samaritan

The first Anglican Bishop was appointed in 2014

Martin Luther King fought for equality in race peacefully, as did Nelson Mandela – however not always peacefully.

Quakers are for same sex relationships

#### Inequality

Muslim women are not allowed to become Imams (Muslim leaders) or pray at the front of the mosque In the Catholic church women are not allowed to become priests "If your lusts on men in preference to woman... we rain down a shower of stones" Qur'an

#### ¿Por qué visitar Salisbury / Downton?

Mi ciudad / mi pueblo está en el sur / sur-oeste (it is in the south / south west)

está ubicado/a en el sur de Inglaterra (is situated in the south of England)

La ciudad / es pequeña/ grande / tranquila / interesante / llena de cosas que hacer (the town / it is small / big / quiet / interesting / full of things to do)

Está situado/a en el campo / cerca de un bosque / al lado del mar (*it is situated in the countryside / near a forest / by the sea*)

a ... km de (... kilometers from)

hay / tenemo (there is, are / we have)

no hay / no tenemos (there isn't, aren't / we don't have)

La ciudad / el pueblo es ... (the town / village is...)

mucho / lleno de / bastante (lots of / full of / enough)

las tiendas / los espacios verdes / los árboles/ las plantas/ las flores/ los campos (shops / green spaces / trees / plants/ fields)

See opposite for a full list of places in a town

En el pasado / hace xx años / antes (in the past / xx years ago/ before)

Mi barrio / pueblo / ciudad (my neighbourhood / village / town)

Era / no era (was / wasn't)

Más / meno (more / less)

Tenía / no tenía (It had / didn't have)





en el verano / en el otoño / en el invierno / en la primavera(in summer / autumn / winter / spring) si llueve / nieva / hace frío/ calor (if it rains / snows / is cold, hot)

cuando hace buen tiempo / mal tiempo (*when it's nice / horrible weather*) se puede... (*you / one can*)

visitar / hacer / ver / nadar / jugar / relajarse / ir (visit / do / see / swim / play / relax / go)

Es facíl (it's easy to)

desplazarse / viajar (get around / travel)



un aeropuerto (an airport) un ayuntamiento = (town hall) un castillo (a castle) un centro commercial (a shopping centre) un cine (a cinema) un colegio (a secondary school) un estación de trenes = (train station) un estadio (a stadium) una hamburguesería (a fast-food restaurant) un hospital = (*hospital*) una iglesia (a church) un mercado (a market) un museo (a museum) un palacio (a palace) un parque (a park) un polideportivo = (sports hall) un puerto (a port) un supermercado (a supermarket) una universidad (a university)



más *(more)* menos *(less)* tranquilo/a *(quiet)* ruidoso/a *(noisy)* sucio/a *(dirty)* limpio/a *(clean)* 

mucha gente (lots of people) más basura (more rubbbish) menos contaminación (less pollution) un problema con la delincuencia (crime) menos edificios (fewer buildings)

#### iVisita!!

i Visite...! (visit) i Venga! (come) i Venga a ver! (come and see) Aproveche... (take advantage of)

Si le interesa (if you're interested in...) Si le gusta (if you like) Si es un fan de... (if you're a fan of...) Si busca... (if you're looking for) Si quire... (if you want)

#### **Comparatives (more than/less than)**

#### más + adjective + que

Southampton es *más* grande **que** Salisbury Southampton is **bigger** (more big) **than** Salisbury

#### menos + adjective + que

Salisbury es **menos** grande **que** Southampton Salisbury is **smaller** (less big) **than** Southampton

#### Superlatives (the most/the least)

To say the **most** you need to use **el**, **la**, **los**, **las** + más + adjective Salisbury es la más bonita (Salisbury is the prettiest)

To say the least you need to use el, la, los, las + menos + adjective Salisbury es la menos bonita Salisbury is the least pretty

#### The imperfect tense = was ..... / used to .....

- When the verb has the -AR, -ER, -IR ending it is called the INFINITIVE. ٠
- Remove the –AR, -ER, -IR ٠
- Dd the correct ending for the person who is speaking ٠
- Hablar = habl = hablaba = I used to speak \*
- Leer = le = Leía = I used to read \*
- Vivir = viv = vivía (I used to live) \*

		<u>AR</u>	<u>IR/ER</u>
уо	(1)	aba	ía
tú	(you)	abas	ías
él, ella	(he/she <b>)</b>	aba	ía
nosotros	(we <b>)</b>	ábamos	íamos
vosotros	(you)	ais	íais
Ellos	(they)	aban	ían



#### Modal verbs

Modal verbs are verbs which require a second verb.

In English, can, must, should etc are all modals as they need a second verb to make sense.

#### Se puede = one can is a modal verb.

It comes from the verb 'poder', which means 'to be able to'.

= I can

= you can

= we can

= they can

= you (pl) can

= he/she/one can

Examples:

se puede ir de compras= one can (you can) do / go shopping no se puede nadar en el mar = one can't (you can't) swim in the sea

#### **Pros and Cons**

A nice way to describe the pros and cons of something is to use 'lo + adjective' to mean 'the...thing'

Lo bueno – the good thing Lo malo – the bad thing Lo interesante – the interesting thing Lo gracioso – the funny thing

Lo bueno es que Salisbury es limpia\* The good thing is that Salisbury is clean

Lo malo es que Salisbury es ruidosa\* The bad thing is that Salisbury is noisy

• The word for town in Spanish is feminine so the adjective must end in 'a'

#### **Adjectival Agreement**

Adjectives change spellings, depending on the gender of the noun, and the quantity of the noun they are describing.

El estadio es moderno (the stadium is modern) La ciudad es moderna (the city is modern)

Los museos son modernos (the museums are modern) Las tiendas son modernas (The shops are modern)





Masculine	Feminine	Masculine	Feminine	English
singualar	singualar	plural	plural	
buen <b>o</b>	buen <b>a</b>	buen <b>os</b>	buen <b>as</b>	Good
suci <b>o</b>	suci <b>a</b>	suci <b>os</b>	suci <b>as</b>	Dirty
tranquil <b>o</b>	tranquil <b>a</b>	tranquil <b>s</b>	tranquil <b>as</b>	Peaceful
bonit <b>o</b>	bonit <b>a</b>	bonit <b>os</b>	bonit <b>as</b>	Pretty
fe <b>o</b>	fe <b>a</b>	fe <b>os</b>	fe <b>as</b>	Ugly
antigu <b>o</b>	antigu <b>a</b>	antigu <b>os</b>	antigu <b>as</b>	Old
modern <b>o</b>	modern <b>a</b>	modern <b>os</b>	modern <b>as</b>	modern

The Fundamentals of Art		TERM 3 and 4		SENTENCE STARTERS	A	ATTITUDE Be positive and try your best	
TONE means the light or darkness of someth This could be a shade how dark or light a col appears.	ness PATTERN ning. repeating or COLOUR lour Patterns	is a design that is create g LINES, SHAPES, TONES G. can be manmade or nat	ed by <b>or</b> ural. A <b>LINE</b> is the path le point, eg. A pencil o in paint. A <b>LINE</b> can forms, eg. Horizontal, diagonal	ft by a moving r a brush dipped take many or curved.	<ul> <li>layering mark making</li> <li>using a range of pencils</li> <li>varying the pressure of m marks</li> <li>using an eraser to add highlights</li> </ul>	y R	RESPECT Respect others, work and the roor
<b>TEXTURE</b> is the surface of something, the way something feels or looks	quality of	A <b>SHAPE</b> is an area enclo by a <b>LINE</b> . It could be ju	osed st an	s and	My work is successful because. I could develop my work furthe by	 er	THINK
There are two types of texture: ACTUCAL TEXTU TEXTURE. ACTUAL TEXTURE: really	JRE and VISUAL	butline or it could be sh n. FORM is a three dimens shape such as a sphere	sional YELLOW, BLUE	COLOURS: RED,	My design was inspired by the work of		IMAGIINE
can feel it and touch it VISUAL TEXTURE: create different marks that	d using	Sculpture and 3D design	By mixing any 2 PRI together you create	MARY COLOURS SECONDARY	1 Holiopic 1 Hopinger 2 Light Tone 2 Light Tone 3 Midtore 3 Midtore 4 Reflected Light 4 Reflected Light process		Be creative, use you imagination!
represent actual TEXTU	RE	about creating FORMS		OREEN, FORFEE	5 Shadow 5 Shadow 6 Core Shadow 6 Core Shadow 7 Cast Shadow 7 Cest Shadow		SPOTLESS
COLOUR BRIGHT	LINE FLUENT	SHAPE/FORM/SPA CLOSED	CE PATTERN AND TEXTURE	<u>TONE</u> BRIGHT			Tidy up after yourself.
VIBRANT PRIMARY	CONTROLLED	DISTORTED FLAT	GEOMETRIC	FADED SMOOTH			TARGET
SECONDARY TERTIARY RADIANT	POWERFUL STRONG ANGULAR	ORGANIC POSITIVE NEGATIVE	RANDOM SYMMETRICAL SOFT	HARSH CONTRASTING INTENSE			Follow directions.
VIVID DULL	FLOWING LIGHT	FOREGROUND BACKGROUND	IRREGULAR UNEVEN	SOMBRE STRONG	•SKETCHBOOK OPTIONAL EQUIPMENT:	Washing Color	
CONTRASTING COMPLIMENTARY HARMONIOUS MONOCHROME NATUARL SATURATED PASTEL COOL WARM	DELICATE SIMPLE THICK THIN BROKEN OVERLAPPING LAYERED MARK MAKING	COMPOSITION ELONGATED LARGE SMALL 2D 3D TWISTED JAGGED	ROUGH BROKEN GRID FLAT WOVEN ORGANIC SMOOTH ABSTRACTED	POWERFUL LIGHT MEDIUM DARK LAYERED DEPTH DEVELOPED SOFT	DRAWING PENS     WATERCOLOUR SET     WATERCOLOUR PENCILS     PAINTBRUSHES	*       TAKI         -       \\         -       \\         -       \\         -       \\         -       \\         -       \\         -       \\         -       \\         -       \         -       \         -       \         -       \         -       \         -       \         -       \         -       \         -       \         -       \         -       \         -       \         -       \         -       \         -       \         -       \         -       \         -       \         -       \         -       \         -       \	NG 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?
# FOOD PROJECT

# TERM 5 and 6

#### Artists you could explore...



Wayne Thiebaud

Emma Dibben



Claes Oldenburg

Potential media you will explore within this project: Observational drawing Photography Sculpture with Mod Roc Various printing techniques

#### Food in Art

Food has always appeared in art, from the Romans to 1960s Pop Art, Cave Art to 21<sup>st</sup> century hyper realistic paintings.

Artists record the world around them, and this often includes food, whether it is in still life form and realistic or abstracted through simplification. We are going to explore the subject matter of food not only through observational studies but through the

lens of graphic design and advertisement. Companies want us to buy their products so have to make them visually appealing. Art is a powerful tool for companies!







#### WAYNE THIEBAUD

- Was an American Pop Artist.
- Pop art focused on things that were popular at the time (mostly in the late 50s and 60s), Wayne Thiebaud focused a lot of his work on popular fast food.
- Thiebaud used a strong light source within his paintings to create contrasting tones and strong shadows.







# FOOD PROJECT

#### Drawing support:

- Use a range of pencils (2B, 3B, 4B, 5B, 6B) to help to build tone.
- Use a rubber to add highlights.
- Vary the pressure of your pencil, the harder you press, the darker the mark, the lighter you press, the lighter the mark.
- Layer your mark making.
- When using colour, add brown, green, purple and blue to help build shadow and darker tones.









Photography support:

- Make sure your image is well framed, this means, check your background is clear from other subject matter.
- Your images should be in focus, the cameras should do this automatically for you but press the shutter button half way down to auto focus before pressing all the way down to take the image.
- Check your composition (where objects are placed in the frame), experiment with where you place your subject matter.



Rule of thirds: The rule of thirds is a compositional guideline that places your subject in the left or right third of an image. This leaves the other two thirds more open and with more space. Using the rule of thirds helps artists and photographers to compose their subject matter in the most visually interesting way they can.

# TERM 5 and 6











Food Idioms Don't cry over spilt milk How do you like your eggs in the morning It was a piece of cake Taking home the bacon Cheap as chips Not my cup of tea Flat as a pancake Sweet as honey Take with a pinch of salt Variety is the spice of life Apple of their eye In a pickle Egg on your face Walking on eggshells Couch potato Bigger fish to fry Full of beans Cool as a cucumber













#### **# Module Learning Objectives**

This unit introduces the polyrhythmic style of Latin-American Samba and revises and revisits may key concepts concerning rhythm, beat and pulse from pupil's learning including features such as polyrhythms, cyclic rhythms, syncopation, ostinato and call and response.

# Understand how instruments, structures and textures are used in Samba

# Perform as part of a larger ensemble understanding key roles of performers and different instruments and the relationship between these and the effect this has on the music

# Use rhythmic features such as ostinato, cyclic rhythms, polyrhythms, call and response and syncopation when performing

and improvising





AAINJAA is a Samba collective from Bogota, Colombia band. They organise drumming sessions for anyone so that they can; "create spaces in which everyone is accepted, regardless of the differences that make us unique." Here they are performing with 150 drummers!



CALL AND RESPONSE – one person plays or sings a musical phrase, then another others respond.

CYCLIC RHYTHM – a rhythm that is repeated over and over again. IMPROVISATION – making up music as you go along, without preparation.

OSTINATO – a repeated pattern. Can be rhythmic or melodic. PERCUSSION – Instruments that are mostly hit, scraped or shaken to produce sound.

POLYRHYTHM – the use of several rhythms performed simultaneously, often overlapping each other to create a thick texture.

PULSE – a regular beat that is felt throughout music RHYTHM – a series of notes of different lengths that create a pattern.

SYNCOPATION – accenting or emphasising the weaker beats of the bar (often a half beat (quaver) followed by a

full beat (crotchet)) giving the rhythm an OFFBEAT feel. SAMBISTA – the leader of a Samba band. STRUCTURE – the way in which a piece of music is put together.

CODA – section that brings a piece of music to an end (Italian for "tail".)

**INTRODUCTION – the opening section of a piece of Music** 



A Surdo,

The Bass drum

Here is a street Samba group

from Rio De Janiero. They are so full of life!!









#### A. Key Words and Terms in Samba Music

CALL AND RESPONSE – one person plays or sings a musical phrase, then another person/group responds with a different phrase or copies the first one.

**CYCLIC RHYTHM** – a rhythm that is repeated over and over again.

**IMPROVISATION** – making up music as you go along, without preparation.

**OSTINATO** – a repeated pattern. Can be rhythmic or melodic; usually short.

PERCUSSION – Instruments that are mostly hit, scraped or shaken to produce sound. Samba uses many percussion instruments which together are called a BATERIA.

POLYRHYTHM – the use of several rhythms performed simultaneously, often overlapping each other to create a thick texture.

**PULSE** – a regular beat that is felt throughout music

**RHYTHM** – a series of notes of different lengths that create a pattern. Usually fits with a regular beat or pulse.

**SYNCOPATION** – accenting or emphasising the weaker beats of the bar (often a half beat (quaver) followed by a full beat (crotchet)) giving the rhythm an **OFFBEAT** feel. **SAMBISTA** – the leader of a Samba band or ensemble, often signalling cues to the rest of the band of when to change sections within the music with an **APITO** (Samba whistle)

#### **B. Form and Structure of Samba**

Samba music often starts with an **INTRODUCTION** often featuring **CALL AND RESPONSE RHYTHMS** between the Samba Leader and ensemble. The main Ostinato rhythm of Samba is called the **GROOVE** when all the instruments of the Samba Band play their respective rhythms over and over again (**CYCLIC RHYTHMS**) forming the main body of the piece. The **GROOVE** is broken up by **BREAKS** - 4 or 8 beat rhythms providing contrast and **MID SECTIONS** – one or two instruments change the rhythm of their ostinato and the others stay the same or stop. Sometimes **BREAKS** and **MID SECTIONS** feature a **SOLOIST** who "shows off" their rhythms. The **SAMBISTA** must signal to the group when to change to a different section which is normally done with an **APITO** (Samba Whistle – loud!). A piece of Samba can end (this section is called the **CODA**) with either a **CALL AND RESPONSE** pattern or a pre-rehearsed ending phrase of rhythm. The **FORM AND STRUCTURE** of a piece of Samba may look like the following:

Intro	Groove	Break	Groove	Mid-Section	Groove	Mid-Section	Groove	Break	Groove	Coda
C. Texture of Samba Music					D. Dynamics	s of Samba Music	<u> </u>	<u>E.</u>	Tempo of Samb	a Music
Texture varies in Samba music, often <b>MONOPHONIC</b> where a single rhythm is heard as in <b>CALL AND RESPONSE</b> sections, sometimes <b>POLYPHONIC</b> where sections of the Samba band play different rhythms <b>(OSTINATOS)</b> creating <b>CROSS-RHYTHMS</b> (when two rhythmic patterns that "conflict" with each other occur simultaneously) creating a thick texture of interweaving and interlocking rhythms – a				The dynamics music design played by lar, dancers and listening. Sou of Samba mu	s of Samba music ed to be perform ge numbers of ins processions with metimes, a <b>CRESC</b> Isic for dramatic e	are normally VEF ed outdoors at ca strumentalists an large audiences w CENDO is used at effect.	RY LOUD – it is arnivals and is d to accompany vatching and the end of a piece	Samba music bpm and kee dancers or pr Sometimes the (TEMPO) RUI for expressive	is generally <b>FAS</b> ps a constant ter rocessional natur ne <b>SAMBISTA</b> (Sa <b>BATO</b> – tiny fluct e effect.	T at around 104 npo to assist the e of the music. mba leader) uses uations in tempo
				F. Instruments.	Timbres and Son	orities of Samba				
SURDO	REPINIC	QUE TAN	IBORIM	CHOCOLO	RECO	-RECO	ΑΡΙΤΟ	AGOGO BEL	LS CA	AIXA DE GUERRO
			arrow a		/				2	



# Module Learning Objectives# Understand the different textural and structural elements of a song/popular song.

# Understand and use the different musical information given on a lead sheet in creating a Musical Arrangement of a Popular Song.





This is Emonik! We will be using Bandlab for this project. Here he takes you through a simple tutorial.





Here is Sink aka Rachel Lindsey who shows you in this video how to formulate a song. She uses loops here and concentrates on melody and from/structure!

## Language for Learning/Music Theory

HOOK – A 'musical hook' is usually the 'catchy bit' of the song that you will remember.

RIFF – A repeated musical pattern often used in the introduction and instrumental breaks in a song or piece of music.

BASS LINE – The lowest pitched part of the music often played on bass instruments such as the bass guitar.

MELODY – The main "tune" of a song or piece of music.

CHORD – A group of two or more notes played at the same time. ACCOMPANIMENT – Music that accompanied either a lead singer or melody line.

FORM AND STRUCTURE – the different sections of a piece of music or song and how they are ordered.

INTRO – The introduction sets the mood of a song.

**VERSES** – Verses introduce the song theme.

PRE-CHORUS - A section of music that occurs before the Chorus which helps the music move forward.

CHORUS – All the choruses have the same lyrics. This section relays the main message of the song .

MIDDLE 8/BRIDGE – This section adds some contrast to the verses and choruses by using a different melody and chord progression. INSTRUMENTAL SOLO – Solos are designed to show off an instrumentalists' skills.

CODA/OUTRO – The final section of a popular song which brings it to an end (Coda is Italian for "tail"!).

CONJUNCT MELODIC MOTION – Melodies which move mainly by step or use notes which are next to or close to one another. DISJUNCT MELODIC MOTION – Melodies which move mainly by leap or use notes which are not next to or close to one another.



A. Popular Song Structure	B. Key Words	C. Lead Sheet Notation and Arrangements
SONG STRUCTURE – How a song is made up of or divided into different sections (see below) and the order in which these sections occur. To work out the structure of a song, it's helpful to analyse the LYRICS <u>and</u> listen to a recording for the song (for instrumental sections). INTRO – often shortened to 'intro', the first section of a song which sets the mood of the song and is sometimes, but not always, an instrumental section using the song's chord pattern.	LYRICS – The words of a song, usually consisting of VERSES and a CHORUS. HOOK – A 'musical hook' is usually the 'catchy bit' of the song that you will remember. It is often short and used and repeated in different places throughout the piece. Hooks can be either MELODIC, RHYTHMIC or VERBAL/LYRICAL. RIFF – A repeated musical pattern often used in the introduction and instrumental breaks in a song or piece of music. Riffs can be rhythmic, melodic or lyrical, short and repeated. MELODY – The main tune of the song often sung by the LEAD SINGER.	A LEAD SHEET is a form of musical NOTATION that contains only the essential elements of a popular song such as the MELODY, LYRICS, RIFFS, CHORDS (often as guitar chord symbols) and BASS LINE; it is not as developed as a <i>FULL SCORE ARRANGEMENT</i> and is open to interpretation by
VERSES – songs normally have several verses. Verses introduce the song's theme and have the same melody but different lyrics for each verse which helps develop the song's narrative and story. Songs made up entirely	COUNTER-MELODY – An 'extra' melody often performed 'on top of' the main melody that 'fits' with it a DESCANT OF INSTRUMENTAL SOLO. TEXTURE – The layers that make up a song e.g., Melody, Counter- Melody, Hooks/Riffs, Chords, Accompaniment, Bass Line.	performers who need to use and adapt the given elements to create their own musical <b>ARRANGEMENT</b> : their "version" of an existing song. <b>COVER (VERSION)</b> – A new performance, remake or recording by someone other than the original artist or composer of the song.
of verses are called <b>STROPHIC</b> . <b>LINK</b> – a optional short section often used to join different parts of a song together, often instrumental, and sometimes joins verses together or appears at other points within a song. <b>PRE-CHORUS</b> – an optional section of music that occurs before the <b>CHORUS</b> which helps the music move forward and "prepare" for what is to some	<b>D. Conjunct and</b> <b>CONJUNCT MELODIC MOTION</b> – Melodies which move by step or use notes which are next to or close to one <b>DISJUNCT MELODIC MOTION</b> – Melodies which move by leap or use notes which are not next to or close to o another. <b>MELODIC RANGE</b> – The distance between the lowest a highest pitched notes in a melody.	e mainly another. mainly one Disjunct
<b>CHORUS</b> – occurs several times within a song and contains the most memorable <b>HOOK/RIFF</b> . The chorus relays the message of the song and is repeated with the same melody and lyrics each time it is heard. In popular songs, the chorus is often repeated several times	E. Song Timbre and Sonority (Instr	ruments that are used to Accompany Songs)
towards the end of the song. <b>MIDDLE 8/BRIDGE</b> – a section (often 8 bars in length) that provides contrasting musical material often featuring an instrumental or vocal solo using new musical material allowing the performer to display their technical skill on their instrument or voice. <b>CODA/OUTRO</b> – The final section of a popular song which brings it to an end (Coda is Italian for "tail"!)	Pop Bands often feature a DRUM KIT and PERCUSSION GUITAR, RHYTHM GUITAR and BASS GUITAR) and KEY the PIANO or A in pop songs su TRUMPET. Sin "frontline" men to the song. BA COUNTER-MEL	N to provide the rhythm along with ELECTRIC GUITARS (LEAD (BOARDS. Sometimes ACOUSTIC INSTRUMENTS are used such as ACOUSTIC GUITAR. ORCHESTRAL INSTRUMENTS are often found uch as the STRINGS, SAXOPHONE, TROMBONE and gers are essential to a pop song - LEAD SINGER – Often the mber of the band (most famous) who sings most of the melody line ACKING SINGERS support the lead singer providing HARMONY or a .ODY (a melody that is often higher in pitch and different, but still

'fits with' the main melody) and do not sing all the time but just at certain points within a pop song e.g. in the chorus.

#### Drama: Terms 5 and 6 Our Day Out and Blood Brothers The social context: Liverpool and Britain in 1982

Willy Russell wrote Blood Brothers in 1982. The play is also set in Liverpool. It is very much a play of its time and it is more than that. It has stood the test of time and been in almost constant production since it was written.

In 1982 there was a **Conservative** government led by Margaret Thatcher in power. They were determined to make the UK a competitive country able to compete with the rest of the world economically. Britain had been plagued by much unrest and strikes in the 1970's. This, however, meant closing factories and industries that the Government deemed uncompetitive. Coal mines, steel works, factories and docks. The cuts and closures were particularly severe in the North of England. In 1982 10.6% of the population were unemployed. Over 6 million people.

Liverpool in 1982 was a city ravaged by these cuts It was a city of high unemployment...The Liverpool Docks had been a proud and historic part of Liverpool for hundreds of years, employing a large part of Liverpool's population. They were closed in 1981.

88,000 people were registered as unemployed in Liverpool in 1982- that is a lot of people. There was poverty, hardship, despair and hunger. Soup kitchens sprung up for the first time since the Second World War. The second scene that we study in this scheme of work is between the two now grown up

boys. Mickey has just been made redundant. This is largely what affects his mood and behaviour towards Fatefully- the boys meet when they are seven years old (the first scene that we Edward.



Minister – Margaret Thatcher





A 'still' from the last scene



#### **Blood Brothers- A summary of the plot**

Mrs Johnstone is struggling financially to feed and clothe her 6 children after her husband has left. The woman she cleans for, Mrs Lyons has never been able to have children. When she hears Mrs Johnstone worrying about being pregnant with twins, Mrs Lyons persuades her to give one of them to her when they are born. She manipulates the deeply religious, Mrs Johnstone by making her swear on the bible.

The two boys grow up without knowing each other. One, Edward, who was given away, grows up in Mrs Lyon's rich, comfortable middle class household. Mickey grows up with the hardships of a single parent family with several siblings (brothers and sisters).

study) and ironically they become blood brothers. They become great friends and share many wonderful times with their mutual friend, Linda.

At 18 Eddie goes away to University. Mickey stays, gets a job at the local factory and finally marries Linda. They have a child. Mickey is made redundant. When the upbeat flourishing Edward returns at Christmas, the brothers could not be further apart in their life situations. Mickey goes to prison for being caught in a robbery that his bad influence brother persuades him to do. Prison brings depression and dependency on medication. Edward takes a promising job with the local council. He supports Linda with housing, friendship and some money. When Mickey discovers this is assumes that Linda and Edward are having an affair. Mickey bursts into the council offices with a gun. The police shoot Mickey who accidentally pulls the trigger as he falls killing Eddie. Both boys lay dead in a pool of their own blood. Blood Brothers to the last.

#### The cultural and artistic context

The general hardship and despair of the country and some Northern cities in particular was reflected in the music of the day. The music of many popular bands of the time was angry and often political,. Punk Rock and Ska were in fashion. You may want to compare the music of some Punk bands like *The Clash* or **Ska** bands like *The Beat* with the gentler, more optimistic music of the 1960's and the dreamy and extravagant songs of the early 1970's. c.f. **The Kinks,** *The* **Sweet, T. Rex** and many others.

Punk Rock – protest

music of the 1980's



UB 40 1980's ska group



You will need to remember our work on character; how characters are made up of their personalities, backgrounds, attitudes, beliefs, thoughts and feelings. You will add a character's job, education and training to this list.

You will also need to remember the ways that an actor shows their character to the audience once that they know what they are like (their personality etc.)

#### Study Focus

This scheme of work will focus on the detailed study of key scenes from a full length play. It will enable you to explore many of the ways in which dramatic literature goes from **Page to Stage**. These will involve the proper analysis of a scene, the preparation of a character using Stanislavski's acting techniques in rehearsal and your proposals to stage the scene considering, set, costume and lighting. The play will be properly studied in its socio- economic and cultural context

#### Key Ideas important to understanding the play

Dole Office- a common slang and colloquial term for the Benefits Office, Unemployment Office where people, *signed- on*. They are now known as The Jobcentre.

**Signing – on –**Going to the **Dole Office** once every 2 weeks to **sign a declaration - declare** that you have had no work or money paid in the last **fortnight** and so are entitled to **unemployment benefit.** 

**'Made redundant' –** Losing a job because the workplace **shuts down** or the position is **cut.** 

**Superstition-** The belief in Good Luck and Bad Luck – the idea that **Supernatural forces** influence events in our lives. Walking under a ladder is bad luck, seeing **two** magpies is Good Luck ('2 for joy') seeing a black cat is either Good Luck or Bad Luck depending on who you ask !

**Social Forces** – These are the forces of social class (you 1<sup>st</sup> studied this in Y8). How being born and brought up in a working class, or middle class or upper middle class family <u>affects</u> our **opportunities**, **viewpoints** and **outcome**s in life. How do the differing class upbringings affect their lives unfold ?

**Conservative Party**- One of the major British political parties. Others include the **Labour Party, Liberal & Social Democratic Party, and The Green Party. Each** party has their own ideas – their particular political views about what is best for everyone and the country







#### Acting Techniques - rehearsal techniques

**Hot-** seating – this is the technique of asking an actor in character questions that will help them get clear about their character and gain a stronger connection with their character. It is only as useful as the quality of the questions being asked.

Duologue — a scene between two actors- the prefix duo means two.

**Stanislavski's acting Techniques** that you learned in Year 7 & 8 and earlier this year.

The Given Circumstances- Everything about the character's situation that is relevant to the scene- their age mood, financial situation, where they are, everything- that- is -going on- for- them.

**Objective-** What the character wants in the situation. An **Objective** always begins with, 'I want...'

**Creative If-** This is a technique that you can use to help you get into character in a simple and honest way. You can say to yourself, **'what if I was that character in that situation, how would I feel, how would I behave...'** 

**Emotion Memory**- Using emotions that you have experienced in your life that are similar to those that a character is feeling in a situation that you have not personally been in.



Blocking – this rehearsal technique involves working out all the moves and actions that the actors in character make



Themes – what the play is about – what is iits meaning – its message

For me, some key questions that the play explores are:

What makes us the way that we are? What makes us behave the way that we do? What are the things that affect our choices, our decisions, our thoughts, our feelings, our confidence, our attitude to life, our self-esteem?

The play, for me, cleverly pitches one idea against another and offers no easy solutions. On the one hand the play clearly shows the way that our background, our social class is a clear determiner of our life expectations. Edward, the middle class twin, goes to university, gets a respectable, well paid job and is successful economically. Mickey, brought up in a working class family, in a working class area, loses his job because the government sees it as necessary for the sake of the country, he gets drawn into crime because it is on his doorstep- literally; his brother, whom he lives with, makes him an offer, that he can't refuse. He gets caught, charged, found guilty and imprisoned. He doesn't cope well with prison and gets clinically depressed which seriously impacts on his relationship with his wife, Linda.

Against these social pressures, Willy Russell, presents moments where, 'new shoes are put on a table' (bad luck) Mrs Johnstone swears to give her child away on does so on a bible- the Holy Book- especially for a Catholic. Mrs Lyons also warns Mrs Johnstone that, ' If two twins separated come to know the truth, they will both die' – quite a threat ! And then, the storyteller, the Narrator, is presented as a figure somewhere between representing Fate and the Devil.

Both boys- the subjects- are genetically the same because they are twins- so they should turn out the same- to have similar outcomes. But they don't and the playwright pitches two ideas; Fate & amp; Social Class against each other to explore the reasons in a highly entertaining musical- I haven't even mentioned the songs- the wonderful songs and the music. It is a very clever device.... The more I get to know the play; (I've read it several times and watched it, maybe, 13 times) the more , I admire it for the way that it manages to engage audiences and, ' Educate through entertainment' Bertolt Brecht- someone that you will hear a lot about if you go on to do GCSE Drama.







#### **Tactics of Performance:**

- How can you use tactics in a track event?
- What stages of a middle distance race should you consider the implementation of tactics?

#### **Race tactics:**

Should you consider to sprint at these points at the race:

- Sprint start
- Start of the 2<sup>nd</sup> Lap
- Back straight
- Final Bend

#### Finish Line Dip:

As you approach the finish line, with a stride left, lean forwards to push chest to cross the line first.

# Discus

Grip:

- Hold the discus by the pads of your finger tips, your thumb resting against the side of the discus
- The index finger can be placed (b) close together or apart (c)
- As you rotate to create momentum the discus will stay in your hand ٠ Wind-up Phase:
- Rotate backwards and forwards
- Arm travels from your side, across your body, to your hand being on top, non-throwing hand meets the discus to stop it dropping

#### Release:

Spin the side of the discus ٠





# **Athletics**



# Respect

#### **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.



**Tactics** 



#### **Triple Jump**

#### Approach:

- Start approach by stepping onto your take off foot
- Mark out your approach distance (11-15 running strides form the take off board)
- Run fast at a speed you can take off from

#### Hop Phase: ٠

- Use a low take off angle
- Use a single arm action
- Drive out and up with no take off leg
- Stay tall and look forward towards the end of the pit Step Phase:
- Push of your back leg just like a bound
- Low take off angle
- Drive your thigh to parallel
- Maintain upright posture

#### Jump Phase:

- Single or double arm action ٠
- Use the hang technique
- Keep head and chest up

#### Landing:

٠

- Use a double leg shoot out in front
- Push your feet ahead of your body
- Don't fall backwards







# Analyse



#### **Performance Analysis:**

- Using the success criteria for each of the skills of Cricket Bowler, Batter, Fielder and Wicket Keeper.
- Identify the strengths and weaknesses in technique.
- Suggest what needs to improve and how it can be improved.

#### **Bowling Technique Checklist:**

#### The Bound

- Ball held at chin
- Arms thrown up
- Body leans backwards

#### The Coil

- Front arm pulled back
- Make a figure of six with bowling arm
- Back foot lands parallel to the crease

#### The Release

- Release ball at 1 o'clock
- Arm brushes ear
- Look over your shoulder

#### **Follow Through**

#### Wicket Keeper: Key Skills:

- Good Glove work use two hands
- Watch the ball with a still head
- Catching with relaxed elbows, moving the gloves in the same direction as the path of the ball
- Soft hands



Wrist spin

Finger spir





#### Respect

#### 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.
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- 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.





#### The Cut Shot

- 1. Played to a ball that is short and wide
- 2. The back foot goes back and across to get closer to the ball. Extend your arms through the shot.
- 3. Try to come from a high back lift down onto the ball. This will allow you to keep the ball on the floor so you don't get caught out.



#### **Forward Defence**

**Tactics** 

The principle of a forward defensive stroke is to block the ball rather than to score runs.

- 1. Played to a straight full delivery.
- 2. Get your head in line with the ball.
- 3. Get your weight right into the ball.
- 4. Don't push at the ball, let the ball hit the bat not the bat hit the ball.
- 5. Angle the bat towards the ground

#### **Key Skills: The Cut shot**









Analyse



# Rounders



#### 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.
- 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





#### **Tactic instructions**

- Ask the bowler to change bowling technique for each batter (try a donkey drop, fast bowl, a slow bowl, a spin).
- 2. Move the fielders around, depending on the batters' strengths and weaknesses.
- 3. ask the batters to strike the ball into space (using a backhand hit if possible).
- 4. Give fielders space when the ball is thrown to them.
- 5. Ask batters to disguise their hits if they can, keeping their batting intentions a secret for as long as possible.
- Ask the batters to 'chance' a run to 2<sup>nd</sup> or 4<sup>th</sup>, even if they 6. think they may be stumped out.
- Tell batters standing on bases to set off running to the next 7. base as soon as the ball leaves the bowlers hands.
- Ask your bowler to cover 3<sup>rd</sup> base when fielding. 8.
- If there is a backwards hit, ask your backstop to walk up to 9. the back line with the ball, before deciding where to throw it.



#### **Performance Analysis:**

- Using the success criteria for each role within Rounders Fielder, Bowler and Batsperson.
- Identify the strengths and weaknesses in technique.
- Suggest what needs to improve and how it can be improved.

#### **Backhand shot**

- Start with original batting stance and change your stance as ٠ late as possible to disguise the shot.
- Like in tennis, begin your backswing by turning your hips and shoulders.
- Step out towards the line of the ball, shifting your weight to the outside foot.
- Hit through the ball as you bring most of your weight onto your front foot.
- Do not make your arm do all of the work, use your whole body to add extra power to your shot.

#### Placing the ball

There are different types of batting technique where you spin your body, so you bat to certain areas of the field. A good batter can select gaps and areas where there is no fielder or can bat towards weaker fielders, so they have more chance of scoring the rounder.



# Respect

- Motivated and contributes 100%
- different situations/ game scenarios.



Analyse







# Respect

#### 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.



#### <u>Smash</u>

• The smash is the shot that the professional players hardly ever miss and that club players rarely get right.

Tactics

• The main reason for that is practice!

#### Step One

- The moment you see the lob go up in the air you need to turn sideways as if you were getting ready to serve.
- Your hands and racquet head up to around chest level with the same grip that you serve with.

#### <u>Step Two</u>

- Keep your eye firmly on the ball and start to adjust position so that the flight of the ball is in line with your body.
- You want the ball to come down just in front of you.
- As you start to move you must stay sideways on, so use side steps and cross over steps to adjust your position.

#### Step Three

- Try to feel both hands going up together your non racquet hand should stretch up towards the ball, use your hand as an aid to track the incoming ball.
- Your racquet hand should bring your racquet back behind you into the same throwing position that you use half way through your service action.

#### Step Four

- Keep your head still and your eyes firmly focussed on the ball.
- As the ball arrives throw the racquet head up to meet the ball as you would in a serve.
- Don't try to hit too hard though timing is the key.

#### Performance Analysis:

- Using the success criteria for each of the shots of Tennis Ready Position, Serve, Forehand, Backhand Groundstrokes, Smash, Volley.
- Identify the strengths and weaknesses in technique.
- Suggest what needs to improve and how it can be improved.

#### <u>Volley</u>

- By coming forwards in the court you are putting huge pressure on your opponent and also opening up all the angles making winners much easier.
- You have less time to cover the width of the court.
- So if your opponent gets in a good shot only exceptional movement and reactions will get you out of trouble.

#### Step One

- Ready position.
- Alter the ready position slightly from the way you would prepare for groundstrokes by bringing the racquet head slightly higher.
- Move the elbows forward so they're just in front of the body. **Step Two**
- Bring the racquet head out into position in front of you.
- Your upper body goes to the ball and your feet following.

#### Step Three

- Do not swing the racquet at the ball.
- Shot should be short and punchy.
- Use your wrist and forearm to bring the racquet head down on the ball in a short, sharp action.

#### Step Four

- Follow through in the direction you want to send the ball.
- Then get back into the centre of the court as quick as you can ready for the next shot.



# 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.







APPLY SOLDER

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.



speaker

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.

NSERT COMPONENT

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







$\left \right\rangle$			
	L	0	

#### 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	Estimated life	Max power
	Polymer Lithium Ion Cell	3.7 V	400 mAh	2 days	0.7 W
Limm	Polymer Lithium Ion Cell	3.7 V	1000 mAh	5 days	0.7 W
The second second	2x AAA	3V	1000 mAh	7 days	0.45W
CD parameter	3x AAA	4.5 V	1000 mAh	4.5 days	1 W
8	2X AA	3V	1500mAH	10 days	0.45W
6	3x AA	4.5 ∨	1500 mAh	6 days	1 W
8 8 8	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.

#### **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  $\Omega$  (ohms) and is often referred to as its 'resistance'.



Alternating current supplied to the loudspeaker creates sound waves in the following way:

- a current in the coil creates a magnetic field
- the magnetic field interacts with the permanent magnet 2. generating a force, which pushes the cone outwards
  - the current is made to flow in the opposite direction
  - the direction of the magnetic field reverses
  - the force on the cone now pulls it back in

6.

Speak

er

- repeatedly alternating the current direction makes the cone vibrate in and out
- the cone vibrations cause pressure variations in the air which are sound waves circuit

#### The variety of methods used to join timbers

The advantages and disadvantages of a range of surface finishes that can be applied to timber

				Contraction of the second seco		
Name	Appearance	Advantages	Disadvantages			
Butt		Easy to make, it is just square ends glued together	<ul> <li>Weak: there is no mechanical strength, just the glue</li> <li>Not aesthetically pleasing</li> </ul>		Turne	Description
			preasing		Туре	Description
Dowel		Automated machines can drill the dowel holes quickly and accurately	Hard to line up the dowels accurately by hand		Paint	A coloured pigm that dries out
					Stain	A coloured liquid into the wood su
Lap		Quite easy to cut	Not very strong	WAXE POLISH BLACK BISON		
					Varnish	A clear coating th shine
Housing		<ul> <li>Holds a shelf or divider securely in the middle of a carcass (frame)</li> </ul>	<ul> <li>Can be tricky to cut neatly on a wide board</li> <li>Very accurate marking</li> </ul>			
		Pairs well with corner lap joints	out and cutting required to ensure a shelf is exactly level		Wax	A soft solid that is into the surface v
Mitre		<ul> <li>Looks good because no end grain shows</li> </ul>	Weak, it is only a butt joint at 45°			
		Good for picture frames			Oil	Is rubbed onto th and soaks in
Mortise and tenon	Mortise Tenon	<ul><li>A strong joint</li><li>Good for joining a table or</li></ul>	Time consuming to cut by hand		Shellac	A cloudy liquid m
		chair frame to legs				Lots of layers are and polished to a
Dovetail		A very strong joint – the dovetails lock together	Very tricky to cut accurately	AN COMPANY	Veneer	A thin laver of wo
		<ul> <li>Good for a drawer front that will get pulled hard</li> </ul>	by hand			onto the surface





	Туре	Description	Advantages	Disadvantages
	Paint	A coloured pigment in liquid that dries out	Available in a range of colours	Covers up the natural woodgrain
POLISH K BISON	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
Z	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

Macron

Micronu

War

**Food Poisoning** 

Time

There are 5 main

nutrients. These 5

groups can be

divided into 2

**Macronutrients** 

by the body in

large amounts.

**Micronutrients** 

by the body in

small amounts.

Living organisms

bacteria) need certain "things"

or conditions to

(including

survive:

Oxygen

which are needed

which are needed

groups of

groups

What are Nutrients?

Nutrients are the building blocks that make up food and have <u>specific</u> and <u>important roles to play in</u> <u>the body</u>. Some nutrients provide <u>energy</u> while others are essential for <u>growth</u> and <u>maintenance of</u> <u>the body</u>.

	Macro Nutrient		Role in the body	Food Example		
ents	Carbohydrate		The main source of energy for the body.		Bread, rice, pasta, potatoes	
	Protein		Provides the body with growth and rep	oair.	Meat, poultry, beans, eggs, lentils, tofu, fish	
	Fat		Provides the body with insulation and small amount protects vital organs. Provides essential fatty acids for the bo	Butter, oil, cheese, cream, nuts, oily fish, crisps		
rients	Vitamin		Role in the body		Food examples	
	A Helps to ke the immur		ep the eyes healthy and strengthen e system.		Dark green leafy vegetables, carrots, liver	
	В	Helps to re	lease the energy from the food we eat. B		ad, milk, cereals, fish, at	
	C Help with with the a		skin healing and healthy skin. Help osorption of Iron.		Fresh fruit, broccoli, tomatoes	
D Importar healthy b		Important healthy bo	for absorbing calcium and help with C ne structure S		fish, eggs, butter, shine	
	Mineral		Role in the body		Food Examples	
bd	Calcium	Important helps with	for strong teeth and bones. It also blood clotting.		k, yoghurt, soya, dark en leafy vegetables	
	Iron	Needed for transport o	red blood cells which help to xygen around the body.		Nuts, whole grains, dark green leafy vegetables, meat, liver	

#### Hygiene



#### <u>Personal</u>

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.

<u>Food</u> – 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



Wider thinking/further reading: www.foodafactoflife.org.uk www.wjec.co.uk/qualifications/hospitality-and-catering www.food.gov.uk

#### <u>Year 9 Design Technology Knowledge Organiser – Spatial and</u> <u>Interior Design:</u> <u>Retail Store Design</u>

Interior and spatial designers are involved in the design or renovation of internal spaces, including structural alterations, furnishings, fixtures and fittings, lighting and colour schemes.

What is the definition of commercial interior design?

Commercial interior design refers to the interior design done in commercial spaces, such as offices, **shops**, restaurants, lobbies, and other public spaces.

British Design award winners 2021: •Michel Anastassiades •Soane Britain •Kitty Joseph •Tom Raffiald •Zoffany •Sam Wilde



#### **EXISTING STORE RESEARCH**



Once you have chosen the brand you will be designing your store based upon it is vital to research their existing stores. This enables us to gain a clear knowledge and understanding of their branding choices which include colour pallets, concepts, materials and product displays.

	KEY TERMS	DEFINITION
	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.
	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.

#### Which Brand will you choose?...















#### COLOUR PALLETS

Colours can convey a message that give us an idea of how the product or company wants to be perceived. They can entice a certain type of customer and can make us think of different things.



Colour pallets which effectively reflect our company brand.



#### Interior Design Considerations in Retail Store Design

• Value of Space. The value of space, depending on the location within the store, is expressed in sales per square foot of floor space, and sales per cubic foot of cubic space.

- Space Utilization and Allocation.
- Storage of Stock.
- Customer Traffic Flow.
- Types of Goods.

#### **CUSTOMER FLOW**

Customer flow is the movement of customers around a store. Providing more check-outs increased customer flow, reduced bottlenecks and improved sales.







window displays 
⇒ ENTRANCE 
⇔window displays
EXTERIOR SIGNAGE
EXTERIOR SIGNAGE



#### MOOD BOARD

A mood board is a visual representation of ideas for a design project. At its most basic, a mood board is a collage of images. The purpose of a mood board is to help explore ideas and figure out the general style, mood, colours, and overall feel of a room or project space.



MODERN, LIGHTS, <mark>NEON</mark>, MINIMAL, CITY, URBAN



ORGANIC, NATURAL, WOOD, RUSTIC, COUNTRY



#### **3D MODEL**

What is model in interior design?

An architectural model is a 3D representation of a proposed building design. With an architecture model, you can see the potential scale and design of a construction or interior design project.





## One point perspective is a drawing method that shows how things appear to get smaller as they get further away, converging towards a single 'vanishing point' on the horizon

converging towards a single 'vanishing point' on the horizon line. It is a way of drawing objects upon a flat piece of paper (or other drawing surface) so that they look three-dimensional and realistic.



**ONE POINT PERSPECTIVE** 

VP





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.	SolidWorks 200° 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		
Cost Savings – Workforce can be reduced.	unemployment.		

If you are designing products and they are made in another country you need to talk to the factory <u>ALL</u> 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



#### **Drawing patterns and layplans**



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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.

#### **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.



#### **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**

<u>One off/Bespoke</u>: when you make a unique item. <u>Batch</u>: when a limited number of the same product is made.

<u>Mass</u>: 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 <u>client</u> [client: person or organisation that wants a product manufactured - eg a retailer. ]; the garment design is developed from a <u>basic block pattern</u> [basic block pattern: pattern made with standard-sized pattern pieces ] and a <u>toile</u> [toile: a prototype garment made from low-cost fabric. ] is made to test the fabric drape, <u>the fit</u> [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	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 <b>UV light</b>	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 <b>REPEL</b> 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)	Glow in the dark materials carry inorganic phosphors that absorb light in the visible and ultra violet wavelengths and then re-	Toys, stickers, paints, clock face/dials, emergency signs.

emit visible light, or a "glow".

Light

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		Outdoor clothing from skiwear
	Waterproof, wind proof, breathable	to mountain wear, walking
	fabric, moisture vapour can escape.	boots, cross country trainers,
		gloves sportswear.
Koylar	Extremely strong and hard-wearing	Personal armour, helmets,
Poly-	evcellent cut and tear resistance high	bullet-proof vests, motorcycle
naranhenvlene	thermal protection non-flammable	safety clothing, extreme sports
toronhtalamida	good chemical resistance.	equipment, audio equipment,
		musical instruments.
Conductive fabrics and threads		Connecting wearable inputs,
	The thread or fabric can pass an	processes and outputs, such as
	electrical current along its length,	switches, lights, Bluetooth
	linking electronic components. It allows	connectivity and speakers in
	for flexible and wearable control of	technical clothing, children's
	electronic products for entertainment,	soft electronic toys, wearable
	safety health and fitness.	electronic sports equipment and
		anti-static clothing.
Fire resistant fabrics		Fire blankets, firefighting or
	Resists heat and ignition from the	safety clothing such as gloves,
	naked flame to protect the wearer.	aprons and boiler suits.
		Protection for racing car drivers.
Microfibres & Micro- encapsulation	Very depending on the specific textile,	Medical textiles, fabrics, cloths
	can be statically charged to pick up	and towels. High-tech clothing
	dust and filter particles, can be	which can be anti-bacterial, heat
	absorbent yet fast drying.	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

COLD OUTER MATERIAL FUNCTIONAL FABRIC MOISTURE VAPOUR (SWEAT)





Gore-Tex

#### **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 doingit: 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.



C= Customer

You can also annotate your designs to fully explain further using ACCESSFM E=Environment

- S=Size
- S=Safety
- F=Function
- M=Materials

- 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 totheir needs.



# **Evelet 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.

> 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-Present)

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.

COCO CHANEL







#### Mary Quant (1934-Present)

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.



#### Alexander McQueen (1969-2010)

An influential fashion designer known for his theatrical, well tailored clothing and dramatic catwalk presentation displaying his collections.



#### Harry Beck (1902-1974)

He redesigned the London Underground map in the 1930's. It's simplified layout made it a huge success and maps of many other transport networks now use Beck's style.





#### Marcel Breuer (1902-1981)

A modernist architect and furniture designer. Some of his best works include- tubular steel furniture and concrete sculpted buildings.



#### Norman Foster (1935-Present)

Architect famous for creating the Millennium Bridge, Gherkin London and Wembley Stadium.



#### William Morris (1834-1896)

A wallpaper, furniture and furnishings designer. His designs were often based on nature.





#### Aldo Rossi (1931-1997)

An architect who published work on architectural theory. He also worked for the company Alessi.



