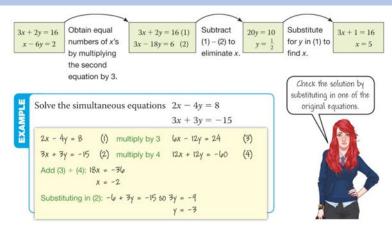
Equations

Key words and definitions

- **Quadratic**: An expression where the highest order term is x^2
- **Substitution**: Replacing a letter in an equation with a number or expression.
- **Elimination**: A method of solving simultaneous equations that involves adding or subtracting to get rid of one of the letters.
- **Simultaneous:** Two equations that are both satisfied by the same values.
- **Inequality:** A relation that compares the size of two expressions.
- Rearrange: Write an equation in a different way.

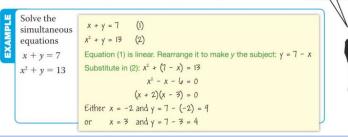
Solving Simultaneous Equations: Elimination





Solving Simultaneous Equations: Substitution

- You can use substitution to solve simultaneous equations where one is linear and one quadratic.
- Rearrange the linear equation to make one unknown the subject.
- Then substitute this expression into the quadratic equation and solve.

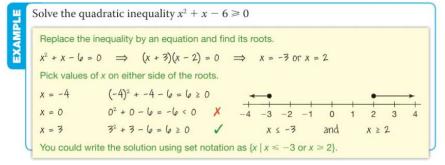


Solving Linear Inequalities

- You can solve an inequality by rearranging and using inverse operations, in a similar way to solving an equation.
- If you multiply or divide an inequality by a negative number you need to reverse the inequality sign to keep it true.
 - **a** Find the range of values of *x* that satisfies both $3x \ge 2(x 1)$ and $12 3x \ge 6$. Represent the solution set on a number line.
 - b List the integer values of *x* that satisfy both inequalities.

a $\exists x \ge 2(x-1)$ $12 - \exists x > 6$ Combine the two inequalities. $\exists x \ge 2x - 2$ $12 > 6 + \exists x$ $1\frac{1}{3} > x$ is the same as $x < 1\frac{1}{3}$. $x \ge -2$ $6 > \exists x$ $50 - 2 \le x < 2$. 2 > x $\frac{-1}{2}$ $\frac{-1}{2}$

Solving Quadratic Inequalities



When to Use Each Method:

Use elimination when both equations are linear.

Use substitution when one of the equations is quadratic.

Set Notation

A linear equation contains

no square or higher terms.

A quadratic equation

ontains a square term, but

no higher powers.

4 < 6 but -2 > -3

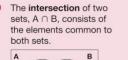
5 > 2 but -15 < -6

Use an 'empty'

circle for < and >

Use a 'filled' circle

for s and 2.



The union of two sets, A ∪ B, consists of the elements which appear in at least one of the sets. The complement of a set, A', consists of the elements which are not in A.





Hegarty Maths Links

Simultaneous Equations by Elimination: 190 – 193 Simultaneous Equations by Substitution: 194 Simultaneous Equations Involving Quadratics: 246 Set Notation: 381 Solve Linear Inequalities: 269 - 272 Solve Quadratic Inequalities: 277

Equations

Elimi	nation			Harc	ler Elimination			Solvi	ng Linear Inequalities		
а	2x + y = 8 5x + 3y = 12	b	3x + 2y = 19 $4x - y = 29$	а	$\frac{x}{3} - \frac{y}{4} = \frac{3}{2}$	b	$\frac{a}{2} + 3b = 1$	а	$3x \leq 21$	b	2x - 5 > 17
с	3a - 3b = 30	d	4x y = 2y $2v + 3w = 12$		2x + y = 14		5a - 7b = 47	с	$\frac{p}{2} + 6 \le -2$	d	28 < 7x + 49
	3a+b=7		$5\nu + 4w = 23$	с	$p - \frac{2q}{3} = \frac{26}{3}$	d	$\frac{5x}{6} + \frac{y}{4} = 8$	e	$5y + 3 \le 2y + 5$	-	-3y > 9
е	9p + 5q = 15 $3p - 2q = -6$	f	3x - 2y = 11 $2x - y = 8$		$\frac{p}{4} + 3q + 1 = 0$		$\frac{2x}{5} + \frac{y}{10} = 4$	g i	$4(x+2) \le 16$ $\frac{x}{-5} \ge -2$	h	-6x < 30
								j	$4p-3 \leq 3(p-2)$)	
								k	3(x-2) < 5(x+1)	6)	
								1	$6x - 4 \ge -2x$		

Substi	tution		Harder Substitution		Solving Quadratic Inequalities	
а	$x^2 + y = 55$	b $x + y^2 = 32$	a $y = x^2 - 2x$	b $y = x^2 - 1$	a $x^2 < 64$	b $x^2 > 1$
	y = 6	x = 7	y = x + 4	y = 2x - 2	c $x^2 + 2x > 0$	$\mathbf{d} x^2 - 6x \leq 0$
С	$x^2 - 3y = 73$	d $2y^2 - x = 13$		d $x = y^2 - 4$	e $x^2 + 6x + 8 < 0$	f $x^2 + x < 12$
	y = 9	x = 5	x=9y-4	x = 2x - 1	g $2x^2 - 5x - 3 \le 0$	h $3x^2 + 2 \le 0$



Circle Theorems Student Knowledge Organiser

Key words and definitions

Circle Calculations

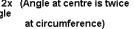
4 cm

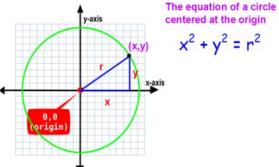
Circumference - the distance all the way around a circle Radius – distance from centre to circumference Diameter – the distance across the circle passing through the centre Chord – a line connecting two points on the circumference of a circle Segment – the area between a chord and the circumference Tangent – a line that touches a circle Sector – part of a circle - the area between two radiuses and the connecting arc of a circle. Arc – part of the circumference Perpendicular – two lines that make a right angle Cyclic Quadrilateral - A quadrilateral with every vertex (corner point) on a circle's circumference Semi-Circle – half a circle

Find the area and circumference:

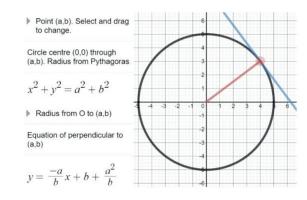
Circle Theorems x=y (Angles at the circumference are x =90 (Angle in a equal) angle semicircle)

y = 2x (Angle at centre is twice



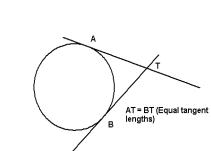


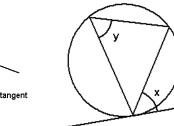
The Equation of a tangent to a Circle



Hegarty Maths Links

Circle Theorems	594 - 602
Multi Step Circle Theorems	603 - 606
Proof of Circle Theorems	816 - 820





x=y (Alternate Segment Theorem)

100				
	/			
\geq	F			

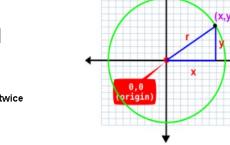


Scotts



Angle between radius and tangent is 90

x+y=180 (Opposite angles of a cyclic quadrilateral add to 180)



The Equation of a Circle

Circle Theorems Student Knowledge Organiser

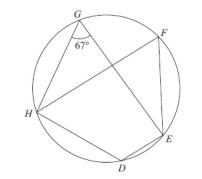


Diagram NOT

accurately drawn

.....

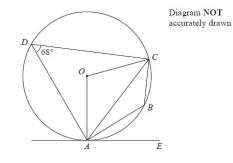
D, E, F, G and H are points on a circle. Angle $EGH = 67^{\circ}$

(*a*) Find the size of angle *EFH*.

(b) Give a reason for your answer.

.....

.....



.....

.....

A, B, C and D are points on a circle, centre O. AE is a tangent to the circle. Angle $ADC = 68^{\circ}$

(a) (i) Find the size of angle *ABC*.

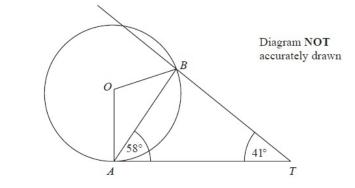
(ii) Give a reason for your answer.

b) (i) Find the size of angle *AOC*.

(ii) Give a reason for your answer.

.....

(c) Find the size of angle CAE



A and B are points on the circumference of a circle, centre O.

AT is a tangent to the circle. Angle $TAB = 58^{\circ}$. Angle $BTA = 41^{\circ}$.

Calculate the size of angle *OBT*. You must give reasons at each stage of your working.



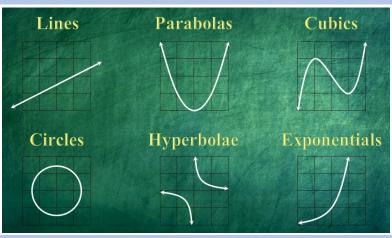
Graphs 2 Student Knowledge Organiser

Key words and definitions

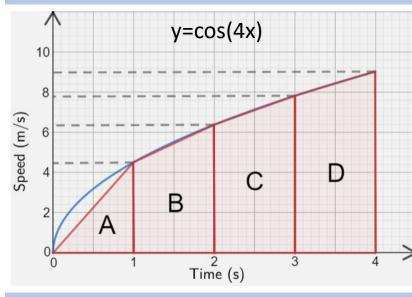
Quadratic Graphs

Linear Graph – A straight line y = mx + c Quadratic Graph – Parabolic in shape y = ax² +bx + c Cubic Graph – See Recognising Graphs y = ax³ +bx² cx + d Exponential – See Recognising Graphs Reciprocal – Hyperbola Tangent – a line that touches a curve Roots – where curve crosses the x axis Turning Point – a point where the gradient changes direction Maximum/Minimum – specific turning points

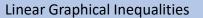
Recognising Graphs

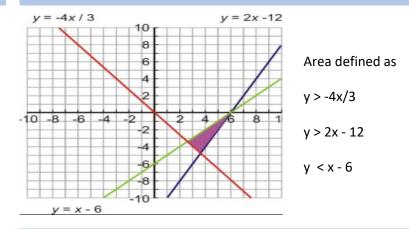


Area Under Graphs



Gradients



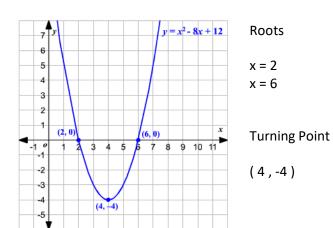


Transforming Graphs

Transformation Rules for Functions							
Function Notation	Change to Coordinate Point						
f(x) + d	Vertical translation up d units	$(x, y) \rightarrow (x, y + d)$					
f(x) – d	Vertical translation down d units	$(x, y) \rightarrow (x, y - d)$					
f(x + c)	Horizontal translation left c units	$(x, y) \rightarrow (x - c, y)$					
f(x – c)	Horizontal translation right c units	$(x, y) \rightarrow (x + c, y)$					
-f(x)	Reflection over x-axis	$(x, y) \rightarrow (x, -y)$					
f(-x)	Reflection over <mark>y-axis</mark>	$(x, y) \rightarrow (-x, y)$					

Hegarty Maths Links

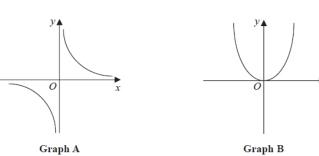
Reciprocal Graphs	300 - 301
Cubic Graphs	298 - 299
Sketching Graphs	898
Area under a Curve	891 - 893
Equation of a Circle	778 - 779

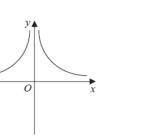




Graphs 2 Student Knowledge Organiser

These graphs show four different proportionality relationships between y and x.





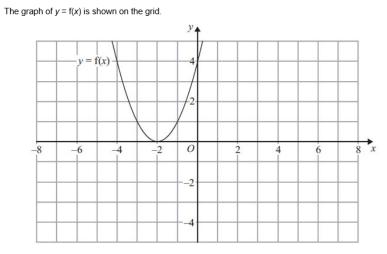
Graph C

Graph D

Match each graph with a statement in the table below.

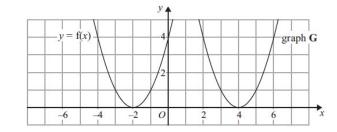
Proportionality relationship	Graph letter
y is directly proportional to x	
y is inversely proportional to x	
y is proportional to the square of x	
y is inversely proportional to the square of x	





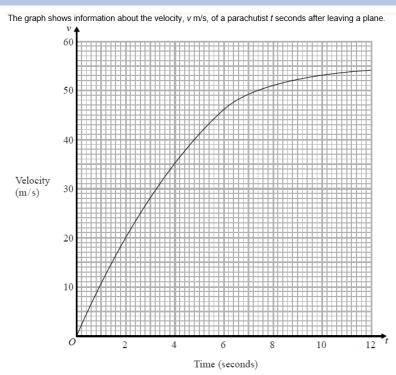
(a) On the grid above, sketch the graph of y = -f(x).

The graph of y = f(x) is shown on the grid.



The graph **G** is a translation of the graph of y = f(x).

(b) Write down the equation of graph G.



(a) Work out an estimate for the acceleration of the parachutist at t = 6

m

 (b) Work out an estimate for the distance fallen by the parachutist in the first 12 seconds after leaving the plane.
 Use 3 strips of equal width.

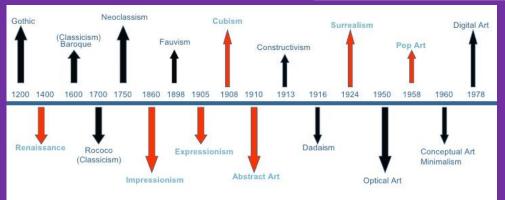


GCSE ART, CRAFT & DESIGN

Assessment Objectives	
AO1 Contextual Understanding	Understanding of historical and contemporary visual elements of Arts, Crafts and Design. Analyse and compare using the Formal Elements to demonstrate your understanding.
AO2 Experiment	Using a range of materials, techniques and processes to explore and develop ideas and intentions as your work progresses. This may be in both 2D and 3D.
AO3 Recording Ideas	Develop and record ideas through drawing and annotation towards a personalized outcome. Link all work to AO1 and AO2 as your project progresses.
AO4 Presenting an Outcome	Create and present a personalized outcome, realizing your intentions.
Coursework Portfolio	Worth 60% of your overall grade. Contains project work evidencing the four assessment objectives above.
Exam Portfolio	Worth 40% of your overall grade. Contains exam work evidencing the four assessment objectives above.

Key Terms	
Abstract	Abstract art seeks to break away from traditional representation of physical objects. It explores the relationships of forms and colours
Aesthetics	Aesthetics is the branch of philosophy that is concerned with the nature of beauty and taste
Aperture	The opening through which light passes to expose sensitized material or a sensor.
Composition	Composition is the placement or arrangement of visual elements in a work of art.
Contemporary Art	Embraces late 20th century contemporary art movements in painting, sculpture and architecture, as well as new media such as installation art, (including sound), conceptualism and video art.
Contrast	Contrast is the scale of difference between dark and light areas in images.
Depth of Field	The distance in front of the point of focus and the distance beyond that is acceptably sharp.
Exposure	The amount of light that is allowed to reach the image sensor which is controlled by the shutter speed and aperture setting.
Form	Form is the aesthetics of recording in 2 and 3D
Line	Lines can be horizontal, vertical, or diagonal, straight or curved, thick or thin.
Macro Photography	Photography producing photographs of small items larger than life size
Modernism	Modernism is the term given to the succession of styles and movements in art and architecture which dominated Western culture from 19th Century up until the 1960's.
Photograph	A drawing with light
Primary source	Your own photographs/ drawings based on real objects
Sculpture	To make or represent (a form) by carving, casting, or other shaping techniques.
Secondary source	Images form the internet, books or magazines
Texture	Texture is the perceived surface quality of a work of art.
Tone	This could be a shade or how dark or light a colour appears

Timeline of Art Movements



SMSC Creative thinkers, Cultural, Reflective learners



Knowledge links: Science, English, Technology, Maths, Geography, History

Key Ideas											
	Within a d	lemocracy like the UK, citizens have the	A proc	ssuro grou	n can be des	cribed as an organised group that	The overwhelming majority of	POINTS THAT SUPPORT	POINTS THAT DO NOT	AOA Ci	tizenship
			-	-		or election but seeks to influence	pressure group action is 'indirect',	PRESSURE GROUPS	HAT PRESSURE		<u></u>
	that concern them. gov					ion. Pressure groups provide a	involving the promotion of issues	INFLUENCE OF THE	GROUPS STRENGTHEN	Active (Citizonchin
						on in national politics between	through education, debate and	More people belong to F	ressure groups have too	Active	Citizenship
1. Making a	ů, s			•••		es able to gather support to force	calculated lobbying. Indirect action is	political parties. c	nuch influence, as they are oncerned about a narrow	Kev	Words
difference in	Petitio	5		•		ap legislation.	much more peaceful in comparison	Pressure groups speak F	Politicians pay too much	Advocacy	Speaking out to
Society		his can access the legal system and try to	•		t their views		to direct action. It involves gathering	issues that politicians do g	ttention to pressure roups, all of which are	Auvocacy	promote a
,		e judiciary to make a decision on issues				y attempting to hinder an activity	support through people, rather than	Pressure groups exert P	ressure groups are		cause or issue.
	-	oncern them.				ng promotion through	targeting the	between elections. a	nemselves undemocratic nd often use non-		
		hold those in power to account				e noted that direct action need	source. Examples: publicity,	If pressure groups did S	emocratic methods. ome insider groups	Boycott	Refusing to buy
	-	political party can be another way of	•			ve. Direct action approaches	leaflets/adverts, petitions raising	ignore a large number of in	f the whole population.		goods or use a
				-		urce and attracts considerable	awareness through educational	Pressure groups can P	oliticians are too		service
		b a public office as a councillor or MP	•			obbying, protests, boycotts	material.		eadlines and over-react to	Citizens	Registered
	Method	Advantages	Incula	Protest	 Can be persona 		How citizens contribute to parliament	ary democracy	Action to bring	Advice	charity
	Campaigns	Reach new audiences Can build relationships	5	(against something)	 Voices heard Gain media atte 		Liberal democracy citizen is at the hear		about political		providing advic
		Low-cost tool E.g. Hillsborough disaster - formed in response to the belief of a substa	antial			a – people join logerter ate Britain – environmental activist group (traffic linction Rebellion – environmental movement	Citizens take part in electoral process b	· ·	change		e and support
		number of people who were involved in the disaster, that after more t years and having many judicial decisions ruled against them, a fresh ag	than nine	Pressure	Speak up for the	e public – allow minority groups to be heard	Citizens can become more active by vo		-Join political		on legal and
		was needed in the fight to achieve proper Justice • E.g. Grenfell Tower - community-led coalition established to obtain jus	· ·	groups	2 million membe	e memberships e.g. National Trust represents more than ers - able to raise awareness of issues of importance to dependent	party, standing election themselves or		party		financial issues
	Heles the	the residents of Grenfell tower. Reach a wider audience and can recruit more members		Can act as expe		in people int advisors and have sound knowledge on their interests ut their point across convincingly - therefore laws enacted	campaign to bring about change How petitions work		-Stand for	Councillor	A citizen who is
	Using the media	Free coverage Enhance legitimacy in the eyes of the government	because of press		because of pres	sure groups should benefit from a lot of expertise. E.g. an expert on nutrition, able to advise on key foods that			election		elected to
2. How		 E.g. Fathers 4 Justice –group aims to gain public and parliamentary sup changes in UK legislation on fathers' rights. Use stunts and costumes. 		Deveette		uldn't be available to children at school	-You create a petition. Only British citiz	ens and UK residents	-Lobbying an MP		serve on local
citizens work		E.g. Marcus Rashford – free school meals – interview with Boris Johnse E.g. RSPCA – adverts, tv programmes	on (Boycotts (abstaining from a	 Allows people to 	o stand up for their beliefs in a peaceful way mic consequences	can create or sign a petition.		 arranging to 		councils
together to	Social media	News spreads quickly – viral		product)	 E.g. Peta campa 	aigned for a boycott of House of Fraser since 2020 over its bus boycott civil rights movement	-You get 5 people to support petition.		meet an MP and	E-petition	request from
change		 E.g. Surfer against Sewage - named and shamed individual companies waste they most frequently found 		Strikes	Helps workers in		-We check and publish.		speak to them in		citizens to
communities	Open letters	 Good coverage – read by wider audience Publicity 			 Protection for we Brings democration 	orkers	-At 10,000 signatures you get a respon	se from government.	the lobby of the		parliament to
	Trade Unions	 Protect workers' rights Negotiate better pay and working conditions 			E.g. NHS and te	achers regarding pay and conditions	-At 100,000 signatures considered for o	debate in parliament.	НОС		debate issue
	Bastilla and	Give general advice and support		Use of a celebrity	Increases awaren Greater influence E.g. Marcus Pacht		-In 2019 highest number of signatures	was 238,573 to extend	-Writing a	General	An election
	Petitions (online e- petitions)	Easy and cost effective to start Effective in getting message across Reach large numbers and good success record		Leafleting	Cost effective	ord - nee school means	paid maternity leave by 3 months in lig	ht of the pandemic	petition	Election	where entire
	petitions	 After 10,000 signatures, petitions get a response from the government 100,000 signatures, petitions are considered for debate in Parliament 	t. After		 Easy to read Visually pleasing 		Roles played by groups in providing a	voice for society	-Campaigning		Uk parliament
		 E.g. Natasha's law – food allergen labelling 		Voting		s who are committed to address issues	A range of bodies and organisations ex	ist to assist in ensuring	-Demonstrating		is elected
	Lobbying	 Raises awareness Encourages leaders/government members to make changes to training and the second seco	Ì	Writing to MP	 Quick and easy MP can represent Must respond to a 		the citizens voice is heard and their rig		-Volunteering –	Trade Union	Organisation
		legislation Put's pressure on the government 		Volunteering	Making a differen		E.g. Equality and Human Rights Commi		helping out in		joined by
	Demonstration	 Public event – will gain attention E.g., Parliament Square has hosted demonstrations for peace ar 		Education	Donations Creates awarenes		funded body that challenges discrimina		the community		employees to
		equality, human rights and liberty, for and against Brexit, for and fox hunting	against			younger generation – their future against what is wrong	rights and makes sure citizens have eq	ual opportunities			provide
		s to know:				Sample Questions (2 marks)					collective
		decided on the issue of your investigation					nportant to have sources of information				
		goals/aims of your project are e.g. raise awa	areness	s, raise mo	ney		ue was mainly a local issue, a national iss	sue or a global issue.			representation
		nd secondary research and resources				Sample Questions (4 marks)					and protect
		esearch helped you carry out the investigat	tion				nship action was the least successful and	l why.		Malantaadaa	rights
3. Your		group assisted you					he type of action you carried out.			Volunteering	Giving your
Investigation		communicated your findings to your audier				Sample Questions (6 marks)					time without
		nich part of your investigation process was t	ine mo	st aifficult	and why		n the planning stage of your citizenship a				pay to help
		e the findings of your investigations					thered at the research stage. Evaluate its	suserulness in relation to	o your issue.		others
		f your actions - Were outcomes achieved? H	10W ?			Sample Questions (12 marks)		uld unforter		NGOs	provides
		and weaknesses of your action					p action was successful. Your answer sho		un cu co co co fuil		services for
	ways you	could have improved your investigation				•	tizenship action, the outcome achieved a	and the successful and u	Insuccessful		those in need –
						elements of your citizenship action	ווע				many are
									charities 'Red		

KS4 - Computer Science - 1.4 NETWORK SECURITY - Knowledge Organiser

NETWORK SECURITY THREATS				HOW TO PREVENT NETWORK SECURITY THREATS			
1	Malware	Malicious software installed without knowledge or consent.	14	Good network	Regularly test to find weaknesses in security, passwords, user access levels, use anti		
2	Phishing	A fraudulent email sent from what looks like a real company that aims to get personal information.		policy	malware and firewalls and encrypt sensitive data.		
3	Social engineering	Weak passwords, giving personal information over the phone or email (falling for phishing scams).	15	Penetration testing	Companies employ specialists to try and hack the network to highlight weaknesses.		
4	Brute force	Automated software used to generate multiple password guesses in order to gain access.	15	Network	Used to find the cause of an attack on a		
5	Denial of service	Hackers flood the network with useless traffic, making it slow or inaccessible.		forensics	network.		
6	Data inception/ theft	Hackers monitor data travelling on a network to intercept personal information.	17	Strong passwords	To prevent unauthorised access. Passwords should be long, use a mix of numbers, letters and characters and should be changed regularly.		
7	SQLUsing SQL code in the login box to access users'injectionpersonal information.			User access 🦱	Control which parts of the network different		
	WHAT	MALWARE DOES TO YOUR COMPUTER	18	levels	users can access.		
9	Scareware	Tells the user their computer is infected so that they follow links and pay to 'fix it'		Anti	Designed to stop malware from damaging an		
10	Ransomwar	e Encrypts (locks) files on computer. User must pay money to unlock the files.		malware/ firewall	organisations network. Firewalls block unauthorised access.		
11	Spyware	Secretly monitors users actions (e.g key presses).			Essential for sending data over a network. Only people with the correct key can access		
12	Rootkits	Alter permissions – allowing hackers admin access to devices.	21	Physical	the data. Security guards/cameras to stop unauthorised access to buildings where		

21

security

Creates holes in security ready for future attacks.

Backdoors

13

unauthorised access to buildings where

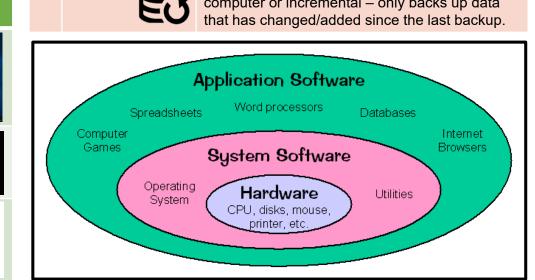
secure data is kept.

KS4 - Computer Science - 1.5 SYSTEMS SOFTWARE - Knowledge Organiser

	OI	PERATING SYSTEMS (OS)	UTILITY SOFTWARE						
1		em is the part of the system software that er hardware and software resources. It is made	10	10 The utility software is another part of the systems softwork helps to maintain or configure a computer.					
	up of the following) five things:		Encryption	Software scrambles data to stop third parties				
2	User interface	The visual part of an application that determines how a user interacts with it.	11	software	from accessing it. Must be decrypted using a key.				
3	Memory management & multi-tasking	Allows the user to have multiple programs running at the same time. Also manages data in the RAM and Virtual Memory.		Defrag- Mentation	File aren't always stored neatly together on a hard disk. They are spread out. Defragging reorganises files so they are together. This makes them faster to access.				
4	Peripheral management & drivers	Manages all hardware connected to a computer using a device driver – a translator between the OS and hardware.	13	Data compression	Compression software reduces the size of files so they take up less space or to make them easier to send/download. You need to know				
5	User La La La management	Allows for different user accounts to be created. Each user can have their own settings.		× ×	about lossy and lossless compression (see KO for 1.2).				
6	File management	Allows the user to create, move, delete and copy files.	14	Backups	A backup is a copy of a computer's file and settings stored externally for security. A backup can be full – backs up everything on the				
	FXAN	PLES OF LISER INTERFACES		F15	computer or incremental – only backs up data				

EXAMPLES OF USER INTERFACES

7	Graphic ′ User Interface	Made up of Windows, Icons, Menus and Pointers (WIMP). The type of interface we are used to.	
8	Command line interface	User to view and manage	
ç	Voice input	A speech recognition application. Becoming more and more popular.	



KS4 - Computer Science - 1.6 IMPACTS OF DIGITAL TECHNOLOGY - Knowledge Organiser

		KEYWORDS	LEGISLATION			
1	Stakeholder	Individuals or groups who take an interest in a product. They may be shop owners, employees, customers, suppliers or the local community.	8	The Data Protection Act 2018	Gives rights to people whose personal data is stored on a computer system. The act has eight principles.	
2	Software	A collection of data or computer instructions that tell the computer how to work. E.g Microsoft Word, Photoshop, an Operating system etc.	9	Computer Misuse Act 1990	Introduced to stop hacking and cyber crime. The three offences include: gaining unauthorised access to a private network or device, gaining unauthorised access in order to commit a crime or modifying computer material without permission.	
3	Ethical issues	 F DIGITAL TECHNOLOGY WITH EXAMPLES What is consider right or wrong by society. Examples: Technology can impact our well-being (cyber-bullying). Face-to-face interactions neglected. Can also cause health problems like eye strain. 	10	Copyright Design and Patents Act 1988	Introduced to protect intellectual property - anything someone has created e.g a book, a song, a piece of software etc.	
4	Legal Issues	What is actually right or wrong in the eyes of the law. Examples: phishing/hacking etc is illegal. Companies cannot share personal data with anyone. See legislation section.	11	Software licences	Legally binding guidelines for the use and distribution of software. Software can be open source or proprietary. See information below.	
5	Cultural issues	How groups of people with certain beliefs/ practices or language could be affected by technology. Examples: Digital divide – people who have access to tech have an advantage – e.g they can apply for jobs online. Robots stealing jobs.	12	Open source software	Allows user access to the software's source code so they can edit/change it. Pros – users can edit and make it right for what they need. Usually free. Strong support forums. Cons – relies on other user support. Need to have	
6	Environment -al issues	Examples: Electronic devices made from precious metals. Technology uses a lot of energy. E-Waste			good knowledge of coding. De-bugging can be hard. May not have regular updates.	
		causes a massive problem in their world countries where poisonous gases leak and cause harm.		Proprietary software	Licensed software that cannot be changed.	
7	Privacy issues	How our privacy is affected by using technology. Examples: Social media requires personal information to sign up. Also encouraged to post even more information like pictures. Cookies track our moves online. Company data could be hacked.	13	Image: A transformed and tr	Pros – free customer support. Good security and bugs fixed quickly. Built by professionals. Cons – Expensive. Reliant on one company. May not fully meet needs of customer.	

BTEC - Component 2: Developing Skills and Techniques in the Performing Arts

Dance

Year 10

Health and safety Creating and reviewing the aspects of health and safety through creating: Risk Assessments Warm ups Vocal warms Ups Rehearsal games and techniques Technical rehearsals Dress rehearsals	Behaviours and attitudes when working with others, such as: cooperation being supportive listening to others punctuality consistency commitment reliability being prepared being respectful of others' opinions and skills	Interpreting existing performance material such as scripts and repertoire. • Repertoire: Your skill set- acting Dance • Exploration of character • Exploration of movement • Rehearsal techniques: Role on the wall, Hot Seating • Vocal exercises • Use of physical characteristics to portray the character	Responding to peer feedback, absorbing and applying feedback and corrections. Target setting Reviewing own performance Identifying strengths Identifying developments Improvement through rehearsals Application of improvements and developments
Exploring themes, ideas, styles or genres <u>Themes:</u> an idea that reoccurs throughout a performance <u>Style:</u> A particular way of performing that can be identified through performance techniques used in the performance i.e. Physical Theatre-Creative movement styles <u>Genre:</u> A category that a performance falls into that can reveal the type of show it is. le.	Performer reproducing existing performer reproducing existing per e being prepared, warming up e repetition and recall, learning blocking and stage direction interpreting and developing combining separate element libretto)	ng dialogue, songs or movement, learning is, learning choreography	 Responding to direction. Use of blocking Rehearsal time Exploration Listening and applying instruction Team skills Annotations of scripts Memorisation
Physical skills relevant to the performance discipline actions, accuracy, balance, body language, coordination, characterisation, communication, dynamic range, energy, expression, facial expression, flexibility, focus and control, gesture, mannerism, movement memory, pace, posture, projection, rhythm, relaxation, reaction/interaction with others,	Vocal skills relevant to the performance discipline accent, breath control, characterisation, clarity and articulation, emotional range, expression, inflection, pace, pitch, phrasing, projection and placing of the voice, remembering lines, rhythm, timing, tone and vocal colour, use of pause	Other performance and interpretative skills relevant to the performance discipline awareness and appreciation of sound accompaniment, for example following the accompaniment, awareness of the performance space and audience, emphasis, energy and commitment, facial expression, focus, handling and use of props, set, costume, makeup and masks, interaction with and response to other performers, musicality, projection, rhythm and timing, ineing, use of space.	 Developing skills such as physical, vocal, musical, design and interpretative. Responding to feedback, e.g. director, choreographer, instructors, peers. Identifying strengths and areas for development. Actions and targets for improvement. Reference to professional working practices.

Year 10, Component 1 Devising Theatre

Section 1 – What have I learnt?

How do I devise?

Use a range of dramatic devices:

- Mime
- Direct Address
- Narration
- Cross Cutting
- Flashbacks
- Slow motion
- Monologue
- Freeze frame/Still image
- Multi-roles
- Thought Tracking
- Choral speaking
- Symbolism

<u>Section 2 – Incorporating</u> <u>Practitioner (A)</u>

Brecht

Brecht was a theatre practitioner from Germany who created **epic theatre**. His techniques included:

- Direct Address
- Narration
- Multi-roles
- Ensemble
- Gestus
- Music and song
- Placards
- Episodic Structure
- Political message
- Unnamed characters
- Tickle and slap
- Speaking stage directions He used the alienation technique to demonstrate to the audience that the actors were playing a role and that they were watching a production, it was <u>NOT</u> <u>REAL LIFE</u>.

<u>Section 2 – Incorporating</u> <u>Practitioner (B)</u>

Stanislavski

Stanislavski was a theatre practitioner from Russia. He believed that the audiences role was to look into the action on the stage through the fourth wall (which separated the audience and the actor). He wanted the actor to use both internal and external techniques to help tell the story.

Internal Techniques:

- The magic 'if'
- Emotional memory
- Feeling of truth
- Relaxation of muscle External Techniques:

<u>External rechniques</u>.

- Making the body expressive
- Accentuation
- Restraint and control
- Intonation and Pauses
- Tempo-rhythm and movement

Section 3 – Incorporating a Genre						
Theatre in Education (TIE)	TIE starts with an educational topic or debate and develops a show around it. It first appeared as an art form in 1965 in Coventry. To fit this genre you must decide on the target audience, choose and research the topic, include audience participation, write the scene and evaluate the work.					
Musical Theatre	Musical Theatre is a genre in which a story is being told through the three performing arts disciplines of acting, singing and dancing. There are three types of songs which are integral to the plot (action, character and production). Main characteristics of the style include; dialogue, song, dance, humour, monologue, pathos, anger/hate, love, chorus and plot.					
Physical Theatre	Physical Theatre is a form of acting that tells a story through the use of movement, gesture and body language. There are many companies that practice this style of theatre including Frantic Assembly, DV8 and Kneehigh.					

Devising Theatre

<u>Practical</u> - You will create a piece of drama using the stimulus provided by EDUQAS. This will be performed and recorded.

Supporting Evidence - A piece of coursework which is written along with the devising process.

Evaluation - An evaluation written in exam conditions after the performance.

<u>Section 4 – How do I perform my</u> scene?

Techniques to help you to give a better performance:

- Motivation
- Know your character
- Movement and space
- Don't fidget
- Variety
- Concentration and involvement
- Emphasis
- Use of voice
- Interaction
- Learn your lines
- Stay in role

Vocal Skills

Tone, expression, tempo, pitch, pace, projection, volume, pause, accent, emphasis, articulation, inflection, phrasing, subtext, emotional range.

Section 5 – Supporting Evidence

To produce an effective portfolio of supporting evidence you must focus on three stages which are significant to the development of the devised piece. Each stage should be approximately 250-300 words and could include any of these different elements:

Photographs Visual images Sketches Mind maps Ground plans Written prose Sections of script Newspaper articles Lyrics Questionnaires PowerPoint slides Video clips

Section 6 – How do I evaluate my devised piece?

To write an effective evaluation it will be broken down into 3 parts:

- 1) Interpretation of character/role or realisation of design
- 2) Performance skills
- 3) Contribution

Refer to your original contribution to the effectiveness of the final performance. Remember to:

- Fulfil initial aims and objectives
- Give good examples
- Refer to the chosen stimulus, practitioner/genre
- Add as much detail as possible.

<u>Keywords</u>						
Minimalistic Drama with few props and little scenery or set.						
Naturalistic	Imitating real life scenarios.					
Non-naturalistic	The drama is presented in a way that does not require the audience to believe in the characters or what is happening.					
Soundscape	A background sound that runs under a scene, to help establish a reality for the world of the play, and to immerse the audience in that world. It can be use to heighten emotional moods and to emphasise important occurrences.					
Narration	A narrator is like a storyteller informing the audience about the plot. This means that it becomes non-naturalistic because the audience are aware throughout that a story is being told and the fourth wall is broken.					
Multi-role	When an actor takes on more than one role in a production.					
Symbolism	Use of symbolic pieces of scenery to represent more than their mere physical characteristics.					

			Comparative	Language Techniques		Poetry Key Terms				
Achieves	Advances	Affects	Symbolises	Connectives	Simile	A comparison using <i>like</i> or <i>as.</i>	Word classes		, adjectives	i,
Allows	Alludes to	Builds	Transforms	<u>Compare</u> • Similarly	Metaphor	A comparison using <i>is, was</i> or were.		adverbs, verbs, pronouns		
Concludes	Confirms	Conveys	Typifies		Imagery	When the writer creates a mental	Language	Word	choices ma	de
Denotes	Develops	Demonstrates	Reinforces	• Like		picture or image.		by the		-
Displays	Justifies	Exaggerates	Offers	• Likewise	Symbolism	The use of "symbols" to signify or connote particular (usually well-	Structure	appear	he poem rs - the ord	er
Encourages	Enhances	Establishes	Presents	Contrast		established) ideas.		and flo	w	
Exemplifies	Emphasises	Explores	Portrays	• On the other	Motif	A recurring image in a poem.	Form	· ·	Physical layout of	
Exposes	Forces	Generates	Questions	hand	Personification	Giving human attributes to something non-human.	the poem, v of poem it i			Ina
Highlights	Hints	Identifies	Provokes	Differently Alternatively	Zoomorphism	Giving animal attributes to something	Tone		text sound	· /
Ignites	Illustrates	Impacts	Signifies	 Alternatively Contrary to 	which is not an animal.		_	e.g. humorous or serious		
Implies	Identifies	Indicates	Juxtaposes	• On the contrary	Oxymoron	Two words which directly contrast, placed together.	Mood		eaders feel	
	Structural Techniques		Alliteration	Repeating the same letter.	respond to text e.g. playful, lon					
Rhythm	The beat of th	e poem			Connotations	Associated words or meanings.	warm			
Volta	The point in th	The point in the poem where the mood changes			Pathos	Creating a strong emotional effect.	Theme	Under messa	lying ges, or "big	Į.
Caesura	A deliberate b	A deliberate break or pause in a metric line			Semantic field	A group of words related by meaning.	A group of words related by meaning.		ideas"	
Enjambment	Sentences run	Sentences running on over more than one line					Number of line		Couplet	2
Stanza	A group of line	A group of lines in a poem			Emotive Language	Language which appeals to the emotions.	in or within a poem		hyming	
Rhyme	Words that ha	Words that have the same rhyming sound			Hyperbole	The use of exaggeration for dramatic		C	Couplet	
Rhyme Scheme	Patterns of rh	Patterns of rhyming words				effect	Torreat			
Meter	The pattern of	f stressed and unstr	essed syllables		Imperatives	Command words which direct the	Tercet	3 9	Sestet	6
Free Verse	Lines of poetr	Lines of poetry that do not follow any regular metrical structure			- Syntax	reader. The order of words within a line.	Quatrain	4 9	Septet	7
Blank Verse	Lines of poetr	y that are unrhymed	d but follow a regu	lar meter	Sibilance	Repetition of the S sound.	Quintet	5 0	Octave	8
Repetition	Repeated wor	ds or phrases				· ·				-
Anaphora	The repetition	IThe repetition of words or phrases at the beginning of a line or contance			Euphony/ Cacophony	Pleasant sounds/ Harsh and discordant sounds	Sonnet	A 14	l-line poem	1

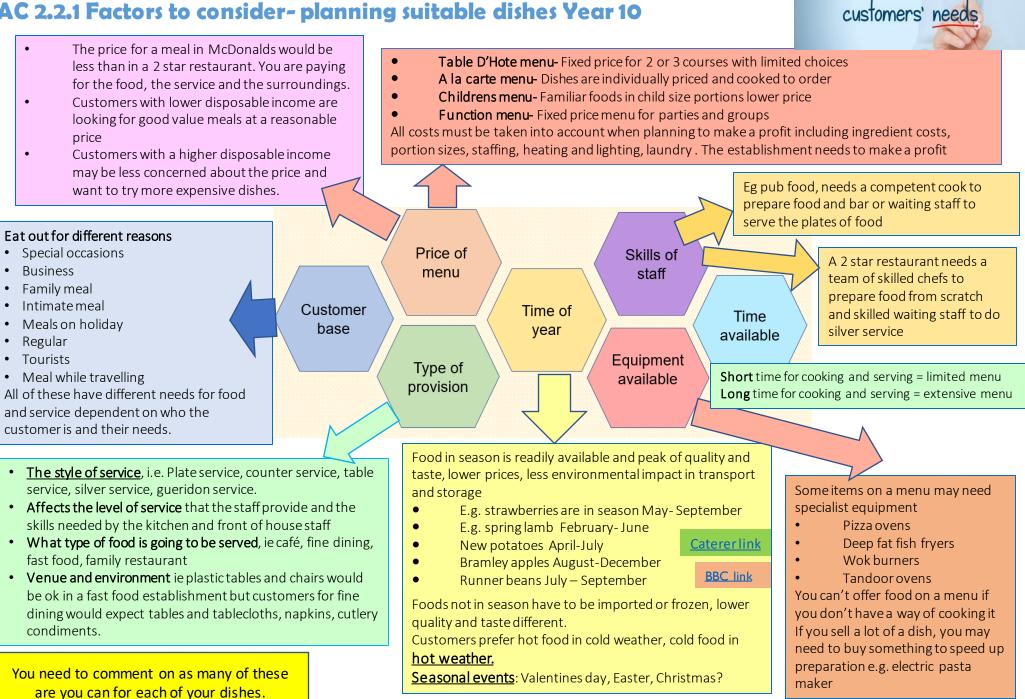
<u>Tier 2 Vocabulary Bank- Add as you go</u>

Poem	Tier 2 Vocabulary
Storm on the Island	
London	
My Last Duchess	
The Charge of the Light Brigade	
Exposure	
Strom on the Island	
Bayonet Charge	
Remains	
Poppies	
War Photographer	
Tissue	
The Emigree	
Checking Out Me History	
Kamikaze	

Questic	This Q	This Quotation/ Reference Q			Question 4: Viewpoints and perspectives			
	Word Classes	Achieves	Advances	Affects		Key	Words	
Noun	Identifies a person (girl), thing (wall), idea	Allows	Alludes to	Builds	Viewpoint	The views a	nd ideas held b	y the writer.
	(luckiness) or state (anger).	Concludes	Confirms	Conveys				
Verb	Describes an action (jump), event (happen),	Denotes	Develops	Demonstrates	Perspective	The particu	lar attitude tow	vards
	situation (be) or change (evolve).	Displays	Justifies	Exaggerates		something	can shaped by	time/place)
Adjective	Describes a noun (happy girl, grey wall).	Encourages	Enhances	Establishes	Attitude		e writer adopts	
Adverb	Gives information about a verb (jump quickly),	Exemplifies	Emphasises	Explores		emphasise	or covey their id	deas.
	adjective (very pretty) or adverb (very quickly).	Exposes	Forces	Generates	Methods		which the writ	
	Sentence Structures	Highlights	Hints	Identifies		communica	tes their views	and ideas.
Fragment	An incomplete sentence (no subject verb	Ignites	Illustrates	Impacts		The v	vriter	
	agreement). "Nothing." "Silence everywhere."	Implies	Identifies	Indicates	thinks	encourages	says	asks
Simple	A sentence with one independent clause.	Initiates	Introduces	Involves	feels	reacts	implores	reveals
	"She went to the shop."	Justifies	Juxtaposes	Kindles	believes	wants	would like	presents
Compound	A sentence with multiple independent clauses.	Launches	Leads to	Maintains				
	"She went to the shop and bought a banana"	Manifests	Notifies	Offers		Explaining	the Source.	
Complex	A sentence with one independent clause and at	Portrays	Presents	Produces	Focusing	Our attention is aimed somewh		somewhere
	least one dependent clause. "Sometimes, when	Progresses	Promotes	Prompts	Introducing	An idea or character is first show		first shown.
	she goes to the shop, she likes to buy a banana."	Provokes	Questions	Represents	Building	When an idea/tension is incr		is increased.
	Language Techniques	Reveals	Reinforces	Signifies	Developing	An earli	An earlier point is extended.	
Lexis	The vocabulary of a language.	Sparks	Suggests	Supports	Changing	A shift i	s created for an	n event/idea.
Hyperbole	The use of extreme exaggeration.	Symbolises	Transforms	Triggers	Concluding	Ideas/ e	events are draw	n to a close.
Imagery	When the writer provides mental "pictures".	Typifies	Upholds	Underscores	Discours	se markers to	compare and	contrast
Irony	Like sarcasm, where the opposite is implied.	Validates	Verifies	Yields	Compare		Contrast	
Juxtaposition	Two ideas together which contrast each other.		Stock Phrase	s	Similarly,		On the other h	nand
List (of three)	A number of connected items (three= effect).	Cr	eates a picture		In the same v	vav	Whereas	,
Metaphor	Something is presented as something else.		aints an image		Equally,	- //	In contrast to	this,
Oxymoron	Contradictory terms together "bittersweet".		forces the view		Compared wi	th	Unlike	
Pathos	Language used to appeal to the emotions.		s the writer's p		As with	-	Alternatively,	
Personification	Giving human traits to something non-human.		nplifies the ide				/	
Repetition	When a word, phrase or idea is repeated.					QI		
Semantic Field	A set of words from a text related in meaning.	Sophisticated Discourse Markers Whilst		Statement		Answers the g	westion	
Simile	Something is presented as like something else.	Although Despite Since		Statement		A clear point r		
Symbolism	An idea is reflected by an object/character etc.	-	d Effect Discou				Precise and er	
Syntax	The way words and phrases are arranged.	therefore	thus	As a result			Might group q	
			consequentl		Inference		What is sugge	
			Jonsequenti	1				

Year 10 English Language Paper 2

AC 2.2.1 Factors to consider-planning suitable dishes Year 10



AC 2.2.1 The environment Year 10

Hospitality and catering organisations need to be aware of environmental issues when running their businesses. **Dishes**

- Preparation and cooking methods
- Ingredients used
- Packaging

Environmental issues

- Conserving energy and water when preparing food
- 3 Rs Reduce, Reuse, Recycle
- Food sustainability and provenance

Using ingredients

- □ Have the ingredients travelled from far away by environmentally damaging transport?
- Have the ingredients been processed and purified using a lot
- of energy carbon footprint
- Ingredients locally produced saving food miles and environmental damage
- Organic ingredients not using excess fertilizer, pesticide or artificial hormones for animals
- Animal welfare e.g. free range or barn eggs, free range meats, organic meats
- Fruits and vegetables and meat produced locally or sustainably
- Ingredients such as cocoa, coffee, syrup produced by fair trade farmers.

Food miles/ Carbon footprint

The distance the food or ingredients travel from production/growing to where it is consumed or sold. Transporting food long distances is harmful to the environment CO2. Some foods can't be grown in this country due to climate. Click on the foot to watch a video. Click here to find out your carbon foot print for food items.



Packaging

- When buying the ingredients, Look for ingredients that have minimum packaging
- Look for ingredients that have packaging that can be recycled
- $\hfill\square$ Use reusable carrier bags to transport the ingredients after
- buying
- We can recycle the plastic food packaging materials if the label says so
- We can also recycle glass from bottles and jars, paper and cardboard from packaging (recycled paper cannot be used for food products)
- Plastic and polystyrene does not biodegrade so recycling is the best way to dispose of it
- Metal aluminium and steel and foil from cans and foil used in food preparation can be recycled
- Use the recycling bins for packaging.





Preparation and cooking methods

- $\hfill\square$ First in first out with ingredients in the fridge
- lacksquare Do not trim and peel too much off the food- wastes food
- □ Conserve energy, put more than one thing in the oven, put lids on saucepans, do not put hot food in the fridge, turn off equipment when not using
- Conserve water, use minimum water when boiling (conserves nutrients
- too) use a bowl or plug when washing up , turn off taps
- Save peelings, bones, carcass to make stock, soup or sauce
- Use leftover bread to make breadcrumbs
- □ Use leftover fruit to make sauce, coulis.



AC 2.2.1 The environment Year 10

Conserving Energy by:

- Keep equipment clean and maintained so it uses less energy including
- filters on ventilation and refrigeration
- Descale equipment used for boiling
- Keep lids on saucepans
- Energy efficient lighting, auto switch off
- D Turn off equipment and lights when not in use
- Don't put hot food in fridges, uses more energy to cool down
- □ Energy efficient boilers etc for hot water, don't have water too hot (above 55 for legionella)
- Replace old equipment with more energy efficient models
- Gas heats up and cools down more rapidly but needs ventilation

Conserving Water by:

- Taps that disperse only short bursts of water
- Motion sensor taps
- Only use minimum water to cook food
- Use a steamer instead of boiling in water
- Reduce flow of taps, use a spray head for washing
- □ Have taps which turn themselves off
- Use a bowl, keep the plug in when washing up
- □ Full loads for washing machines and dishwashers
- □ Serve water on tables at customer's request
- Reduce flow rate to equipment such as potato peelers
- Low flow toilets and showers
- U Water metering



Sustainability and Food Provence

Fair Trade foods

are bought directly from the farmer, cutting out the middle men. Farmers receive a fair and stable price for their products.



The RSPCA Assured label makes it easy to recognise products from animals that have had a better life. RSPCA inspect indoor as well as outdoor farms, including free range and organic. They require good water quality and careful handling which ensure the health and welfare of farmed fish.

ENERGY

SAVING



Soil association

Less use of artificial

Crops are grown in

soil. No Genetically

modified ingredients.

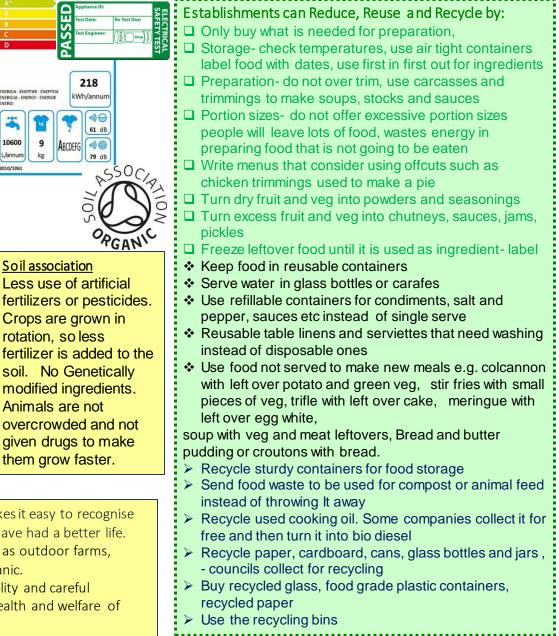
overcrowded and not

given drugs to make

them grow faster.

rotation, so less

Animals are not



REUSE

AC 2.2.1 How menu meets customer needs - Nutritional Year 10

Cooking methods

Some cooking methods add fat, adding too much fat to food increase the calories (energy content) drastically and is also thought to be a risk factor in cardiovascular disease. Cooks should be minimise their use where possible. These include:

- Frying deep (submerging food in hot fat)
- Frying shallow (frying food in 1cm or less of fat in a pan)
- Roasting (cooking in fat in the oven)





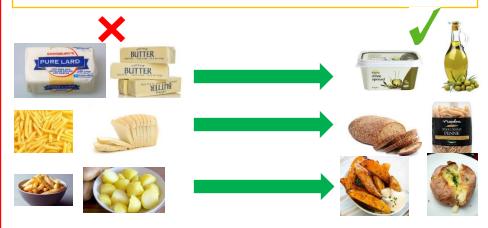
Healthier cooking methods only add small amounts of fat, or do not add fat to food at all. They can be dry (cooking without the use of water) or moist (cooking with water or steam). Healthier cooking methods include:

- Stir frying (cooking quickly in a small amount of oil at v high temps)
- Poaching (cooked gently in simmering liquid)
- Boiling (cooking food submerged in vigorously boiling 'rolling boil' water
- Steaming (holding food above boiling water to be cooked by the steam)
- Grilling on a cooker or on a BBQ (food cooked by radiant heat from a flame or glowing element)
- Baking in the oven (dry heat)
- Stewing (slow-cooking on hob or in slow-cooker with liquid)
- Casseroling (slow-cooking in oven with liquid)
- Braising (slow-cooking pre-sealed meat and vegetables in oven with liquid)



Preparation methods

- Do not add too much extra fat when preparing/marinating or cooking
- Trim fat off excess fat from meat where possible (leaving some is fine for flavour)
- Do not add too much extra salt when seasoning/marinating foods before cooking
- > Do not add too much sugar when marinating foods



CHANGE THE INGREDIENTS USED:

- ✓ Avoid saturated fats such as butter, lard and dripping Use heart healthy unsaturated fats such as olive oil, avocado oil
- ✓ Avoid using white flour where possible use wholegrain or brown versions for extra fibre and B vitamins
- $\checkmark\,$ Leave the skin on potatoes for extra fibre and vitamin C
- $\checkmark\,$ Replace cream in recipes with reduced fat crème fraiche
- $\checkmark\,$ Replace mild cheeses with stronger ones, and use less
- ✓ REDUCE sugar content of recipes by using naturally sweet ingredients such as fruits
- ✓ Add extra VEGETABLES, FRUITS, NUTS and SEEDS into recipes where possible, for extra fibre, vitamins and minerals - these can be blended into sauces to 'hide' them for fussy eaters

AC 2.2.1 How menu meets customer needs - ORGANOLEPTIC

Changes to make dishes healthier can affect OTHER aspects of the finished dishes in several ways....

Organoleptic means the qualities of food that people experience with their senses. There are 5 senses: sight, smell, taste and sound. To enable people to enjoy their food, it is important that the menu planning, preparation, cooking serving food is carried out well so that food is **appetising**.

SIGHT: Appearance and presentation of the meal

- Adding vegetables to a dish to increase fibre, vitamins and minerals may also affect the colour of the dish.
- Adding greens such as green peppers or green beans will create a fresher, more vibrant look.
- Adding tomatoes/red peppers to a dish will make it look brighter. Remember – contrast in colours within a dish is good, makes dishes look more appealing and delicious!
- Changing carbs to wholegrain or skin-on versions may also change the colour of the dish, however this time may increase the presence of brown in the dish, which is considered a 'dead' or dull colour, and will need brightening up in other ways...
- Type of serving dishes.
- Garnishing
- Think cut, shape and form of food.
- Make sure plates and dishes are clean
- before serving food, to remove drips and splashes.





TOUCH: Texture (how food feels in the mouth)

- Use fresh food- stale food lose texture e.g. fruit, vegetables and fish.
- Prepare food well to remove edible parts e.g. shell, bones, stalk, tough skin.
- Cook food well to avoid unexpected textures e.g. lumps in a sauce, under cooked egg white, under cooked cake.
- **Cook food at correct temperature** and for correct time to allow textures to develop e.g. when melting chocolate, baking cake or bread, frying chicken.
- Reducing fat content in recipe may alter the texture, making it drier or more brittle.
- Adding vegetables or fruits to dishes can bring crunchiness, softness, chewiness.
- Changing the cooking method will also alter the texture frying or roasting food in fat creates crispy crunchy textures, whereas replacing frying/roasting with the healthier methods of steaming, boiling, stewing etc will create soft textures. Grilling and barbecuing will also create chewy/crispy textures.

AC 2.2.1 How menu meets customer needs - ORGANOLEPTIC Year 10

TASTE

- There are 5 basic flavours: salty, sweet, bitter, sour and umami (savoury)
- Use fresh food- stale food loses its flavour.
- Cook food carefully to avoid damaging flavours.
- Reducing fat content in recipe may alter the taste it can reduce creaminess aka 'mouth feel'.
- · Reducing the fat content of baked goods can also alter the taste making them taste less rich.
- Adding vegetables to dishes can alter the taste in many ways depending on what fruit/vegetables is added - e.g. red peppers will bring sweetness, adding kale will bring an earthy taste, adding broccoli will add a fresh taste etc...
- Changing carbs to wholegrain or skin-on versions will affect the taste, making the dish have a more 'nutty' flavour
- Adapting the cooking method may also change the taste of a dish:
- Steaming or poaching will preserve the flavours of the original food whereas barbecuing or grilling food will also impart charred flavours.
- Sautéing vegetables in butter or oil bring out the flavour.
- Making stock from meat, poultry or fish bones plus vegetables, herbs and spices.
- Roasting root vegetables intensifies their flavour by evaporating water and caramelising the natural sugars they contain.
- Using natural flavours e.g. citrus fruit zest, fresh herbs and spices.
- Avoid using too much flavouring
- Take care with delicate foods like fresh-less is more.

Top tip: always taste test before serving- REMEMER FOOD HYGIENE!







Five Basic tastes

SOUND

- The sound of food can make it more appealing.
- Certain foods you expect to sound in a particular way e.g. crisp to crunch, biscuits to snap and food being fried to make a sizzling sound.
- To preserve these sounds food needs to be cooked and stored correctly to maintain its texture.



SMELL - Aroma

- Use fresh ingredients- stale ones lose ability to produce aromas.
- Using natural foods that produce a strong aroma e.g. fresh/ dried herbs and spices, garlic orange and lemon zest and cooking methods that develop aromas e.g. grilling, roasting, baking and frying.
- Plan and select combination of foods to produce a mixture of aromas, but avoid using too many, as the overall effect will be spoiled.



Sour

AC 2.2.1 How menu meets customer needs - Cost Year 10

For this part you need to explain how you will keep the costs of the dishes reasonably low . Your reasons could be....

- Buy food in season so it is not imported and expensive
- Buy food locally so that you don't have to travel too far to buy it and reduces carbon footprint e.g. support local business.
- Minimise the waste produced in both food and resources.
- **Control the portion** size so that you do not waste food that people are not going to eat and everyone gets the same size portion.
- Not buying ready prepared ingredients because it is cheaper to prepare them from scratch.
- Buying cheaper cuts of meat, this can effect the quality and fat content.
- Buy **non branded** food- supermarket own brands are cheaper.
- • Freeze left over foods or use in other dishes.
- Store the ingredients at the **correct temperature** so they don't go off.
- Buying organic, free range, fair trade foods will cost more but is better
- for the environment and improved taste e.g. free range eggs, chicken, chocolate, bananas.

Portion control

Portion control is extremely important. Customers need to feel they are getting 'value for money' and having the same size portion as everyone else.

It helps the caterer when planning (how many portions will these ingredients make?) calculating selling price (how much should I charge to cover costs and make a profit?) and avoids waste.

Using standard recipes can help a caterer by determining how many ingredients will make 10, 20, 30 or more portions.

ASDA Butcher's Selection Beef Mince (Typically Less Than 20% Fat) 1kg Price £4.00

£6.19















The **quality of the**

product can affect it's price and therefore can affect which people choose to purchase it. To the left are three minced beef packets from ASDA. The cheapest is a 20% fat mince, the next a 5% fat mince and the most expensive is made from an Aberdeen angus cow – one of the most luxurious beef products.



acheter	to buy	mettre	to put	
un avantage	an advantage	mettre en ligne	to upload	
chercher	to look for, to search	mot de passe	password	
clavier (m)	keyboard	numérique	digital	
cliquer	to click	ordinateur (m)	computer	
un compte	an account	ordinateur portable (m)	laptop	
une console de jeux	a games console	tablette (f)	tablet	
dangereux	dangerous	passer du temps	to spend time	
un désavantage	a disadvantage	portable (m)	mobile (phone)	
écran (m)	écran (m) screen		to receive	
écran tactile (m)	écran tactile (m) touchscreen		social media	
en ligne	online	rester en contact	to stay in contact	
envoyer	to send	site web	website	
enregistrer	to record	souris (f)	mouse	
effacer	to delete	surfer sur Internet	to surf the internet	
faire des achats	to buy things, to shop	taper	to type	
forum	a discussion forum	tchater	to talk online	
imprimante (f)	printer	télécharger	to download	
un inconvénient	a disadvantage	un texto	a text	
jeu (m)	game	touche (f)	key	
logiciel	software	utiliser	to use	

J'utilise [l use]	mon portable	Year 10 French Sentence Builder Technology – devices and	d uses	communiquer	
Elle utilise [She uses] Il utilise [He uses] On utilise [We use] Nous utilisons [We use]	[my phone] mon ordinateur [my computer] mon ordinateur portable [my laptop] l'Internet [the internet]	au moins cinq heures [at least five hours] souvent [often] tout le temps [all the time]	pour [in order to]	[to communicate] discuter [to discuss] écrire des choses [to write things] partager des photos / vidéos [to share photos / videos] regarder des videos [to watch videos]	
J'utilisais [I used to use] Elle utilisait [She used to use] Il utilisait [He used to use] On utilisait [We used to use] Nous utilisions [We used to use]	ma tablette [my tablet / iPad] les applis [apps] ma montre connectée [my smart watch]	toujours [always] tous les jours [every day] chaque heure [every hour]	afin de [in order to]	tchatter avec mes ami(e)s [to chat with my friends] travailler [to work] faire mes devoirs [to do my homework] faire des amis [to make friends acheter des choses / des trucs [to buy things / stuff]	

S	Year 10 French entence Builder gers of technolo beaucoup de	gy		devenir victime de la cyber intimidation	qui me rend	triste [sad]
	dangers [lots of dangers] un nombre de			[become a victim of cyberbullying] devenir victime du vol d'identité [become a victim of identity theft]	[which makes me]	malheureux [unhappy]
il y a	dangers [a number of	par exemp on peu		devenir accro [become addicted]		
nere is / ere are]	dangers]	[for example, you can]	-	être dépendant [be dependant] rencontrer des inconnus [meet strangers] être victime de l'escrocage [be a victim of catfishing]		peur [afraid, scared]
	plein de risques [lots of risks]				qui me fait [which makes me]	pleurer
	des risques					[cry]
	[some risks]				qui m'énerve [which annoys me]	
					qui m'inquiète [which worries me]	

What is Urbanisation?

This is an increase in the amount of people living in urban areas such as towns or cities. In 2007, the UN announced that for the first time, more than 50 % of the world's population live in urban areas

Where

Urbanisa

all over

LICs and

much fast

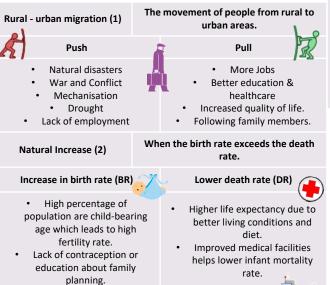
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they ar

h

e is Urbanisation appening?	100 80 80	
ation is happening the word but in d NEEs rates are ster than HICs. This ly because of the economic growth re experiencing.		Wind Wind Wind Wood Wood

Causes of Urbanisation



Types of Cities

Megacity An urban area with over 10 million people living there.



More than two thirds of current megacities are located in either NEEs (Brazil) and LICs (Nigeria). The amount of megacities are predicted to increase from 28 to 41 by 2030.

Sustainable Urban Living

Sustainable urban living means being able to live in cities in ways that do not pollute the environment and using resources in ways that ensure future generations also can use then.

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Energy Conservation

Promoting renewable energy

Making homes more energy

Encouraging people to use

Waste Recycling

Collection of household waste.

More local recycling facilities.

Sustainable Strategies

The city's waste water allows

for rainwater to be retained.

The use of sustainable energy

such as solar and wind is

many open spaces for

reducing flood risk.

recreation, clean air and

becoming more important.

40% of the city is forested with

Greater awareness of the

benefits in recycling.

More recycling means fewer

reduces the amount that

eventually goes to landfill.

resources are used. Less waste

Using less fossil fuels can reduce

the rate of climate change.

sources.

efficient.

energy.

Water Conservation This is about reducing the amount of water used. •

- Collecting rainwater for gardens and flushing toilets.
- Installing water meters and toilets that flush less water. Educating people on using less
- water.

Creating Green Space

Creating green spaces in urban areas can improve places for people who want to live there.

- Provide natural cooler areas for people to relax in.
- Encourages people to exercise. Reduces the risk of flooding
- from surface runoff.

Y10 Geography

Urban Issues & Challenges

Sustainable Urban Living Example: Freiburg

Background & Location Freiburg is in west Germany. The city has a population of about 220,000. In 1970 it set the goal of focusing on social, economic and environmental sustainability.



Integrated Transport System

This is the linking of different forms of public and private transport within a city and the surrounding area.

Brownfield Site

Brownfield sites is an area of land or premises that has been previously used, but has subsequently become vacant, derelict or contaminated.

Traffic Management

Urban areas are busy places with many people travelling by different modes of transport. This has caused urban areas to experience different traffic congestion that can lead to various problems.

Environmental problems

Traffic increases air pollution which releases greenhouse gases that is leading to climate change.

Economic problems

Congestion can make people late for work and business deliveries take longer. This can cause companies to loose money.



Social Problems

 There is a greater risk of accidents and congestion is a cause of frustration. Traffic can also lead to health issues for pedestrians.

Congestion Solutions

- Widen roads to allow more traffic to flow easily.
- Build ring roads and bypasses to keep through traffic out of city centres.
- Introduce park and ride schemes to reduce car use.
- Encourage car-sharing schemes in work places.
- Have public transport, cycle lanes & cycle hire schemes. Having congestion charges
- discourages drivers from entering the busy city centres.

Traffic Management Example: Bristol

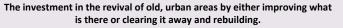
In 2012 Bristol was the most congested city in the UK. Now the city aims to develop it's integrated transport system to encourage more people to use the public transport. The city has also invested in cycle routes and hiring schemes.



Greenbelt Area

This is a zone of land surrounding a city where new building is strictly controlled to try to prevent cities growing too much and too fast.

Urban Regeneration







Urban Change in a Major UK City: Bristol Case Study

Location and Background

Bristol is the largest city in the south west of England. It has a population of 440500. The population is expected to reach half a million by 2029.



Migration to Bristol

Between 1851 and 1891 Bristol's population doubled as people arrived looking for work. In recent years migration from abroad has accounted for about half of Bristol's population growth. This has included large numbers from EU countries, in particular Poland and Spain. Compared to elsewhere in the UK, a higher proportion of migrants coming to Bristol intend to stay permanently.

City Challenges

Social: Inequalities: Filwood has more than a third of its population living in very low income households. Stoke Bishop on the other hand is home to many millionaires.

Economic: Changes in the economy and industry have led to challenges areas have become run down and high concentration of redundant buildings

Environmental: The amount of waste produced in Bristol is 23% lower than the UK average, however, the city still produces over half a million tonnes a year.



 It holds a strategic position on the M4 corridor with easy access to London and rail and ferry services across Europe.

City's Importance

- Bristol airport links the city to major European centres and the USA.
- There has been a change in from the dependence of traditional industry like tobacco and paper, to the development of global industries such as finance and business, service, aerospace and defence
- There has been a high level of inward investment, including FDI (Foreign Direct Investment).
- Bristol University attracts students from all over the world.

City's Opportunities

Social: Bristol's youthful population means there is a vibrant underground music scene. Bristol has two professional football teams and a rugby union team.

Economic: High-Tech industries have developed. There are 50 micro-electronic and silicon design businesses in Bristol.

Environmental: In 2015 Bristol became the first UK city to be awarded the status of European Green Capital.

Temple Quarter Regeneration

Aims: The target is to create 4000 new jobs by 2020 and 17000 by 2037. There will be 240000m2 of new or refurbished buildings.

Main features: Bristol Arena that can house up to 12,000 spectators and Brunel's Engine Shed. A new 1.7million innovation centre, home to high-teach creative and low-carbon sector companies. This will add to Bristol's importance as a major UK high-tech centre. an Change in a Major NEE City: RIO DE JANEIRO Case Study

Location and Background

Rio is a coastal city situated in the South East region of Brazil within the continent of South America. It is the second most populated city in the country (6.5 million) after Sao Paulo.

Migration to Rio De Janeiro

The city began when Portuguese settlers with slaves arrived in 1502. Since then, Rio has become home to various ethnic groups.

However, more recently, millions of people have migrated from rural areas that have suffered from drought, lack of services and unemployment to Rio. People do this to search for a better quality of life.

This expanding population has resulted in the rapid urbanisation of Rio de Janeiro.

City Challenges

Social: There is a severe shortage of housing, schools and healthcare centres available. Large scale social inequality, is creating tensions between the rich and poor.

Economic: The rise of informal jobs with low pay and no tax contributions. There is high employment in shanty towns called Favelas

Environmental: Shanty towns called Favelas are established around the city, typically on unfavourable land, such as hills.

City's Importance

- Has the second largest GDP in Brazil It is headquarters to many of Brazil's main companies, particularly with Oil and Gas.
- Sugar Loaf mountain is one of the seven wonders of the world.
- One of the most visited places in the Southern Hemisphere.
- Hosted the 2014 World Cup and 2016 Summer Olympics.

City's Opportunities

Social: Standards of living are gradually improving. The Rio Carnival is an important cultural event for traditional dancing and music.

Economic: Rio has one of the highest incomes per person in the country. The city has various types of employment including oil, retail and manufacturing.

Environmental: The hosting of the major sporting events encouraged more investment in sewage works and public transport systems.

Self-help schemes - Rocinha, Bairro Project

- The authorities have provided basic materials to improve peoples homes with safe electricity and sewage pipes.
- Government has demolished houses and created new estates.
- Community policing has been established, along with a tougher stance on gangs with military backed police.
- Greater investment in new road and rail network to reduce pollution and increase connections between rich and poor areas.



Fieldwork and Enquiry

Fieldwork Investigation

The fieldwork investigation includes 7 steps:

•Planning- preparing a question or hypothesis. Researching the topic.

•Methodology- planning and justifying your

methods.

•Completing the fieldwork- data collection. •Data presentation- showing your data in graphs, maps, diagrams etc.

•Data analysis- discussing and manipulating your data to link it to the question/ hypothesis and topic.

•Conclusion- summarising findings. •Evaluation- evaluating the reliability of methods, data presentation and data analysis. Reflecting on accuracy of conclusions.

Planning Fieldwork

You will need to complete fieldwork in a human environment (Newcastle Quayside) and a physical environment (Seaham Coast). One investigation needs to link physical and human processes- Flood risk on the River Tyne, how will this affect the area.

When choosing fieldwork location you need to account for:

Accessibility of the location- how will you get there, are you allowed to go there (land ownership), is it easy to access (e.g. steep slopes, floods etc.) and how long will it take?
Safety- is this a safe location to visit.
Suitability- is this location appropriate to investigate the task question or hypothesis?

Identifying questions:

•A hypothesis is a statement that can be tested

•The **questions** should be focused on the place or processes in places.

•You should be able to explain **why** you are studying this statement or hypothesis and the **results you expect**.

•You should be able to justify why this is an important issue.

Data Collection

Sheets- These need to be designed as tables or tick sheets to quickly collect the data and ensure it is well presented and clearly labelled.

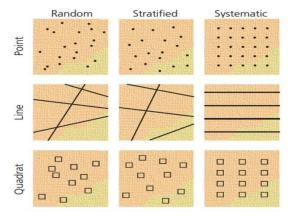
Sampling size- needs to avoid bias so needs to be large enough to be **representative** but small enough so you are able to complete the data collection.

Sampling methods

Random Sampling-where any of the features/ people could be chosen, and a random number counter selects. E.g. it selects 1, 5, 7 and the 1st 5th and 7th people to walk past would be asked.

Stratified Sampling-equal results in each category e.g. the amount of sand: pebbles at Seaham Beach.

Systematic sampling- Having a clear system to collect the sample, e.g. asking every 5th, 10th person etc.



Fieldwork and Enquiry

<u>Data</u>

Quantitive Data- numerical data. **Qualitative data-** descriptive information.

Primary Data- the data you collect yourself.

Secondary Data- collected by other people.

Accuracy- how reliable the data is. **Sample size-** how many pieces of data were collected.

Skills

Mean, percentages and fractions.

Type of data presentation	Examples
Maps	A map of the study area
Graphs (simple)	Bar chartLine graphPie chart
Graphs (sophisticated)	 Choropleth map Flow line map Scatter graph Transect Proportional symbols
Visuals	Field sketchPhoto

<u>Risk assessment</u>

Hazard- the risk e.g. vegetation over path.

Impact- what could happen from this risk., such as getting scratched. Risk rating- score of how bad this risk could be, out of 10.

Control- the measures taken to avoid the risk.

Digital Data- this can include photographs, GIS, data on a computer etc.

GIS- geographical information systems, e.g. google maps.

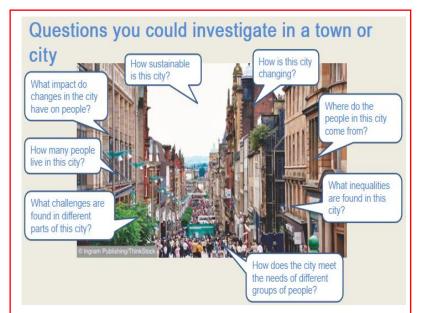
Satellite Imagery- photos from satellites (above).

Conclusions

Summarising what has been found out linking to the task/ hypothesis.

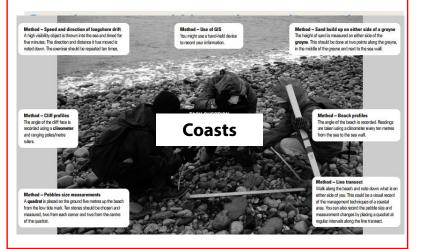
Evaluation

Discussing how effective (a bit/ not at all/ very) effective the planning, methodology, data presentation and conclusion were and why. Discussing how much this impacts the conclusion, and whether your conclusion is reliable.



Investigation questions

You need to be able to form basic questions for fieldwork at any location. These can be simple or complicated.



COMPONENT 2: HEALTH AND SOCIAL CARE SERVICES AND VALUES KNOWLEDGE ORGANISER

TOPIC CONTENT:

- You will learn a range of health and social care services, any barriers individuals face accessing them and how they can be overcome.
- You will learn about the skills, attributes and values required to give care.

<u>LAA – Understand the different types of health and social care services and</u> <u>barriers to accessing them.</u>

Health Conditions –

Type 2 Diabetes

- The Sugar levels (glucose) in the blood become too high (7 mmol/l +)
- Symptoms include headaches, thirst, urinating a lot, blurred vision/tiredness

Arthritis

- Affects the joints.
- Symptoms include stiffness in joints, swelling around the joint, pain/tenderness, warmth around the joint.

Coronary Heart disease

- When fatty substances build up in the coronary arteries making them narrower and restricting blood flow to the heart.
- Symptoms include chest pain, feeling dizzy, nausea (sick) and shortness of breath

Dementia

- Reduced brain function resulting in memory loss.
- Symptoms include understanding and processing difficulties, difficulties in speech, loss of independence etc. these progressively get worse.
- 1 in 14 people over 65 have dementia

Cerebral Vascular Accident

• Interrupted flow of blood to the brain caused by either a stroke or brain injury.

Obesity

• Someone with a high level of body fat.

Asthma

- A chronic life threatening condition which affects the lungs.
- Symptoms include breathlessness, wheezing and coughing.

Chronic Obstructive Pulmonary Disease

- An inflammation of the lungs which obstructs (reduces) airflow.
- Symptoms include breathlessness, chesty cough, wheezing, frequent chest infections and tiredness.

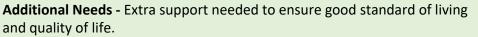
Types of Care.

Respite – Short term care which provides relief to families who provide full time care. This can be at home or in a residential care home. **Residential** – Living in a setting instead of your home. Accommodation, Laundry and meals are all provided. Staff are specifically trained to support individuals 24 hours a day.

Domiciliary – Care workers visiting the home of an individual to support them with daily living e.g. Personal Care.

LEARNING OBJECTIVES

- A Understand the different types of health and social care services and barriers to accessing them.
- B Understanding the skills, attributes and values required to give care.



Sensory Impairment –

• Vision/Hearing difficulties which significantly impact communication and well-being.

Learning Disability

- Less able to understand complex information and learn new skills. Physical Disability
 - "A limitation on a persons' functioning, mobility, dexterity or stamina that has a substantial and long-term negative effect on an individual's ability to do normal daily activities" – *Equality Act 2010*

Primary Care – First point of contact with the NHS. e.g. GPs, Walk-in Centres, Dentist etc.

- Secondary Care When you need more can than a primary service can provide. E.g. Cardiology, Endocrinology – they usually support diagnosis and treatment.
- **Tertiary Care** Advanced specialists who are highly skilled and experiences. E.g. complex surgeries i.e. Brain, etc.

Allied Health Professionals- They support people who are experiencing both mental and physical health problems. They must be registered with the Health and Care Professions Council (HCPC) e.g. Paramedics, dieticians, Art Therapists, Speech and Language Therapists etc.

Services for children and young people.

- Foster Care provides a safe environment for children who for whatever reasons can't be at home with their family. Can be short-term or long-term.
- **Residential Care** best for people with complex needs provides high quality care.
- Youth Work Supports young people between 11-25. Helps with personal and social development.





Key terms – Formal Support Informal Support Type 2 Diabetes Arthritis **Coronary Heart Disease** Dementia Cerebral vascular accident Obesity Asthma **Chronic Obstructive Pulmonary** Disease **Primary Care** Secondary Care **Tertiary Care Allied Health Professionals** Respite Care **Domiciliary Care Residential Care** Informal Carers 6 C's

Informal Social Care

 Informal Carer – family or friends.
 Charities - Voluntary organisations that support individuals and their families e.g.. Homestart.
 Faith-based groups – Supporting Individuals who share religious or Spiritual beliefs e.g. Islamic relief.
 Community groups – Support within the community. E.g. Food banks

COMPONENT 2: HEALTH AND SOCIAL CARE SERVICES AND VALUES KNOWLEDGE ORGANISER

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<u>LAA – Understand the different types of health and social care services and</u> barriers to accessing them.

Barriers – stop people being able to access a service. Meaning people miss appointments, treatments and support.

LEARNING OBJECTIVES

- A Understand the different types of health and social care services and barriers to accessing them.
- B Understanding the skills, attributes and values required to give care.

LAB - Understanding the skills, attributes and values required to give care.

Scan the QR code for the

specification document

Skills and Attributes in Health and Social Care

- oblem Solving
- servation
- aling with difficult situations
- ganisation
- pathy
- tience
- ustworthiness
- nesty

s in Health and Social Care

Value	Definition
Communication	The exchange of information between two people that helps to provide care and support.
Care	Looking after and providing for the needs of a person.
Compassion	Working with empathy, respect, and dignity.
Competence	Skills and knowledge to understand a person's needs and to deliver effective care, based on research.
Courage	Doing the right thing for the people being cared for and speaking up when concerns arise.
Commitment	A determination to improve the quality of care.

es that individuals face

- of motivation
- esteem issues]
- ous bad experiences
- ety
- of support
- constraints
- hievable targets
- of resources
 - oility
- h Conditions
- **Modulation**

Benefits of skills, attributes and values.

- Ş High quality care
- Q Person-Centred Care
- Respect Ģ
- Q Independence
- Q Involvement in care decisions
- ĝ Not discriminated against
- Protected from harm Q
- Q Able to raise complaints
- Protected dignity and privacy Ş
- Q **Rights promoted**
- Confidentiality maintained Q

Barriers to accessing Services	Overcoming Barriers
Physical – something that stops someone physically accessing the service they need. E.g. Stairs into a GP surgery	Special adaptations which enable someone to access the service they need e.g. wider corridors to allow wheelchair access.
Sensory Barriers – something which reduces a persons' ability to access a service due to a sensory impairment. E.g. not being able to hear what is happening around you due to a deterioration in hearing.	Adaptions put in place to support sensory barriers e.g. large print for sight impairments.
Cultural barriers – something which reduced a persons' ability to access a service due to cultural beliefs, practices and needs. E.g. worrying they will be judged or not taken seriously because of their beliefs.	Proper training and collaborative approaches to understand cultures and beliefs to ensure that a persons' wishes/needs are fulfilled e.g. enabling a Muslim to pray regularly during the day in a quiet and private setting in a hospital.
Language Barriers – something which reduces a person's ability to access a service due to not understanding the words or language used. E.g. having English not as a first language.	Having adapted leaflets, translators etc to enable someone to access the information they need.
Geographical Barriers – Being unable to access a service due to location e.g. poor public transport in a village making it difficult to get to the local GP surgery.	Providing serviced which allow someone to access the service e.g. Phone Consultations with GP. Home visits.
Learning disabilities – being unable to fully understand complex information and make an informed decision without support.	Ensuring that adequate support is given to ensure that someone with a learning disability is supported to ensure that they are able to fully understand/make decisions e.g. Communication cards to help someone express emotions and preferences
Financial Barriers – Being unable to access a service due to money. E.g. not being able to afford care/therapies that will aid their condition.	Some charities and Local Authority provision can be put in place/claimed to help assist with reducing the financial burden that can be created.



Year 10 British Medicine <u>History KO.</u>

Medieval 13th to 16th Centuries

Yellow bile

Black Bile Earth

Ideas on cause of disease Four Humours: Idea by Hippocrates that body contained 4 humours (blood, black bile, yellow bile, phlegm)

that when imbalanced, made you ill, for example nosebleed = too much blood, that needed to be got rid of Church supported idea of 4 Humours and people thought it made sense Physicians used Urine Charts, linked to humours to diagnose illness Miasma: Bad air called Miasma causes disease, caused by dirt/waste God: Church taught God caused disease to test faith or for punishment Supernatural: Astrologists blamed stars & planets for illness. Movement of Mars/Jupiter caused Black Death. People also superstitious, e.g. witches **Treatment of Disease**

Four Humours: Galen's 'Theory of Opposites' used to treat humour with opposite, phlegm= have hot/spicy food Leeching, Cupping, to move bad blood Purging with herbs, draw out humours Herbal Remedies: Wise women gave homemade remedies that did work e.g. honey for infection, mint for stomach **Religious:** Prayers, pilgrimage to shrine Surgery: Barber surgeons used trepanning to remove demons from skulls, basic antiseptic like wine, experienced in times but high chance of death due to dirty tools, high risk of infection and no anatomical knowledge Supernatural: eg. crushed magpie beak

Prevention of disease

Most people thought ONLY god could prevent disease, so focus on prayer, fasting Rich used *Regmin sanitis*: eat & live healthy Wearing amulets/charms for protection Herbs and ringing bells to remove miasma <u>Public Health</u>

Poor public health, dirty towns, water supplies and a lack of waste. No government spending but some cities employed rakers (12 in London) and installed cesspits and water supply (York)

Care & Hospitals

Physicians: trained by church at university, no anatomical knowledge as dissection was banned. Took observation and diagnosed Apothecaries: Chemists who made herbal remedies, experienced but no training Wise Woman: Local woman with medical skills such as midwifery & making remedies Hospitals: First in 1123, ran by the church. Offered 'care not cure', thought God would do it. Turned away those with diseases. Black Death 1348-9

Causes: blamed on God, Planets, Jews and Miasma but no one knew it was rats Treatment: Popping buboes, praying, spells Prevention: Flagellants whipped themselves Public Health: Govt. introduced quarantine Progress?

Very little progress overall, continuity! Factors for/against progress

Church: Church controlled everything and people afraid of God, limited change. They controlled education and ideas on disease, which support Hippocrates/Galen's ideas so no one dared or wanted to challenge ideas as if you challenged Church, you were God! Tradition: Many simply respected tradition, e.g. Hippocrates/Galen and saw ideas as rational and respected. Galen wrote 300 books, so why bother looking for change? Government: King and government spent nothing, only during Black Death

Renaissance 16th to 18th Centuries Ideas on cause of disease

Change: Fewer people believed in supernatural or religious causes (reducing power of the Church in Reformation). Scientific thinking spreads, idea seeds in air may spread disease. Less use of Urine Chart Thomas Sydenham promotes 'direct observation' of patients not using books **Continuity:** Miasma theory continued and stayed popular whilst Four Humours continued, even used on King Charles II. People believed God caused Plague, 1666 <u>Treatment of Disease</u>

Change: Little change over the period Alchemy: Over 122 chemical cures like Mercury to cure Smallpox but dangerous Transference: Idea illness could be transferred to an object like an onion New Remedies: New World (USA) brought herbs/spices like quinine for dysentery Continuity: Large amounts of continuity Herbal remedies remained popular Bleeding and purging the Four Humours, even Charles II was and during Great Plague Religious: People still believed God cured, 92,000 touched Charles II hand to cure scrofula. Many still prayed in Great Plague Care & Hospitals

Change: Physicians had better access to medical books due to printing press, impact of Vesalius improved knowledge of anatomy. Dissection now allowed Surgeons/Apothecaries could join guilds to get training to become masters : Over 122 Hospitals: More hospitals treating sick but Henry VIII closed monastery run hospitals Pest house for contagious disease & some charity hospitals opened with physicians who focused on treatment not religion **Continuity**: Large amounts of continuity Physicians continued to be too expensive, most care done in the home by women Most hospitals continued, no contagious

Prevention of Disease

Emphasis on removing Miasma: draining swamps & clearing rubbish. Closing bathhouses to stop Syphilis spread **The Scientific Revolution**

Royal Society (1660) set up and given £ by Charles II, encouraged science printed scientific book 'Philosophical transactions' e.g. Van Leeuwenhoek seeing of bacteria Vesalius Italian professor who carried out dissection, improved understanding of anatomy and proved Galen wrong (Jaw) which encouraged others to challenge Galen/do dissections. Work printed in UK William Harvey Royal physicians, did public dissections and recorded symptoms, not using books. Used Vesalius ideas to prove Galen wrong about blood circulation through arteries & veins. Ideas then taught in medical schools and encouraged further challenge of ideas

Thomas Sydenham Doctor, published Observationes Medicae, challenged four humours and suggested direct observation of patients symptoms. Part of Royal Society <u>Great Plague 1666-7</u>

Causes: Most people blamed for Miasma, realised could be passed between people **Treatment**: Similar to Black Death, many visited Quack Doctors & used transference **Prevention**: Plague Doctors advised herbs **Public Health:** Govt did much more, closed theatres, killed cats/dogs, burnt tar, carts collected the dad and quarantined houses

Factors for/against progress

Church: Decline of church power in reformation, allowed new ideas/dissection Tech: Printing press allowed spread of ideas to challenge church and new scene ideas Government: King supported scientific revolution, govt. action in Great Plague Individuals: Sydenham, Vesalius, Harveru BUT, little short term change as old ideas continued and new ones slow to spread

Industrial 18th to 20th Centuries Ideas on cause of disease

Change: Considerable changes Early scientists using microscopes so bacteria could be seen, led to theory of Spontaneous Generation, germs produced by decaying matter (waste) Pasteur: Publishes Germ Theory 1861, proves SG wrong and that microbes in air cause decay and possibly disease Koch: Proves Pasteur right that germs cause disease: TB 1882, Cholera 1883 Little impact at first, BUT eventually inspired Lister and other doctors Continuity: Miasma theory remained Treatment of Disease

<u>Treatment of Disease</u> Change: Significant change

Religious, supernatural, 4 humours gone **Surgery**: Huge change in surgical treatment Antiseptics: Using the Germ Theory, Joseph Lister developed first antiseptic: Carbolic Acid in 1867. Greatly reduced infection in surgery and help led to Aseptic Surgery (by 1900 Operating Theatres were sterilised: equipment, patients & clothing) Anaesthetics: Before 1800 alcohol used, then tests with Ether, Laughing Gas until Simpson developed Chloroform in 1847. Worked well but incorrect dosage led to deaths (Surgery Black Period). Cocaine then developed as first local anaesthetic However, many doctors reluctant to believe Germ Theory, so growth of antiseptics & anaesthetics was slow at first but long term there was huge impact as surgery became more complex (First heart surgery 1896)

Prevention of disease

Edward Jenner, English doctor focused on wiping out Smallpox and in 1798 proves vaccination could prevent it. Slow to be used and only from 1852 did government make it compulsory as doctors resistant Pasteur/Koch then develops it using GT to find vaccinations for Cholera 1883

Care & Hospitals

Florence Nightingale: trained as nurse, led nurse team in Crimean war, encouraged hygiene, clean air and training for nurses. Wrote books & opened Royal College of Nursing to train nurses/midwives Change: New hospitals opened by charities, small Cottage hospitals with Nurses & Doctors from 1859. Nurses given more training, hospitals cleaner (Aseptic) due to Germ Theory. Old, Sick or Poor still had to visit workhouses but eventually infirmaries opened for the poor. Specialist hospitals for mentally sick (Asylums) Rich could pay doctors to visit at home.

Continuity: Still had to pay for treatment **Public Health**

Government began to take steps to improve, end of the Laissez Faire policy

Public Health Act, 1975: authorities had to provide: clean water, sewers, public toilets, health officers and monitor buildings Cholera, 1854

Causes: blamed on Miasma/Spont Gen but John Snow identified it was dirty water **Treatment**: No treatment

Prevention: No immediate change but long term changes: sewage system, clean water Public Health: Led to Public Health Act 1875 Progress?

Large amounts of progress (hospitals, surgery, cause of disease) but still low age expectancy (46) and most people did not experience changes to medicine/health yet especially the poor, as there was nothing Factors for/against progress

Government: Government finally began to spend on health (Vaccinations/Public Health Act) which was first time in history **Individuals:** Medieval & scientific Improvements pushed by Jenner, Lister, Pasteur, Koch and Simpson **Science/Tech:** Development of microscopes, laboratories for discoveries

Modern 21st Century

Ideas on cause of disease

Change: Germ Theory only found bacteria cause, now improvements in genetic causes and diagnosis Genetics: DNA identified by Crick/Watson in 1953, and then Human Genome Project allowed doctors to identify genetics diseases like Parkinson's and Alzheimer's. However, no treatment yet but can test/prevent Downs Syndrome in embryo Diagnosis: Specific methods to diagnose e.g. CT Scans, Ultrasounds, Blood Tests, X Rays, MRI Scans, ECGs Scans could now test for; cancer, broken bones or diabetes. Huge improvement Lifestyle: Understood impact of lifestyle on health; smoking, drinking and diet Treatment of Disease

Change: More huge change in period Antibiotics: Paul Ehrlich develops first Magic Bullet (Salvarsan 606) in 1914 to attack infections in body, chemical cure Prontosil, 2nd Magic Bullet developed which helped post-natal infection drop from 20% to 5%. Still not widely used Penicillin: huge breakthrough with accidental discovery of penicillin by Fleming, then developed by Florey and Chain in 1938 to create pure penicillin. America funded production, NHS then made it free for all to treat most bacteria infections like pneumonia – huge impact!

But, growth of penicillin resistant bugs Surgery: Key hole surgery to limit impact of surgery, microsurgery to help transplants (heart 1967) and anaesthetics now perfected. **Modern Treatments**: New drugs like Aspirin to cure painkillers/fever, X-Rays for radiotherapy, blood transfusions, dialysis machines and prosthetic limbs

Prevention of Disease

Vaccination: National vaccination campaign for Diphtheria 1942 and Polio eradicated by 1984 due to compulsory vaccinations. Lifestyle Campaigns: Understanding of causes led to specific campaigns, e.g. Stoptober to stop smoking for a month and everyone gets a free health check over 40 Government Actions: New laws to to provide a healthy environment for UK, e.g. Clean Air Act 1956 & Smoking Ban 2007.

Care & Hospitals

In 1911, National Insurance Act gave some care for working class but not enough The NHS set up 1948 huge change, essentially free health care for all people At first, lack of money, hospitals and GP quality and waiting times but improvements GP's Charter 1966 to improve GPs, Quality Care Commission to monitor hospitals and more hospitals built, even specialists like Alder Hey for children. NHS played huge part in life expectancy growing to 83 due to free care and medical developments

Lung Cancer Study

Huge problem, almost 40,000 cases a year **Causes**: CT Scan and Bronchoscope can identify type of cancer, but not early enough **Treatment**: Improvements, surgery, radiotherapy and chemotherapy BUT at present there is NO CURE not cancer. **Prevention**: Government slowly brought in Smoking Ban (2007), tobacco tax and encouraged advertising to stop smoking **Factors for/against progress**

Science/Tech: Hugely important, led to rapid changes in causes and treatment Government: NHS ad Vaccinations huge in put into improving public health Individuals: Watson, Crick, Fleming, Florey and Chain all pushed huge discoveries Massive change in Modern Age, 83 life expectancy and huge advances, but still genetics, cancer and superbug problems



because it's a quick way to generate ideas that link to the central theme. document used in the first meeting which branches off into different Mind Maps are used to organise thoughts into a more formalised structure by having a main idea It's a common pre-production new ideas.

Hardware & Software used:

- Hardware:
- Keyboard Mouse
- Monitor
- Touch screen
- Laptop/Computer Graphics tablet

Software:

- Mind map software .
- Desktop publishing software

3.2

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Components of a mind map

Central idea

The central idea is what the project is about or what the theme is.

Nodes

which illustrated how the ideas are related to each connected to the central idea using branches Nodes are points other.

Sub-nodes

more clearly and provide nodes to organise ideas These are connected to more detail.

Colours can be used Specific words may between the ideas. different colour in express the idea. be used to help Each node is in to differentiate this example. Keywords Colours St of St 2 231 1111

Creative director, Production manager, Illustrator, Graphics artist, Web designer, Director

CM11: Moodboard

R093: Creative iMedia in the media industry

OCR Cambridge National in Creative iMedia

3.2

generating ideas/setting a theme for paper or digital form. It's a way of sample materials which can be in A moodboard is a collection of the product.

This can be represented

Colours

with the inclusion of a

colour swatch or colour

Components of a mood board

Hardware & Software used:

moodboard because

feature of a

Images are a key

mages

representation it

of the visual

provides for the

dea.

- Hardware:
 - Mouse
- Keyboard Monitor
- Fouch screen
- Graphics tablet
- Laptop/Computer

 - Microphone

represent the theme

or to provide

information

keywords that

the form of

Text may be used in

ext

colour schemes that

could be used.

typography and

- Headphones
 - Speakers Headset

and animation to

express an idea.

- Desktop publishing software Software:
 - Graphics software
- Video editing software
- Presentation software

outs of material that are may include actual cut-A physical moodboard may use videos, audio A digital moodboard Multimedia assets stuck to the paper. Fabrics palette.

Creative director, Production manager, Illustrator, Graphics artist, Web designer, Director

3.3

Components of a storyboard

allows changes to be seen over time, content that requires movement. It and allows the ideas to be planned narrative to be included, storylines to be developed through dialogue illustrate a sequence of events for A timeline that is designed to and linked together.

Hardware & Software used:

- Hardware: Mouse .
- Keyboard .
- Monitor . .
- Touch screen
- Laptop/Computer Graphics tablet . .
- Microphone .
- Headphones/Headset
 - Speakers

Software:

- Desktop publishing software . .
 - Graphics software

 - Video editing software .

This can be inferred from number which makes it the drawings found in How long each scene clearly defined scene Each panel will have Scene numbers Scene content each panel. Timings will last.

also identify camera

type such as a virtual camera.

shots, movements

identify camera

and angles. It can

This can be used to

Camera





Lighting Specify use of lighting techniques dialogue or sound effects could be Background music, expressed Sound The storyboard should follow a logical

Order of panels

isolation and use editing

easier to film these in

techniques to put them

together.

structure to make it easier to put together. Location The scene is filmed outside (EXT) or inside (INT)

in scenes.

Creative director, Camera operator, Audio technician, Illustrator, Graphics artist, Director

CM13: Script

Description

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S. **S**

characters so they know what to say document that is used as part of a camera crew to know what will be product. It provides lines for the and provides direction for the narrative for an audio-visual A script is a pre-production used within each scene.

Hardware & Software used:

Hardware:

- Mouse
- Keyboard .
 - Monitor .
- Touch screen .
- Graphics tablet
 - Laptop/Computer .

Software:

Sound

- Word processing software
 - Script writing software

Creative director, Camera operator, Audio technician, Illustrator, Graphics artist, Director

2



happens in the scene, This refers to what Direction

hing the late put d see large

The scene is filmed outside

Location

(EXT) or inside (INT)

Components of a script

휭

And to get the 11 for the tourists.

Ab 10's

LANCO LANCO

something as simple as a character movement. this might be

taid him you were count to a thousa

A thousand. well sole to That's what

camera shots, movements and

angles. It can also identify

This can be used to identify

Camera

It's important the dialogue for each clearly define the haracters (

character names are

included as it helps to character.

> (JACH) 휘 등

Dialogue

None, None Non the P

include: Intonation, loudness,

emotion.

product. But this can also he speaking parts of the

What bush

(interrupt) That's his That he's clear the

camera type such as a virtual

camera.

NL1 3087

Background music, dialogue or sound effects could be expressed.

CM12: Visualisation diagram

A draft version to plan out a product a good opportunity for the client to product could look like. This can be in a visual way. It can be used to provide useful feedback to the show the client what the final designer.

Hardware & Software used:

- Hardware:
 - Mouse
- Keyboard
- Monitor •
- Touch screen .
- Graphics tablet •
- Laptop/Computer .

Software:

- Desktop publishing software
 - Graphics software •

People:

designer, Content creator, Copywriter and Photographer Illustrator, Graphics artist, Graphics

3.3

OCR Cambridge National in Creative iMedia R093: Creative iMedia in the media industry



Components of a visualisation diagram

This is because it tells you what used to promote a festival, it's name and when it takes place. the graphic is about. In this example, the title has been itle

look. Using clear images

make it easier for the

visual representation of

This provides a more

mages

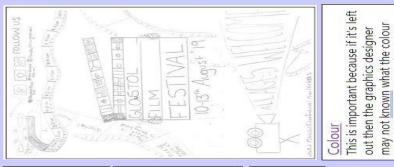
what the product will

choice such as font colour, size and style. This is helpful as it of headings, sub-headings and can help to determine to sizes This is refers to typography the main body of text. Font

This is refers to information that needs to be on the graphic. ext

which should be easily visible The most recognisable part to the viewer. 000

scheme will be.



important when doing a understand what assets visual representation of sketch design because graphics <u>has to</u> work with. 3 Another term used for it's not always easy to the final product. The more information the more annotation, the graphics designer to provide a complete labelling and this is need to be added. Annotation

CM14: Wireframe

A planning document that illustrates will look and will be used by a fronthow a product will look. It will show together and is used commonly for focuses more on how the website websites and apps. Wireframe how pages/screens are linked end web developer.

Hardware & Software used:

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P	
5	
S	
>	
>	
0	
5	
5	
T	

- Mouse
- Keyboard
- Touch screen Monitor . .
- Graphics tablet
- Laptop/Computer

Software:

Desktop publishing software Word processing software

R093: Creative iMedia in the media industry Components of a wireframe

+ + C +

OCR Cambridge National in Creative iMedia

3.3

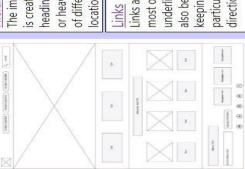
box with a cross which represents These are usually displayed as a an image. Images Video

The word video is displayed inside the box.

These are usually displayed as a box with straight lines, the actual copy or by a placeholder text such as Lorem ipsum. ext

<u>Annotation</u> This allows the designer to

explain how different elements are linked together.

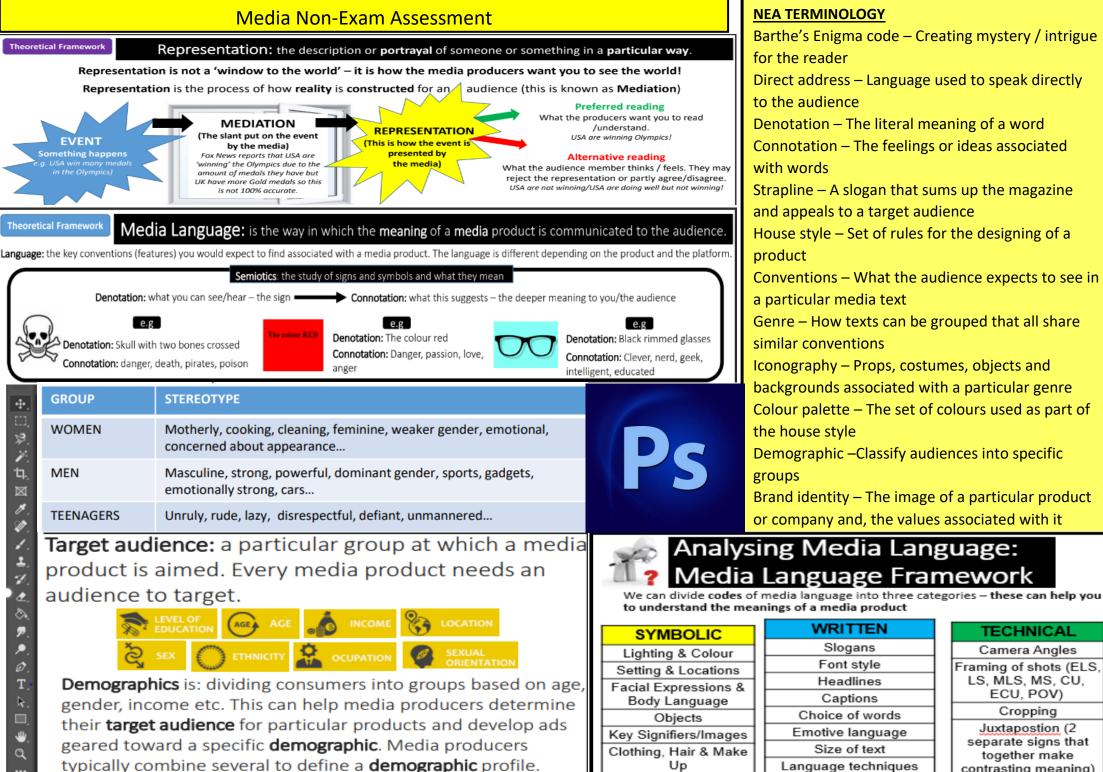


headings, most often bold The importance of a page or heavier weighted text, of different sizes and is created by using Hierarchy location.

Links are represented most often as blue,

underlined text. Links may also be a different colour, particular visual design keeping in line with a direction.

Photographer, Web designer, Illustrator, Graphics artist, Web developer

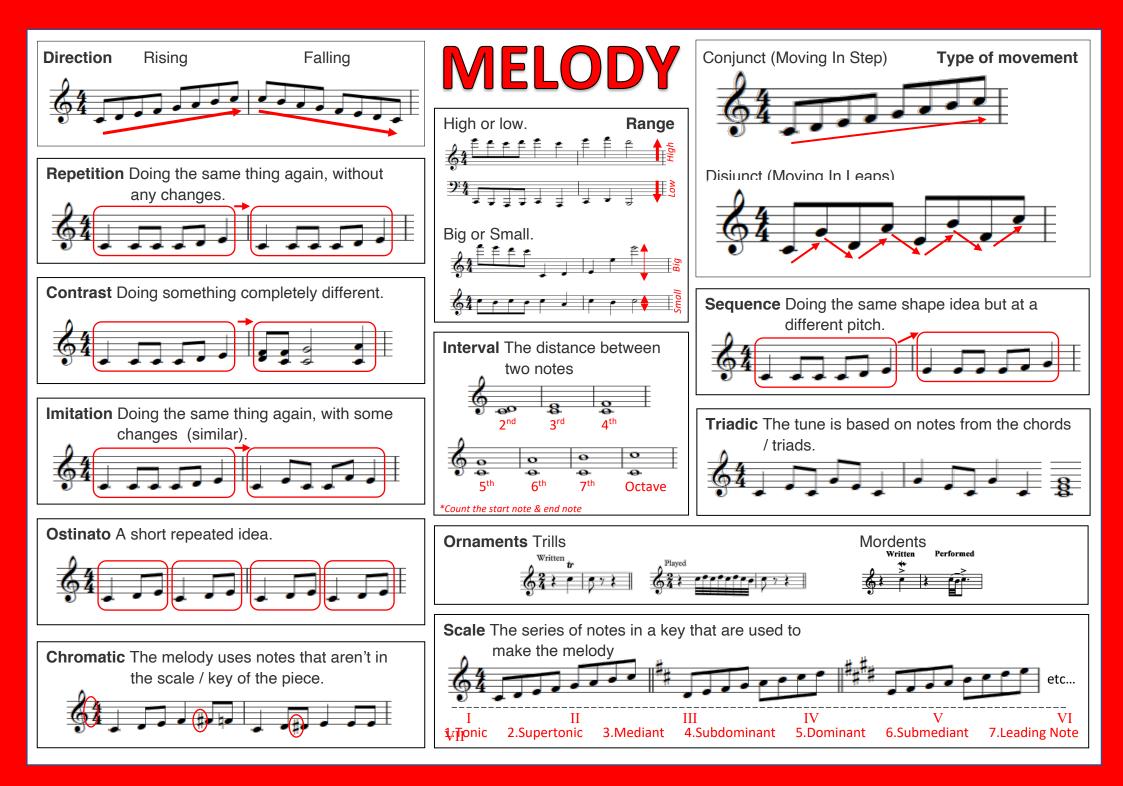


Up

together make contrasting meaning)

Language techniques





Describing What You Hear

Comment on any changes - don't sum up the whole example with one word (unless it doesn't change!)

The music starts... then... the music ends...

On The Score

Dynamics are marked underneath the music, to show the instrument how loudly it should play:



If it is a piano, the dynamics usually go in-between the two staves:



For singers, dynamics usually go above the stave, so that they don't get mixed up with the lyrics:



Baroque Period: Dynamics were rarely used (no crescendos and diminuendos). Use of <u>Terraced Dynamics</u>.

Classical Period: Some dynamics, to add contrast.

Romantic Period: Lots of crescendos & diminuendos and a large range of dynamics to add expression.

DYNAMICS

(The volume of the music)

Writing Dynamics

Dynamics can create contrast in music.

Dynamics can add expression to the music.

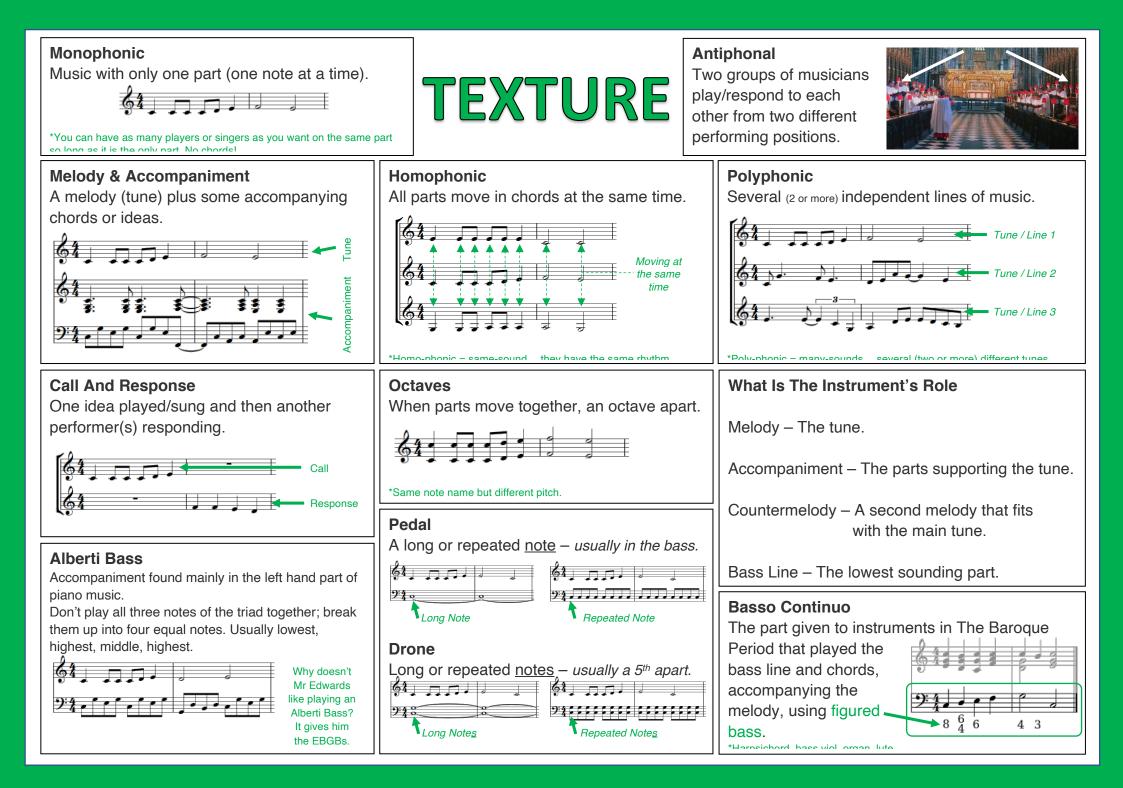
Dynamics can allow the listener to hear the most important lines in the music.

Marking	Italian Term	Meaning	
рр	Pianissimo	Very Quiet	Shh
Р	Piano	Quiet	ł
mp	Mezzo Piano	Moderately Quiet	ł
mf	Mezzo Forte	Moderately Loud	ł
f	Forte	Loud	ł
ff	Fortissimo	Very Loud	↓ 111
	Crescendo	Getting Louder 🔶	radually
	Diminuendo	Getting Quieter 🔸	Change gradually
sfz	Szorzando	Sudden Accent	

Writing Your Own Dynamics

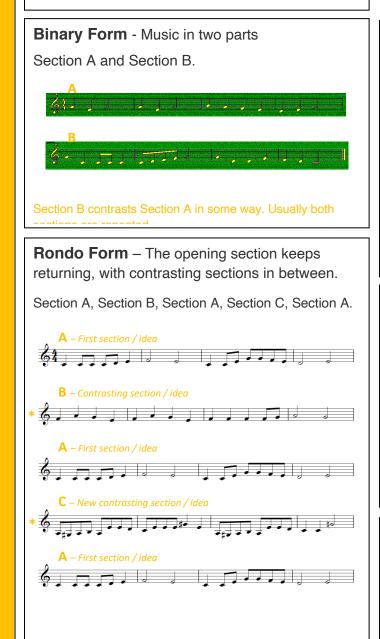
If using crescendos and diminuendos, make sure you say how loud/quiet you want the music to get. This will clearly show what you want.



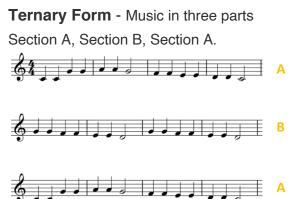


Structure – The order that things happen in.

First... then... this is followed by... at the end.



STRUCTURE



The 2nd Section A can be an exact repeat of the 1st Section A or a slightly altered version

Minuet & Trio – Dance founded in 17th-18th Century Europe. In Triple time and moderato. Both are in binary form. Trio is like a second Minuet but contrasting in some way.

Mir	inuet Trio			Minuet Trio Minuet			uet
Section A (Repeated)	Section B (Repeated)	Section A (Repeated)	Section B (Repeated)	Section A (No Repeat)	Section B (No Repeat)		
In tonic key. Ends with key change.	In related key. Ends with change back to tonic key.	More contrast – new key or change of instruments. Ends with key change.	In related key. Ends with key change back to starting key of trio.	Keys are same as first time playing Minu			

Variation Form – A theme / section is then followed by other sections (variations), changing and developing the first theme / section in different and imaginative ways.

Theme Variation 1 Variation 2 Variation 3 The original idea / section There are many ways you can transform the theme: Change the instrumentation, tempo, key, harmony, metre, rhythm Use imitation, inversion, sequence, diminution, augmentation Developing harmonies without the tune Introducing new tunes Varying the style Variation 3				-
The original idea / sectionChange the instrumentation, tempo, key, harmony, metre, rhythmUse imitation, inversion, sequence, diminution, augmentation	Theme	Variation 1	Variation 2	Variation 3
		Change the instrumentation, tempo, use imitation, inversion, sequence, d	key, harmony, metre, rhythm liminution, augmentation	the style

Song Form

Intro Verse Chorus Middle 8 Bridge Outro

Strophic Form - Same music repeated each section. Section A, Section A, Section A.

2 Long - ing for peace, our world is trou - bled. Long - ing for	1. Long - ing	for light.	we wait i	n dark - ness	Long - ing	for 🤞
4.Long-ing for ibel-ter, man - y are home-less. Long-ing for 5.Man - y the gifts, man - y the peo - ple, man - y the 9.2.3			our world i	s trou - bled.		for 🧹
3. Man - y the gifts, man - y the peo - ple, man - y the 9.2 a			man - y a			for 🧹
28.8 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1						
	<u>5. Man</u> – y	the gifts,	man - y t	te peo - ple,	man - y	the 🔫
9:13 8: 6: 6: 6:): ‡ 3 p:	Î Î				

Key Signature

The sharps or flats at the start of a piece of music, showing what key the music is in.

HARMONY & TONALITY

Major and Minor Key Signatures Key Signatures ງ: 🕯 Major Keys 6 = С Minor Keys 9: #_#_____ 9: ⊧ D 6,2, Circle Eb F# Δ Fifths ງ: ‡_‡ 9:₽, Eb/D# Ab/G# A♭ B♭/A# &[‡]‡[‡]≢ 6,2,2 Db/C# C♭/B 9: , , , G♭/F♯ 9: ⊈ 2 11 11 6°, **&***** 9: 1: 1 2 1 1 1 1 2 P. P. 9: *;*;;;; @ 2016 Sicnea 14 Vigod IIIII MUSICCIASHCOURSES COM 9: #:[#]: #

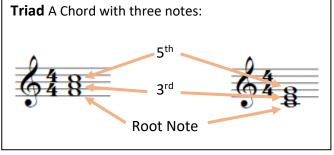
*When you write music in a minor key you also need to raise the 7th note (leading note) up one small step - e.g. A minor uses G#s, not Gs.

Diatonic

Music only uses notes that are found in the key signature of the piece

Chromatic

Music uses the notes found in the key of the piece but also adds in extra accidentals (# / b)



(The chords and keys used in the music)

Identifying The Tonality...

- Tonal In a major or Minor Key
- Atonal There is no sense of key
- Modal Uses 'old-fashioned' scales called modes
- Pentatonic The music only uses 5 notes

Chords

- Triad A chord with three notes (See below)
- **Power Chord** Only playing the Root and Fifth of a triad (used in Rock music)
- **Dissonance** Clashing notes played together
- Consonance Notes that fit / sound nice together
- **Primary Chords** The three most commonly used chords used in music: I, IV, V
- Secondary Chords The other chords: II, III, VI, VII
- **Chord Sequence** The order the chords in a piece of music follow (containing cadences at the ends of phrases)

Modulation

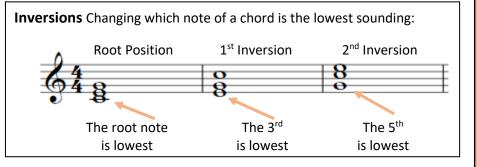
The last two chords in a phrase.

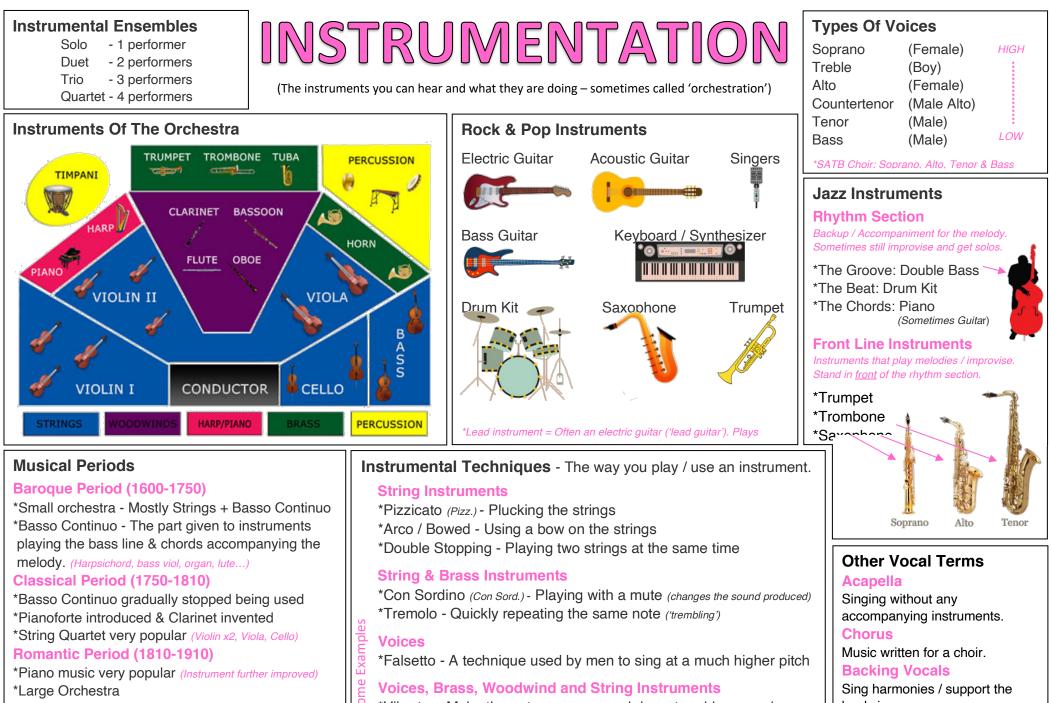
Cadences

Musical word for key change. Most common changes: to Dominant or relative Major/Minor.

Only sounds 'complete' if ends on chord I. **Sounds Complete** Perfect V Т Dominant Tonic Cadence Plagal IV Т Cadence Subdominant Tonic Sounds Incomplete Imperfect V Cadence Tonic Dominant Not chord Interrupted V Minor Chord Dominant Cadence

*Sometimes the final cadence of a piece in a minor key ends with a major chord instead of the expected minor chord. This effect is known as a **Tierce de Picardie**.





*Tone / construction of instruments improved

*Vibrato – Make the note waver up and down to add expression

lead singer.

Reading Rhythms

You need to be able to read all the different note lengths if you want to pass GCSE music. If you keep forgetting, look over them again!

RHYTHM & TEMPO

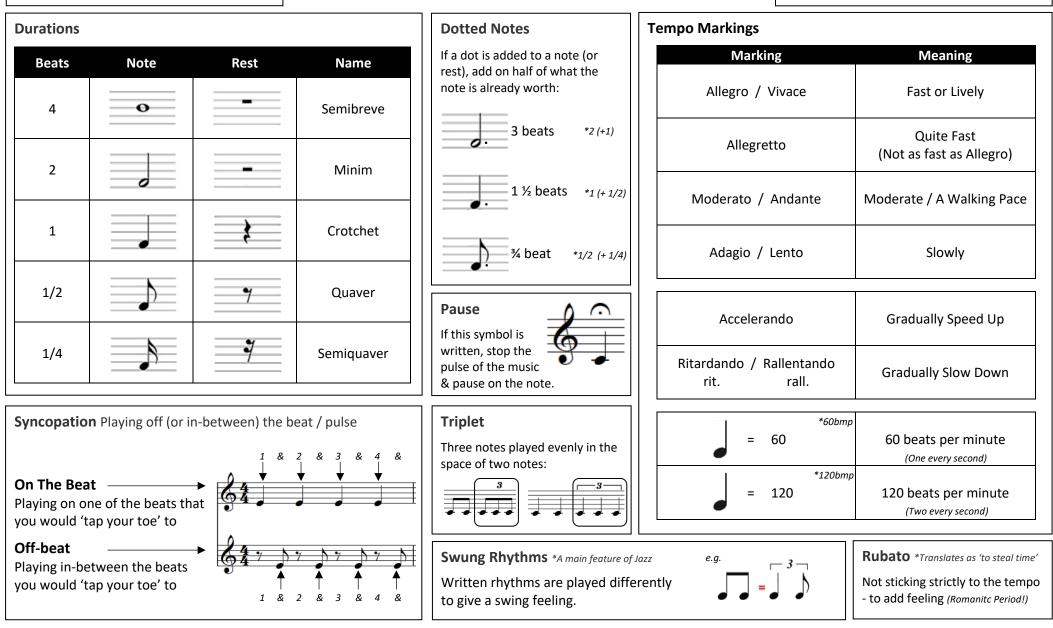
(The Patterns Of Note Lengths & Silences)

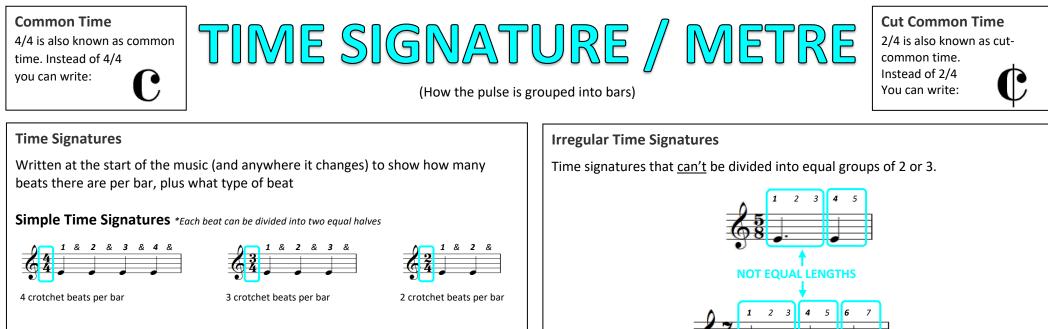
(The Speed Of The Music)

Working Out The Tempo

Tap your toe to the pulse of the music and think, 'how fast am I tapping'.

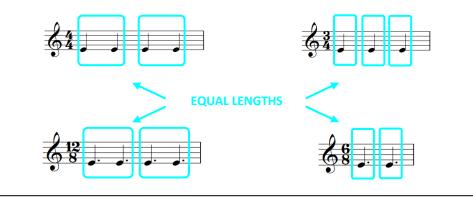
*If you tap your whole foot you might put off other pupils.





Regular Time Signatures

Time signatures that <u>can</u> be divided into equal groups of 2 or 3.



Writing Your Own Music

You must make sure every bar adds up to the correct number of beats. Changing metre is a good way to create contrast in your work.

Compound Time Signatures *Each beat is dotted and can't be divided into two equal halves



4 dotted crotchet beats

per bar (12 quavers)



3 dotted crotchet beats per bar (9 quavers)

123456789

2 dotted crotchet beats per bar (6 quavers)

Listening Examples Go to Youtube to hear some examples of different metres:

2/4	Slaidburn March *A march is usually in 2/4 (Left, Right, Left, Right = 1, 2, 1, 2)
3/4	Shostakovich's Waltz No.2 *A waltz is a dance, usually in 3/4
4/4	All That Jazz (from Chicago) *Chicago is a Musical
5/4	Take Five (By Dave Brubeck) *Listen out for the jazz style
7/4	The start of Money (By Pink Floyd) *Listen out for the opening bass riff
6/8	We Are The Champions (By Queen) *Queen are a famous British Rock Band
12/8	The Way You Make Me Feel (By Michael Jackson) *Count 1&a 2&a 3&a 4&a

Western Classical	Music				Jazz & Blues	*Swung rhythms
Baroque Period 1600-1750	Classical Period 1750-1810	1810	ic Period -1910	STYLE	*The 12 Bar Blues	*Extended chords: 7 th , 9 th
Bach, Vivaldi, Handel Ornaments Terraced Dynamics Major & Minor Keys	Mozart, Haydn, Beethoven Balanced, regular phrase Alberti Bass Wider range of dynamics	S Use of the Music more	bert, Wagner e leitmotif e expressive of dynamics	Minimalism *Started in 20 th Century *Composers - Philip Glass	IV IV I I IV IV I I V IV I I *Improvisation - Perfor	*Blue notes – 'bending' some notes by a semitone mers make up music in the performance
Harpsichord Small Orchestra (Mostly Strings) Basso Continuo	Pianoforte introduced Wider range of mood Orchestra got bigger Elegant/Graceful style	Use of chron Unusual Ko Large O	matic chords ey Changes rchestra Rubato	*Based upon Repetition *Uses small motifs that gradually change *Slow changing harmony	*Walking Bass - The ba	- Drums, Double Bass, Piano/Guitar s - Saxophones, Trumpets, Trombones ss plays a steady rhythm & walks up/down tes of the chord or scale.
For example	e than one style of mus	-	* Pop - Co	ock Music ommercial music which appeals to Generally 'more aggressive' but also		*Riff - A repeated pattern. Can help make the song memorable.
-	JK in 1980s. Mixing trad sic & pop music.	elody		ents - (See instruments sheet!)	o includes fock-ballads.	*Examples:
	Verse / Chorus Quite	repetitive. Decorated.	Intro Verse	Tells the story. Lyrics change each time b	but tune stays the same.	The Who Jimmy Hendrix The Beatles
Synconation	dian instruments Dhol, Tabla, Sitar)	nnology machines.	Choru Bridge Middle	A section that links two other sections.		Pink Floyd The Sex Pistols The Clash AC/DC David Bowie Queen

Outro

Film Music

4 beats per bar.

*Genre - Action, Adventure, Horror, Romance, War, Sci-fi, Western...

*Composers - John Williams, James Horner, Jerry Goldsmith

& Pop Instruments

*Think, how do the musical features represent what is happening on-screen? e.g.

Synths. Scratching.

Car Chase: Fast tempo, loud dynamics, sudden changes in melody direction... WWII Film: Military instruments, fanfare, monophonic to represent isolation... Large Theme Park Scene: Big Orchestra, Loud Dynamics, Fast/exciting rhythms... Horror Scene: Dissonant chords and use of repeated pattern to build tension...

*Leitmotif - A short musical idea linked to a specific character / thing

Musical Theatre

Extra bit of music to finish off the song.

*A theatrical story told through music, singing, acting and dance



- *Types: Jukebox, Film-to-stage, Sung-through (no speaking), Disney...
- *Composers Andrew Lloyd Webber, Leonard Bernstein, Stephen Sondheim...
- *Overture The music played before the musical begins, usually featuring the musical's main themes.
- *Solo Song for one character
- *Duet Song for two characters

*Chorus - Song for usually the whole 'company' to sing

*Recitative - A song which does not have a memorable tune (more speech-like), often used to fill in the story if the show is all sung.

T3 Year 10 GCSE Music Composition Knowledge Organiser

Dynamics:

- Have I added contrast using the following dynamics: pianissimo, piano, mezzo forte, forte, sforzando
- Have i added a crescendo or diminuendo?
- Is there any use of silence?

Melody:

What type of scale am I using?

- Is there a contrast between conjunct/disjunct?
- Are my phrases balanced?
- Am I using any interesting intervals?
- Have I included any ornaments?
- Have I used these devices appropriately? Imitation/ Anacrusis/Sequence
- Have I contrasted my piece with the following: Staccato/Legato/Accented notes
- Have I considered the different techniques on the instruments; Slurring//tremolo/pizzicato.

- Have I combined long and short notes to different effect?
- What tempo am I working at? (Largo (slow), Andante (walking pace), Allegro (fast)
- Have I considered a dotted rhythms/ Syncopation/Triplets
- How about Hemiola/Cross rhythm
- Accelerando/Rubato?

Rhvthm:

AO2.1.a: Creativity/development of musical ideas

- Ideas offer potential for development
- The content is developed throughout the piece
- Use of contrasts in tone colour and moods

AO2.1b: Technical control of music elements/resources

- Choice of elements and resources
- How musical elements are used
- How resources, including technology, are controlled

AO2.1c: Structure and stylistic coherence

- Organisation of the piece and presentation of musical ideas
 - Style and character in response to the chosen brief
 Coherency of final outcome

Structure:

What would be an appropriate structure for my choice of brief?

- AOS1: Classical styles: Binary/Ternary/Rondo/Rounded binary?
- AOS2: Strophic/Verse-chorus/32 Bar form? Any other ideas?
- AOS3: Episodic? How can I add contrast?
- AOS4: If using verse-chorus can I add other sections e.g. Pre-chorus/instrumental section?
- AM I DEVELOPING MY IDEAS IF REPEATED?
- What is the length of the piece?
- How many sections will it have?
- Will sections repeat, and in what order?
- What form will the introduction and ending take? Will they use extracts from other sections?
- Is the structure of the piece appropriate for the style of music?

Instrumentation:

How can I combine instruments appropriately (families/including voices)?

- Have I written appropriate parts (inc range)?
- Can all the parts be played live?
- Where would it be performed?

Harmony:

What key am I working in? Major or Minor?

- Have I used any interesting chords; Sus4/Diminished/ Augmented/7th?
- Have I added a key change? Have I used a Pedal note/Drone?
- How often do the chords change?

- Texture:
- Have I contrasted my piece using more than one of the following:
- Monophonic: Unison/ Octaves
- Homophonic: Parallel motion/Melody & accompaniment/ Chordal
- Polyphonic: Countermelody, Imitation

Gangs are groups of people, often involved in criminal activities. Young people can become involved in gangs for many reasons – they are operating in their area, they are groomed, they see it as a way of making money.

Dessens for Joining a cone

Reasons for joining a gang								
Sense of belonging and/or identity	Protection							
Pressure to join	To get respect							
Expectation to join as family or friends are members	Not sure people are trustworthy							
Poverty	Enjoy risk-taking							
Concerns over safety within a gang	Looking for a glamourous lifestyle							

FACTS MYTH OR It has been proven that if you carry a knife, you are more likely to be hurt o Carrying a knife threatened by someone else. People provides a persor are often wounded by their own knife with protection they were carrying, putting them at greater risk Actually, 99% of young people DO NOT carry knives. Sometimes it may feel like Most young people re people carry knives because of stories they've heard, or what they have seen online, on social media or ir the news. If it is illegal to carry Any sharp object that is being carried a knife, then other with the intention of using it in a sharp objects can hreatening way could be classed as be carried for an offensive weapon. protection Any stab wound could be fatal for a number of reasons. For example, major There are safe rteries run across the whole body. If a places on the body najor artery is severed, that person will . to stab someone bleed very quickly and it could be fatal vithin 5 minutes

What is joint enterprise? If somebody has been fatally stabbed you can be found guilty of that person's murder even if you were not the person who actually stabbed them.

It means you're seen as guilty for someone else's death, because you were part of the situation that could have encouraged the incident, or were part of it without trying to stop it from happening.

ion

talism

Hate

Hate

Crime

Speech

lone in a shopping centre or high stree either during school hours or unusual They might seem unfamiliar with the ocal area, or not have a local accent?

County Lines

4

into rural towns or county locations

•It is a type of criminal exploitation

•County lines is the exploitation of vulnerable young people

•It is a method of drug supply (primarily Class A drugs) from a city

Are they obviously being approached or intimidated by a controlling, peer or group?

re they deliberately avoiding authorit figures such as police officers or

security quards

Ę,

texts or phone calls

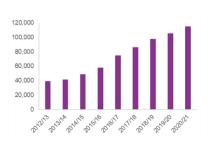
Some may be with older individuals w are purchasing tickets for them or givin them money for tickets.

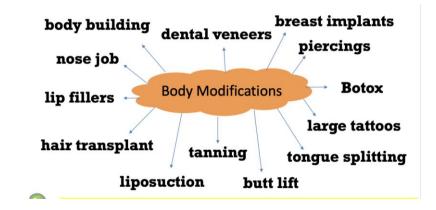
Extremism Vocal or active opposition to commonly held values, particularly British values such as democracy and the rule of law Radicalisat A process by which a person comes to support terrorism and extremist ideologies Fundamen The strict following of (often religious) principles Freedom The right to voice an opinion without fear of restriction or of speech punishment. In the UK, this right is limited by the law. E.g. you cannot use threatening or abusive language likely to cause distress or great offence. This includes racist or anti-religious hate speech. Speech that attacks a person or group on the basis of their race, religion, ethnic or national origin, sexual orientation, disability, or gender. This includes images, videos, music, memes. This is when someone commits a crime against you because of your

disability, gender identity, race, sexual orientation, religion, or any other perceived difference.

Y10 Non GCSE – Crime and Social Influences

A hate crime is defined as 'Any criminal offence which is perceived by the victim or any other person, to be motivated by hostility or prejudice based on a person's race or perceived race: religion or perceived religion; sexual orientation or perceived sexual orientation; disability or perceived disability and any crime motivated by hostility or prejudice against a person who is transgender or perceived to be transgender.'





Why do people modify their bodies?

- Making the body conform to ideals of beauty
- Self-expression
- . Addiction
- . Impulsive decisions

Body Dysmorphia - a mental health condition in which you can't stop thinking about perceived defects or flaws in your appearance that appear minor or can't be seen by others

						P4L								
Statement A piece of paper or online docume into an account and paid out from				Year 10 – Fina	ances	Knowledg	e Organise	Ad	ebit card dvantages	l of on th	Debit card disadvantages	adva	dit card antages	Credit card disadvantages
month. Credit An account "in credit" means that	there is money in it th	at is available to be	spent. If		RD	VS. DEE		Eas	asy withdrawa	al of cash	Doesn't usually let yo borrow money	frauc	re protection from d	Must pay back eventually – can get into debt
you obtain goods or services "on c bank or credit institution) has give	redit" it means that so	omeone (for exampl	e, a	You borrow mone a lender in order t	0	your ba	the money in nk account to		an use in shop ings	ps to pay for	Less protection from	fraud Spee	ed - emergencies	Hidden costs
Debit Money taken out of an account is ' Standing Order				 make purchases v credit. You are responsib paying back purch made with this ca 	le for hases	 Paymer from yo the mer 	urchases. ht is withdrawn ur account once chant approves nsaction.	2	eadily accepte	ed	Fees- some machine charge for withdrawa	200 U 0.00 U	borrow for free on rest free cards	High interest rates
A method of paying regular amour in control and instruct your bank to company. It's your responsibility to it needs to be changed.	o pay the money to a p	particular person or		 Your credit limit determines how n money you can us You can access a d advance from an A 	se. cash	balance much n use.	nk account determines how noney you can withdraw	001	ome cards offe wards.	er cash back	Contactless- people use card	can Can score	build up your credit e	Irresponsible spending
Direct Debit An instruction to your bank to rele other amounts automatically. The money from the bank directly and	billing company has co	ontrol and requests	2842.225	 Using this form of can impact your c score. 	s may card	money This for	n of card does act your credit							things which can ding university.
KEYWORDS			Intere	est Rate	Tim	e (how long it	TYPE OF SAVE	NGS DEF	FINITION			ACCOUNT	FEATURES	
Budgeting - process of managing your	Principal (amount borrowed) Principal (amount borrowed) P x R x T For example, if £1,000 is borrowed at an interest rate of 20% over 1 year, then the interest to be repaid would be: £1,000 x 0.2 x 1 = £200				Contraction of the second second second	Easy access accounts	Offe which of n	money at any time without prior warning. Interce Offen these are "instant access" accounts, which allow you to withdraw any amount of money from an ATM straight away for free. May 1 Advance warning usually has to be given if you wish to withdraw money from this type of account without being penalised. Typical given if in log is to be given if given if in log is to be given if it log is to be given if log is tob be g			 Interest re May be re 	ffer a higher interest rate when first set up at rate tends to be lower than for other accounts e restrictions on how many withdrawals you ake every year, so make sure you check the print		
money. Debt – when money is owed to a bank,					to be repaid	Notice account	you				 Typically, 30, 60 or 90 days advance notice has to be given to withdraw money Withdrawing money without giving notice could result in loss of interest Generally have a better interest rate as the bank knows when you will be taking money out, and can plan accordingly 			
organization or individual.	The total repayment	to the lender would b		rest paid	Toto	al repayment	Regular saver account		egular sum account ea			 The inter The numl the account In all cas 	est rate is usually hig ber of withdrawals th unt may be limited	hat can be made from
Interest – money that is owed on top of original amount	£1,000 + £200 = £1,200						Fixed rate savi (sometimes ca bonds)	lled for the A be This more	Your saved money is "locked away" for a specified period of time (known as the term). A bond is another word for a loan. This means that you are lending your money to a bank or building society in return for interest.		me (known as r a loan. mding your	 A one-off amount often must be deposited at the The term is usually between 1 and 5 years A fixed (and usually higher) interest rate is offere – depending on how much money is deposited a how long the term is You may be able to withdraw money before the is up, but this will usually result in penalites, whis 		
borrowed. APR – annual		<u>P</u>	ayda	<u>y Loans</u>			Individual Savi Account (ISA)	ngs This you			ccount where interest earned.	 The gove 	ther than for a Notice ernment set the limit of i in an ISA each tax y	of how much money you
percentage rate			n personal loar	ns – you can see payday ler	nders on t	he high street and	RISK	LOW, ME		MPLICATIO	NS		HOW TO MINIM THE RISK	ISE
calculates the total cost of borrowing for a year.						Giving your debit card to a friend	Medium t	They use you card without your Knowledge to take money out or		 Never give you to anyone Always get mo machines your 				
Payday Loan – short-	 WARNING: rolling overpay day loans (taking them out over and over again) can work out very expensive. WARNING: missing payments will also to fines being added on top of the interest. 					Putting a friend's PIN into phone notes	High	:	 They may use without your knowledge If the same PIN is used for multiple cards or accounts, it could leave you vulnerable to misuse. Never keep records o about your PIN. 					
term loans for small amounts of money – often carry high interest rates.	Monthly Payment	1 month £629.96	3 month £259.92	ns 6 months 2 £173.28	Ľ	P4L Non GCSE	Using a holiday company that no one has ever heard of	High	:	so you we	a scam bany may not be p buld lose your mo ompany failed.		the business deCheck if they compared to the second sec	review site to check atails ire ATOL protected - customers think of
interest rates.	Total Cost Total Interest	£629.96 £130	£779.76 £280	5 £1,039.68 £540			Getting a credit card	Low	:	· Could aff	to use and build fect your credit rat s are missed.		 Keep the credit Only use for lot Pay off the ball 	

Paper 1: Lever Systems

Lever Systems:

Lever systems help you to move. They can increase the amount you can lift or the speed in which you can move something. You need to be able to:

- Draw the three classes of lever
- Describe the lever
- Give examples in sport

<u>Key Words</u>

Lever: Is a bone and is shown as a straight line

Fulcrum: Is a pivot or joint and is shown as a triangle

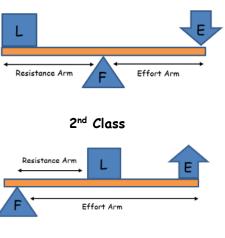
Effort: Is a force provided by muscles and is shown by an arrow

Load: Is the weight of the body/object being moved, it is shown as a square

Levers:

Lever

1st Class



3rd Class Lever

Resistance Arm

Effort Arm

The fulcrum is surrounded by the effort and the load

Description



Sporting example

The load is surrounded by the fulcrum and the effort



The load is surrounded by the fulcrum and the effort



Bicep curl

Mechanical advantages:

1 st Class Lever	Advantage
Resistance Arm F Effort Arm	Will vary depending on the distance of the load and the effort from the fulcrum
2 nd Class Lever	Advantage
Resistance Arm	Able to lift heavier loads owing to its large effort arm
3 rd Class Lever	Advantage
Effort Arm E L F Resistance Arm	Provides speed and wide range of movement owing to a long resistance arm

Identifying lever systems:

Each lev	ver system can be iden	tified by the co	mponent in the middle:
	One	Two	Three
	F	L	E
	(fulcrum)	(load)	(effort)



Effort = Biceps Load = water Fulcrum = hand/oars 1st class lever (fulcrum in the middle)



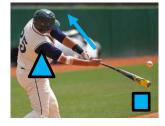
Effort = Triceps

Fulcrum = Feet

2nd class lever

Load = Body weight

(load in the middle)



Effort = muscles Load = bat/ball Fulcrum = shoulders 3rd class lever (effort in the middle)

Paper 1: Short and long term effects of exercise

Immediate effects of exercise:

These are the effects that happen during exercise

Immediate effects of exercise	Explanation
Getting hot	Heat is a by-product of energy production, the harder we train the hotter we get
Getting sweaty	Sweat glands produce sweat to cool you down, sweat evaporating from the surface of your skin removes some body heat
Having red skin	Blood vessels dilate close the surface of the skin to help you lose heat, this makes you look red
Increased depth and rate of breathing	This allows more gaseous exchange to occur more quickly. More oxygen can be delivered to the working muscles and more carbon dioxide can be removed
Increased heart rate	This allows gases to be transported around the body. Oxygen can be delivered to the working muscles and carbon dioxide can be removed

Short term effects of exercise:

These are the effects that happen 24 to 36 hours after exercise

Short-term effects of exercise	Explanation
Tiredness and fatigue	When we are exercising energy, stores are being use up this will lead to tiredness and fatigue
Light headedness or nausea	When we exercise, we lose fluids, this can lead to dehydration, Light headedness and nausea are symptoms of being dehydrated
Aching muscles	Blood vessels dilate close the surface of the skin to help you lose heat, this makes you look red
Cramp	Cramp is an involuntary muscular contraction. A cause of cramp is a depletion of energy stores or dehydration and a lack of electrolytes due to sweating
DOMS	DOMS can occur due to micro tears in the muscles from vigorous activity

Long term effects of exercise and improvements in specific components of fitness:

These are the effects that happen months or years after training

Long-term effects of exercise	Explanation
Change in body shape	A change in body shape can improve performance. An increase in muscle mass will assist in strength and power sports such as sprinting and rugby. A reduction of body fat will assist a long-distance runner
Improved stamina	Improved stamina will allow performers to last longer in an activity without getting tired. For example, performing to a high standard for 90 minutes in football
Increase in size of the heart (cardiac hypertrophy)	An increase in the size of the heart will allow more blood pumped per beat (stroke volume) when exercising. This will allow more oxygen to be delivered to the working muscles
Lower resting heart rate (bradycardia)	Because the heart can pump more blood per beat it will not have to work as hard at rest therefore resting heart rate will be lower



Strength allows us to provide a force applied by a muscle group to overcome a resistance

Muscular endurance allows repeated contractions and avoid fatigue

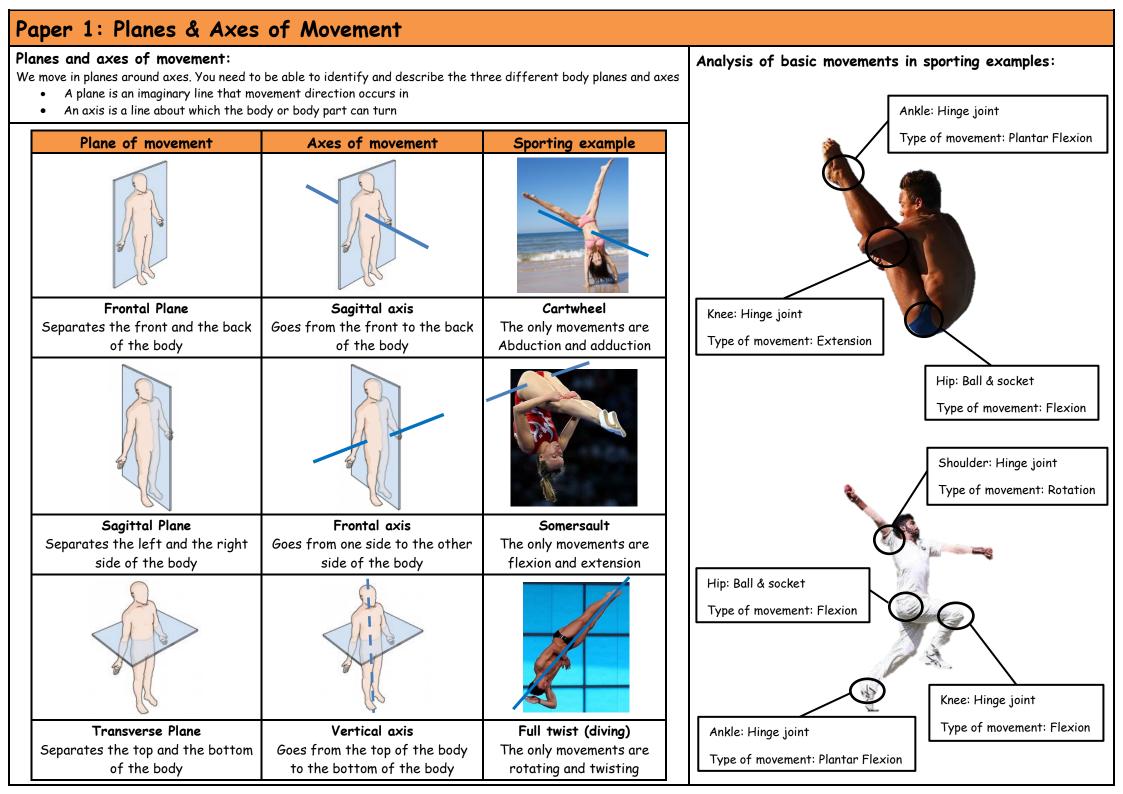
Suppleness/flexibility allows a greater range of movement at a joint

Speed allows us to perform movements quickly



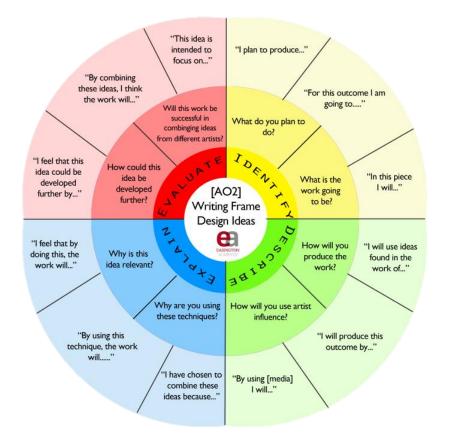
Cardiovascular endurance allows oxygen to be supplied to the working muscle so you can perform for a long time without getting tired





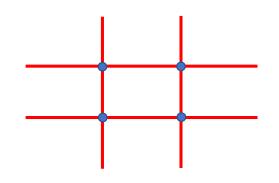
Explanation	Sporting Example
 A cool down is important after vigorous exercise. Light exercise and stretching help to: To keep the breathing/heart rate elevated ensures blood blow to the muscles which helps convert the lactic acid to glucose, carbon dioxide and water to prevent muscle soreness 	Any sport or activity after vigorous exercise
 A massage helps the delayed onset of muscular soreness (DOMS). This is when muscle soreness does not happen immediately but one or two days after a period of intense exercise The massage: Reduces inflammation of a tender area Increases blood flow, so increases oxygen delivery to the muscles which helps the removal of lactic acid 	Games players may use an ice bath after an intense match to help recovery
 Getting into an ice bath 5 to 10 minutes after intense exercise helps: Aid and repair micro tears in muscle fibres preventing DOMS Reduce swelling of an injured area When you get out an ice bath the warmer temperature dilates blood vessels which allows oxygenated blood to rush to the muscles removing lactic acid and other waste products 	Games players may use an ice bath after an intense match to help recovery
Carbohydrates Foods high in carbohydrates should be consumed soon after exercise this aims to: • Replace glycogen stores Rehydration Water or isotonic drinks should be consumed before during and after vigorous exercise, this helps to:	Endurance athletes such as runners Any performer that sweats needs t rehydrate
	 A cool down is important after vigorous exercise. Light exercise and stretching help to: To keep the breathing/heart rate elevated ensures blood blow to the muscles which helps convert the lactic acid to glucose, carbon dioxide and water to prevent muscle soreness A massage helps the delayed onset of muscular soreness (DOMS). This is when muscle soreness does not happen immediately but one or two days after a period of intense exercise The massage: Reduces inflammation of a tender area Increases blood flow, so increases oxygen delivery to the muscles which helps the removal of lactic acid Getting into an ice bath 5 to 10 minutes after intense exercise helps: Aid and repair micro tears in muscle fibres preventing DOMS Reduce swelling of an injured area When you get out an ice bath the warmer temperature dilates blood vessels which allows oxygenated blood to rush to the muscles removing lactic acid and other waste products

GCSE PHOTOGRAPHY



Key Terms	
Angle	The position from one point to another
Aperture	Used to determine how much light passes into the camera
Balance	An equal or symmetrical composition
Composition	The layout of an image, or placement of objects within a frame.
Contrast	The difference in tones from the lightest tone to the darkest tone
Depth of Field	The focus of objects based on distance
Detail	The part of an image that might have otherwise gone unnoticed. Often fine or small elements within an image.
Exposure	The amount of light in a picture.
Focus	The definition (or lack of) in an image. What the camera is aiming for. What your eye is drawn towards.
Light	The illumination of scenes or objects to be photographed .
Negative Space	The space around the object.
Positive Space	The object that takes up physical space in the image
Rule of Thirds	a guideline that places the subject in the left or right third of an image, leaving the other two thirds more open. It divides a photo into nine equal parts, split by two equally spaced horizontal and vertical lines.
Saturation	The amount of colour in an image.
Shutter Speed	The length of time that the camera allows light into its lens.
Viewpoint	What the photographer sees from their position





Rates and equilibrium Knowledge Organiser

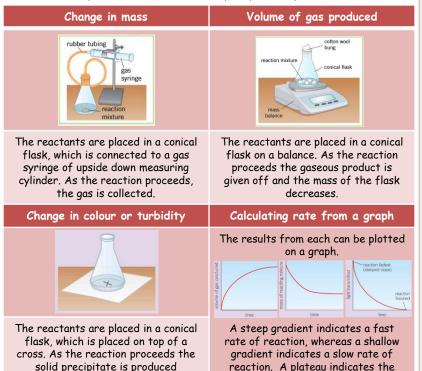


Rates of reaction

The rate of reaction is how quickly the reactants become the products. The rate of reaction can be determined by:

```
Mean \ rate \ of \ reaction = \frac{quantity \ of \ reactant \ ised}{time \ taken} \ \mathsf{OR} \ \frac{quantity \ of \ product \ formed}{time \ taken}
```

Practically this can be determined from measuring how the mass of the reaction changes, the volume of gas given off from the reaction or the changes in the colour or turbidity of a solution when a solid precipitate is produced



Collision theory

reaction has reached completion.

eliminating view of the cross.

For a reaction to occur, the reactant particles need to collide with sufficient energy to react. This amount of energy is called the **activation energy**. The rate of a reaction can be increased by: increasing the frequency of collisions and increasing the energy of particles when they collide.

Factor	Impact on rate of reaction
Increasing the temperature	Particles gain more kinetic energy, move faster and therefore collide more frequently, with more energy so more collisions result in a reaction.
Increasing the concentration of solution reactants	There are more reactant particles therefore more frequent collisions occur.
Increasing the pressure of gaseous reactants	There is less space between the particles, so more frequent collisions occur.
Increasing the surface area of solid reactants	Only reactant particles at the surface of a solid are able to interact and collide with another reactant, so a larger surface area leads to more frequent collisions occurring.

Factors affecting the rate of reaction

Catalysts

Catalysts speed up the reaction without being used up in the reaction. They provide an alternative pathway that has a lower activation energy.

activation energy without catalyst activation energy with catalyst reactant orrelucte progress of reaction

For some reactions, he products can react to produce the original reactants. This is a reversible reaction. We use this symbol: 🥽 If carried out in a closed system, equilibrium can be reached where the forward and reverse reactions occur at the same rate

Reversible reactions

Chatelier's principle (HT le on

To move from equilibrium, and to change the amount of reactant and product, the conditions of the reaction must be changed. Le Chatelier's principle states, that within a closed system, the system will work to oppose or counteract the change by favouring either the forward or the reverse reaction. Conditions that can be changed are: concentration of the reactants or products, temperature of the system or the pressure of the system.

Concentration - When the concentration of a substrate is altered, the system will oppose the change. For example, if the reactant concentration is increased, the forward reaction is favoured, less reactant is available and more product is made.

Temperature - When the temperature of the system is altered, the system will oppose the change. For example, if the temperature of the system is increased, the endothermic reaction is favoured, resulting in the surrounding temperature to decrease.

Pressure - When the pressure of the system is altered, the system will oppose the change. For example, if the pressure of the system is increased, the reaction will favour the direction with fewer molecules, resulting in a decrease in pressure.

Key	Activation en	nergy	catalyst	collision t	heory frequ	ency rate of reaction	temperature	
terms	equilibrium	conce	ntration	pressure	surface area	closed system	energy	reversible

Organic Chemistry 01 Knowledge Organiser

Crude oil

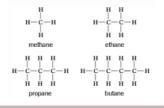
Crude oil formed from the remains of plants and animals millions of years ago. Crude oil is a mixture of **hydrocarbons** (molecules made of only carbon and hydrogen) of different sizes. As a raw product, crude oil is not particularly useful.

The properties of hydrocarbons depend heavily on the length of the molecule.

Chain length	Flammability	Boiling point	Viscosity
Long chains	Low	High	High
Short chains	High	Low	low

Alkanes

Alkanes are a family of hydrocarbons that have only single bonds. They are described as saturated. The general formula is C_nH_{2n+2} . The first four alkanes are:



Alkenes are also a family of hydrocarbons that have a double bond functional group between 2 carbon atoms. The general formula is C_nH_{2n} . Alkenes are used as fuels and to produce polymers.

Alkenes

Alkenes are more reactive than alkanes. They react with hydrogen, with the use of a nickel catalyst to form alkanes, with water(steam) under high temperatures and pressures to form alcohols and with halogens at room temperature to form haloalkanes.

Combustion

Hydrocarbons are used as fuels. When they react with oxygen, during the process of **combustion** they release a lot of energy.

Complete: Hydrocarbon + oxygen \rightarrow carbon dioxide + water

Alkanes

flammability

terms

Incomplete: Hydrocarbon + oxygen \rightarrow carbon + carbon monoxide + water

Cracking

Not all hydrocarbons are useful. Longer chain hydrocarbons tend to be less useful than those shorter chains. A process called cracking is used to break up the longer hydrocarbons, to produce shorter **alkanes** and **alkenes**. The two cracking techniques are:

- Catalytic cracking hydrocarbons are heated to become a gas before being passed over a hot ceramic catalyst
- **Steam cracking** hydrocarbons are mixed with steam at very high temperatures to break the longer chains.

alkenesboiling point

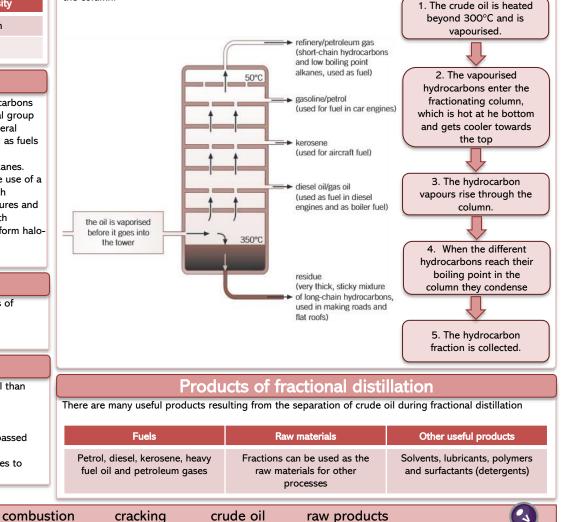
fractional distillation

fuel

Fractional distillation

Crude oil can be separated into **fractions** based on the different boiling points of different length hydrocarbons through a process called **fractional distillation**. Each **fraction** contains molecules of a similar number of carbon atoms.

To carry this process out a **fractionating column** is used, with a increasing temperature gradient moving up the column.



viscosity

volatility

hydrocarbon

Organic reactions and Polymers 02 (SEPARATES ONLY) Knowledge Organiser

Organic Reactions

There are numerous families of carbon based compounds. Each family is a homologous series, which has similar properties and reactions. Each homologous series is defined by the functional groups present.

Alkenes, alcohols, carboxylic acids and esters

Homo- logous series	Function -al group	Formation	Uses	Combustion	Reactions									
				Complete → carbon	Halogens: At room temperature, two halogen atoms are added across the double bond to form a haloalkane.	$\begin{array}{c} C_2H_4 + Br_2 \rightarrow C_2H_4Br_2 \\ H \\ C = C \\ H \\ H \end{array} \xrightarrow{H} Br - Br \rightarrow H - C - C - H \\ H$								
Alkenes	Alkenes C=C Catalytic cracking or steam cracking	Formation of polymers Raw materials	dioxide and water. Incomplete → carbon, carbon	Hydrogen: With a nickel catalyst, two hydrogen atoms are added across the double bond to form an alkane.	$\begin{array}{c} C_2H_4 + H_2 \rightarrow C_2H_6 \\ H & H & H \\ C = C + H_2 \longrightarrow H - C - C - H \\ H & H & H \end{array}$									
				monoxide and water	Water: Under high temperature and pressure, steam is added across the double bond to form an alcohol.	$\begin{array}{c} C_2H_4 + H_2O \rightarrow C_2H_3OH \\ H \\$								
Alcohols	-ОН	Reaction of alkene and steam. Ethanol can be formed by	Ethanol - alcoholic drinks, biofuels Others - row	alcoholic drinks, biofuels Others -	alcoholic drinks, biofuels Others -	alcoholic drinks, biofuels	alcoholic drinks, biofuels Others -	alcoholic drinks, biofuels Others -	alcoholic drinks, biofuels Others -	alcoholic drinks, biofuels Others - raw products and	alcoholic drinks, biofuels Others – raw products and	alcoholic drinks, biofuels Others - row dioxide and	Sodium: Alcohols react with sodi similar to when alkali metals are is an alkoxide, which if added to alkaline solution.	added to water. The product
							fermentation pro	fermentation products Oxidation: Prima and as potassium dick				and	and	Oxidation: Primary alcohols reac as potassium dichromate (IV) to
				idditives Not vinegar, typically	Bases/alkalis: Carboxylic acids re	eact similarly to other acids								
Carboxylic acids	al	dichromate - vinegai	Food additives - vinegar, citric acid		Sodium carbonate: Formation of carboxylic acids + metal carbona water									
ucius		(IV) in the presence of dilute H ₂ SO ₄	and malic acid	and malic	and malic	and malic	fuel.	Alcohols: Carboxylic acids react alcohols to make water and este r For example, ethanol + ethanoic → ethyl ethanoate + water	rs. H-C-C H H					
Key	Addit	tion alcoho	ol alkene	alkoxic	de amine amino ac	cid carboxylic acid								

homologous series

Polymers

Polymers are long molecules made up of small repeating **monomers**. They are formed during **polymerisation**.

Addition polymerisation reacts small alkene monomers together to form large molecules.

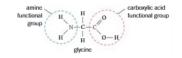


Condensation polymerisation involves

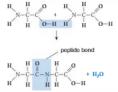
monomers with **two** functional groups, such as diols or dicarboxylic acids. When these react they lose a small molecules such as water, and as such are called condensation reactions

 $n HO \longrightarrow OH + n HOOC \longrightarrow OOH \longrightarrow +O \longrightarrow O-CO \longrightarrow CO \longrightarrow 2nH_2O$

Amino acids have two different functional groups - amine and carboxylic acid groups.



They react by condensation reactions to produce polypeptides. When lots of polypeptides come together they form proteins.



DNA (Deoxyribonucleic acid) is a large molecule which encodes genetic instructions for the development of living organisms. DNA is made of two long polymers that wind around each other in a double helix. The polymers are made of four different monomers called nucleotides. Other naturally occurring polymers important for life include starch and cellulose, which are made from glucose molecules joined together.

DNA

polymer

oxidising agent

oxidation

monomer

ester

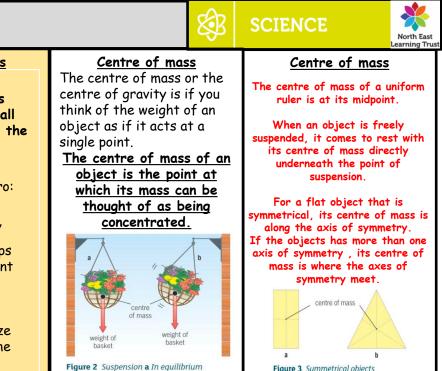
fermentation

polymerisation

terms

functional group





forces

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iagonal of starts at forces.

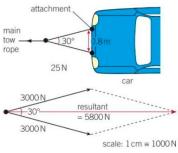
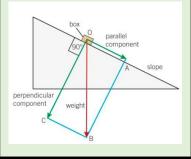


Figure 3 Symmetrical objects

Resolution of forces (HT)

Resolving forces means finding perpendicular components that have a resultant force that is equal to the force. To resolve a force in two perpendicular directions, draw a rectangle with adjacent sides along the two directions so that the diagonal represents the force vector.



Key vocabulary:	Forces between objects	<u>Resultant forces</u> Resultant force is a	<u>Centre of ma</u> The centre of mass
•Vector •Scalar	mation:	single force that has	centre of gravity is
•Scalar •Magnitude	When two objects interact	the same effect as all	think of the weight
Displacement	with each other, they exert	the forces acting on the	object as if it acts
•Newton	equal and opposite forces on each other.	object.	single point.
•Driving force	each other.		The centre of mas
•Braking force	🔶 🔶 pull 🛛 pull 🍑 💭	Balanced forces,	object is the po
•Braking force •Friction		resultant force is zero:	which its mass c
•Resultant force		 objects at rest 	thought of as b
 Balanced forces 		remains stationary	concentrated
•Unbalanced forces			
•Weight		 object moving keeps 	a
•Air resistance		moving at a constant	
•Stretching force (tension)		speed	
•Contact forces		Unbalanced forces	centre C
•Non- contact forces	Equal and opposite forces Vector quantity has magnitude		of mass
•Magnetic force	(size) and direction	 Depends on the size 	weight of weight
•Electrostatic force	Scalar quantity has magnitude	and direction of the	basket
•Gravity	ony	resultant force	Figure 2 Suspension a In equili
			b Non-equilibrium
•Free body force diagram			
 Free body force diagram Centre of mass 	Balanced forces	Unbalanced forces	Parallelogram of
•Centre of mass	Same size and opposite	The movement depends on	
•Centre of mass •Suspended equilibrium		The movement depends on the size and direction of	Parallelogram of the parallelogram of for scale diagram of two for
•Centre of mass •Suspended equilibrium •Symmetrical objects	Same size and opposite	The movement depends on the size and direction of the resultant force.	The parallelogram of fo scale diagram of two fo vectors.
•Centre of mass •Suspended equilibrium	Same size and opposite direction	The movement depends on the size and direction of the resultant force. When a jet plane takes off	The parallelogram of fo scale diagram of two fo vectors. The parallelogram of fo
•Centre of mass •Suspended equilibrium •Symmetrical objects	Same size and opposite	The movement depends on the size and direction of the resultant force. When a jet plane takes off the thrust from the engine	The parallelogram of fo scale diagram of two fo vectors. The parallelogram of fo used to find the resulta
•Centre of mass •Suspended equilibrium •Symmetrical objects •Parallelogram of forces	Same size and opposite direction	The movement depends on the size and direction of the resultant force. When a jet plane takes off the thrust from the engine is greater than the air	The parallelogram of fo scale diagram of two fo vectors. The parallelogram of fo
•Centre of mass •Suspended equilibrium •Symmetrical objects •Parallelogram of forces <u>Physics only</u>	Same size and opposite direction	The movement depends on the size and direction of the resultant force. When a jet plane takes off the thrust from the engine is greater than the air resistance or drag on it.	The parallelogram of fo scale diagram of two fo vectors. The parallelogram of fo used to find the resulta forces that do not act same line. The resultant is the dia
 Centre of mass Suspended equilibrium Symmetrical objects Parallelogram of forces <u>Physics only</u> Moments 	Same size and opposite direction	The movement depends on the size and direction of the resultant force. When a jet plane takes off the thrust from the engine is greater than the air	The parallelogram of fo scale diagram of two fo vectors. The parallelogram of fo used to find the resulta forces that do not act same line. The resultant is the dia the parallelogram that s
 Centre of mass Suspended equilibrium Symmetrical objects Parallelogram of forces Physics only Moments Load 	Same size and opposite direction	The movement depends on the size and direction of the resultant force. When a jet plane takes off the thrust from the engine is greater than the air resistance or drag on it.	The parallelogram of fo scale diagram of two fo vectors. The parallelogram of fo used to find the resulta forces that do not act same line. The resultant is the dia
 Centre of mass Suspended equilibrium Symmetrical objects Parallelogram of forces <u>Physics only</u> Moments Load Effort 	Same size and opposite direction	The movement depends on the size and direction of the resultant force. When a jet plane takes off the thrust from the engine is greater than the air resistance or drag on it.	The parallelogram of fo scale diagram of two fo vectors. The parallelogram of fo used to find the resulta forces that do not act same line. The resultant is the dia the parallelogram that s
 Centre of mass Suspended equilibrium Symmetrical objects Parallelogram of forces Physics only Moments Load Effort Force multiplier 	Same size and opposite direction	The movement depends on the size and direction of the resultant force. When a jet plane takes off the thrust from the engine is greater than the air resistance or drag on it.	The parallelogram of fo scale diagram of two fo vectors. The parallelogram of fo used to find the resulta forces that do not act of same line. The resultant is the dia the parallelogram that so the origin of the two for attachment
 Centre of mass Suspended equilibrium Symmetrical objects Parallelogram of forces <u>Physics only</u> Moments Load Effort 	Same size and opposite direction	The movement depends on the size and direction of the resultant force. When a jet plane takes off the thrust from the engine is greater than the air resistance or drag on it.	The parallelogram of fo scale diagram of two fo vectors. The parallelogram of fo used to find the result forces that do not act same line. The resultant is the dia the parallelogram that s the origin of the two fo
 Centre of mass Suspended equilibrium Symmetrical objects Parallelogram of forces Physics only Moments Load Effort Force multiplier 	Same size and opposite direction ush force push force friction Figure 2 Overcoming friction When the crate is pushed	The movement depends on the size and direction of the resultant force. When a jet plane takes off the thrust from the engine is greater than the air resistance or drag on it. The plane is accelerating .	The parallelogram of for scale diagram of two for vectors. The parallelogram of for used to find the result forces that do not act of same line. The resultant is the dia the parallelogram that as the origin of the two for main tow rope
 Centre of mass Suspended equilibrium Symmetrical objects Parallelogram of forces Physics only Moments Load Effort Force multiplier 	Same size and opposite direction push force riction Figure 2 Overcoming friction When the crate is pushed across the floor at a constant speed without	The movement depends on the size and direction of the resultant force. When a jet plane takes off the thrust from the engine is greater than the air resistance or drag on it. The plane is accelerating .	The parallelogram of fo scale diagram of two fo vectors. The parallelogram of fo used to find the result forces that do not act same line. The resultant is the dia the parallelogram that s the origin of the two fo
 Centre of mass Suspended equilibrium Symmetrical objects Parallelogram of forces Physics only Moments Load Effort Force multiplier 	Same size and opposite direction push force friction Figure 2 Overcoming friction When the crate is pushed across the floor at a constant speed without changing direction, the	The movement depends on the size and direction of the resultant force. When a jet plane takes off the thrust from the engine is greater than the air resistance or drag on it. The plane is accelerating . Figure 3 A passenger jet on take-off	The parallelogram of fo scale diagram of two fo vectors. The parallelogram of fo used to find the resulta forces that do not act of same line. The resultant is the dia the parallelogram that so the origin of the two for attachment tow rope 25N
 Centre of mass Suspended equilibrium Symmetrical objects Parallelogram of forces Physics only Moments Load Effort Force multiplier 	Same size and opposite direction push force riction Figure 2 Overcoming friction When the crate is pushed across the floor at a constant speed without	The movement depends on the size and direction of the resultant force. When a jet plane takes off the thrust from the engine is greater than the air resistance or drag on it. The plane is accelerating .	The parallelogram of fo scale diagram of two fo vectors. The parallelogram of fo used to find the resulta forces that do not act same line. The resultant is the dia the parallelogram that s the origin of the two for attachment tow rope
 Centre of mass Suspended equilibrium Symmetrical objects Parallelogram of forces Physics only Moments Load Effort Force multiplier 	Same size and opposite direction push force figure 2 Overcoming friction When the crate is pushed across the floor at a constant speed without changing direction, the push force on it is equal in	The movement depends on the size and direction of the resultant force. When a jet plane takes off the thrust from the engine is greater than the air resistance or drag on it. The plane is accelerating . Figure 3 A passenger jet on take-off	The parallelogram of fo scale diagram of two fo vectors. The parallelogram of fo used to find the resulta forces that do not act of same line. The resultant is the dia the parallelogram that is the origin of the two for attachment two rope 25N attachment = 5800N
 Centre of mass Suspended equilibrium Symmetrical objects Parallelogram of forces Physics only Moments Load Effort Force multiplier 	Same size and opposite direction push force figure 2 Overcoming friction When the crate is pushed across the floor at a constant speed without changing direction, the push force on it is equal in size and opposite direction	The movement depends on the size and direction of the resultant force. When a jet plane takes off the thrust from the engine is greater than the air resistance or drag on it. The plane is accelerating . Figure 3 A passenger jet on take-off	The parallelogram of fo scale diagram of two fo vectors. The parallelogram of fo used to find the resulta forces that do not act same line. The resultant is the dia the parallelogram that s the origin of the two for attachment tow rope

object

Key vocabulary:

 Vector-a quantity with direction and magnitude

Scalar- a quantity with magnitude only

 Magnitude- size or amount of a physical quantity

Displacement- distance in a given direction

Velocity- speed in a given direction

•Speed- how fast something is moving

Acceleration- change of velocity per second

 Deceleration- negative acceleration, used for any situation where an object slows down

 Gradient- (of a straight live graph) Change of the quantity plotted on the y-axis divide by the change of the quantity plotted on the x axis

 Tangent- a straight line drawn to touch a point on a curve, so it has the same gradient as the curve at that point

 Independent variable- the one you chose to vary in an investigation

•Dependent variable- used to judge the effect of varying the independent variable

Continuous data- any numerical value

 Categoric data- one that is best described by a word or a label

Equations to remember:

$$v = \frac{s}{t}$$
 $a = \frac{v - a}{t}$

Equation you will be given and expected to use:

$$[v^2 - u^2 = 2 a s]$$

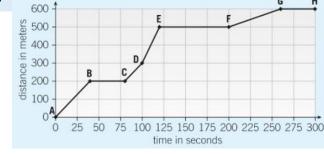
Speed, distance and time:

You can calculate the speed of an object by using the equation speed= distance/ time. If you have a distance time graph you can get the distance and the time for each section and therefore calculate the speed.

The gradient on a distance time graph represents the speed.

A-B shows constant speed as it is a straight line

B-C shows the object is stationary as the distance is not changing C-D is also constant speed but as the gradient is steeper is a greater constant speed



Acceleration, change in velocity and time:

You can calculate the acceleration of an object if you know the change in velocity and the time it takes for the change in velocity. These can be taken from a velocity- time graph.

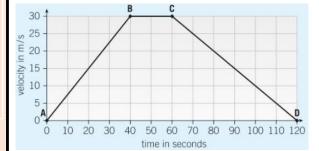
The gradient of the line on a velocity- time graph represents the acceleration.

A-B shows constant acceleration

B-C shows constant speed

C-D shows deceleration

A steeper gradient shows a greater constant acceleration



Higher tier The area under the velocity-time graph represents the distance travelled in a direction (displacement). Work out the area of regular shaped objects.





earning Trus

- Typical speeds of people:
- walking ~ 1.5 m/s
- running ~ 3 m/s
- cycling $\sim 6 \text{ m/s}$

Near the Earth's surface any object falling freely under gravity has an acceleration of about 9.8 m/s^{2.}

HT An object moving in a circle has a direction of motion that changes continuously as it goes round. So its velocity is not constant even if its speed is constant, this is because the direction is continuously changing direction.



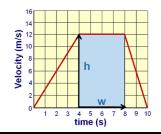
If the graph has curved sections. the motion is not



uniform.

time To find the speed for a curved part of the graph you need to draw a tangent. The would out the speed by doing $\Delta Y / \Delta X$

Work out the distance travelled, the area under the V-T graph. Calculate the area of the rectangles and the right-angled triangles.



Year 10 Science Forces and motion

<u>Keywords</u>

Braking distance– the distance a car travels while under the braking force or while the brakes have been applied

Inertia- an objects tendency to reman in a steady state

Momentum- mass x velocity

Reaction time- the time for you to react to a stimuli. It varies from person to person but ranges from 0.2-0.9s

Stopping distance- braking distance + thinking distance

Thinking distance- the distance the car travels while the driver reacts

Inertia- the tendency for an object to continue in its state of motion

Inertial mass-Is a measure of the difficulty of changing the object's velocity

Recoil- rebound or movement backwards

Directly proportional (\propto)- There is a direct proportion between two values when one is a multiple of the other.

Remember from previous topics:

Velocity is *speed* in a given *direction*. It is a vector quantity.

A change in velocity means an object:

- Starts to move
- Stopes moving
- Speed up
- Slows down
- Changes direction

Balanced forces are the same size and opposite directions.

When the forces are balanced the resultant force is zero Newtons and an object at rest will remain at rest and if the object is moving it will continue to move at the same speed in the same direction.

Newton's Second law Newton's Second Law states that:

the acceleration of an object is proportional to the force on the object.

 $a \propto F$

Is inversely proportional to the mass of the object

 $a \propto \frac{1}{m}$

•

• They are then linked in the equation:

F= m x a

Where

F= force in N

m= mass in kg

a= acceleration in m/s^2

The diagram shows apparatus that can be used in this investigation. A constant stream of air reduces the friction between the glider and the air track.

Investigate the effect of varying the force on the acceleration of an object. **Method**

•make and record measurements of length, mass and time accurately

•use appropriate apparatus and methods to measure motion

Position an air track on a bench with a bench pulley at one end and two light gates above the track. Cut an interrupt card to a known length (such as 10 cm) and attach it to an air track glider. Connect the glider to a hanging mass by a string the length of the air track passing over the bench pulley. Make sure the air track is level and that the card will pass through both gates before the mass strikes the floor.

Set the data logging software to calculate acceleration.

Add 5 \times 20 g slotted masses (0.98 N of force) to the end of the string.

Release the glider, then record the weight and acceleration.

Repeat steps 4 and 5 two more times, and calculate a mean value for the acceleration. Repeat steps 4 to 6, removing one of the slotted masses each time (giving forces of 0.78 N, 0.59 N, 0.39 N and 0.20 N.

 Stopping distance

 The distance it takes for a car to stop is the stopping distance.

 Stopping = thinking + braking distance

 distance distance

 Thinking distance

 Thinking distance

 Thinking distance

driver reacts.

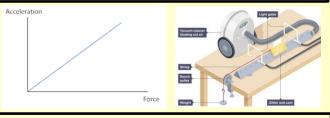
Braking distance-the *distance* the car travels while the driver brakes.

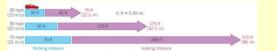
Factors that affect:

Braking distance	Thinking distance
Speed	Tiredness
Road conditions (ice, snow rain- must state this!)	Drugs and alcohol
Condition of brakes or tyres.	Distractions such as phones

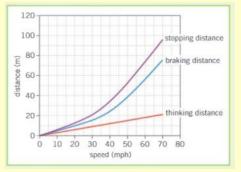
Factors that reduce friction increase the braking distance. Less friction can increase skidding.

Drugs and alcohol slow the drivers reactions and so the car travels further while the driver reacts.





stopping distance = thinking distance + braking distance



Newton's Second law Required practical

Investigate the effect of varying the force on the acceleration of an object of constant mass

There are different ways to investigate the effect of varying the force on an object. In this

Force and acceleration experiment

required practical activity, it is important to:

•measure and observe the effect of force

Year 10 Science Forces and motion					
Forces and elasticity Required practical					
Equipment	Safety glasses Spring Slotted masses 1m ruler Clamp stand				
Method	 Attach the spring to the clamp stand by hanging it off a clamp and let the spring hang freely over the side of the bench. Use the two clamps to hold the ruler vertically, near but not touching the spring. You will use this to measure the length of the spring. Measure the length of the spring with no force acting on it. Hang the slotted masses from the spring and measure the new length of the spring. Record the length of the spring and the mass suspended from it. Work out the <u>extension</u> of the spring. Continue adding slotted masses and record the new mass each time and work out the extension. Plot the results on a graph. Extension v weight. 				
Safety	Safety glasses must be worn throughout Carefully place the slotted masses on the spring				
increase accu pointer to t	eans close to the true value. To uracy you use a <u>wooden split as a</u> <u>he ruler</u> . The ruler is clamped in position so it is vertical.				
7 - 6 - 5 -	polythene strip rubber band				
N ni the second	stand metre rule				
	steel spring F=k x e 40 60 80 100 120 extension in mm e=extension in m				

HT Momentum

Momentum is the property of all moving objects. It is a vector quantity Momentum depends on the mass and velocity of the object.

p = m x v
Where:
p= momentum in kg m/s
m= mass in kg
v= velocity on m/s

The law of conservation of momentum says that: In a closed system, the total momentum before an event (e.g. a collision or an explosion) is equal to the total momentum after the event.

If two objects collide the law of conservation can be written as:

M1u1+ m2u2= m1v1+m2v2

m1= mass of object 1 u1= initial velocity of object 1

v1= final velocity of object 1

HT Inertia

The tendency for an object to remain at rest or to continue in uniform motion is called inertia.

The inertial mass of an object is the measure of the difficulty of changing the object's velocity.

Inertial mass= force/ acceleration

<u>HT SUVAT</u>

The deceleration of a vehicle can be calculated using the following equation: $v^2 = u^2 + 2as$

You do not need to remember this equation it will be given to you. You will need to be able to re-arrange it, know units and know that the acceleration close to the surface of the Earth is 9.8ms²

PHYSICS SEPARATES ONLY

<u>Momentum</u>

If an object is moving an unbalanced force acting on it will change its momentum.

Since F= ma and a= $\Delta V/t$ so we can write F= m $\Delta v/t$ where m Δv is the change in momentum

The greater the time for the change in the momentum:

- The smaller the rate of change of momentum
- The smaller the force experienced

Vehicle safety features increase the time take for the change in momentum: Aire bags, seat belts, crumple zones, cycle helmets and crash mats for gymnastics.

Year 10 Science Homeostasis and the nervous system

Homeostasis

Homeostasis is the regulation of internal conditions (of a cell or whole organism) in response to internal and external changes, to maintain optimum conditions for functioning.

This maintains optimum conditions for all cell functions and enzyme action.

In the human body, this includes control of

- blood glucose concentration
- body temperature
- water levels

The automatic control systems of homeostasis may involve nervous responses or chemical responses.

All control systems involve

- Receptor cells, which detect stimuli (changes in the environment)
- Coordination centres (such as the brain, spinal cord, or pancreas), which receive and process information from receptors
- Effectors (muscles or glands), which produce responses to restore optimum conditions.

The nervous system

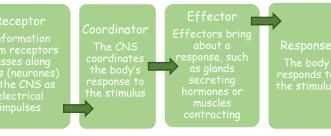
Function

Structure

The nervous system is made up of

The nervous system enables humans to react to their surroundings and to coordinate their behaviour - this includes both voluntary and involuntary actions.

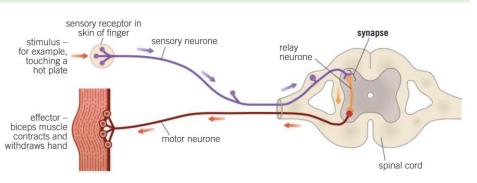
the central nervous system (CNS) and a network of nerves. The CNS comprises the brain and the spinal cord.



Reflex arcs

Reflex actions of the nervous system are automatic and rapid - they do not involve the conscious part of the brain.

Reflex actions are important for survival because they help prevent damage to the body.



Reflex arc structures

Synapses

Gaps between neurones, which allow

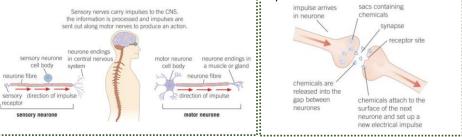
electrical impulses in the nervous

system to cross between neurones.

receptor site

Neurones

Carry electrical impulses around the body - relay neurones connect sensory neurones to motor neurones



Factors affecting reaction time

- Tiredness
- Distractions
- Caffeine
- Alcohol

Key terms

Year 10 Science Inheritance

Types o	f reproduction				Genetic in	heritance					
Sexual	Asexual	You need to be	e able t				etic inhe	ritance:			
Two parents	One parent	gamete	Specialised sex cell formed by meiosis								
Cell division thorough meiosis	Cell division by mitosis	chromosomes	L	Long molecule made from DNA found in the nucleus of					ls		
Joining of male and female sex cells (gametes) - sperm and egg in animals, pollen and ovule in plants	No fusion of gametes	gene	r	Part of a chromosome that codes for a protein - some characteristics are controlled by a single gene (e.g. fur colour in mice and red-green colour blindness in humans), but most are				lour in are			
Produces non-identical offspring that a genetically different to parents	re Produces offspring that are genetically identical to parent (clones)	controlled by multiple genes interactin allele Different forms of the same gene					ing				
Results in wide variation within offsprir and species	No mixing of genetic information	dominant		Allele that only needs one copy present to be express							
Meiosis	DNA and the genome	recessive		Allele that needs two copies to present to be expressed							
Meiosis is a type of cell division that	Genetic material in the nucleus of a cell is	homozygous	۱	When an in	dividual carr	arries two copies of the same allele for a trait					
makes gametes in the reproductive organs.	composed of DNA. DNA is made up of two strands forming a	heterozygous	١	When an in	dividual carr	iers two alleles for a trait					
Meiosis halves the number of	double helix. DNA is contained in structures called	genotype	0	Combinatio	ombination of alleles an individual has						
chromosomes in gametes, and	chromosomes.	phenotype	F	Physical ex	ysical expression of the genotype - the characteristic shown						
fertilisation (joining of two gametes) restores the full number of	A gene is a small section of DNA on a chromosome that codes for a specific	Genetic crosses Sex determination									
chromosomes. The fertilised cell divides by mitosis, producing more cells. As the embryo develops, the cells differentiate.	 sequence of amino acids, to produce a specific protein. The genome of an organism is the entire genetic material of that organism. The whole human genome has been studied, and this has allowed scientists to: Search for genes linked to different diseases Understand and treat inherited disorders 	A genetic cross is when you consider the offspring that might result from two known parents. Punnett squares can be used to predict the outcome of a genetic cross, for both the genotypes the offspring might have and their phenotypes. For example, the cross bb (brown fur) x BB (black fur) in mice:				Normal human body cells contain 23 pairs of chromosomes-one of these pairs determines the sex of the offspring. In human females the sex chromosomes are the same (XX) and in males there are different (XY). A Punnett square can be used to determine the probability of offspring being male or female. The probability is					
parent cell	 Trace human migration patterns from the past. 				her	always 50% in human as there are two XX and two XY outcomes.					
DNA replicates	Inherited disorders Some disorders are due to the inheritance of			В	В			mot	her		
two daughter cells, each with a paired chromosome set	certain alleles: • Polydactyly (extra finger or toe) is caused by a dominant allele.	father	b	Bb	Bb			×	x		
four daughter cells (gametes), each with a single chromosome	 Cystic fibrosis (a disorder of cell membranes) is caused by a recessive allele. 		b	Bb	Bb	father	x	xx	xx		
set and all genetically	Embryo screening and gene therapy may alleviate suffering from these disorders, but there are ethical issues surrounding their use.	Offspring genotype: 100% Bb Offspring phenotype: all black fur				ХУ	ху				
Key allele chromosom terms genotype		•••••	ation phenoty	gamete /pe Pui	gene nnett squar	genetic cr e recess	5	enome	P		

Year 10 Science Inheritance

Variation in populations	Mutation	G	enetic Engineering			
Differences in the characteristics of individuals in a population are called variation. Variation may be due to differences in: the genes they have inherited, for example eye colour (genetic causes) the environment in which they have developed, for example,	 There is usually a lot of genetic variation within a population of species - this variation arises from mutations. A mutation is a change in a DNA sequence: mutations occur continuously very rarely a mutation will lead to a new phenotype some mutations may change an existing phenotype and most have no effect if a phenotype is suited to an environmental change, it can lead to a 	involves changing the genome of an organism by introducing a gene from another	nple: erial cells have been genetically engineered to produce al substances, such as human insulin to treat diabetes. crops have been genetically engineered to be tant to diseases, insects, or herbicides, or to produce or and better fruits and higher crop yields. Crops that undergone genetic engineering are called genetically fied (GM).			
language (environmental causes) a combination of genes and the environment.	relatively rapid change in the species - this is the theory of evolution by natural selection.	human with ins gene ir	cell cut out of DNA by an enzyme in it taken up by bacterium			
Selective Breeding						
Selective breeding (artificial selection) is the process by which humans breed plants and animals for particular genetic characteristics. Humans have been using selective breeding for thousands of years, since breeding crops from wild plants and domesticating animals. Process of selective breeding: 1. choose parents with the desired	 Disadvantages of selective breeding: can lead to inbreeding, where some breeds are particularly prone to inherited defects or diseases reduces variation, meaning all members of a species could be susceptible to certain diseases. 	bacter with rin DNA ca a plast	g of insulin gene inserted into			
characteristics from a mixed population 2. breed them together 3. choose offspring with the desired		There are many benefits to ge but also some risks and moral	netic engineering in agriculture and medicine, objections.			
characteristic and breed them		Benefits	Risks			
 together 4. continue over many generations until all offspring show the desired characteristic. The characteristic targeted in selective breeding can be chosen for usefulness or appearance, for example disease resistance in food crops animals that produce more meat or milk domestic dogs with a gentle nature larger or unusual flowers. 	large fruit disease resistant disease resistant disease resistant disease resistant disease resistant disease resistant disease resistant disease resistant disease resistant disease resistant disease resistant disease resistant disease resistant	 Potential to overcome some inherited human diseases Can lead to higher value of crops as GM crops have bigger yields than normal Crops can be engineered to be resistant to herbicides, make their own pesticides, or be better adapted to environmental conditions. 	 Genes from GM plants and animals may spread to other wildlife, which could have devastating effects on ecosystems Potential negative impacts on populations of wild flowers and insects Ethical concerns, for example, in the future people could manipulate the genes of foetuses to ensure certain characteristics Some people believe the long-term effects on health of eating GM crops have not been fully explored. 			
Key terms genetically mod	dified genetic engineering inbree	eding mutation select	ive breeding variation			

Year 10 Science Inheritance

Innermance									
Theory of evolution	Process of natural selection	Resistant bacteria							
Evolution is the gradual change in the inherited characteristics of a population over time. Evolution occurs through the process of natural selection and may result in the formation of new species.	 The theory of evolution by natural selection states that: Organisms within species show a wide variation in phenotype Individuals with characteristics most suited to the environment are more likely to survive and breed successfully These characteristics are then passed on to their offspring. 	Bacteria can evolve rapidly because the reproc This has lead to many strains of bacteria deve resistance, such as MRSA. The development of resistance is evidence for the theory of evolut selection. The development of new antibiotics is expensiv unlikely to keep up with the emergence of new resistant bacteria strains.	loping antibiotic fantibiotic tion by natural ve and slow, so is antibiotic-						
Fossils	Evidence for evolution	To reduce the rise of antibiotic-resistant stra doctors should only prescribe antibiotics f	lins						
Fossils are the remains of organisms from millions of years ago, which are found in rocks. Fossils can be formed from:	 The theory of evolution by natural selection is now widely accepted because there are lots of data to support it, such as It has been shown that characteristics are passed on to offspring in genes 	 doctors should only prescribe antibiotics for serious bacterial infections patients should complete their courses of antibiotics so all bacteria are killed and non survive to form resistant strains. the use of antibiotics in farming and agriculture should be restricted. 							
 Parts of the organism 	Evidence from the fossil record		Evolutionary Trees						
that do not decay because one or more of the conditions needed for decay are absent	 The evolution of antibiotic resistance in bacteria Benefits of the fossil record Problems with the fossil record 	Classification of living organisms Kingdom Carl Linnaeus developed a system to classify living	Evolutionary trees use current classification data for living organisms and fossil data for extinct organisms to show how scientists believe organisms						
 Hard parts of an organism (e.g. bones) when replaced by minerals Preservation of the 	 Can tell scientists how individual species have changed over time Many early organisms were soft-bodied, so most decayed before producing fossils 	Phylum things into groups, based upon observable characteristics.	are related. PRESENT DAY 40 20 extinct exti						
traces of organisms (e.g. burrows, footprints, and rootlet traces).	 Fossils allow us to understand how life developed over the Earth's history Fossils can be used There are gaps in the fossil record as not all fossils have been found and others have been destroyed by 	Class New models of classification were proposed as understanding of biochemical processes developed and improvements	common ancestor actinct extinct actinct extinct						
1 The reptile dies and falls to the ground 3 Protected, over millio	to track the geological or human movement of a activity - this means species or its scientists cannot be	in microscopes led to discoveries of internal structures.	edinct verset family verset family raccoon family						
years, the skeleton be mineralised and turn rock. The rocks shift	sto Degan on Earm.	There is now a three-domain system developed by Carl	Extinction						
The flesh decays, leaving the skeleton to be covered in sad or soil and clay before it is damaged	4 Eventually, the fossil emerges as the rocks move and erosion takes place Organisms are named by the binomial system of genus and species e.g. Homo Sapiens Homo is our Genus Sapien is our Species	Family System developed by Carl Woese, dividing organisms into: Bacteria (true bacteria) Genus Archea (primitive bacteria usually living in extreme conditions) Species Eukaryota (including protists, plants, fungi and animals).	Extinction is when there are no remaining individuals of a species still alive. Factors that may contribute to a species' extinction include: - new predators - new diseases - new competitors - catastrophic events - changes to the environment						
terms Antibiotic resistance	e binomial system evolution evolutionary tre	e extinction fossil record natural sel	ection three-domain system 🔎						

Year 10 - Space



<u>Keywords</u>

Big Bang theory- the theory that the universe was created in a massive explosion from a single point and the universe has been expanding ever since.

Centripetal force- The resultant force towards the centre of a circle acting on an object moving in a circular path.

Dark energy-Believed to cause the universe's acceleration.

Dark matter- Matter in a galaxy that cannot be seen. Its presence has been deduced because galaxies would spin much faster if their stars were their only matter. **Nebula-** interstellar cloud of dust and gas.

Red shift- Increase in the wavelength of EM waves emitted by a star due to the galaxies motion away from us. The faster the speed of the galaxy the greater the red shift.

Satellite- an object that orbits around a planet in a circular motion.

Supernova- the explosion of a massive star after fusion ceases and causes the matter to collapse into its core.

Our solar system

Our solar system is made up of the Sun (a star) and all the objects that's orbit it. Including; eight planets, dwarf planets, asteroids, comets and moons (natural satellites that orbit planets).

The sun is located in the Milky way galaxy which contains billions of other stars.

Formation of stars

The sun (and all the other stars) was formed from a huge cloud of dust and gas (a nebula) pulled together by gravitational attraction.

Gravitational attraction between the particles f dust and gas cause them to merge together to form a Protostar.

The Protostar becomes denser as gravitational forces continue to pull it together, so the particles in the Protostar collide more often.

Formation of stars continued

More energy from the gravitational potential energy store of the particles is transferred to the thermal energy store so the temperature of the Protostar increases.

When the temperature is high enough hydrogen nuclei fuse together to form helium nuclei. This nuclear fusion releases huge amounts of energy. The star is now at its main sequence stage. The star is stable as the forces are balanced. The inwards gravitational force and the outwards force from the fusion.

When the star runs of out hydrogen to fuse it reaches the end of main sequence. Its core collapses and the outer layers swell. The star is now a red giant/red super giant depending on the size of the star.

- If the star is the same size as the sun or smaller when ta star has fused the heavier elements up to iron, fusion stops. The star collapses. It gets very hot and dense. It glows, this is a white dwarf. It then fades and becomes a black dwarf.
 - If the star is much bigger than the sun the red super giant will fuse heavier elements up to iron and then it will collapse. The compression causes a cataclysmic explosion called a supernova. Elements heavier than iron are formed in a supernova. The most massive stars then form a black hole. Those that are a bit less massive from neutron stars.

Orbital motion and satellites

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The Earth and other planets in the solar system orbit the Sun. The moon is a natural satellite that orbits the Earth. Other planets have moons orbiting them. The Earth has artificial satellites orbiting it also.

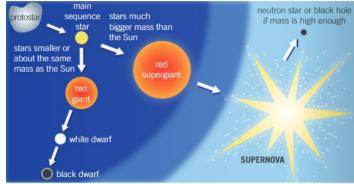
Circular orbits

Satellites orbit around the Earth in a circular orbit.

An object in a circular orbit is constantly changing direction. It is constantly changing **velocity** (not speed) as velocity is a vector quantity.

Therefore it is constantly **accelerating** and so have a **resultant force** acting on it.

The resultant force is centripetal force and is always directed towards the centre of the circular orbit. The acceleration is always directed towards the centre.



The big bang theory

Scientists used observations to propose the Big Bang theory for the start of the universe. The Big Bang theory suggests that the universe started off as an extremely hot small and dense object that exploded.

The evidence for this is **<u>red-shift</u>** and the existence of <u>electromagnetic radiation</u> left over from the Big Bang.

Red shift is the name given to the effect that makes the wavelengths of light longer if the light source is moving away from the observer. Light from the most distant galaxies are the most red shifted and suggests they are moving away the fastest.

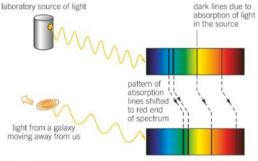


Figure 2 Red-shift

Scientists do not know or understand much about the origin of the universe. For example <u>dark energy</u> could be responsible for the acceleration of the universe and <u>dark</u> <u>matter</u> might provide gravitational force holding galaxies together. <u>Dark matter</u> cannot be seen. Its presence means that the density of the universe is much larger than if it did not exist.

NCFE Level 1/2 Technical Award in Creative Design and Production – KS4

Assessment Objective	S
AO1 - Recall knowledge and show understanding	The emphasis here is for learners to recall and communicate the fundamental elements of knowledge and understanding.
AO2 – Apply knowledge and understanding	The emphasis here is for learners to apply their knowledge and understanding to real-world contexts and novel situations.
AO3 - Analyse and evaluate knowledge and understanding	The emphasis here is for learners to develop analytical thinking skills to make reasoned judgements and reach conclusions
AO4 - Demonstrate the application of relevant technical skills, techniques and processes	The emphasis here is for learners to demonstrate the essential technical skills relevant to the vocational sector by applying the appropriate processes, tools and techniques
AO5 - Analyse and evaluate the demonstration of relevant technical skills, techniques and processes.	The emphasis here is for learners to analyse and evaluate the essential technical skills, processes, tools and techniques relevant to the vocational sector
Non-exam assessment (NEA)	Worth 60% of your overall grade. Contains project work evidencing the 5 assessment objectives above.
Exam	Worth 40% of your overall grade. Contains exam work evidencing the 5 assessment objectives above.

Key Terms	
Abstract	Abstract art seeks to break away from traditional representation of physical objects. It explores the relationships of forms and colours
Aesthetics	Aesthetics is the branch of philosophy that is concerned with the nature of beauty and taste
Aperture	The opening through which light passes to expose sensitized material or a sensor.
Composition	Composition is the placement or arrangement of visual elements in a work of art.
Contemporary Art	Embraces late 20th century contemporary art movements in painting, sculpture and architecture, as well as new media such as installation art, (including sound), conceptualism and video art.
Contrast	Contrast is the scale of difference between dark and light areas in images.
Depth of Field	The distance in front of the point of focus and the distance beyond that is acceptably sharp.
Exposure	The amount of light that is allowed to reach the image sensor which is controlled by the shutter speed and aperture setting.
Form	Form is the aesthetics of recording in 2 and 3D
Line	Lines can be horizontal, vertical, or diagonal, straight or curved, thick or thin.
Macro Photography	Photography producing photographs of small items larger than life size
Modernism	Modernism is the term given to the succession of styles and movements in art and architecture which dominated Western culture from 19th Century up until the 1960's.
Photograph	A drawing with light
Primary source	Your own photographs/ drawings based on real objects
Sculpture	To make or represent (a form) by carving, casting, or other shaping techniques.
Secondary source	Images form the internet, books or magazines
Texture	Texture is the perceived surface quality of a work of art.
Tone	This could be a shade or how dark or light a colour appears

Timeline of Art Movements

Year									1							
1860	1870	1880	1890	1900	191	0	1920	1930	1940	1950	1960	1970	1980	1990	2000	Present
Arts an	d Crafts															
		Art Nou	veau													
						Mo	dernism									
							Bauhaus									
							Art Deco									
									Po	st Modern	ism					
													Memphis	5		

SMSC Creative thinkers, Cultural, Reflective learners



Knowledge links: Science, English, Technology, Maths, Geography, History

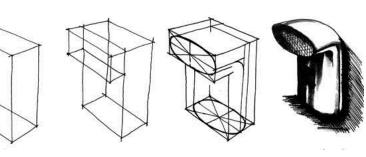
Unit R038: Principles of engineering design Communicating design outcomes

3.1 Types of drawing used in engineering

Freehand Sketching

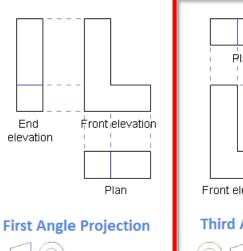
• Freehand sketches increase designers' ability to communicate design ideas.

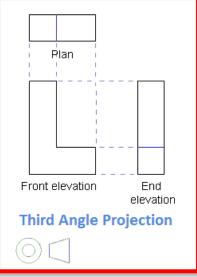
- Basic building blocks are crated out using light construction lines.
- Proportions (size relationships) are calculated by comparing features.
- Crated shapes are refined further, and detail added.
- The drawing is then rendered (shade, colour, texture, tone)
- Drawing can also be emphasised using thick and thin lines to make them stand out.



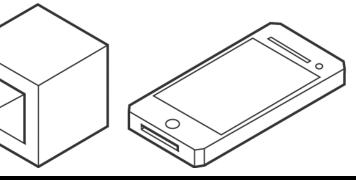
Orthographic Drawings

- A 2D drawing often referred to as an engineering or working drawing.
- Orthographic drawings show different elevations of a 3D product in 2 dimensions.
- Drawings will be drawn to scale and can be measured during manufacturing.





- Isometric drawings have no perspective.
- They can be drawn to scale, measured and used in manufacturing.
- Horizontal lines are drawn at **30 degrees**.
- Vertical lines within a product remain vertical within the drawing.
- Third lines are used to make the product look hollow
 Thick and thin lines can be applied to emphasise a
- Thick and thin lines can be applied to emphasise a drawing.



Exploded Views

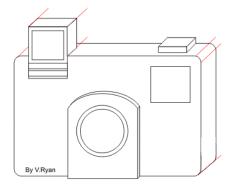
Isometric

- Parts of a product are separated (exploded) within the drawing to show how they interact and go to together.
- Specific line conventions are used to show the relationship between parts.
- Drawings can be quickly created in CAD to enable designers to visualize how components will interact to speed up the development process.
- They can also be used as an assembly line aid for workers and in instruction booklets.

- Freehand sketching
 - s <mark>Isometric</mark>
- Oblique
- Orthographic drawings
- Exploded views
- Assembly drawings
- Block diagrams
- Flowcharts
- Circuit diagrams
- Wiring diagrams

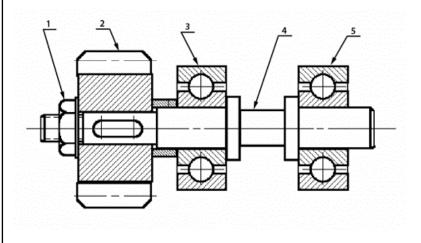
Oblique

- Oblique drawings have no perspective.
- They can be drawn to scale, measured and used in manufacturing.
- Horizontal and vertical lines within a product remain two dimensional.
- The sides (depth) of the product is drawn at a **45-degree** angle.
- All lines are generally parallel.



Assembly Drawings

- Assembly drawings show how parts are assembled to make the final product or sub-assembly.
- They can be drawn 2D (cross section), 3D and or exploded.

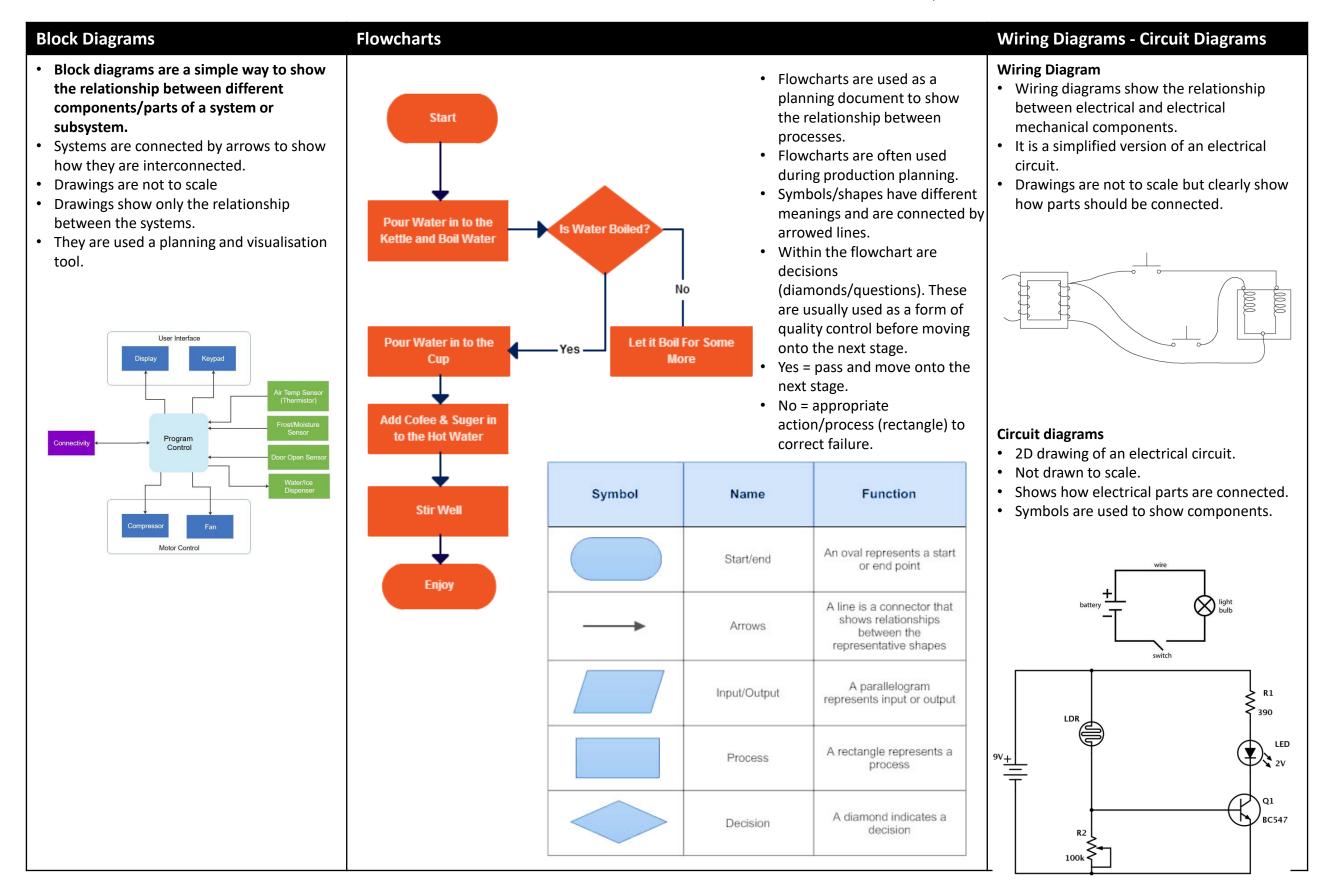


3.1 Types of drawing used in engineering

- Freehand sketching
- Isometric
- Oblique
- Orthographic drawings
 - Exploded views

Assembly drawings

- **Block diagrams**
- Flowcharts
- Circuit diagrams
- Wiring diagrams



3.2 Working drawings

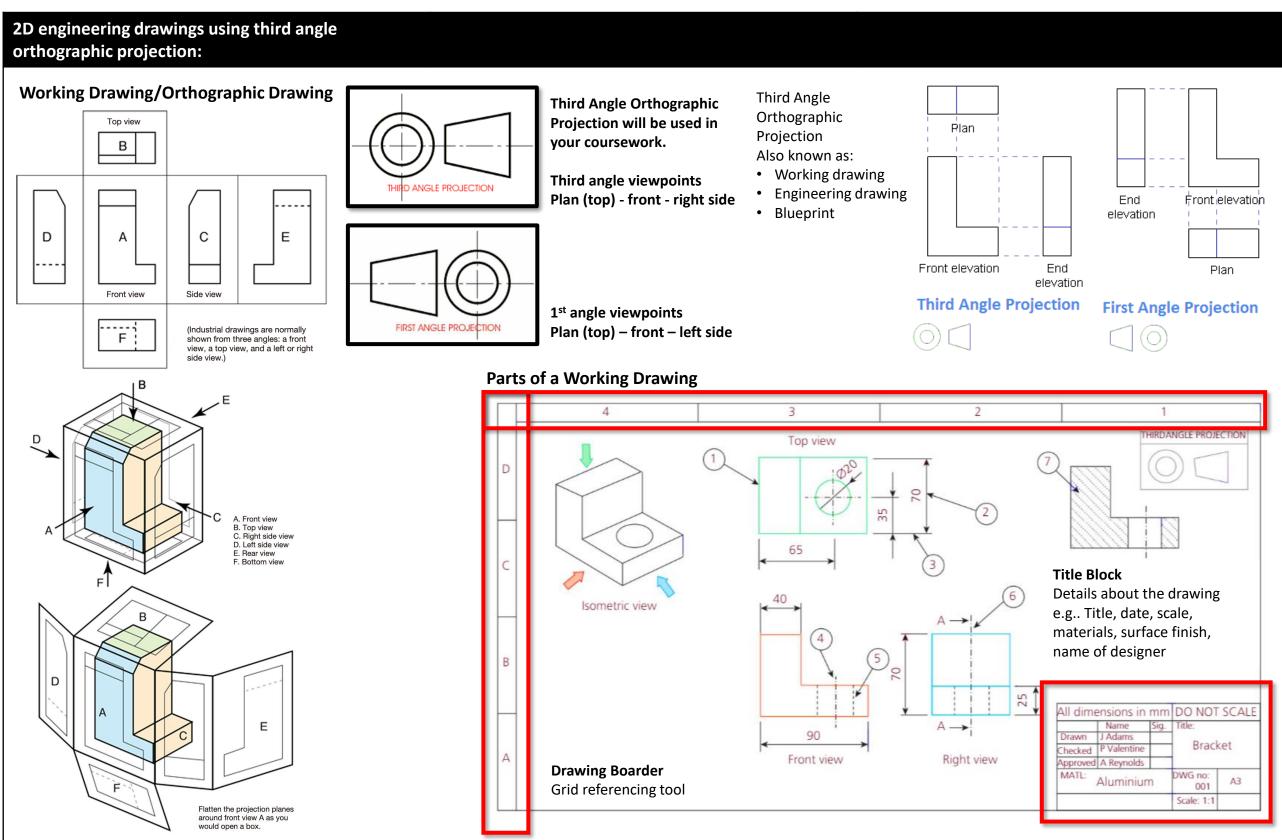
2D engineering drawings using third angle orthographic projection Standard conventions

Title block

- Metric units of measurement
- Scale
- Tolerance

Standard conventions for dimensions:

- Linear measurements
- Radius
- Diameter
- Surface finish



3.2 Working drawings

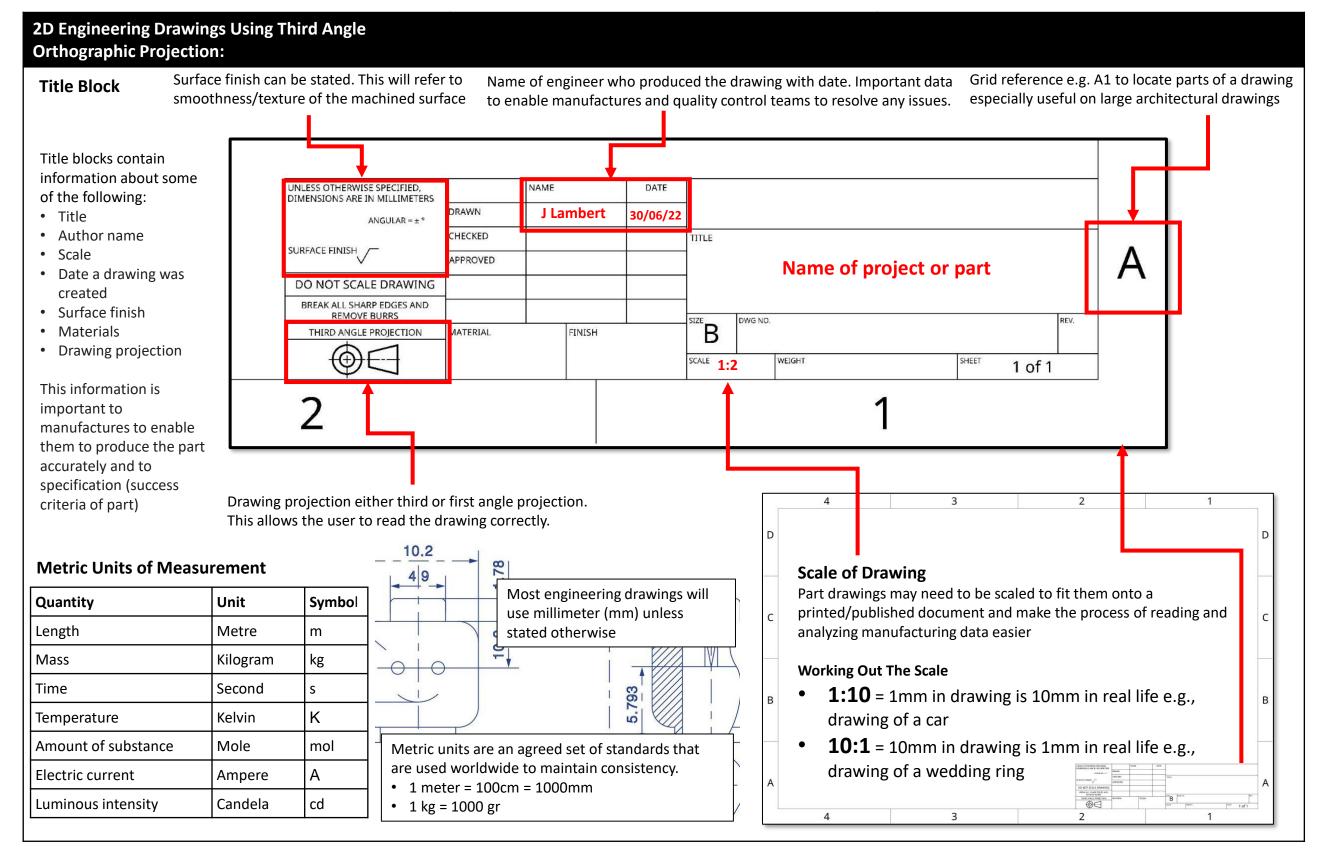
2D engineering drawings using third angle orthographic projection Standard conventions

Title block

- Metric units of measurement
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Standard conventions for dimensions:

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- Diameter
- Surface finish



FRONT VIEW

3.2 Working drawings

Meaning of line types:

- Outlines
- Hidden detail
- Centre line
- Projection Dimension
- Leader line

Abbreviations:

- Across flats
- Centre line
- Diameter Drawing ٠
- Material
- Square

Representations of mechanical features:

- Threads
- Holes
- Chamfers
- Countersinks
- Knurls

Meaning of line types:

. :.. ~. • • . . _ .

Number	Representation	Description	Application	Top view	
1		Continuous wide line	Visible edges and outlines of objects to make them stand out		
2, 3, 7 Continuous narrow line			Used for dimension lines, extension lines, leader lines, hatching and projection lines (to help with drawing construction)	Projection lines	
5	Dashed narrow line		Used to show hidden detail in a drawing	Line at A5°	
4 Long dashed-dotted			Used to show the centre of a feature on a drawing, like a hole		
6	Long dashed-dotted wide line		Shows the position of a cutting plane for a sectional view		
, · · ·			- 52		
drawing differen Outlines	on lines are orthographic s to plan out t viewpoints. s lines are ound the				

Ø16

R16

SIDE VIEW

36

FRONT VIEW

Ø18

RIGHT VIEW

3.2 Working drawings

Meaning of line types:

- Outlines
- Hidden detail
- Centre line
- Projection
- Dimension
- Leader line

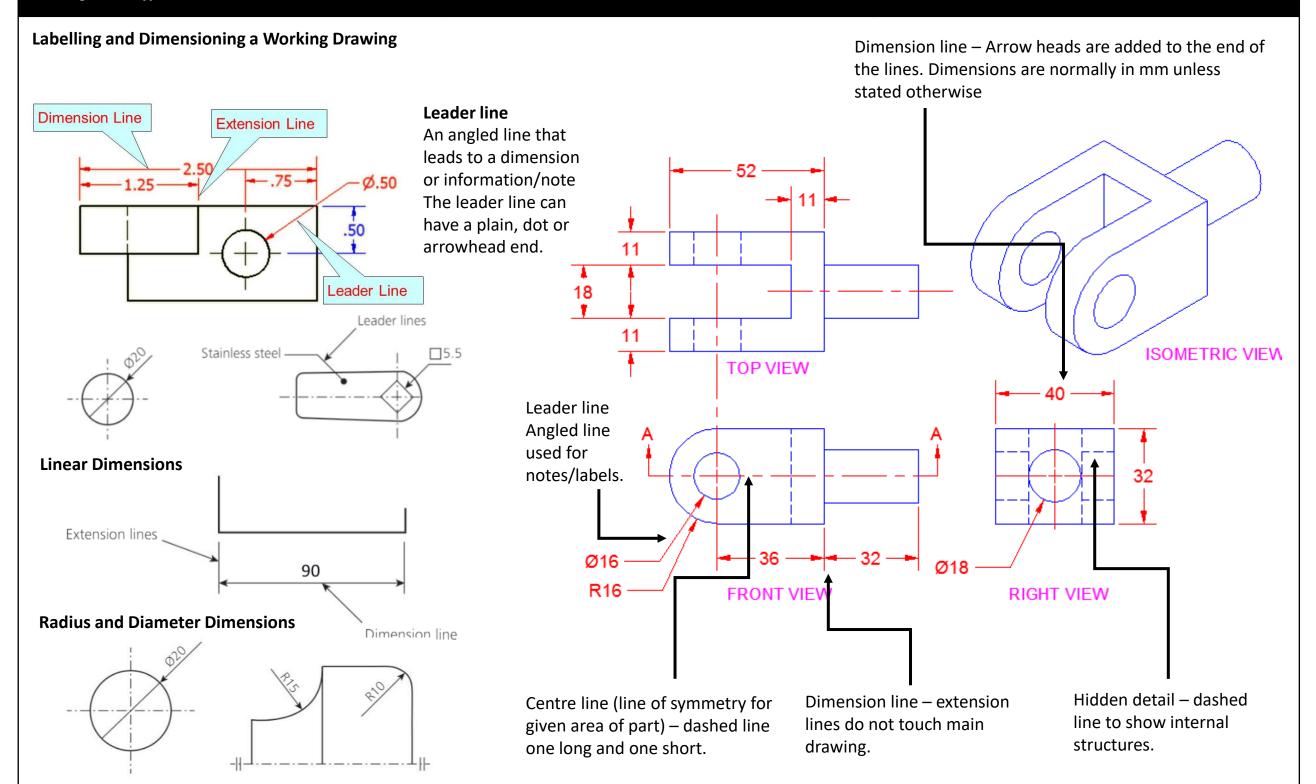
Abbreviations:

- Across flats
- Centre line
- Diameter
- DrawingMaterial
- Square

Representations of mechanical features:

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Meaning of line types:



Unit R038: Principles of engineering design Communicating design outcomes 3.2 Working drawings

2D engineering drawings using third angle orthographic projection Standard conventions

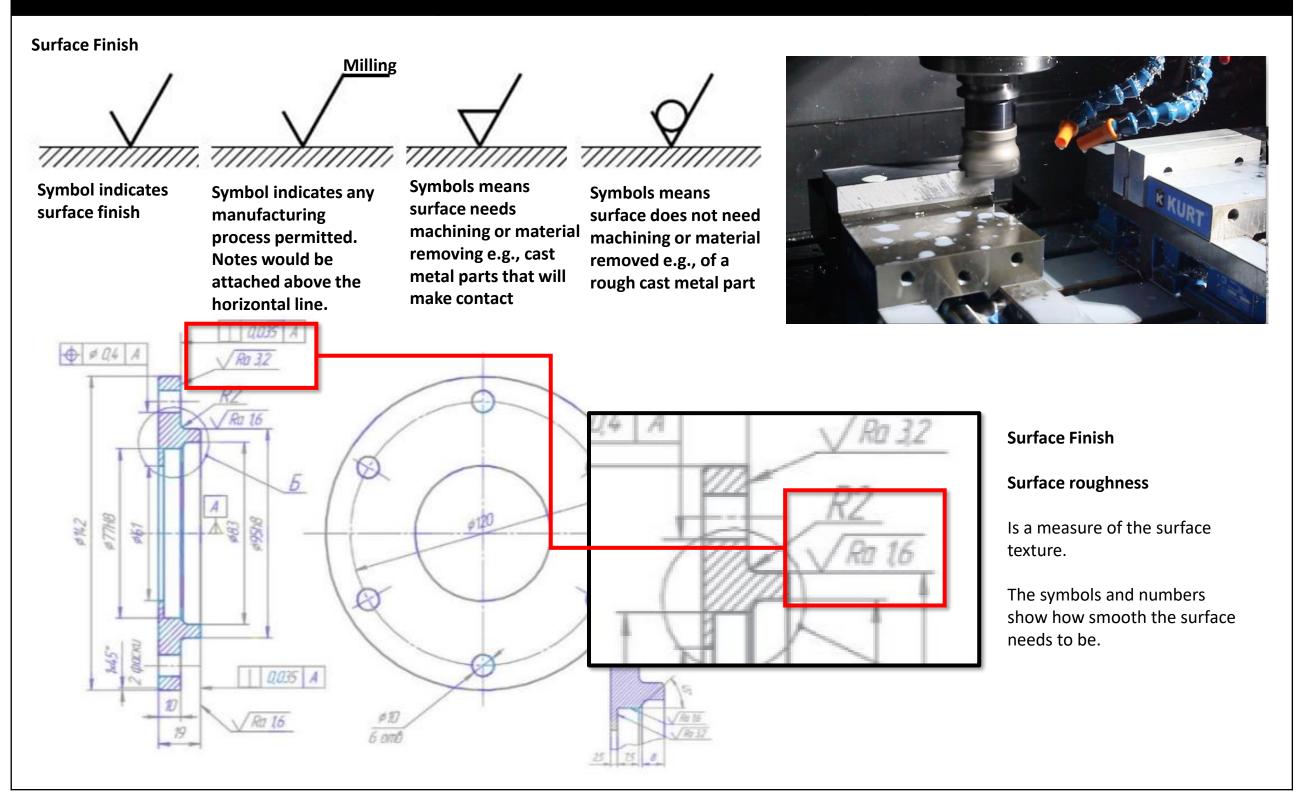
- Standard conventions

 Title block
- Metric units of measurement
- Scale
- Tolerance

Standard conventions for dimensions:

- Linear measurements
- Radius
- Diameter
- Surface finish

Standard Conventions For Dimensions:



3.2 Working drawings

2D engineering drawings using third angle orthographic projection Standard conventions

- Title block
- Metric units of measurement •
- Scale

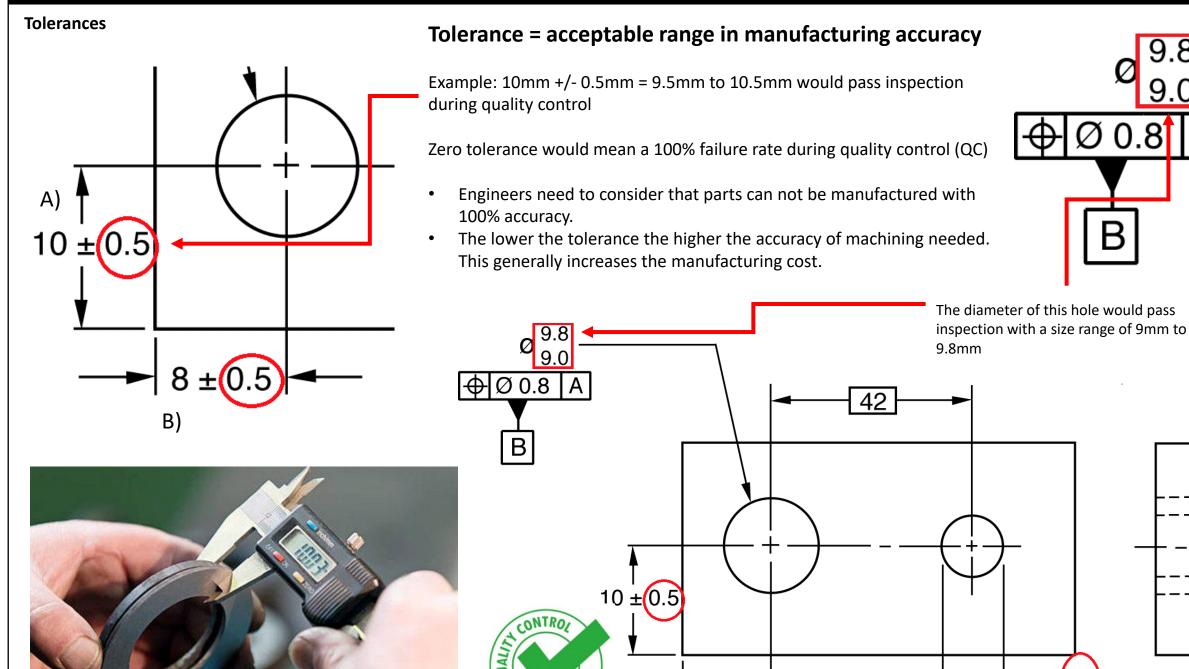
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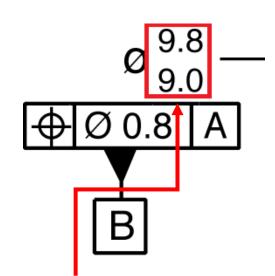
Tolerance

Standard conventions for dimensions:

- Linear measurements
- Radius
- Diameter
- Surface finish

2D engineering drawings using third angle orthographic projection:





5.6

6.0

0.8

A B

Α

3.2 Working drawings

Meaning of line types:

- Outlines
- Hidden detail
- Centre line
- Projection
- Dimension • Leader line

- Abbreviations:
- ٠ Across flats ٠
- <mark>Centre line</mark>
- <mark>Diameter</mark> ٠ **Drawing** ٠

٠

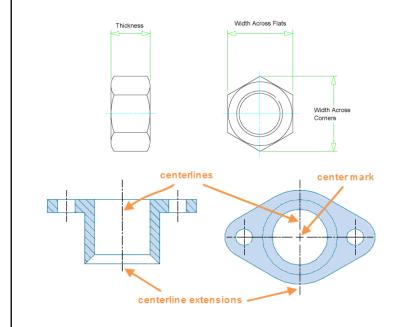
•

- **Material**
- Square

Representations of mechanical features:

- Threads
- Holes
- Chamfers
- Countersinks
- Knurls

Abbreviations:



Term	Abbreviations	Example	Application
Across flats	AF	Across flats	Width across flats is the distance between two parallel surfaces on the head of a screw or bolt, or a nut as shown.
Centre line (or centreline) CL or &	CL C/L		A centre line is used to show the centre of a feature, such as the centre of the hole shown in the example.
Diameter Ø D DIA	D Ø		The diameter of a feature, such as a hole, is often represented by the Ø symbol to indicate the dimension, as shown in the example.
Square			Used to indicate the dimensions of a square feature. This saves dimensioning all sides of the square. In the example, the square cut out is 5.5 mm x 5.5 mm.
Drawing	ving DWG All dimensions in mm DO NOT SCALE DRG Drawn J Adams Checked P Valentine Bracket		Shorthand for 'drawing'. Can be used anywhere on a drawing, including in a filename extension (such as bracket.dwg). The example shows it being used in the title block.
Material	MATL Matl	Approved A Reynolds MATL: Aluminium Scale: 1:1 DWG no: 001 A3 Scale: 1:1	Shorthand for 'material'. Can be used anywhere on a drawing to indicate material to be used. The example shows it being used in the title block – MATL: Aluminium.

3.2 Working drawings

Meaning of line types:

- Outlines
- Hidden detail
- Centre line
- Projection
- DimensionLeader line

- Abbreviations:
- Across flats
- Centre line
- DiameterDrawing

٠

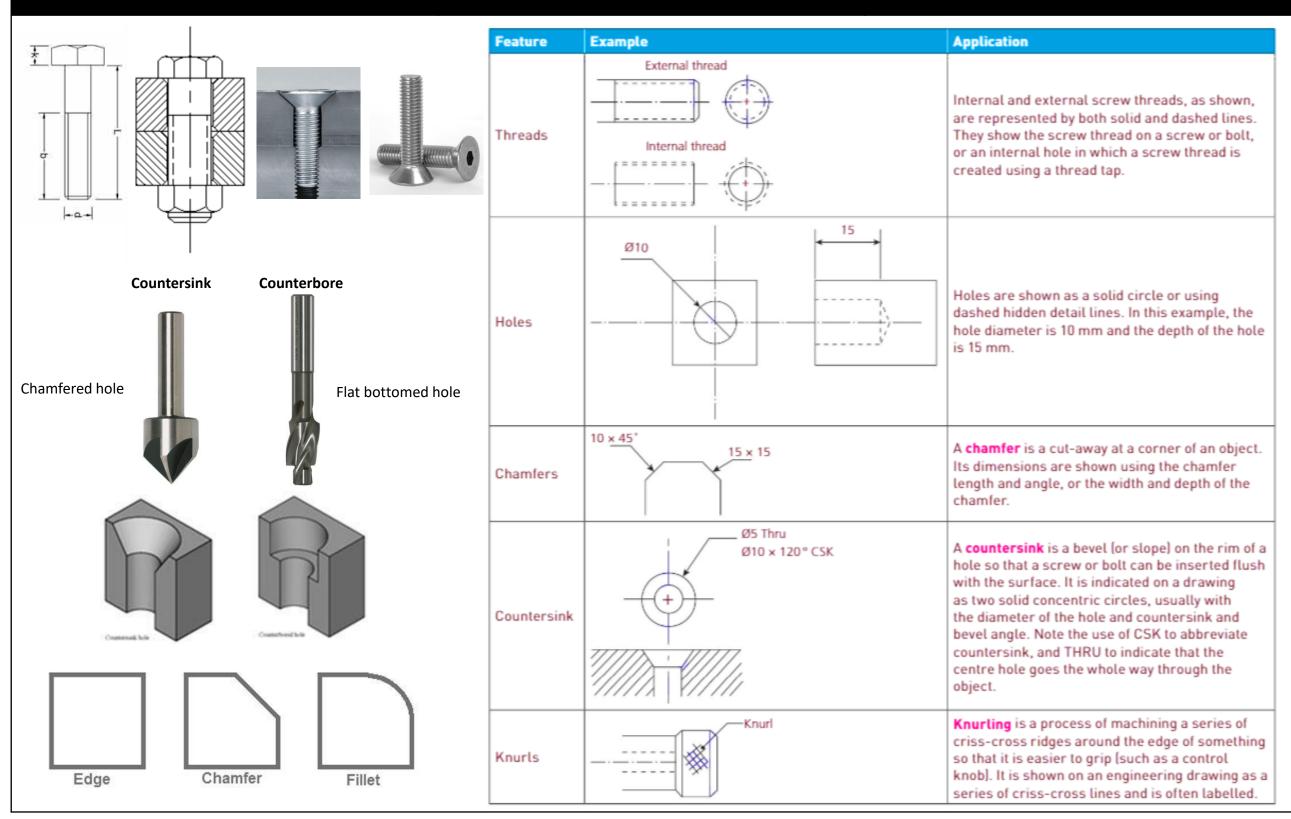
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- Material
- <mark>Square</mark>

Representations of mechanical features:

- Threads
- Holes
- Chamfers
- Countersinks
- Knurls

Abbreviations:



3.2 Working drawings

Meaning of line types:

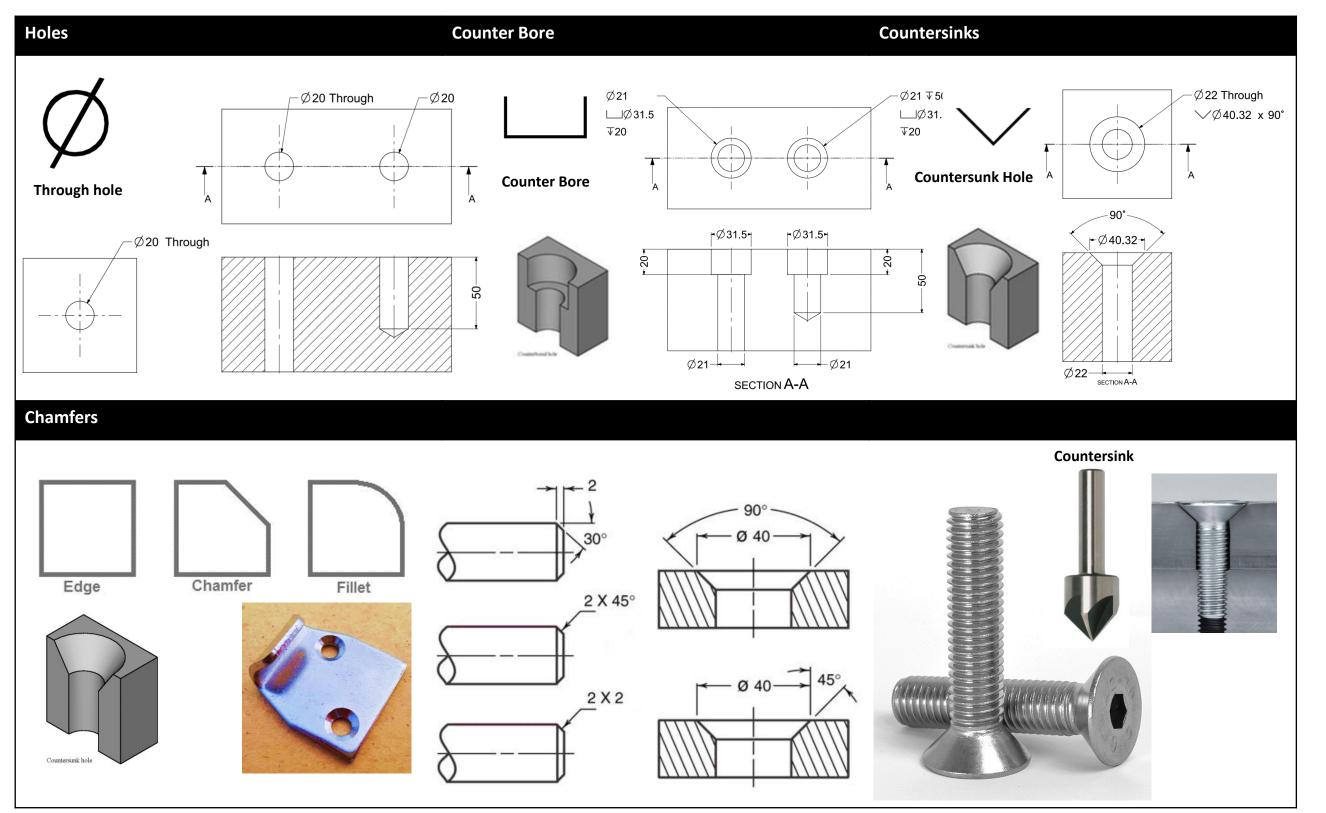
- Outlines
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Abbreviations:

- Across flats
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Representations of mechanical features:

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- Knurls



3.2 Working drawings

Meaning of line types:

- Outlines
- Hidden detail
- Centre line
- Projection
- DimensionLeader line

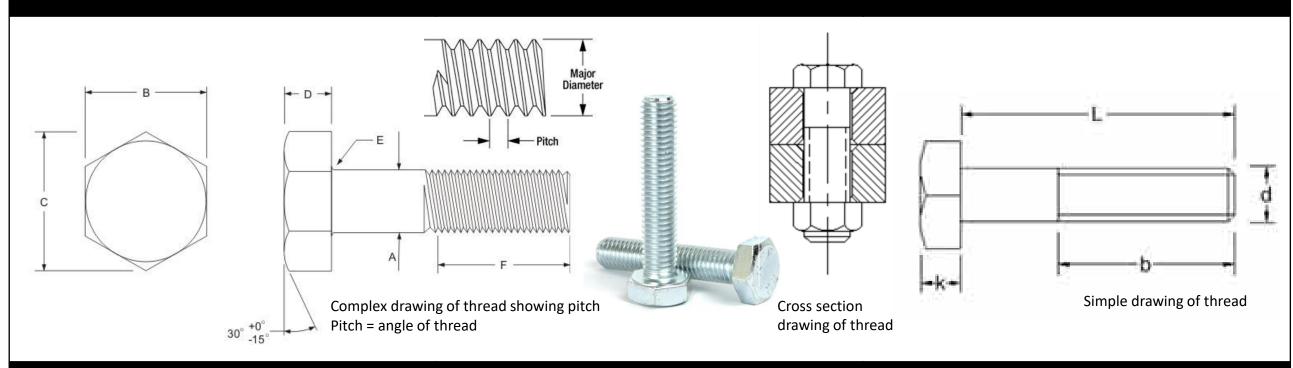
Abbreviations:

- Across flats
- Centre line
- Diameter
- DrawingMaterial
- Square

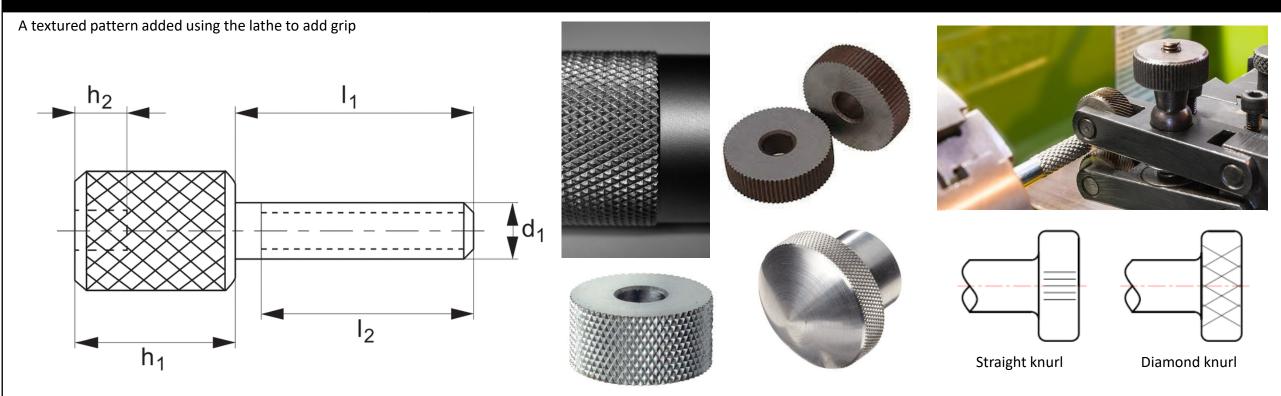
Representations of mechanical features:

- Threads
- Holes
- Chamfers
- Countersinks
- Knurls

Threads



Knurls



CLEO

ptc

Advantages and limitations of using CAD drawing software compared to manual drawing techniques

- CAD = Computer aided design
- CAM = Computer aided manufacture
- **CNC = computer numerical control**

CAD is often used in engineering, architecture, fashion, graphics and much more.

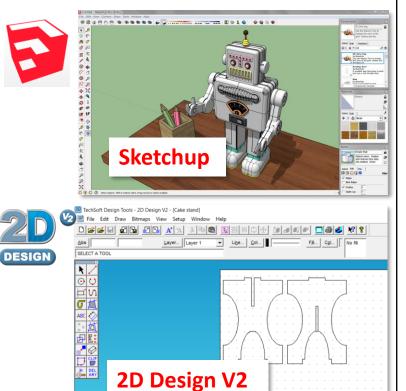
CAD drawings are often produced to be used with various forms of CAM, Computer aided manufacture, such as a laser cutter, 3D printer, CNC (computer numerical control) miller or lathe. CAD drawings contain co-ordinates that control the movement of the machine.

Examples of CAD packages:

- 2D Design V2
- PTC ProDesktop
- Sketchup
- Fusion 360
- PTC Creo Parametric
- Rhino 3d
- Onshape
- Adobe Photoshop.

Advantages	Disadvantages
 Quicker than traditional hand drawing techniques. Companies can reduce design time to increase their competitive edge. 	 Expensive – CAD software and suitable hardware is expensive to buy.
 Precise – CAD is more accurate than hand drawings. This will reduce error rate and allow engineers to identify mistakes with greater ease. 	 Training fees – CAD packages can be difficult and expensive to learn.
 Changes can be made quickly. Complex CAD drawings and assemblies can be updated automatically if parts are modified or changed. 	 Corrupt data - data can become corrupt or damaged due to power outages and virus attacks.
 Reduce prototyping costs - designs can be simulated and tested to reduce the need for expensive physical prototypes (models). It allows companies to reduce their time to market giving them a competitive edge. 	 Job losses – increased productivity and efficiency require a smaller workforce.
 Work collaboratively - engineers can use cloud computing to work collaboratively on the same drawing, reducing design time and increasing productivity. 	 Can be hacked – CAD work can be stolen, damaged or held to ransom. Stolen CAD work could be manufactured without permission causing the original company to lose money.
 Easy to share – CAD work can be shared with ease reducing design time. 	





PTC Creo Parametric

4.14.1 Methods of Evaluating Design Ideas4.24.2 Modelling Methods4.34.3 Methods of Evaluating a Design Outcome

4.1	Methods of Evaluating Design Ideas		
Evaluation	 Evaluating outcomes (ideas) is one of the most important stages of the design cycle. Identify Brief Research Process Planning 		
IDENTIFY DESIGN	Design Specification Security Design Manufacturing Plan		
	Optimise make Prototyping Error proofing		
VALIDATE OPTIMISE	Validate Test Evaluate		
	 Companies review outcomes to make sure they are successful, safe, and accurate. After testing, designers will assess test data and make a plan of action to correct design flaws. 		
	 Designers will review the outcomes against the design brief and specification to make sure the client is satisfied, and that the product is successful. 		
	 Designers can use a mixture of subjective and objective evaluations. 		
	Design BriefDesign Specification• Assess the outcome against the requirements of the client (design brief).• Assess the outcome against the requirements of the product. 		
Subjective Evaluation	 Biased – an evaluation based on personal views. Quicker than objective evaluations. 		
Objective Evaluation	 More accurate and reliable than subjective evaluations. Factual/criteria based. Measurable Repeatable Quantitative – uses facts and figures. Testing and feedback data are used to evaluate the success of a product. 		
Summative Evaluation	Final evaluation/appraisal of the product.		
Production Of Models	 Why do designers make models? To identify errors and miss calculations in design ideas. Identify product strengths and weaknesses. Review: research, planning, materials, and tool managements. 		
Qualitative Comparison with The Design Brief and Specification	 Objective evaluation Results should be the same if another designer completed the comparison. Factual – points should be justified – explained to support judgements. 		
Ranking Matrices	 A table with numbers used to rate a products features against other products. Used to compare existing products. Compare strengths and weaknesses. 		

Quality Function Deployment (QFD)	 QFD is a process that aims to meet the needs of the user/customer by trying to understand their requirements and priorities (what they need and want in order). This enables designers to make calculations during the development of a new product to make sure the user gets value for money and remains happy. Often referred to as a House of Quality 	Consistor 0			
4.2					
Virtual (3D CAD)	 Designers create virtual models in CAD. CAD models CAD = computer aided design CAM = computer aided manufacture - 3D CNC = computer numerical control Virtual simulation 				
	Prototype = model Advantages	Disadvantages			
	Changes (edits/modifications) can be made quickly.	Expensive to set up.			
	 Ideas can be tested virtually to reduce prototyping costs and reduce design time and material wastage. 	Expensive to train staff.			
	Accurate	 Data can become corrupted, and work lost. 			
	 Improved communication - designers can work together on the same CAD drawing to reduce design time. 	CAD drawings can be copied, and ideas stolen.			
Card	Card models are inexpensive (cheap) and allow the designer/client to visualize the product.				
	Advantages	Disadvantages			
10	 Quick Inexpensive Easy to work with Require simple hand tools 	 Not functional Only suitable for simple models 			
Block	 Block models can be made from wood, metal, and plastic. Foam (expanded polystyrene – a type of plastic) can be shaped with ease to produce an appearance model to test aesthetics and basic ergonomics. Wood, metal, and sheet plastic are more durable but harder to shape than foam. 				
NUCERIA	Advantages	Disadvantages			
	 Realistic. Can be functional - can be physically tested. Can be more detailed than a card model. 	 Time consuming Requires more skill than a card model. 			
Breadboarding	Breadboarding is used to create electrical prototypes of circuits without soldering. Electrical components are plugged into the breadboard.				
	Advantages	Disadvantages			
	 Quick and simple Changes can be made quickly. Cost less than PCBs – printed circuit board Can be reused many times. 	 Not suitable for complex circuits. Non-permanent: parts can come loose. Larger than the final printed circuit board (PCB). 			

	Safer than traditional solde	ering	
3D printing	 Safer than traditional soldering Additive manufacturing = adding material Models are built one layer at a time – polymers (plastics) and metal can be 3D printed. Can be used to make functional prototypes. Types of 3D Printing: FDM = fused deposition modelling SLA = stereolithography 		
	 SLS = selective laser sintering Advantages Print on demand = rapid print Can be used to construct for prototypes. Easy to make changes via Comodels. Can create complex design to traditional. Modelling/motion methods. Can increase creativity and efficiency. 	rototyping unctional CAD to s compared nanufacturing	 Disadvantages Limited materials Can be a poorer finish compared to methods such as CNC milling. Parts need cleaning = time consuming post production. Expensive compared to other modelling methods – machinery, training software. Slow = not suitable for mass production
	Cost effective compared to CNC milling		Can break down
4.3 Methods Of Measuring the Dimensions and Functionality of The Product	(design for manufacturing as	acy lerance – do pa	arts fit together safely and with ease? DFMA
	Steel rule/engineers' rule	Often used for measuring external lengths. Advantages • Inexpensive • Easy to use Disadvantage • Can only measure in 0.5mm intervals • Maybe read incorrectly by the user	
	Digital vernier caliper	Often used for thickness of a measuring in Advantages • Ac • Lan mi	or measuring the diameter, width, and a material with accuracy. Can be used for ternal and external features. curate – typically measure within 0.01mm +- rge measuring range compared to a crometer
	Micrometer	• Ma Often used to	ge n be expensive compared to a steel rule. anual calipers can be difficult to read. o measure the diameter or thickness of h a high degree of accuracy.
	For Street	+-	curate – typically measure within 0.001mm pre accurate than a vernier caliper.
		• Of • Th ma	ten more expensive than a caliper. e measuring scale can be difficult to use on anual versions. nall measuring range
	Multimeter	Multimeters resistance in Advantages	are used to measure voltage, current and an electrical circuit/prototype.

Quantitative Comparison with The Design Brief and Specification	Designers will often terequirements (needs) Functionality Quantitative data Qualitative data	of the design br The pu Data b measu	urpose for which something is designed or expected to fulfil. based on numbers and quantities, which can be counted or ured.
	counted or measured.		
		• <mark>Often</mark>	user opinions or comments.
User Testing	 Known as usability testing Product is tested on real users. Physical models are often used but virtual can be used as well. Designers examine and analyse what users think and how they behave with the product. Individual user Group if users – focus group. Extensive physical testing over a long time is often used to identify issues with durability, function and safety especially with material fatigue and electrical systems. 		
Reasons For Identifying Potential Modifications and Improvements to The Design Modifications = changes, improvements, alterations Designers will analyse and review data from product testing to weaknesses or overlooked criteria. Product strengths will often remain unchanged but can material or component consumption to reduce manuf Product weaknesses are often modified to make sure f successful. 		view data from product testing to identify strengths, iteria. ill often remain unchanged but can be modified to reduce ent consumption to reduce manufacturing costs. are often modified to make sure the product is more	
	Possible reasons for m		ions: Reasons for modification/improvement
	Area Aesthetics		 Make design look and feel more attractive to customers. Make design more distinctive and stand out from other designs. Make design easier to use (such as colours and style of buttons and controls).
	Ergonomics		 Ensure design fits users better. Make sure design is comfortable to use.
	Features and function	ons	 Improve existing features and functions to make them work better. Add features and functions that users feel could be useful. Remove features and functions that users don't think they will need.
	Safety		 Make sure that the design is safe to use (this is an important reason for making modifications and improvements).
	Product quality		 Improve the quality of the product to make it more attractive to customers.
	Sustainability		 Ensure product design is sustainable (increasingly seen as important by customers).
	Materials and manu	facturing	 Select different materials or manufacturing processes to improve product design and manufacture.