Hartford
Church of England
High School

CARITAS ET VERITAS

Year 10
Knowledge
Organiser

Contents

Maths

Forming Equations

Forming Equations		
Area of Rectangle Base x Height	12cm / 5cm = $60cm^2$	$3x + 12$ cm, x cm $x(3x + 12)$ $= 3x^2 + 12x$
Perimeter of Rectangle 2(l+w) or 2(b+h) or l+w+l+w	10cm / 6cm = 32cm	$3x + 12$ cm, x cm $3x + 12 + x + 3x + 12 + x$ $= 8x + 24$
Angles in a quadrilateral Sum to 360	$140°$ $115°$ 81 $24°$ $81+140+115+24 = 360$	$x°$ $x°$ $2x°$ $2x°$ $x + x + 2x + 2x = 6x$ $6x = 360$ degrees $x = 60$ degrees

Rearrange Formula

$a + 6 = b$
Make "a" the subject

$a + 6 = b$
-6 ⟶ $a = b - 6$ ⟵ -6

1 step

$3a = b$
Make "a" the subject

$3a = b$
$\div 3$ ⟶ $a = \dfrac{b}{3}$ ⟵ $\div 3$

Inequalities

Inequalities	meaning	integers	On a number line	Circle
$x > -3$	x is greater than -3	x could be 4, 5, 6 ….	(number line from -4 to 5, open circle at -3)	Open > or <
$-2 < y < 3$	y is greater than -2 but smaller than 3	x could be -1, 0, 1, 2	(number line from -3 to 4, open circles)	Open > or <
$x \le 3$	x is less than or equal to 3	x could be 3 , 2 , 1 …	(number line from -2 to 3, closed circle at 3)	Closed ≤ or ≥

2 step

$2a + 8 = 2b$
Make "a" the subject

$2a + 8 = 2b$
-8 ⟶ $2a = 2b - 8$ ⟵ -8
$\div 2$ ⟶ $a = b - 4$ ⟵ $\div 2$
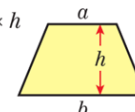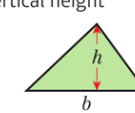
2 step

$\dfrac{a + 5}{2} = 3b$
Make "a" the subject

$\dfrac{a + 5}{2} = 3b$
$\times 2$ ⟶ $a + 5 = 6b$ ⟵ $\times 2$
-5 ⟶ $a = 6b - 5$ ⟵ -5

Maths - Higher
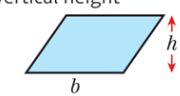
Proportion	Formula
y is directly proportional to x	$y \propto x$ $\quad$ $y = kx$
y is proportional to x squared	$y \propto x^2$ $\quad$ $y = kx^2$
y is inversely proportional to x	$y \propto \dfrac{1}{x}$ $\quad$ $y = \dfrac{k}{x}$
y is inversely proportional to the square root of x	$y \propto \dfrac{1}{\sqrt{x}}$ $\quad$ $y = \dfrac{k}{\sqrt{x}}$

Quadratics	Formula
The general form of a quadratic expression in x is:	$ax^2 + bx + c$
Quadratic formula	$x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
Completing the Square	$x^2 + bx + c = \left(x + \frac{b}{2}\right)^2 - \left(\frac{b}{2}\right)^2 + c$
Coordinates of the turning point of a quadratic when the quadratic has been written in completed square form: $a(x + b)^2 + c$	$(-b, c)$

Angle Facts	
Sum of Interior Angles in a polygon with n sides	(n-2) x 180
Exterior angles in any polygon add up to	360°
Each exterior angle in a REGULAR polygon with n sides is equal to	360 ÷ n
	Alternate angles are equal
	Co—interior angles add up to 180°
	Corresponding angles are equal

Area	Formulae
Area of a parallelogram	base × vertical height $b \times h$
Area of a trapezium	$\frac{1}{2} \times (a + b) \times h$
Area of a triangle	$\frac{1}{2} \times$ base × vertical height $\frac{1}{2} \times b \times h$

English

Hartford Church of England High School

Language Paper 1: Reading
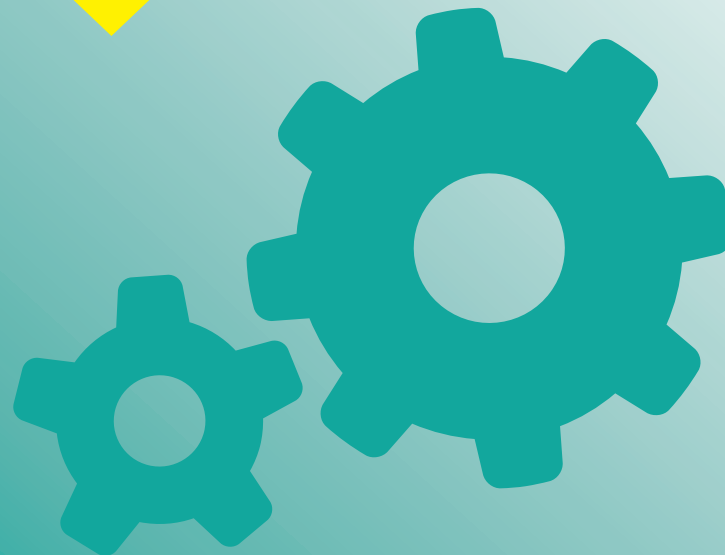
Q2/ 4 Word class	Definition	Example	Sentence types	Examples
Verb	A **verb** is a word or set of words that shows action (*runs, is going, has been painting*); feeling (*loves, envies*); or state of being (*am, are, is, have been, was, seem*)..	The normally subdued child, tore off the wrapping paper and beamed at her gift. She was elated.	Imperative (giving a command)	Accept that there is nothing to be done. Change the way you think. Pick up the litter.
Adverb	An adverb labels how, when or where something happens (and they often end in '–ly').	The dog growled menacingly whenever the inquisitive bird flew gracefully towards the window.	Declarative (stating information)	It is wrong to assume that everyone is as fortunate as you. There was a disconcerting quality to his grin. As a group, they felt forlorn by their lack of freedom.
Noun	Nouns are names, places and things; they also signify imagined things like 'a ghost'; and ideas or concepts, such as 'love', 'guilt' or 'fate'.	The was a flash of hope in his eyes as he looked through the window. She was surprised it was happening.	Interrogative (asking a question. They end with a question mark)	Was it everything you wished for? How could she not feel exasperated by their ignorance?
Pronoun	Words used instead of a noun i.e. 'he', 'she', 'they', 'it'.			
Adjective	An adjective is a describing word or phrase that adds qualities to a noun. It normally comes before a noun, or after verbs like 'am', 'is', 'was', 'appears' or 'seems'.	He was normally such an insular character; his newly vibrant demeanour had surprised everyone.	Exclamatory (expressing a heightened emotion. They end with an exclamation mark)	I felt obliged! I have resigned myself to the fact that nothing can be done!
Preposition	Prepositions are short words and phrases that give information about place, time and manner	The money was hidden under the bed, beside the old duvet, on top of the shoe box.		

Q2/ Q4 Language Features	Definition	Example
Metaphor	A descriptive technique that names a person, thing or action as something else.	The mesmerising circus was a magnet for the children.
Simile	A descriptive technique that compares one thing with another, usually using 'as' or 'like'.	The horse's majestic mane was like fire.
Personification	Describing an inanimate object as having human feelings.	The carpet lamented the demise of his beloved hoover.
Zoomorphism	A technique in which animal attributes are imposed upon non-animal objects, humans, and events.	The maid had a brusque manner; she snarled at anyone who dared to approach her.
Imagery	A technique in which the author appeals to the senses i.e. seeing, hearing, touching.	The earthy, unmistakable aroma of coffee weaved through the air.
Semantic field	Words from a the semantic field are part of a common category.	The writer includes a series of words from the semantic field of nature, 'Seedling…hedge…..plant'.
Intensifier	A word, especially an adverb or adjective, that has little meaning itself but is used to add emphasis to another adjective, verb, or adverb.	He was too dispirited to continue. The contract was very confusing. The card was extremely sentimental.
Minimiser	A word that is used to make another adjective, verb or adverb sound lesser.	She was slightly traumatised. They were just considering it. We were a little forlorn.
Listing	When the writer includes several words/ phrases/ ideas, one after the other.	The familiar tapping, scratching, tearing and shouting echoed down the street.
Oxymoron	A phrase combining two or more contradictory terms.	There was a deafening silence.
Pathetic fallacy	A type of personification where emotions are given to a setting, an object or the weather.	The clouds crowded together suspiciously overhead as the sky darkened forebodingly.

Q3/ Q4 Structural Features	Definition
Opening	The first mood/ image of the text.
Cyclical	When end of the text repeats an idea/ character/ setting from the opening.
Widening/ narrowing the perspective	When the writer switches from a broader overview (i.e. describing a crowd) to a more specific point of view (i.e. an individual).
Character development	When the writer presents a character differently as the text progresses.
Repetition	When a word/ phrase is noticeably repeated throughout a sentence/ paragraph/ whole text.
Shift in tense	When the writer deliberately changes tense i.e. I was powerless, I was beaten, I was a wreck. I will never feel that way again.
Juxtaposition	Two ideas placed together for contrasting effect.
Foreshadowing	A warning/ hint about what is going to happen next.
Introduction of speech	Direct speech between characters.
Change of mood/ tone	When the writer alters the overall feeling of the text.
Shift in focus	Focusing on a different topic/ place/ character.
Shift in the narrator's point of view	When the speaker (the voice telling the story) changes their mind about something.
Connections/ links across paragraphs	A pattern that can be identified across the text.
Ending	The final mood/image of the text.

Language Techniques	Definition	Example
Metaphor	A descriptive technique that names a person, thing or action as something else.	The mesmerising circus was a magnet for the children.
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Semantic field	Words from a the semantic field are part of a common category.	The writer includes a series of from the semantic field of nature 'Seedling…hedge…..plant'.

Sentences connecting paragraphs

The sound of….cut into his thoughts…….
She regarded her surroundings…..
As the figure came closer, her appearance sharpened….
They ambled towards….
The words radiated around him and….
The familiar words echoed…..
The surprising view of…..nudged into her vision…..
Her mind was transported back to….

Writing: Paper 1

Paper 1 Sentence Types

Begin with a verb:
Regarding the inside of the cave, they knew they had gone too far.

Begin with an adverb:
Hastily, she gripped the handle.

Begin with an emotion:
Desperate, they contemplated leaving her behind.

Use a hyphen to add extra information at the end:
They saw several icicles - the majority looming down at them from the ceiling.

Use hyphens to add extra information in the middle of a sentence:
She took a tentative step further in - then two or three steps - always expecting to feel woodwork against the tips of her fingers.

Use a semi colon to add more detail to a description:
His sleep had been fitful; his eyes burned and his body ached.

Use a semi colon to show the difference between the 'inside' and 'outside':
To the crowd, she appeared content; inside, she was reeling.

Use a colon to introduce a list:
The beach was a hive of activity: parents wrestling with umbrellas, children squealing delightedly and crabs dodging the clatter of human feet.

Use a colon to expand on the first part of the sentence:
His mood was notoriously difficult to predict: he regularly jolted between pleasant and peevish, without any warning.

Begin with a time connective:
Now, there was nothing to do but wait in terrified silence.

List a series of actions:
She immediately stepped into the wardrobe and immersed herself among the coats, rubbing her face against them, breathing in the musty scent and believing herself to be utterly safe.

Structural Techniques	Definition
Cyclical structure	When the conditions at the end are in the some way the same as they are at the beginning
One sentence paragraph	Using a one sentence paragraph to create emphasis, meaning or a turning point/change in tone.
Flashback	a scene in a novel, etc. set in a time earlier than the main story
Cliff-hanger	a story or event with a strong element of suspense/ unanswered questions
Climax	the most intense, exciting, or important point; the culmination of the story.

PUNCTUATION

" "	**quotation marks** used to show what someone said
'	**apostrophe** used to show possession or to represent missing letters in contractions
( )	**parentheses** used to set off less important details such as an afterthought or a personal comment
:	**colon** used to introduce a list; used in time and in Bible verses
;	**semi-colon** used to join two related sentences or used to separate items in a series that have commas
/	**slash** used to indicate line breaks when quoting poetry
—	**hyphen** used to divide a word or in compound words
,	**comma** used to indicate a pause, to set off a phrase, or to separate items in a series

There "Look over there!" "There it is!" "She is there, by the park."

Their "Their books are red." "Bob wants to play with their toys."

They're (they are) "They're my best friends!" "They're having fun."

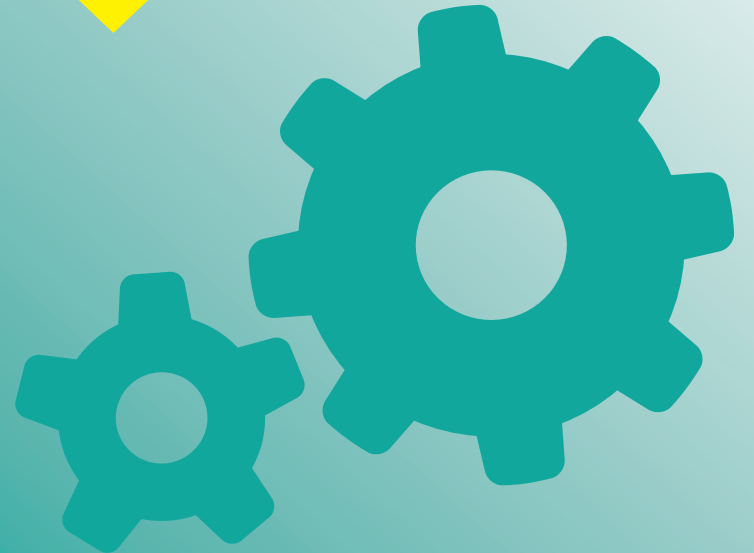**where** - is an adverb relating to place/position. I know where you left it.

were - is the plural past tense of the verb 'are'. We were playing outside?

we're - is a contraction of 'we are'. We're going to the park.

wear - is used when talking about clothing. I don't know what to wear.

Science

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Charles Darwin

Theory of evolution by natural selection.

- Individual organisms within a particular species show a wide range of variation for a characteristic.
- Individual most suited to the environment are more likely to breed successfully.
- Characteristics enable individuals to survive are then passed on to the next generation.

Developed since its proposal from information gathered by other scientists.

Did much pioneering work on speciation but more evidence over time has lead to our current understanding.

Theory of evolution (Biology only)

Evidence from around the world, experimentation, geology, fossils, discussion with other scientists (Alfred Wallace) lead to:

Charles Darwin 'On the Origin of the Species' (1859)	**Published the theory of evolution by natural selection**	Slowly accepted; challenged creation theory (God), insufficient evidence at time, mechanism of inheritance not yet known.

Both Darwin and Wallace's work contributed to the modern science of genetics and 'molecular biology'.

Alfred Wallace

Independently proposed the theory of evolution by natural selection

- Published joint writings with Darwin in 1858.
- Worked worldwide gathering evidence.
- Best know for work on warning colouration in animals and his theory of speciation.

EDEXCEL GCSE NATURAL SELECTION AND GENETIC MODIFICATION PART 1

Classification of living organisms

The full human classification

Carl Linnaeus classified living things

Kingdom	Animalia
Phylum	Chordata
Class	Mammalia
Order	Primates
Family	Hominidae
Genus	Homo
Species	sapiens

The five kingdoms are animals, plants, fungi, protista, prokaryotes.

Carl Woese

3 domains instead of kingdoms based on genetic analysis.

Archaea (primitive bacteria), true bacteria, eukaryota.

Antibiotic resistant bacteria

Mutations produce antibiotic resistant strains which can spread

- Resistant strains are not killed.
- Strain survives and reproduces.
- People have no immunity to strain and treatment is ineffective.

Antibiotic resistance in bacteria provides evidence for evolution.

Evolution is widely accepted. Evidence is now available as it has been shown that characteristics are passed on to offspring in genes.

Evidence for evolution

Evidence for evolution from anatomy (Biology only)

The pentadactyl limb

Darwin suggested that the five finger (pentadactyl) limb found across many vertebrates suggest a common ancestor.

Human   Cat   Whale   Bat
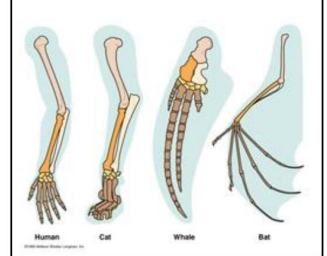
Selective breeding

Selective breeding

Choosing parents with the desired characteristics from a mixed population

Chosen parents are bred together.

From the offspring those with desired characteristics are bred together.

Repeat over several generations until all the offspring show the desired characteristics.

Choosing characteristics

Desired characteristics are chosen for usefulness or appearance

Disease resistance in food crops.	
Animals which produce more meat or milk.	
Domestic dogs with a gentle nature.	
Large or unusual flowers.	

Evidence for human evolution

Fossils	Stone tools
Ardipithecus ramidus 'Ardi' from 4.4 million years ago	Earliest simple stone tools from 3.3 million years ago.
Australopithecus afarensis 'Lucy' from 3.2 million years ago	
Leakey's discovery of *Homo habilis* from 1.6 million years ago	The age of different layers of rock can be dated. Stone tools found in those layers are the same age.

Human evolution

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EDEXCEL GCSE NATURAL SELECTION AND GENETIC MODIFICATION PART 2

(Biology only) Solutions to growing human populations

Fertilisers	**Advantages:** Increases the growth and yield of crop plants.
	Disadvantages: Excess fertiliser can run off into lakes and rivers and cause pollution leading to the death of other plants and animals.
Biological control	**Advantages:** Insects can be used to control weed populations. No herbicides are necessary.
	Disadvantages: Introduced insects can complete for non weed plants and disrupt other species food chains.

Agricultural solutions

Risks and benefits

Tissues cultures

Genetic engineering

Risks and benefits (practical and ethical)

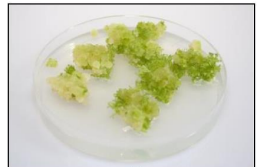|		
Genetic engineering	**Risks:** Seeds from GM plants can be very expensive. Some people think eating GM plants is bad for health although there is no evidence to support this view.
	Benefits: decreased use of herbicide with increase in yield from food crops. Medicines tailored for individuals.
Selective breeding	**Risks:** alleles that may be useful in future may be bred out. Populations with low variation can be vulnerable to genetic diseases.
	Benefits: Increased growth and yield of plants and animals for food.

Advantages and disadvantages of genetic engineering

Advantages	Modification of crop plants e.g. insect resistance from Bacillus thuringiensis. Modification of bacteria to produce human hormones e.g. human insulin made by bacteria.
Disadvantages	Resistant crops could pass on genes to wild plants affecting food chains. Insulin produced using GM bacteria is not identical to human insulin and not everyone can use it.

Cloning techniques in plants/animals

Tissue culture	Small groups of cells to grow new plants in nutrient solution or solid agar. **Advantage:** Important for preservation of rare plants and commercially in nurseries.
	Small groups of human cells used to grow new tissues. **Advantage:** matched tissues can be grown that are not rejected by the body's immune system.
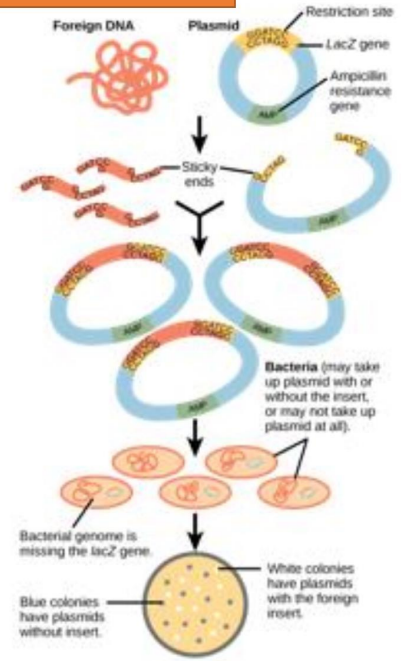
Modification of the genome of an organism to introduce desirable characteristics

Foreign DNA — Plasmid — Restriction site — LacZ gene — Ampicillin resistance gene — Sticky ends — Bacteria (may take up plasmid with or without the insert, or may not take up plasmid at all). — Bacterial genome is missing the lacZ gene. — Blue colonies have plasmids without insert. — White colonies have plasmids with the foreign insert.

Genetic engineering process (HT only)

1. Restriction enzymes are used to isolate and cut out the required gene.

2. If sticky ends of DNA on the isolated gene and the plasmid DNA match then they can be joined together.

3. DNA is joined in the plasmid DNA using the enzyme ligase – bacterial plasmid or virus.

4. Genes are transferred to plants/animals/microbes in a vector (bacteria or virus) at an early stage of development so they develop the required characteristics.

Genetically modified crops (GMO)

Crops that have genes from other organisms	To become more resistant to insect attack or herbicides.
	To increase the yield of the crop.

The World Health Organisation (WHO) describes health as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.

The presence of one disease can lead to a higher susceptibility to other diseases.

Damage to immune system	Makes it easier for other pathogens to cause disease.
Damage to body defences	Barriers and defences are damages. Pathogens can enter the body.
Damage to organ systems	Organ systems don't work as effectively leading to other diseases.

Communicable and non communicable diseases

Communicable	*Non-communicable*
Caused by pathogens. They can be passed from person to person.	Caused by a fault in genes or by the way we live (lifestyle)

Health

EDEXCEL GCSE HEALTH DISEASE AND MEDICINE part 1

Pathogens may infect plants or animals and can be spread by direct contact, water or air

Detection and identification of plant diseases (bio HT only)

Detection	Identification
Stunted growth	Reference using gardening manual or website, laboratory test for pathogens, diagnostic testing.
Spots on leaves	
Area of decay	
growths	
Malformed stem/leaves	
Discolouration	
Presence of pests	

Plants have several ways of defending themselves from pathogens and animals (Biology only)

Physical	*Mechanical*
Thick waxy layers, cell walls stop pathogen entry	Thorns, curling up leaves to prevent being eaten
Chemical	
Antibacterial and toxins made by plant	

Pathogen	*Disease*	Symptoms	Method of transmission	Control of spread
Bacteria	cholera	Causes diarrhoea.	Contaminated water	Vaccination, water treatment to remove bacteria.
Bacteria	tuberculosis	Causes lung damage.	Air borne water droplets from couching.	Isolation of infected person, vaccination.
Fungi	*Chalara ash dieback*	Leaf loss and bark lesions.	Spores in the air.	Remove/destroy infected trees.
Protists	*Malaria*	Recurrent fever. Damage to blood and liver.	By an animal vector (mosquitoes).	Prevent breeding of mosquitoes. Use of nets to prevent bites.
Bacteria	*Stomach ulcers (Bio only)*	Pain in abdomen, damage to stomach lining.	Oral transmission.	60% already carry the bacteria.
Virus	*Ebola (Bio only)*	Internal bleeding and fever.	Contact with bodily fluids of an infected person.	Isolation of infected person. Vaccination.
Virus	*HIV*	Initially flu like systems, serious damage to immune system.	Sexual contact and exchange of body fluids.	Anti-retroviral drugs and use of condoms.
Bacteria	*Chlamydia*	Unusual discharge from genitals or anus, pain when urinating.	Unprotected sex.	Using condoms during sex.

Bacteria may produce toxins that damage tissues and make us fell ill

| Viruses	Bacteria (prokaryotes)	Protists (eukaryotes)	Fungi (eukaryotes)
e.g. cold, influenza, measles, HIV, tobacco mosaic virus	*e.g. tuberculosis (TB), Salmonella, Gonorrhoea*	*e.g. dysentery, sleeping sickness, malaria*	*e.g. athlete's foot, thrush, rose black spot*
DNA or RNA surrounded by a protein coat	No membrane bound organelles (no chloroplasts, mitochondria or nucleus). Cell wall. Single celled organisms	Membrane bound organelles. Usually single celled.	Membrane bound organelles, cell wall made of chitin. Single celled or multi-cellular

Pathogens are microorganisms that cause infectious disease

Pathogens

Communicable diseases

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Antigens (surface protein)
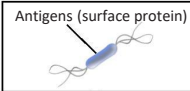
Life cycle of a virus

Lysogenic pathway	Lytic pathway
Virus attaches to cell and inserts genetic material	Viral genetic material can spilt off from bacterial chromosome.
Viral genetic material forms a circle.	
The viral genetic material uses to cell to produce new proteins and genetic material to make new viruses	Viral genetic material is inserted into the bacterial chromosome.
Cell breaks apart (lyse) to release new viruses.	Bacterium reproduces normally replicating both types of genetic material.

Specific immune system

a. Exposure to pathogen	Pathogens are identified by white blood cells by the different proteins on their surfaces **ANTIGENS**.
b. Antigens trigger an immune response	Trigger causes the production of antibodies.
c. Production of memory lymphocytes	Antigens also trigger the production of memory lymphocytes (a type of white blood cell). These cells can produce the specific antibody for a pathogen.
d. Secondary response	Memory lymphocytes can produce specific antibodies much more quickly if the same pathogen returns.

Antibiotics
e.g. penicillin — Used to treat bacterial infection by inhibiting cells processes in the bacterium but not the host organism (human) cells. They do not work on viruses.

EDEXCEL GCSE HEALTH DISEASE AND MEDICINE part 2

Immune system

Non-specific immune systems

The human body has several chemical and physical ways of providing protection from pathogens

|		
	Nose	Nasal hairs, sticky mucus and cilia prevent pathogens entering through the nostrils.
	Trachea and bronchus (respiratory system)	Lined with mucus to trap dust and pathogens. Cilia move the mucus upwards to be swallowed.
	Stomach acid	Stomach acid (pH1) kills most ingested pathogens.
	Skin	Hard to penetrate waterproof barrier. Glands secrete oil which kill microbes.
	Lysozymes in tears	Breaks down the cell wall of some bacteria.

Immunisation

Vaccines are used to immunise a large proportion of the population (herd immunity) to prevent the spread of a pathogen

Vaccination

Small amount of dead or inactive form of the pathogen

1st infection by pathogen	White blood cells detect pathogens in the vaccine. Antibodies are released into the blood.
Re-infection by the same pathogen	White blood cells detect pathogens. Antibodies are made much faster and in larger amounts.

Vaccination (Biology only)

Disadvantages	A very small number of people (eg 1 in 900000 for MMR) a person may have a bad reaction to a vaccine and therefore cannot be immunised.
Advantages	Almost everyone can be immunised (herd immunity) which protects those people who cannot have vaccines. Spread of a pathogen in a population is prevented.

LYTIC CYCLE
LYSOGENIC CYCLE
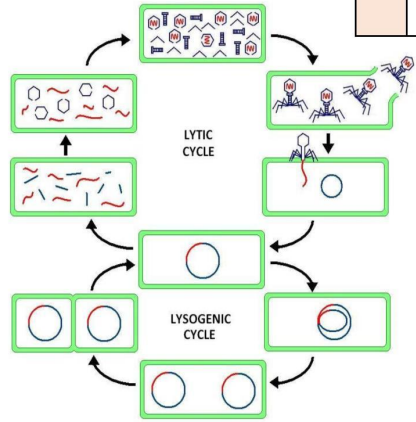
Calculate cross sectional area

흡풍ㄷㅅ

Measure the diameter of the clear area where bacteria has not grown. Half the diameter of the clear area to find the radius.

Aseptic technique

Autoclave	Sterile inoculating loops	Covered petri dishes and culture vials
Sterile growth medium and agar plates are sterilized by subjecting them to high pressure steam.	Sterilized before transferring microorganisms so that sample isn't contaminated.	Covered to avoid contamination by other microorganisms in the air.

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Healthy weight can be calculate using waist:hip ratio and the equation for BMI.

$$ratio = \frac{Waist}{Hip} \qquad BMI = \frac{MASS}{(HEIGHT)^2}$$

Non-communicable diseases are caused by the interaction of a number of factors

Disease	Interacting factors
Cardiovascular disease	Diet, obesity, smoking, drinking alcohol, lack of exercise, genetics.
Cancer	
Lung disease	
Liver disease	
Malnutrition	

Lifestyle factors and their effects on non-communicable disease

Disease	lifestyle factors
Obesity and malnutrition	Lack of exercise and consuming too many/too few calories through an unbalanced diet. Schools meals are balanced to combat this in young people.
Liver disease	Large amounts of alcohol taken over a long period of time can lead to liver disease e.g. cirrhosis. The NHS spends over £500 million a year treating liver disease.
Cardiovascular disease	Smoking leads to damage and blocking of arteries supplying the heart with oxygenated blood. WHO estimates that 6 million people die globally as a result of smoking related illnesses.

Non-communicable diseases

Discovery of new drugs

EDEXCEL GCSE HEALTH DISEASE AND MEDICINE part 3

Treating CVD

Evaluating different treatments for cardiovascular disease (CVD)

Life long medication	Surgical procedures	Lifestyle changes
Medicines to reduce blood pressure and cholesterol. Statins for lowering cholesterol carry a small risk of developing diabetes.	A stent can be surgically inserted into blocked blood vessel. Blocked blood vessels can be bypassed with inserted blood vessels. This treatment requires life long medication.	Giving up smoking, drinking excess alcohol and taking more exercise can reduce the risk of CVD. Some patients may not stick to lifestyle changes.

Drugs (including antibiotics) have to be tested and trialled before to check they are safe and effective

New drugs are extensively tested for:

Efficacy	Make sure the drug works
Toxicity	Check that the drug is not poisonous
Dose	The most suitable amount to take

Preclinical trials - using cells, tissues and live animals - must be carried out before the drug can be tested on humans.

Clinical trials use healthy volunteers and patients

Stage 1	Stage 2	Stage 3	Stage 4
Healthy volunteers try small dose of the drug to check it is safe record any side effects	A small number of patients try the drug at a low dose to see if it works	A larger number of patients; different doses are trialled to find the optimum dose	A double blind trial will occur. The patients are divided into groups. Some will be given the drug and some a placebo.

Double blind trial: patients and scientists do not know who receives the new drug or placebo until the end of the trial. This avoids bias.

A placebo can look identical to the new drug but contain no active ingredients

Monoclonal antibodies (Biology only HT)

Monoclonal antibodies — Identical copies of one types of antibody produced in laboratory

1. A mouse is injected with pathogen.
2. Lymphocytes produce antibodies (but do not divide).
3. Lymphocytes are removed from the mouse and fused with rapidly dividing mouse tumour cells.
4. The new cells are called hybridomas.
5. The hybridomas divide rapidly and release lots of antibodies which are then collected.

Monoclonal antibodies can be used in a variety of ways

Testing	Diagnosis
e.g. pregnancy test – measure the level of hormones	Can detect very small quantities of chemicals in the blood

Specific to one binding site on the antigen. Can target specific chemicals or cells in the body unlike drug and radiotherapy treatments.

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Base	*A base is any substance that reacts with an acid to form a salt and water only*
Examples of soluble bases	*Alkalis e.g. sodium hydroxide, potassium hydroxide*

Reactions with acids

Metals	*Metal + acid → metal salt + hydrogen*	Magnesium + hydrochloric acid → magnesium chloride + hydrogen
Metal oxides	*Metal oxide + acid → metal salt + water*	Copper oxide + sulfuric acid → copper sulfate + water
Metal hydroxides	*Metal hydroxide + acid → metal salt + water*	Sodium hydroxide + nitric acid → sodium nitrate + water
Metal carbonates	*Metal carbonates + acid → metal salt + carbon dioxide + water*	Calcium carbonate + sulfuric acid → calcium sulfate + carbon dioxide + water

Concentrated	*High mass of substance in a given volume of solution*
Dilute	*Low mass of substance in a given volume of solution*
Strong acids	*Completely ionised in aqueous solutions e.g. hydrochloric, nitric and sulfuric acids.*
Weak acids	*Only partially ionised in aqueous solutions e.g. ethanoic acid, citric acid.*
Hydrogen ion concentration	*As the pH decreases by one unit (becoming a stronger acid), the hydrogen ion concentration increases by a factor of 10.*

Acids

Strong and weak acids (HT ONLY)

EDEXCEL TOPIC SC8: ACIDS & ALKALIS

Reactions with acids

Acids

Producing salts from insoluble reactants

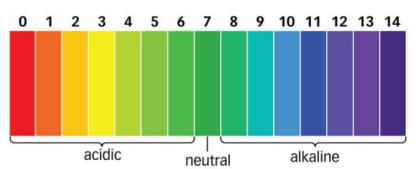|	
Soluble salts	*Soluble salts can be made from reacting acids with solid insoluble substances (e.g. metals, metal oxides, hydroxides and carbonates).*
Production of soluble salts	*Add the solid to the acid until no more dissolves. Filter off excess solid and then crystallise to produce solid salts.*

Universal indicator	*Red in acid, green in neutral and blue in alkali*
Litmus	*Red in acid, purple in neutral and blue in alkali*
Methyl orange	*Red in acid, yellow in neutral and yellow in alkali*
Phenolpthalein	*Colourless in acid and in neutral and pink in alkali*

Gas tests

Gas tests

Gas	Test	Positive result
Hydrogen	*Burning splint*	'Pop' sound.
Carbon dioxide	*Limewater*	Goes cloudy (as a solid calcium carbonate forms).

Producing salts from soluble reactants

Titration	*The acid and the soluble reactant are mixed in the correct proportions and the remaining solution is only salt and water*

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

acidic   neutral   alkaline

The pH scale and indicators

Acids	*Acids produce hydrogen ions (H+) in aqueous solutions.*
Alkalis	*Aqueous solutions of alkalis contain hydroxide ions (OH⁻).*

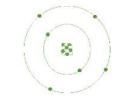*A neutralisation reaction is between an acid and a base*

In neutralisation reactions, hydrogen ions react with hydroxide ions to produce water:

$$H_+ + OH^- \rightarrow H_2O$$

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Small molecules (ie: Oxygen) typical size of 10^{-10}m.

Diameter of an atom 1 X 10^{-10}m.

Diameter of nucleus is 10,000 times smaller.

Neutral charge | Equal numbers of protons and electrons.

Atom | **Positively charged nucleus, surrounded by negatively charged electrons**

Nuclear radius is much smaller than the atom.

Almost all of the atom's mass is in the nucleus.

Electrons | **Orbit the nucleus at set distances** | Absorbing or emitting EM radiation causes change in orbit.

Electrons lost | Positive ion.

Atomic number = 3 protons
Mass number = 6 (3 neutrons + 3 protons).

Atomic number = 3 protons
Mass number = 7 (4 neutrons + 3 protons).

Isotope | $^6_3$Li | $^7_3$Li

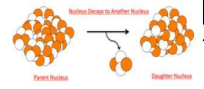*Different forms of an element with the same number of protons but different number of neutrons*

Mass number	**Number of protons and neutrons**
Nucleon	**Smaller particles in the nucleus**
Atomic number	**Number of protons**
Ion	**Unequal number of electrons to protons**

Particle	**Relative Charge**	**Relative mass**	**Found**
Proton	**+1**	**1**	**In the nucleus**
Neutron	**None**	**1**	
Electron	**-1**	**1/1835 0r 0.0005**	**Orbits the nucleus**
Positron	**+1**		

Detecting

Use Geiger-Müller *tube* | Radiation passes into tube, ionising gas causing a short pulse of current to flow.

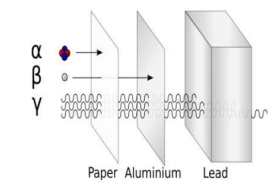**Photographic film** | Film becomes darker when radiation reaches it.

Count rate	**Number of clicks per second**
Dose	**Amount of radiation**

Atom Structure

EDEXCEL TOPIC 6 RADIOACTIVITY.

Types of radiation and radioactive decay

Background radiation

Background radiation

Low level ionising radiation from space and naturally occurring radioactive substances in the environment
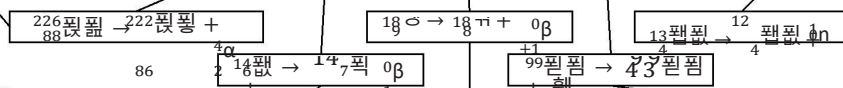
Radon gas (49%), Medical (15%), Ground and buildings (13%), Cosmic rays (12%), Food and Drink (10%), Nuclear and other (1%).

J J Thomson (1897)	Discovered electrons could be removed from atoms. Suggested 'plum-pudding' model – atoms were spheres of positive charge with tiny negative electrons stuck in them.
Rutherford and Marsden (1909)	Fired a beam of alpha particles (He^{2+}) at thin gold foil. They expected particles to pass straight through or be slightly deflected. They found some travelled through, some were deflected more than expected and some bounced back.
Rutherford (1911)	Used above evidence to suggest most of the mass of atom was concentrated at the centre in a tiny nucleus, most of atom was empty space and the nucleus had a positive charge since positive alpha particles were repelled. The nuclear model was created.
Bohr (1913)	Tweaked Rutherford's idea, and suggested modern model of atom – electrons in fixed orbits at set distances from nucleus. The distances were called energy levels. He suggested electrons can only exist in these energy levels. This Bohr model is the currently accepted model of the atom.

Radioactive decay	*Unstable atoms randomly emit radiation to become stable*
Ionisation	*Radiation that 'knocks' electrons from atoms*

Decay	Alpha (α)	Beta ($\beta-$)	Positron ($\beta+$)	Gamma (γ)	Neutron
Emitted from nucleus	Helium nuclei ($^4_2$He)	High energy, high speed electron ($^0_{-1}$e)	High energy, high speed particle ($^0_{+1}$e)	High frequency Electromagnetic wave	Neutron
Mass number	4	0	0	0	+1
Atomic number	+2	-1	+1	0	0
Charge	+2	-1	+1	0	0
Ionising	Strongly	Moderately.	Moderately.	Weakly.	Not.
Penetrating	Few cm	Few metres.	Smaller range.	Few kilometres.	
Stopped by	Paper or skin.	Aluminium.	When they hit an electron they destroy each other.	Concrete or lead.	

To balance nuclear equations the total mass and atomic numbers must be equal on both sides.

When nuclei undergo radioactive decay, nuclear rearrangement and loss of energy as gamma radiation often occurs.

$^{226}_{88}$? → $^{222}_{86}$? + $^4_2\alpha$

$^{14}_6$? → $^{14}_7$? + $^0_{-1}\beta$

β- a neutron becomes an proton and an electron.

$^{18}_8$O → $^{18}_9$? + $^0_{+1}\beta$

β+ a proton becomes an neutron and a positron.

$^{99}_{43}$? → $^{43}_{?}$?

$^{13}_{?}$? → $^{12}_{?}$? + $^1_0$n

Gamma rays do not change the charge or the mass of the nucleus.

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EDEXCEL TOPIC 6 RADIOACTIVITY.

Beta - Gauging thickness
Paper is passed between rollers connected to a detector, which measures the amount of Beta particles passing through. Too thin, pressure reduced, too thick, pressure increased.

Beta or Gamma - Tracing leaks
Radioactive tracer leaks out of damaged area and is detected using Geiger-Müller tube.

Decay
When a nucleus will decay cannot be predicted - it is a random process

An unstable nucleus changes and emits particles changing the atom.

Radioactive activity of a source decreases over a period of time.
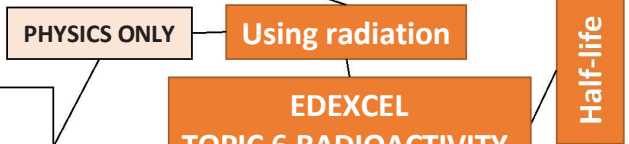
Gamma - Diagnosis of cancer.
Cancer cells are very active so take up glucose quicker than normal cells. Using radioactive glucose will detect cancer cells.

Gamma - Treatment of cancer.
Cancer cells divide more quickly and are more susceptible to be killed by radiation.

Alpha - Household smoke alarms
Alpha particles ionise molecules in air. Ions are attracted to charged plates allowing a small current to flow. Smoke gets in the way of ions and current decreases setting off alarm.

Half life
The time taken for the activity of a radioactive source to decay by half

A period of time, constant for each isotope for half of the un-decayed nuclei to decay.
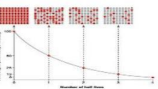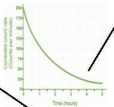
Gamma
Irradiating food — Kills bacteria.
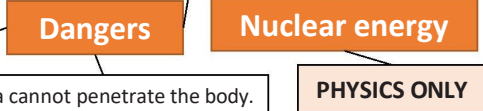**Sterilising medical equipment** — Kills bacteria.

PHYSICS ONLY

Using radiation

Half-life

Uses
Different isotopes have different half lives

Household smoke alarms, irradiating food, sterilising medical equipment, tracing and gauging thicknesses, diagnosis and treatment of cancer.

Unit of activity — **Becquerel** — The number of nuclear decays per second.

Fuel rods — Made of U-238, 'enriched' with U-235 (3%). Long and thin to allow neutrons to escape, hitting nuclei.

Control rods — Made of Boron. Controls the rate of reaction. Boron absorbs excess neutrons.

Moderator — Water slows down fast moving neutrons.

Concrete — Neutrons hazardous to humans – thick concreate shield protects workers.

PHYSICS ONLY

Low doses cause minor damage, cells divide rapidly (cancer).

High doses kills cells causing radiation sickness.

Dangers

Nuclear energy

PHYSICS ONLY

Controlled reaction — *Steady rate of nuclear fission* — 1 neutron produces another fission.

Alpha cannot penetrate the body.

To prevent activity decreasing, isotope made close to scanner.

Ionisation
Radiation ionises atoms leads to tissue damage

Beta and gamma penetrate the body.

Nuclear power — *Thermal energy released from nuclear fission* — Produces radioactive products.

PET scanners
Positron emission tomography – used to diagnose conditions.

Short half=life tracers injected into patient. Positron meets electrons in organ and annihilates emitting high energy gamma rays in opposite direction. Gamma rays used to locate tumour.

Reduce the risk
Reduce length of exposure time.
Reduce distance from source.

Irradiation
*Person is in exposed to radioactive source*

Nuclear fission
One large unstable nucleus splits to make two smaller nuclei

Neutron hits U-235 nucleus, nucleus absorbs neutron, splits emitting two or three neutrons and two smaller daughter nuclei. Process also releases energy.

Nuclear energy store in fuel.	Thermal energy.	Thermal energy store in moderator.
Thermal energy store in moderator.	Thermal energy.	Thermal energy store in water.
Thermal energy store in water.	Kinetic energy.	Kinetic energy store in steam.
Kinetic energy store in steam.	Kinetic energy.	Kinetic energy store in turbine.
Kinetic energy store in turbine.	Kinetic energy.	Kinetic energy store in generator.
Kinetic energy store in generator.	Electrical energy.	To the National Grid.

Contamination
Unwanted presence of radioactive atoms in body or ground

Treating tumours
Internally – short half-life alpha emitters placed inside body in or near tumour.
Alpha is strongly ionising so damages cells. Have a short range so damage to normal tissue is limited.

Internally – short half-life beta emitters (implants) placed inside body in or near tumour.
Beta penetrates case of implant and damages tumour cells. Range is longer so more damage to healthy can occur.

Externally – long half-life gamma rays aimed at tumour
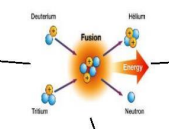Gamma penetrates into body, some damage to surrounding cells occurs.

Advantages
Very reliable, 'clean' fuel - does not release greenhouse or acid rain gases, produces huge amounts of energy

Disadvantages
People see it as dangerous, nuclear waste has very long half life and needs to disposed of safely, risk of leaking and explosions
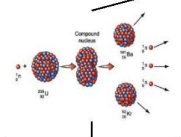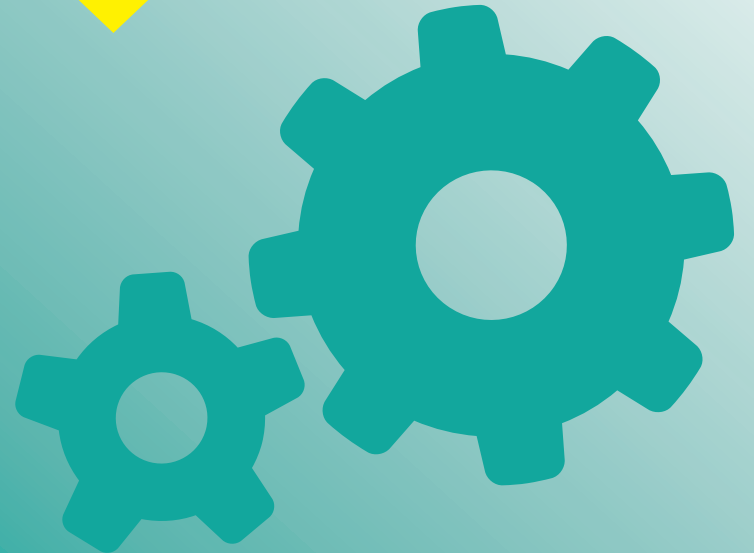
Process repeats, chain reaction formed.

Used in nuclear power stations.

Nuclear fusion
Two small nuclei join to make one larger nucleus

Difficult to do on Earth – huge amounts of pressure and temperature needed.

Occurs in stars.

Strong electrostatic repulsive forces from positively charged nuclei have to be overcome, using lots of heat and pressure so is uneconomical.

History

- **Religion:** Elizabethan **religious settlement** was a compromise; declared herself **Governor of Church of England** which was Protestant, but allowed Catholics to worship in private. Moderate Archbishop of Canterbury appointed, Matthew Parker.
- Elizabeth was practical after the religious rollercoaster left by her father, Mary and Edward. In the Religious Settlement, the **Act of Supremacy** of 1559 gave Elizabeth control of the Church as Supreme Governor. In the **Act of Uniformity**, she would allow Catholics to worship privately but would keep England Protestant with a new **Book of Common Prayer** and an English Bible in every Church. **Impact:** The Middle way was designed to satisfy the majority for the sake of peace. However, it did not satisfy the extreme Catholics (Jesuits) or Protestants (Puritans)
- **Mary Queen of Scots:** Queen Elizabeth's Catholic cousin was forced to flee to England due to murky past. Placed under house arrest, but became embroiled for the rest of her life in 'attempted' plots to overthrow Elizabeth (**Ridolfi, Norfolk, and Babington**). Finally executed in 1596. Catholics now had a **martyr**,
- **Catholic challenges:** 1570, Pope **excommunicated** Elizabeth; new approach needed. 1581 law made it **treason** to attend Catholic mass or have a Catholic priest in your home. 1593 law said Catholics could not travel 5 miles away from homes. **Recusancy** fines increased to £20 and illegal to own rosary beads. Catholic reaction was to send <u>Jesuit priests</u> (from new college at Douai in Spanish Netherlands led by Cardinal William Allen) from 1580. Supported by France and Spain, despite ban on Jesuit priests in 1585. Robert Parsons (later fled England) and Edmund Campion (executed) led Jesuit mission.
- <u>Puritan challenge:</u> They were **extreme Protestants**, who began meetings called '**prophesyings**' for prayers and discussions. New Archbishop of Canterbury, <u>Edmund Grindal</u> encouraged these meetings and was suspended. Puritans attempted to set up own Churches in Norwich and London but failed. Many supporters in Parliament, including <u>Peter Wentworth</u> <u>Anthony Cope, Robert Dudley and Sir Francis Walsingham</u>. From 1583, crackdown on Puritans: Rules banned unlicensed preaching and enforced attendance at Church. **New High Commission** led by Archbishop of Canterbury, <u>John Whitgift</u>, had power to fine and imprison. Puritan printers calling for a reorganised Church without bishops (Presbyterians) were punished such as <u>John Stubbs</u>.
- **Conflict between England and Spain** occurred due to the following: Elizabeth would not agree to marry Philip II, Spain was Protestant, the Pope called for all Catholics to challenge Elizabeth in 1570, Sir Francis Drake and other English sailors attacked Spanish shipping and Elizabeth sent help to Protestants rebelling in the Spanish Netherlands.
- **English navy was a thorn in Philip's side;** it had been helped by new technology (mentioned earlier). Also adopted surprise attacks on Spanish ships and the use of fireships such as **Singeing of King of Spain's Beard** at Cadiz in 1587.
- **Spanish Armada: People:** King Philip, Santa Cruz, Duke of Parma, Duke of Medina Sidonia, Lord Howard, Francis Drake. **Pressure:** Elizabeth interference in Spanish Netherlands, piracy, raid on Cadiz. **Planning of Spanish:** Combination of Parma and Santa Cruz plans to pick up soldiers from Netherlands and land in Dover to march on London. **Weaknesses** included quality of barrels to store food, no deep sea ports to use, communication between commanders. **Planning of English:** Fast, speedy and more manoeuvrable ships, close to home, use of cannons. **Performance:** English tactics superior with use of fireships to break tight formation, the weather and Spanish mistakes (not effective warships for English Channel as too slow and unable to defend against English fire power in Battle of Gravelines, Spanish cannonballs did not fit cannons, unable to pick up troops in Netherlands, Duke of Medina Sidonia inexperienced). **Position:** Spanish soon blown off course and battered by storms off Scotland. Only 92 of 127 returned home and half never used again.

AQA GCSE HISTORY 9-1 SUMMARY REVISION GUIDE:
Elizabethan England, c.1568-1603

Exam Questions			
How convincing is the interpretation? (8)	Explain what was important about (8)	Write an account of... (8)	Spanish Armada question (16)
10 mins	10 mins	10 mins	20 mins

Part 1: Elizabethan Court and Government

- **Elizabeth:** Had a difficult upbringing (she was labelled as **illegitimate** by some people) and sometimes feared for her life. In 1554 was accused of conspiring against her half-sister. Therefore, she was very cautious and only trusted close advisors. She was intelligent, confident and very well educated. With little experience, she became a very powerful and effective ruler.
- **Government:** The Privy Council was made up of people chosen by Elizabeth (mostly nobles) for the day to day running of the country dealing with military, religion, security and foreign affairs. <u>Led by Secretary of State</u>.
- **Parliament** made up of <u>Lords</u> (nobles, lords, bishops) and <u>Commons</u> (wealthy and educated) had power over taxation and laws.
- **Lord Lieutenants** appointed by Queen to take control over areas of country to **raise taxes, settle disputes and raise militia** for Queen. Many were also <u>Privy Councillors</u>.
- **J.P.'s** ensured law and order were kept. Selected from local gentry and **ensured laws properly enforced** (had power to imprison).
- **Royal Court** made up of government officials, ladies in waiting, servants and advisors who surrounded Elizabeth. Over 1000 people; centre of political power and fashions of the day.
- **Key men: William Cecil**, who served as Secretary of State twice and Elizabeth's most trusted advisor. Played key role in <u>Poor Laws</u>.
- **Key men: Francis Walsingham**, who also served as Secretary of State and again one of her most trusted advisors from 1573 to 1590. Known as the '<u>spymaster</u>' and played a key role in <u>execution of Mary Queen of Scots</u>.

Elizabeth's problems as a female ruler

- **The Succession:** Parliament was keen for Elizabeth to be married and have children to secure the Tudor line.
- Her heir was **Mary Queen of Scots** who was exiled to England from 1568. For many Englishmen, the prospect of a Scottish Catholic taking throne was unimaginable.
- **Religion:** Elizabeth was practical after the religious rollercoaster left by her father. Mary and Edward. She would allow **Catholics to worship privately** but would keep England Protestant. She also had to tackle Puritanism later.
- **Ireland:** Elizabeth and the Irish clashed over her claim to be **Queen of Ireland**. She spent vast sums of money without success of trying to limit Irish rebellions, particularly in 1559.
- **Foreign Policy:** Catholic countries such as France and Spain were keen to assert their influence over England. Her major concern was protecting England.
- **The importance of marriage.** <u>Pros:</u> Marriage could create an alliance with a foreign power, produce an heir and prevent Mary Queen of Scots from ruling England. <u>Cons:</u> Could come under control of a foreign power, Elizabeth kept her independence, childbirth was dangerous, hers sister's marriage to Philip seen as a disaster.
- **Worthy suitors:** <u>Robert Dudley, Earl of Leicester</u> – Privy Councillor, former favourite but previously married (wife's death was also controversial). <u>Francis, Duke of Alencon</u> – heir to French throne, but Catholic and public against this. <u>King Philip II of Spain</u> – most powerful man in world, but Catholic, unpopular and had already married her sister.

- Many in **Parliament** saw it their duty to discuss Elizabeth's marriage. She was furious and one member arrested for openly discussing it and sent to Tower (Peter Wentworth). Elizabeth saw it as her decision alone, so she never married.

Challenges to Elizabeth's rule:

- **The Northern Rebellion of 1569**. Northern Lords led by the Dukes of Westmorland and Northumberland took control of Durham Cathedral and celebrated an illegal Catholic mass. Marched south with 4,500 men but were stopped by Earl of Sussex. Leaders fled. 700 executed including Northumberland.
- **The Ridolfi Plot of 1571**. Catholic Duke of Norfolk, Queen's second cousin, had already been implicated in Northern Rebellion and put in Tower of London for a time. Now involved in a plot with Italian banker Ridolfi to encourage rebellion in the North and together with army from the Netherlands, murder Elizabeth, marry Mary Queen of Scots and put her on the throne. Coded letters found under Norfolk's doormat and executed 1572.
- **The Essex Rebellion, 1601.** He became a Privy Councillor in 1595, and given a monopoly on sweet wine in England. Achieved military success against Spanish in 1596. Seriously quarrelled with Queen over Ireland in 1598; allegedly was about to draw his sword. In 1599, made Lord Lieutenant of Ireland reluctantly. Job to crush Irish rebels but instead made a deal with them. Quickly lost favour; monopoly not renewed and faced financial ruin. Took 4 Privy Councillors hostage and with 200 followers marched to London. Cecil, his rival declared him a traitor losing him support and hostages released by his own supporters. Tried and executed Feb 1601. Several other rebels executed and others (whom he had confessed to under torture) fined. Whereas the above were motivated by religion, Essex motivated by power.
- **Why did the rebellions fail?**
  Elizabeth had a fantastic network of **spies and informers** under Francis Walsingham. The rebellions had a **lack of popular support**. Even Catholics preferred Elizabeth to Mary Queen of Scots and influence of Philip II of Spain. Elizabeth was a **skilled politician** and worked effectively with Parliament. Finally, Elizabeth was not afraid to use swift action and **punishment** against traitors, using torture and execution. However as long as England was a Protestant country, she would face threats and invasion.

Part 2: Life in Elizabethan times

- **Great Chain of Being.** Elizabethans knew their place in society; God was at the top followed, then human beings, followed by animals and plants. Human beings were sub divided into the monarch followed by the nobles, gentry and then the peasants.
- **Wealth:** Land made money and raised social status. **Nobles** were the most respected members of society. They had titles such as **Duke, Earl or Baron.** There average income was £6000 a year (£1m today). A member was born into it or awarded a title from the Queen. Privileges included protection from torture or public hanging. 14% of country's income came from 1% of the noble population. Queens right to give and take away influence. **Gentry** were landlords of the countryside. Lived on rents of their tenants and did no manual labour. Income varied from £10 and £200 a year. (Up to £34,000 today). Many were **J.P.s** and served in Parliament. Titles included **knight** and **esquire.** People making money from trade moved into this class. **Peasants** were poorest in society. Often worked as **labourers** and struggled for work especially with a rising population.
- **Fashion:** Elizabethans liked to show off their new wealth, like Bess of Hardwick. They built **fine houses** in the countryside and lavishly decorated and furnished them. **Banquets** (meat and wine) were a way of showing off and entertaining. **Fine clothes** and **white faces** became fashionable amongst women. The **ruff** became an important fashion accessory. England had become stable and secure and this period became known as a **Golden Age.**
- **The Theatre.** Rich and poor alike visited the theatre. Famous playwrights included **William Shakespeare** and **Christopher Marlowe.** Theatre companies sponsored by a **patron** (a great way to show your culture and get in favour with the Queen) sprung up such as the **Lord Chamberlain's men** and the **Admiral's Men.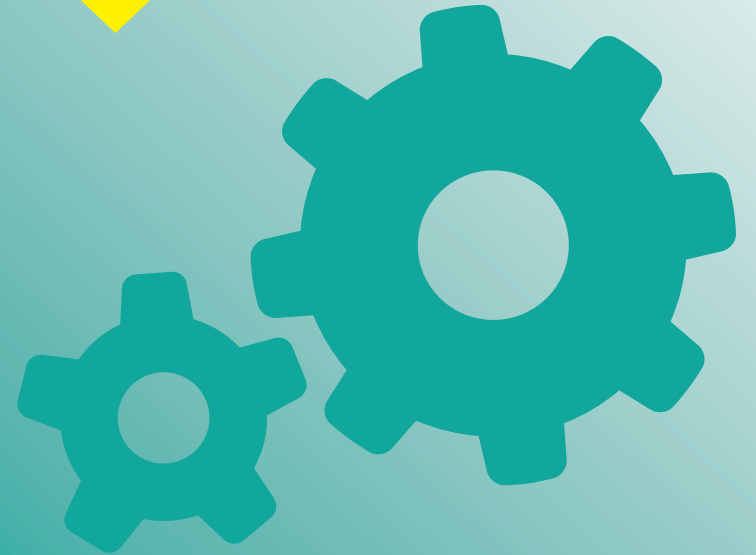** Acting was strictly a male profession. The most famous of the day was **Richard Burbage.** Plays were at first performed in inns or outside in the yard but soon a number of **permanent** and purpose-built theatres existed such as **The Globe** in London. Plays became extremely **popular** and began at 3.00pm and continued into the evening, providing a cheap day's entertainment. The performance became like a circus with jostling and heckling. **Protests** however from **Puritans** saw the theatres as dens of immorality, drunkenness and crime. People instead should read the **Bible**; however, **patronage** from Elizabeth meant that the theatre kept growing in popularity. Elizabeth also used it for **propaganda** purposes to put the Tudors in a favourable light.
- Was it a **Golden Age?** **Pros:** Art, Exploration, Theatre, Building, Science and Technology (navigation and astrology), Theatre, Education, Literature. **Cons:** Blood sports, punishments, Life expectancy low, Poverty, Alchemy.
- **Hardwick Hall, more glass than wall:** Designed by Robert Smythson, emphasis on symmetry and order, such as **E shape, open courtyards** and **straight chimney columns.** **Glass** was status symbol (note how windows get larger on each level rising). Key features to mention: 1) **Location** – countryside which was peaceful 2) **Function** – residences now to show off wealth and patronage such as **Great Chamber and Long Gallery** for guests 3) **Structure and design** – new renaissance ideas such as **loggia** at front 4) **Owners** showing off wealth to Queen and rise of gentry 5) **Culture, value and fashions of the time** – **tapestries, fireplaces, Long Gallery, Great Hall, heraldry, oak panelling, paintings of Queen.**
- **Rise in Poverty** not helped by **Reformation:** The **closing of the monasteries by HVIII** left monks and nuns unemployed, unable to care and help those in need by giving them food and shelter. HVII had banned lords keeping **private armies**, so many soldiers out of work. HVIII also **debased** the coinage to pay for wars. This led to **inflation** and a collapse in cloth industry and trade. **Bad harvests** in 1594 and 1598 led to food shortages and starvation. Landowners also started enclosing their land with hedges; fewer workers were needed. A **flu epidemic** of 1558 killed around 200,000 including many needed on the fields.
- **Attitudes to poverty: Deserving Poor.** Archbishop Whitgift established Almshouses in Croydon for beds and food. **Undeserving Poor** such as beggars (**Counterfeit crank, Baretop trickster, Clapham Dudgeon, Tom O'Bedlam**) dealt with by punishments such as stocks, whipped, burned or hanged.
- **Elizabethan Poor Law** taxed rich to support poor (**helpless poor** receive food and shelter, **able bodied** poor expected to work for food and drink, **idle poor** to be whipped and sent to house of correction) **Pros:** begging reduced, help to poor and not just vagrants. **Cons:** inconsistently applied and how to define categories – paupers just sent from area to area.

Part 3: Troubles at home and abroad

- **Exploration:** **Francis Drake** and his cousin **John Hawkins** became privateers. Attacking enemy ships (mostly Spanish) and taking their cargo. This made them and Elizabeth extremely rich.
- New technology in sailing helped: New **lanteen** sails made ships faster and easier to steer; the **astrolabe** allowed sailors to work out how far north or south they were and better compasses made navigation more accurate.
- Trade boomed: **The East Indian Company** was formed to trade in porcelain, spices and silks with India. Other companies had monopolies in Russia (**Muscovy Company** in 1555) and in Turkey and the Middle East (**Levant Company** in 1581).
- **John Hawkins** with Francis Drake began a **slave trade**– taking Africans to South American coast to be sold. **Sir Walter Raleigh** attempted to set up a colony called Roanoke in North America.

Geography

Option 3: ENERGY GLOBAL

Physical

- **Geology** determines the availability of fossil fuels.
- **Climate variations** will affect the potential use of renewable energy.
- **Natural disasters** can damage energy infrastructure.

Economic

- **Cost** of extracting fossil fuels is becoming costly and difficult.
- **Price of fossil fuels** are volatile to potential political changes.
- **Infrastructure** for energy is costly, especially for LICs.

Technology

- **New technology** is making once difficult energy sources now reachable/exploitable.

Political

- **Conflict** and turmoil in energy rich countries can affect exports.
- **Stricter regulations** over Nuclear.

Impact of Energy Insecurity

Sensitive environments

Exploration of energy resources threatens to harm sensitive areas such as the oil drilling in Alaska, USA.

Food production

Food production depends on the energy needed to power machinery and transport goods to different markets.

Energy conflict

Shortages of energy resources can lead to tensions and violence. Conflict can be caused by fear of energy insecurity.

Industry

Countries can suffer from shortfalls in energy leading to a decline in manufacturing and services.

Increasing Energy Supply

Non-renewables

Fossil Fuels - Conventional power stations can be made more efficient with carbon capture overcoming the environmental impacts.

Nuclear - Once a nuclear plant is built it can provide a cheap and long-term dependable source of energy.

Renewables

Wind, Solar, Biomass - These are examples of environmentally friendly renewable sources that can't run out but cost a lot to install.

C.S. UK Fracking

Fracking is used to extract natural gas trapped in underground shale rock. It is a method considered by the UK.

Advantages
- Estimated to create 64,000 jobs.
- UK has large shale gas reserves.
- Is far cheaper than natural gas.

Disadvantages
- May cause groundwater pollution
- Is a non-renewable resource.
- May trigger minor earthquakes.

Sustainable Energy Supply

This involves balancing supply & demand. It also includes reducing waste & supporting the environment.

Home design - Building homes to conserve energy. i.e. roof insulation.

Reduce demand - Changing attitudes towards energy used to save energy.

Efficient technology - Making cars more efficient by improving engine design and weight. i.e. Hybrid engines.

Transport - Using public buses & bikes.

C.S. NEE - Chambamontera

Chambamontera is an isolated community in the Andes of Peru. It introduced a micro-hydro to exploit water power as an energy source.

Benefits to the community
- Provides renewable energy.
- Low maintenance & running costs
- Has little environmental impacts.
- Using local labour and materials.
- Businesses are developing.
- Less wood is needed to be burnt.

Resource Challenges

Resources are things that humans require for life or to make our lives easier. Humans are becoming increasingly dependent on exploiting these resources, and as a result they are in high demand.

Demand outstripping supply

The demand for resources like food, water and energy is rising so quickly that supply cannot always keep up. Importantly, access to these resources vary dramatically in different locations

1. Population Growth

- Currently the global population **is 7.3 billion**.
- Global population has risen **exponentially** this century.
- Global population is expected to reach **9 billion by 2050**.
- With more people, the **demand** for food, water, energy, jobs and space **will increase**.

2. Economic Development

- As **LICs** and **NEEs** develop further, they require **more energy** for industry.
- **LICs** and **NEEs** want similar lifestyles to **HICs**, therefore they will need to **consume more resources**.
- Development means **more water is required** for food production as diets improve.

Significance of Water

Resources such as food, energy and water are what is needed for basic human development.

FOOD

Without enough nutritious food, people can become **malnourished**. This can make them ill. This can prevent people working or receiving education.

WATER

People need a supply of **clean and safe water** for drinking, cooking and washing. Water is also needed for food, clothes and other products.

ENERGY

A good supply of energy is needed for a basic standard of living. People need **light and heat** for cooking or to stay warm. It is also needed for industry.

3. Changing Technology and Employment

The demand for resources has driven **the need for new technology** to reach or gain more resources.
More people in the **secondary and tertiary industry** has increased the **demand for resources** required for electronics and robotics.

Food in the UK

Growing Demand

- The UK imports about 40% of its food. This increases people's **carbon footprint**.
- There is growing demand for greater choice of **exotic foods** needed all year round.
- Foods from abroad are more affordable.
- Many food types are unsuitable to be grown in the UK.

Impact of Demand

Foods can travel long distances (food miles). Importing food adds to our carbon footprint.
+ Supports workers with an income + Supports families in LICs.
+ Taxes from farmers' incomes contribute to local services.
- Less land for locals to grow their own food.
- Farmers exposed to chemicals.

Agribusiness

Farming is being treated like a large industrial business. This is increasing food production.
+ Intensive faming maximises the amount of food produced.
+ Using machinery which increases the farms efficiency.
- Only employs a small number of workers.
- Chemicals used on farms damages the habitats and wildlife.

Sustainable Foods

Organic foods that have little impact on the environment and are healthier have been rising.
Local food sourcing is also rising in popularity.
- **Reduces emissions** by only eating food from the UK.
- **Buying locally sourced** food supports local shops and farms.
- A third of people **grow their own food**.

Resource Reliance Graph

Consumption – The act of using up resources or purchasing goods and produce.
Carry Capacity – A maximum number of species that can be supported.
Resource consumption exceeds Earth's ability to provide!

Geography - The Challenge of Resource Management

Energy in the UK

Growing Demand

The UK **consumes less energy** than compared to the 1970s despite a smaller population. This is due to the **decline of**

Changes in Energy Mix UK
75% of the UK's oil and gas has been used up.
Coal consumption has declined.
UK has become too dependent on imported energy.

Energy Mix

The majority of UK's energy mix comes from **fossil fuels**. By 2020, the UK aims for 15% of its energy to come from **renewable sources**. These renewable sources do not contribute to **climate change**.

2009 **2020**

Oil	Gas	Renewable
Nuclear	Coal	Other
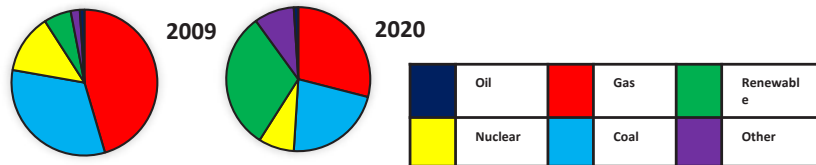
Energy in the UK

Significance of Renewables

+ The UK government is investing more into low carbon alternatives.
+ UK government aims to meet targets for reducing emissions.
+ Renewable sources include wind, solar and tidal energy.
- Although infinite, renewables are still expensive to install.
- Shale gas deposits may be exploited in the near future

Exploitation

Nuclear
New plants provide job opportunities.
Problems with safety and possible harm to wildlife.
Nuclear plants are expensive.

Wind Farm
Locals have low energy bills.
Reduces carbon footprint.
Construction cost is high.
Visual impacts on landscape.
Noise from wind turbines.

Water in the UK

Growing Demand

The average water used per household has risen by 70%. This growing demand is predicted to increase by 5% by 2020.
This is due to:
- A growing UK population.
- Water-intensive appliances.
- Showers and baths taken.
- Industrial and leisure use.
- Watering greenhouses.

Deficit and Surplus

The north and west have a **water surplus** (more water than is required). The south and east have a **water deficit** (more water needed than is actually available).
More than half of England is experiencing **water stress** (where demand exceeds supply).

Pollution and Quality

Cause and effects include:
- Chemical run-off from farmland can destroy habitats and kills animals.
- Oil from boats and ships poisons wildlife.
- Untreated waste from industries creates unsafe drinking water.
- Sewage containing bacteria spreads infectious diseases.

Water stress in the UK

Average rainfall increase 2008 figures
- Normal range
- Above average
- Substantially above average
- Very wet

Management

UK has **strict laws** that limits the amount of discharge from factories and farms.
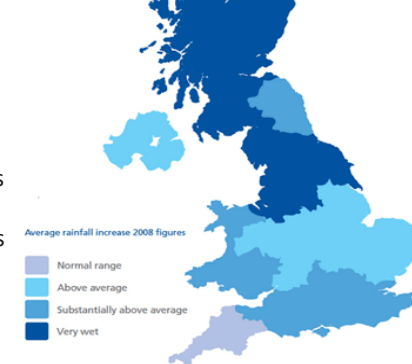**Education campaigns** to inform what can be disposed of safety.
Waste water treatment plants remove dangerous elements to then be used for safe drinking.
Pollution traps catch and filter pollutants.

Water Transfer

Water transfer involves moving water through pipes from areas of surplus (Wales) to areas of deficit (London).
Opposition includes:
- Effects on **land and wildlife**.
- High maintenance **costs**.
- The **amount of energy** required to move water over long distances.
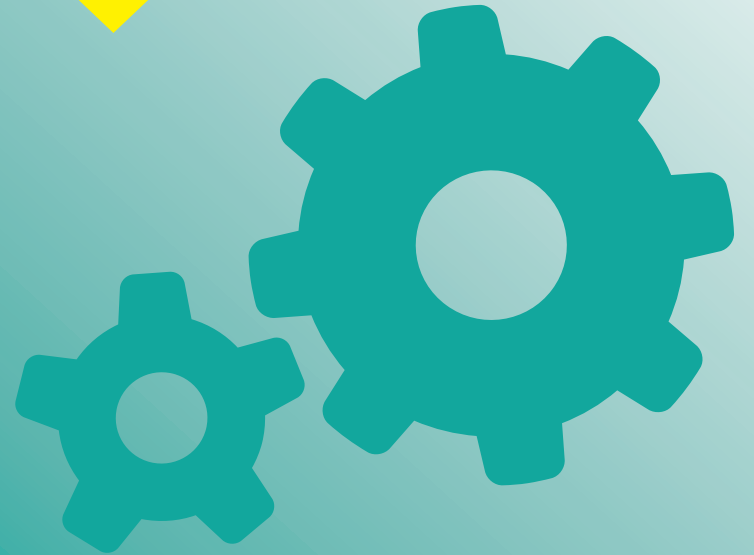
Religious Studies

Hartford Church of England High School

CARITAS ET VERITAS
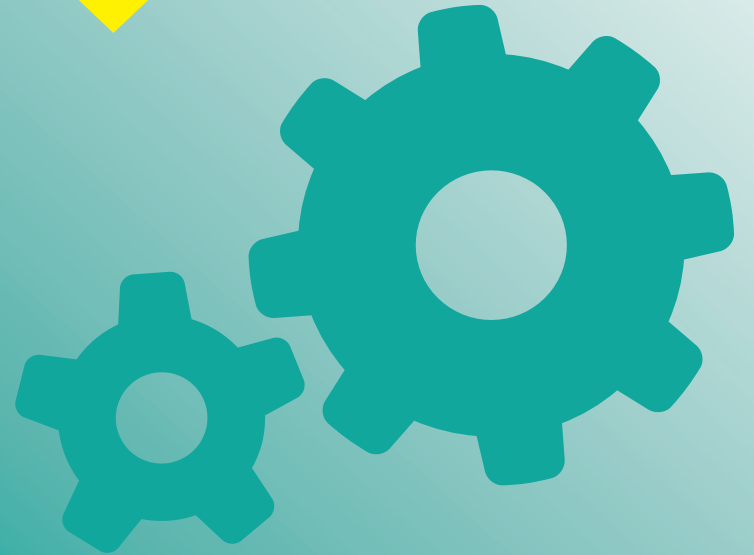
Key Words			
Adultery	Having sex with someone who is not your husband or wife, outside of marriage	**Gender Prejudice**	Holding biased opinions about people based on their gender
Artificial Contraception	Methods of preventing pregnancy e.g. condoms, the pill, the coil	**Heterosexual**	Sexual attraction to the opposite gender
Cohabitation	Living and starting a family with someone who you are not married to	**Homosexual**	Sexual attraction to the same gender
Divorce	The legal ending of a marriage	**Marriage**	A legal and religious ceremony joining two people together in love
Family Planning	Using a woman's natural cycle of fertility to try and avoid pregnancy	**Procreation**	Bringing babies into the world
Gender Discrimination	Acting against people based on their gender	**Remarriage**	Marrying someone else after divorce

Key Ideas		
Religious Views on Sexuality	**Sexual Orientation** - The Roman Catholic church teaches that sex between people of the same gender is 'disordered' - They argue that **homosexual** relationships are banned by the Bible - Liberal Christians teach that Jesus wanted people to love each other and show **mercy** and that we should be accepting of homosexuals - **Gay marriage** is banned in the Catholic Church and Church of England *"Do not have sexual relations with a man as one does with a woman"* – Leviticus 18:22	**Adultery and Sex Outside Marriage** - Roman Catholics argue that all **sex before marriage** and after a divorce is unacceptable. Sex should only take place inside a marriage which is a lifelong, loving relationship. - **Adultery** means the act of having sex with someone who is not your husband or wife. - It is prohibited by the Bible and Christians argue it is wrong as it undermines marriage involves lies and secrecy. *"You shall not commit adultery"* - Exodus 20:14
Artificial Contraception	- **Artificial contraception** means using something to stop yourself from getting pregnant. This could be a condom, the pill or a device like the coil. - **Family planning** means using the natural cycle of fertility which women go through to predict when a woman would be least fertile. It is much less effective than artificial contraception. - God tells Adam and Eve (the first couple) to "*be fruitful and multiply*" (Genesis 1:2) which encourages them to have children. ☒ The *Catholic Church* argues that all sexual acts inside marriage must be open to **procreation** (having babies) and that a baby is a gift from God. They may use family planning as it is a natural method. ☑ The *Church of England* argues that contraception should be allowed so that couples can take time and consider if they want to have children.	
Marriage and Divorce	- **Marriage** is a religious and legal ceremony in which two people make **vows** (promises) in front of their friends and family and (if in a church) in front of God - During the ceremony you agree to be **together for life** saying "*til death do us part*" (Marriage Ceremony) - **Divorce** is the legal break-up of a marriage. It is **legal** in the UK and many marriages currently end in divorce. - Many Christians do not like it as it is seen to **break the promises** made in a marriage. ☒ The *Catholic Church* do not support divorce. They believe that sex after divorce is a form of adultery and you cannot get remarried in a Catholic Church once you have been divorced. Jesus says "*if a man divorces his wife [...] he involves her in adultery*" (Matthew 5:32) ☑ The *Church of England* accepts divorce, especially if it is for reasons of abuse but you have to receive special permission to get remarried in a church. They might see it as a merciful option.	
Family	**Types of Family** - **Nuclear Family** is a family with a mother, father and children – some Christians argue this is the ideal - **Extended Family** is a family where grandparents and other relatives are involved - **Single Parent Family** this is a family where one parent brings up the child	**Purpose of the Family** - **Procreation** – the family should be for the purpose of having and bringing up children - **Stability** – the family should be for providing a secure, stable environment for children - **Faith** – the family should be a way of bringing children up as good Christians
Gender	- **Gender equality** means that men and women should be equal and given the same rights and opportunities as each other -In the UK women can face gender **prejudice and discrimination** where they are not treated equality - The **Catholic Church** argues that women have a special role as mothers and they do not allow women to be priests - The **Church of England** has allowed women priests since 1994	

Spanish

Knowledge organiser: las vacaciones

Los verbos	
Ir	To go
Viajar	To travel
Reservar	To book
Viajar	To travel
Llegar	To arrive
Salir	To leave
Volver	To return
Descansar	To rest
Tomar el sol	To sunbath
Tomar una copa	To have a drink
Comer / Beber	To eat/ to drink
Cenar	To have dinner
Ver	To see/watch
Visitar	To visit
Bailar	To dance
veranear	To go on holiday
Hacer turismo	To site see
Tomar una siesta	To take a nap
Pasar tiempo	To spend time
Aburrir**se**	To get bored
Divertir**se**	To have fun
Broncear**se**	To sunbathe
Alojar**se**	To stay
Quedar**se**	To stay

Los verbos	
Ir de excursión	To go on a day trip
Caminar/pasera/andar	To walk
Llevar	To take /carry
Sacar fotos	To take photos
Quejarse	To complain

Los sustantivos	
Las vacaciones	Holidays
El viaje	The joiurney
El vuelo	The flight
El billete	The ticket
DNI	Spanish ID

Los Paises del Mundo

False friends:
Quincena = Fortnight

Los sustantivis	
Alojamiento	**Accommodation**
Un camping	Camp site
Un chalet	A chalet
Un piso de alquiler	A rented apartment
Un albergue juvenil	A youth hostel
Un parador	An inn
Una caravana	A caravan
Una pensión	A bed and breakfast
En el extranjero	Abroad
Instalaciones	**Facilities**
Una habitación	A room
Una habitación individual	A single room
Una cama de matrimonio	A double bed
Media pension	Half board
Pension complete	Full board
Con vistas al mar	With sea views
Un comedor	Dining room
Una piscina cubierta	An indoor pool
Equipaje	**Luggage**
Las maletas	Suitcases
La llave	The key
Un bañador	A swimming costume
Papel higiénico	Toilet paper
Un saco de dormir	A sleeping bag
Una tienda de campaña	A tent
El pasaporte	Passport

Knowledge organiser: Las Vacaciones

Los Adjetivos para describir

Aburrido/a/os/as	Boring
Divertido/a/os/as	Fun
Agotador/a/es/as	Tiring
Acogedor/a/es/as	WELCOMING
Lento/a/os/as	Slow
Largo/a/os/as	Long
Caro/a/os/as	Expensive
Barato/a/os/as	Cheap
Animado/a/os/as	Lively
Historico/a/os/as	Historic
Lujoso/a/os/as	Luxurious
Averiado/a/os/as	Broken
Relajante/s	Relaxing
Emocionante/s	Exciting
Estresante/s	Stressful
Inolvidable/s	Unforgettable
Cultural/es	Cultural
Construido/a en	Built in …

Cuidado:
- Era - It was (preterite)
- Fue – It was (imperfect)
- Eran - they were (preterite)
- Fueron – They were (imperfect)

Opinions

	Present	Past	Future
Yo	Me gusta Lo pas**o** mal	Me gust**ó** **Lo pasé bien**	Me gustaría
Él/ ella	Le gusta Lo pas**a** mal	Le gusto Lo pas**ó** bien	Le gustaría

Las vacaciones ideales

Mis vacaciones ideales …	My ideal holidays…
Mis vacaciones soñadas…	My dream holidays …
Serían en	(they) would be
Mi hote ideal tendría	My ideal hotel would have…
Si ganara la loteria, iría a	If I won the lottery, I would go to
Si fuera rico/a, viajaría a	If I were rich, I would travel to…

To describe your ideal holidays, you need to use the conditional. Remember you need to use the full infinitive (Do NOT remove –ar, -er,-ir):

Conditional

	AR / ER/IR		
I	+ ía	We	+ íamos
You	+ ías	You all	+ iais
He/she	+ ía	They	+ ían

Bailariamos = We would dance   Comería = He would eat
Tomaría el sol = I would sunbathe   Descansarias= You would rest

Sequencing what happened

Acabo de + infinitive	I have just …
Antes de + infinitive	Before….
Después de + infinitive	After …
Antes/ Después	Before/After
Primero	Firstly
Luego	Then
Más tarde	Later
Al día siguiente	Next day
All llegar	On arrival
Mientras	Whilsr
Por la mañana	In the morning
Por la tarde	In the afternoon
Por la noche	At night

Sustantivos - Transpprtes

Voy .. / Viajo	I go / I travel
en coche	by car
en coche de alquiler	by a rented car
en avión	by plane
en barco	by boat
en tren	by train
en autobus	by bus
en autocar	by coach
a pie	by foot

Las ventajas y desventajas de las vacaciones

Lo bueno es que …	Lo malo es que …
Lo mejor es que …	Lo peor es que …
La ventaja es que …	La desventaja es que …

Es demasiado caro	it is too expensive
Puede ser estresante	It can be stressful
Puedes pasar tiempo con tu familia	You can spend time with your family
Puedes conocer otras culturas	You can learn about other cultures
Puedes aprender idiomas	You can learn languages
Puedes hacer nuevos amigos	You can make new friends
Puedo relajarme	I can relax relax
Puedes olvidarte de la realidad	You can forget about reality
Puedes reconectarse con la familia	You can reconnect with family

IT

Formula	Explanation
=A7+B7	This will add the data in cell A7 with the data in cell B7.
=D4-J1	This will subtract the data in cell J1 from the data in cell D4.
=C5*I9	This will multiply the data in cell C5 with the data in cell I9.
=E6/T7	This will divide the data in E6 with the data in T7.
=SUM(F4:F12)	This will add up all the data from cells F4 to F12.
=AVERAGE(H2:R2)	This will work out the average of the data between cells H2 and R2.
=MAX(A6:A34)	This will look at cells A6 to A34 and display the maximum value across the range.
=MIN(C4:K4)	This will look at cells C4 to K4 and display the minimum value across the range.

Operator	Explanation
=	Equal to.
>	Greater than.
<	Less than.
>=	Greater than or equal to.
<=	Less than or equal to.
<>	Less than or greater than.

IF Functions

	A	B	C	D
1		**School Tests**		
2				
3	Surname	Forename	Test result	pass/fail
4	Black	Emma	45	
5	Brown	Simon	55	
6	Green	Louise	66	
7	Lilac	Maddy	86	
8	Orange	Daniel	21	
9	Tan	Tom	100	
10	White	Jack	37	
11		Average	59	

=IF(C4>=50, "Pass","Fail")

IF the value in cell C4 is greater than, or equal to the value of 50. "Pass" will be displayed in cell D4. Otherwise it will display "Fail".

Re-write the formula for D5. This time the pupil will only pass if the match or get higher than the class average.

=IF(C5>=C11, "Pass","Fail")

IT - Databases

Database Structure

- A database contains one or more **tables**

- A database with only one table is called a flat file database

- A table has rows, each row containing one **record**

- Columns in the table each contain one **field** belonging to the records

Key terms

Term	Definition
Record	All of the data in a row in a table. For example "Mr Jones"
Field	The identifier at the top of each column for the data below. For example "Surname"
Table	Where multiple records are stored.
Validation	Rules which are used to check that the data entered is sensible. For example not leaving a field blank.
Form	Used to allow a person to interact with a database, usually to input or search for data. Data added here goes to the table.
Query	Used to search a database for a certain piece of information.
Primary Key	Each record may have a unique identifier, called the primary key.

Database Structure

Primary Key

Field

Pupil ID	FirstName	Surname	School	Town	Postcode	Gender	Age	Category
22	John	Devlin	Hillside School	Bradford	BD3 7YV	M	11	1
23	Lindsay	Green	Hillside School	Bradford	BD3 7YV	F	14	1
24	Colin	McCullough	Hillside School	Bradford	BD3 7YV	M	11	1
25	Pauline	Heron	Dayes High School	Liverpool	L16 8VC	F	12	1
26	Emily	Ellingham	Dayes High School	Liverpool	L16 8VC	M	13	1
27	Stuart	Junges-Stainthorpe	Dayes High School	Liverpool	L16 8VC	M	11	1
28	Samuel	Langridge	Dayes High School	Liverpool	L16 8VC	M	14	1
29	Anthea	Elfallah	Donnington School	Worthing	BN14 9JH	F	14	1
30	Gillian	House	Donnington School	Worthing	BN14 9JH	F	14	1

Record

Table

Query Operators

Operator	Meaning	Example
<	Less than/before	<21/01/99
<=	Less than or equal to	<=100
>	Greater than or after	>01/01/21
>=	Greater than or equal to	>=30
=	Equal to	="dog"
BETWEEN	Tests for a range of values	BETWEEN 18 AND 25
OR	At least one of the criteria must be satisfied	"DOG" OR "CAT"
NOT	All criteria are satisfied except for the ones specified	NOT "male"

Computer Science

Simple logic diagrams using the operators "AND", "OR" AND "NOT"

Truth tables

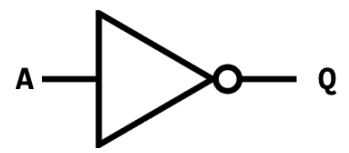**Combining Boolean operators using "AND", "OR" and "NOT"**

Applying logical operators in truth tables to solve problems

Computers are made up of circuits containing millions of switches. As electrical switches have two possible values (ON or OFF) ,

these values can be represented

using binary values 1 or 0. Each circuit contains logic gates and BOOLEAN LOGIC is used to evaluate the results of different combinations of 1's and 0's.
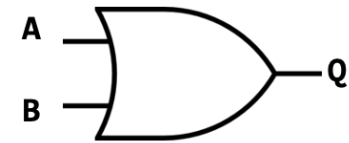
A NOT gate has a single input – '**A**'

NOT gate

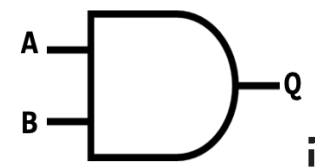| A	B
0	1
1	0

There are a number of different logic gates which produce different results when they receive inputs (1's and 0's.)

AND gate

An OR gate has two possible inputs – '**A**' and '**B**'

OR gate

A	B	Q
0	0	0
0	1	1
1	0	1
1	1	1

The possible values for each gate can be represented using a **TRUTH TABLE.**

An **AND** gate has two possible inputs - '**A**' and '**B**' '**Q**' are the possible outputs.

A	B	Q
0	0	0
0	1	0
1	0	0
1	1	1

Logic gates can be combined to create complete circuits. These can also be represented using truth tables. The circuit below is made up of three gates:

This can also be represented as a Boolean expression:
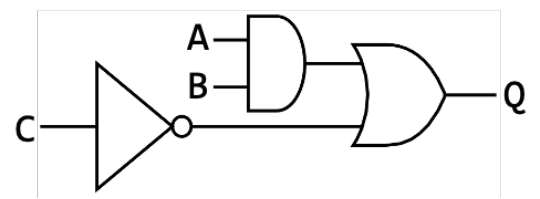
(A AND B) OR (NOT C)

A	B	C	Q
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	1
1	0	0	1
1	0	1	0
1	1	0	1
1	1	1	1

Business

Business

Aims and Objectives

Aims are an overall statement of where you want to be in the long term.

Financial
Survival
Profit
Sales
Market Share

Non Financial
Social Objectives
Personal Satisfaction
Challenge
Independence

Cash Flow

Cash is the physical form of money that a business has instant access to. Without cash a business will become insolvent.

Importance of cash
- To pay suppliers, overheads and employees
- To prevent insolvency

Cash flow is the money going in and coming out of a business.
Cash flow forecast is a prediction of the money within a business over a certain time period

Calculations
Net cash flow calculation= Total inflows – Total Outflows
Closing Balance= Net Cash Flow + Opening Balance
Opening Balance is the previous months closing balance.

Solving cash flow problems
Delaying payments
this means having an agreement to pay suppliers after products have been received
Speeding up customer credit
Asking customers to pay quicker than what they currently are.
External sources of finance- loans/overdrafts

Revenue and Profit

Revenue is the amount of money made from selling a product or service
Calculation= Selling Price X Quantity Sold
Revenue needs to be as high as possible in order to achieved the highest profit margin.
You need to increase the quantity sold or adjust the selling price to manipulate Revenue achieved.
** Revenue is also known as Sales, Turnover and Receipts

Profit is the money left from sales AFTER all costs have been covered.
Calculation= Total Revenue – Total Costs

Revenue must be higher than costs, otherwise a (loss) is made
In order to achieve the highest profit margin, Costs need to be carefully monitored and revenue needs to be at the maximum.

Costs

Costs are the outflows from a business.

Total Costs Calculation= Variable Costs + Fixed Costs

Variable costs are costs that change dependent on output/sales. So the more a business produces/sells the higher the costs.
EG Raw Materials, Utility Bills.
Calculation= Quantity X Cost per Unit

Fixed Costs are costs that stay the same no matter how many units a business produces or sells.
EG Rent, Salaries.
There is no calculation for fixed costs as they always remain the same

Costs need to be monitored carefully as they impact revenue and profit.
Remember costs being kept low isn't always the best strategy.

Break Even

Break-even point is the number of the product the business needs to sell to cover all the fixed and variable costs. It is the point where a business makes no profit, but also no loss.

Calculation =   fixed costs
    (price – variable costs per unit)

Break even can also be found using a Diagram. It is shown where the Total Costs line and the Total Revenue line Meet.
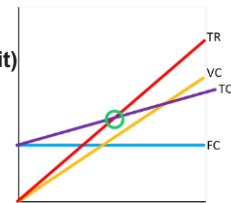
Margin of safety is the gap between sales and the break-even point. The wider the margin the less risks the business will need to take in selling the product.
Calculation= Actual Sales – Break Even Point

Sources of Finance

Short Term
- Overdraft- where the bank allow you to use more money than is actually in the account.
- Trade Credit- a buy now pay later strategy

Long Term
- Savings- personal savings that have been built up
- Venture Capital- where business experts invest a sum of money, in return for a share in the business. Guidance is also given to increase chances of success.
- Share capital- selling parts of ownership in the business
- Loan- a sum of money borrowed by the bank and paid back with interest.
- Retained Profit- profit made that is reinvested
- Crowd Funding- raising money through groups of people for a specific project.

Business

Location

The location of a business is important as it is the place where the customers go to in order to purchase. When a business locates, it will base it on the following factors:

- Proximity to market- How important is it to be close to the customers
- Proximity to raw materials-How close the business is to the materials needed to produce the product/service.
- Proximity to labour - Some businesses need to be located close to skilled workers in order to run/function.
- Proximity to competitors -How close a business is to its rivals may determine how successful it is.

E commerce- some businesses operate online only and so do not benefit from having a physical marketplace.
Fixed Premises- a physical and permanent place of operation

Marketing Mix

The marketing mix is an overview of the 4 elements. They are known as the 4 Ps

- Price- The amount charged to the customers to purchase
- Place- where the product/service can be accessed
- Product- the purpose and design mix of the product/service
- Promotion- how the business and product is going to raise awareness to encourage customers to purchase.

It is important that a business regularly adapts parts of the mix to meet the needs of the customers to avoid becoming obsolete.

Technology is forcing businesses to constantly adapt

Start up options

Type	Benefits	Drawbacks
Sole Trader An unincorporated business run by one person,	• Can start trading immediately • Have 100 per cent control • You are your own boss • You receive 100% profit	• Unlimited liability • Have 100 per cent responsibility • Can lead to a high workload • Difficult getting finance
Partnership A business that is owned by a group of two or more people	• Liability is spread between the partners • Complementary skills • Not as much stress	• Unlimited liability • There may be conflict • Have to split the profits with all partners
Private Limited A private limited company is an incorporated business that is owned by shareholders.	• Limited liability • Can sell shares to outside investors through invitation only • The term LTD betters reputation	• Risk of losing control • Cost of starting up • Could be conflict • More documentation to
Franchise Franchising means paying a franchise owner for the right to use an established business name, branding and business methods	• Product that has already become well established. • Risks of failure therefore become much smaller	• A royalty has to be paid each year even if sales and profits are falling. • The entrepreneur will have less control

Business Plans

The purpose of a business plan is to minimise risk and obtain finance
Include:
The Business Idea- what the business is all about
Aims and Objectives- where the business aims to be with strategies to get there.
Target market- details of market research
Sales and profit- A forecast regarding initial profit and costs
Cash flow forecast- a forecast showing a liquid/stable company
Sources of finance- what investment is needed to start up
Location- where the business be operating from
Marketing mix- analysis of all 4 aspects of marketing mix

Liability

Liability is the amount of money you are responsible for should your company/business go into debt and eventually liquidate.

Limited	Unlimited
Limited Liability is where the level of risk is limited to the amount invested into the business, should the business face debt/financial crisis. They are liable for only the limited amount they invested to cover debts	Unlimited liability is where the owner of the business is responsible for all the debts it incurs, no matter how large. If the person cannot pay the debts they could lose their personal possessions or be made bankrupt.

Art

A02 Refine work by exploring ideas, selecting and experimenting with appropriate media, materials, techniques and processes

REFINE
EXPERIMENT
EXPLORE TECHNIQUES AND SKILLS
SELECT
EXPLAIN
PHOTOGRAPHS
IDEAS

You need to develop and explore ideas using media, processes and resources, reviewing, modifying and refining work as it progresses.

This assessment objective allows you to demonstrate to the examiner how creative and versatile you are. You need to start with an idea or theme and develop it, exploring lots of possible solutions using different materials and techniques and processes.

For every project/theme
Try out different materials and techniques.
Explore and experiment
Refine ideas and compositions

**Review
Select
Organise
Explore
Experiment
Refine**

Assessment

At the end of each project your work will be formally assessed by you and your teacher. However as your project progresses your teacher will assess your progress both with written and verbal feedback in lessons. This should give you a good indication of how well you have met the success criteria for each assessment objective and whether you are meeting your targets.
Please remember grades are not set in stone and any improvements you make to your work can be re assessed by your teacher.

Expectations:
•It is expected that you will complete quite a lot of work for this course through the homework programme, approximately two hours per week
•It is advisable to attend GCSE Art club sessions each week
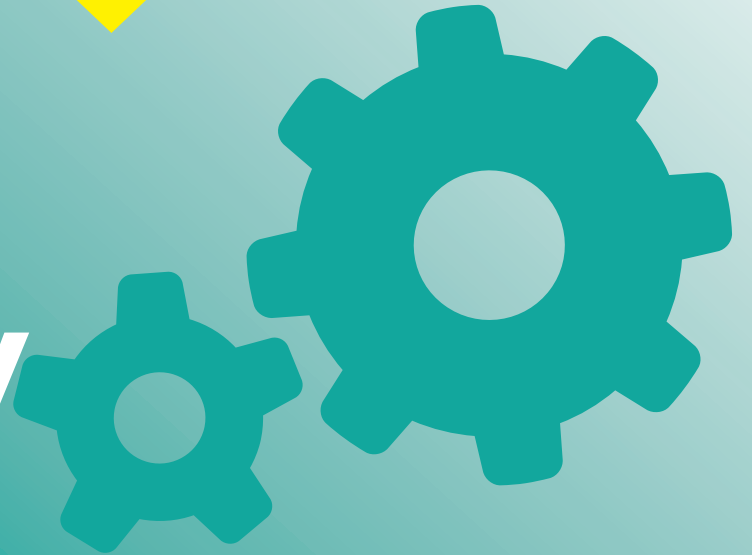•You will need to hand in a sketchbook as part of your portfolio component.

Design Technology

Objectives

- Know and understand how timbers and boards are selected and processed for commercial products
- Learn how materials are cut, shaped and formed to a tolerance
- Learn about the preparation and application of treatments and finishes to enhance functional and aesthetic properties

Engineered wood

- Manufactured or engineered wood has many advantages over solid wood
  - May be mixed with glues to give greater strength and stability
  - Ideal for use in construction, industrial and domestic use
  - Efficient in its use of mixed materials and utilising waste wood
  - It can be made in a large sheets not limited by the diameter of a tree trunk

Flat-pack furniture

- Manufactured boards are well suited to self-assembly products
  - They are generally less expensive than hand-made items
  - Arrives boxed making it easier to store and transport
  - Relatively straightforward to assemble with a basic tool kit
  - What properties of manufactured board make it suitable for flat-pack products?
  - Why do you think it may be less aesthetically appealing?

Commercial manufacturing

- Mass produced timber components are produced using CNC machinery
  - This enables large quantities of equal-sized parts or products to be produced
  - Templates can be saved and reused to help minimise waste
  - Screw holes, slots and patterns can be cut in one process
  - What are the benefits to the manufacturer of minimising waste?
  - How could they dispose of the waste responsibly?

Commercial routing

- CNC machinery can cut, drill, shape, mill and profile manufactured or natural timbers
  - Screw holes, slots and patterns can all be cut in one process
  - Machines can accommodate big sheets of material
  - Machines work quickly and efficiently enabling a product to get to market swiftly
  - What other advantages does CNC routing offer over hand cutting?

Commercial turning

- CNC wood lathes produce cylindrical components
  - Once programmed they are very effective at producing complex shapes and spirals
  - Ideal for repeat production
  - Lathes can accept large and long pieces of material
  - What disadvantages would the introduction of CNC machinery present to a skilled workforce?

Mechanisation and automation

- Automated machinery has changed the way industry manufactures timber based products
  - Improvements in manufacturing methods have been embraced by designers
  - Stringent quality control methods have increased consistency and accuracy
  - Increased availability of manufactured boards means products can be batch and mass produced
- Discuss the differences between 'mechanisation' and 'automation'

Quality Control – 'QC'

- The process where products are checked to ensure they meet the design specification
- They should also:
  - function correctly
  - be free of defects
  - be consistent and accurate
  - meet set size tolerances

Tolerance

- The total amount a specific dimension or property is permitted to vary
  - This can apply to hole depth, length, angle, thickness, weight and elasticity
  - A gauge can be inserted into a gap or hole to check if the sizes fall within tolerance
  - If parts do not fit within the specified tolerances they are discarded or recycled

Surface treatments and finishes

- Wood can be protected and visually enhanced using
  - Preservative
  - Wax
  - Oil
  - Paint
  - Stain
  - Varnish
- Finishes can be applied by brushing, rubbing or spraying

Wood preservation

- Treating timber can help extend its life for decades
- Tanalising is the process in which timber is immersed in a preservative
  - Hydraulic pressure forces the treatment deep into the timber
  - Helps delay the rotting process
  - Protects against insect and fungal attack

Environmental impacts

- Traditional paints and finishes can have harmful effects on the environment
  - Oil or solvent based products offer long lasting finishes, but contain high levels of VOCs – Volatile Organic Compounds
  - Water based products are kinder to the environment
  - Paint can be made from recycled latex and even milk

Creative Media

LO1 – Understand the purpose and properties of digital graphics.

Digital Graphic Definition: An image that can be used in the entertainment industry for a particular purpose, with a specific target audience in mind.
Examples of Digital Graphics: Magazine front covers/adverts, CD/DVD covers, Book cover jackets film posters, Comics cartoon, web images and graphics, concept art from games, logos.
File Format used for Digital Graphics: PSD, TIFF, PNG, GIF
Raster Images: A raster image is like a mosaic made up of pixels.
Vector Images: A vector image is made up of blocks of colours, no pixels.
White Space: It is any blank space and can be used effectively to emphasise key parts of a graphic.
Book Cover/Jacket Conventions: Title, Author name, Publisher (name and logo), Slogan, Main Image, Mini Review, Barcode, Blurb.

LO2 – Be able to plan the creation of a digital graphic.

Client Requirements: The person you will be working for and what they want you to plan, design and create for them.
Target Audience: The demographic/group that the product is aimed at.
NRS Social Grade: Identifying an audience based on their interests and desires.
Psychographics: Identifying an audience based on their interests and desires.
Work plan: An important tool that helps a project to assign tasks, manage workflow and track the various components and milestone deadlines.
Mood board: A mood board is a collage (digital or on paper), of objects (images, colours, screenshots, patterns, text etc) which try to capture a feeling, theme or design.
Mind map: A mind map is a diagram in which information is represented visually, usually with a central idea placed in the middle and associated ideas arranged around it.
Asset: An asset is a convention/image that media producers use to make a media product.
Resources needed: Computer, Mouse, Keyboard, Photoshop, Hard Drive, Camera, SD Card.
Legislation to consider: Copyright, Intellectual Property, Trademark, Royalty free assets.

LO3 – Be able to create digital graphics.

Image Editing Software: For example Photoshop, a program that's allows you to manipulate the style and dimensions of still images.
Image Editing Tools, Cropping, Rotating, Brightness/Contrast, Colour, Adjustment, Adding text, Cloning, Red Eye Removal, Filters, Magic Wand tool, Lasso tool, Blur tool.
The best type of file type for print media: TIFF
The best type of file type for online media: PNG/JPEG
Naming Conventions: Make sure every file type has the correct name and is then organised in a named folder.
The purpose of naming conventions: So that the file is instantly recognisable to the user/producer and so that the file name is appropriate for the client.
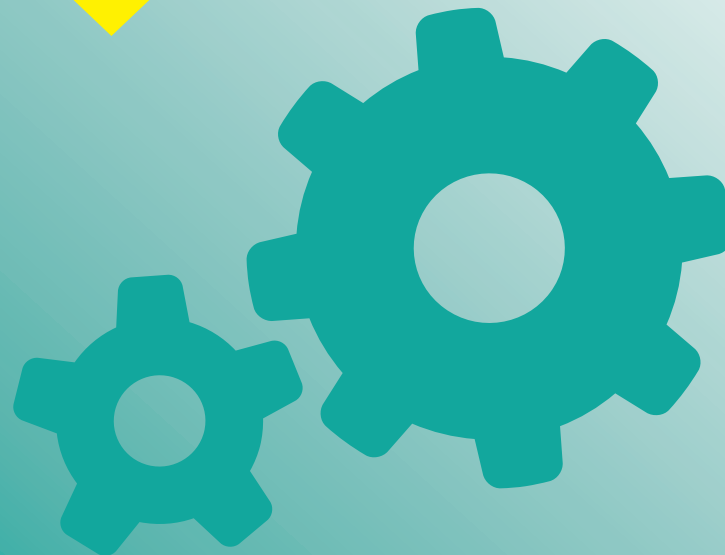
LO4 – Be able to review a digital graphic.

Review: The process of analysing the overall effectiveness of a product in relation to the clients and target audience requirements.
Structure of a review:
1. How does the product meet the requirements of the brief.
2. How does the product successfully appeal to the target audience.
3. Three strengths of the final digital graphic.
4. Three weaknesses of the final digital graphic.
5. Three different ways that the digital graphic can be improved.

Music

Tonality: can be major or minor

Harmonies:
- Major
- Minor
- Suspended 4th
- Inverted chord

Texture: melodic line accompanied by instruments within the band. Accompaniment is mainly chordal (homophonic)

Guitar: Acoustic/electric played **rhythm** (chords) and **lead** (riffs) with effects such as **distortion/overdrive, palm muting, hammer ons, pitch bending.**

Vocals: usually a **solo** voice, catchy lyrics, **harmonies** in chorus. Lyrics usually in **1st person** and used **regional accents**

Drum Kit: Played a strong **4/4 rhythm**. Lots of **fills** and sometimes a drum solo.

Bass Guitar
Electric bass guitar, usually played the **root note** of the chord using **interesting rhythms**.

Piano/Keyboard: Would play **chords/ rhythms**. Sometimes **riffs**. Sometimes played the introduction of the song.
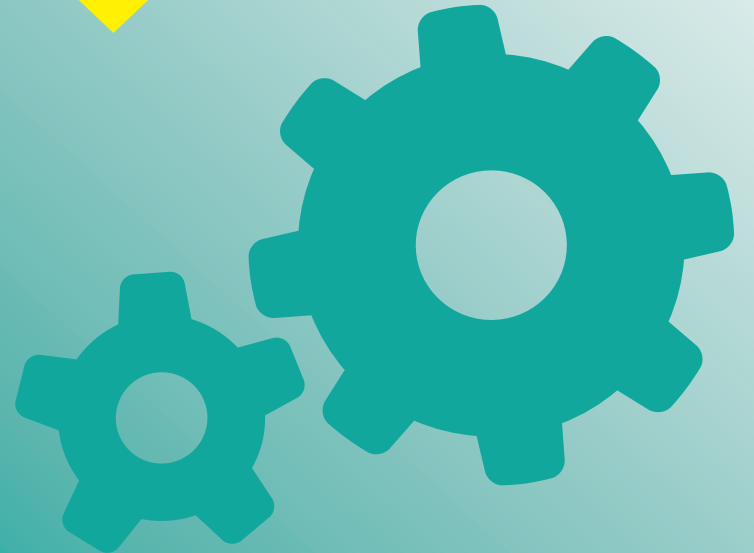
An example of a typical structure

Intro
Verse
Chorus
Mid 8
Verse
Chorus
Outro

Awight geeza Britpop is common for memorable guitar riffs and iconic hooks

Sport

COMPONENTS OF FITNESS

- AGILITY – To change direction quickly with control.
- BALANCE – Maintaining centre of gravity over a base of support.
- CO-ORDINATION – Flow of movements to perform motor task effectively.
- REACTION TIME – Responding to stimulus and initiation of response.
- AEROBIC ENDURANCE – Cardio-respiratory system working for long periods of time supplying oxygen and nutrients to working muscles.
- MUSCULAR ENDURANCE – Muscle is able to contract over periods of time against a light to moderate exercise rate.
- FLEXIBILITY – The range of motion around a joint.
- SPEED – Distance divided by the time taken
- MUSCULAR STRENGTH – Maximum force that can be generated by a muscle or muscle group.
- BODY COMPOSITION – Ratio of fat mass in the body compared to the % of fat free mass found as muscle.

PRINCIPLES OF TRAINING

All training programmes should be:
- **SPECIFIC** – To the individual and the sport they take part in.
- **PROGRESSIVE** – Training should be increased at steady rate.
- **OVERLOAD** – The body should be made to work harder than usual (F.I.T.T).
- **REVERSIBILITY** – Although rest is important, resting for too long will cause the body to lose its fitness levels.
- Our training programme must also be varied to avoid **TEDIUM** or boredom. By using a variety of different training methods we ill keep out enthusiasm and motivation.
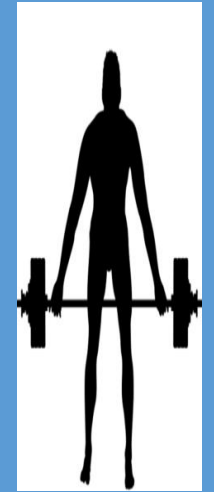
The FITT Principle

F – FREQUENCY
How regularly/ how many times a week

I – INTENSITY
How hard you train.

T – TIME
How long each session must be in order to benefit

T - TYPE
What sort of training you do?

EXERCISE INTENSITY

Heart rate max
- Measure heart rate by measuring beats per minute.
- Max Heart Rate is calculate 220 – AGE
- Then work out 60% and 80% threshold and apply the recommended training zones to the athletes.
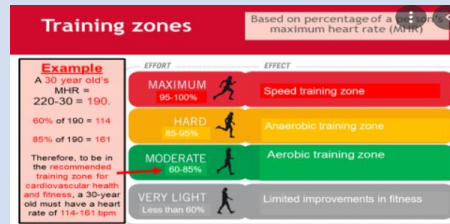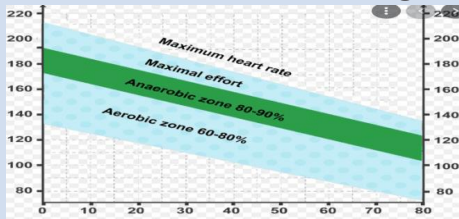
THE BORG SCALE

- Rate of Perceived Exertion, ranges from 6 to 20.
- Athletes choose a stage in which they feel they are working at. To work out HR multiply by 10.

Dance

Comparison of the three choreographers

All choreographers have created dance pieces which are complete and whole -
They have all created pieces for different dance companies – great experience working with different dancers
Bruce and Fagan have choreographed dances for musicals – a very different way of working
Bintley has created short and long ballets – wide audience

Creation of dance piece
BINTLEY

- His works range from one-act pieces such as *Flowers of the Forest* (1985),
varied jazz-based pieces including *The Shakespeare Suite*

 - His full-evening works include *Hobson's Choice* (1989), .
his spectacular Aladdin, and the British premiere (2014) of The Prince of the Pagodas,
both created for the National Ballet of Japan

- In his time he choreographed at least ten full-length and 12 one-act ballets for the BRB
and commissioned a further 21 ballets by other choreographers.

Creation of dance piece
BRUCE

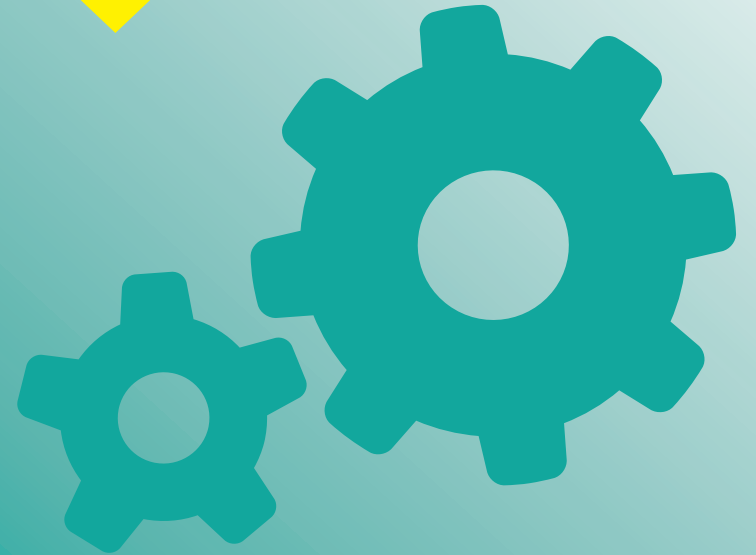- Created full length ballets for different companies.
choreographed the Andrew Lloyd-Webber/Alan Ayckbourn musical Jeeves in 1975.

- Choreographed theatre productions and musicals
In addition to performing and choreographing, he has created many works for Rambert
and for Nederlands Dans Theater, Houston Ballet and Cullberg Ballet and has had a long-
term association with the English National Ballet and the Houston Ballet.

Creation of dance piece
FAGAN

-He choreographs primarily full dance pieces for Garth Fagan Dance, Alvin Ailey American
Dance, Dance Theatre of Harlem, the Limón Dance Company and New York City Ballet

- He also created the choreography for a production of Duke Ellington's only opera,
Queenie Pie, at The Kennedy Centre for the Performing Arts.
Choregraphed the musical Lion King

Dance experience & background
BINTLEY

- Bintley was a character dancer earlier in his career
- Trained at Royal Ballet school
- Ninette de Valois was a big influence on Bintley
- His first piece, *The Outsider,* was created in 1978

Dance experience & background
BRUCE

- Started studying dance at 11 years old.
- Trained at the Ballet Rambert School before joining
the company as a dancer in 1963.
- Influenced by Glen Tetley and Norman Morrice
1977 Christopher was appointed associate director of
the company and was Associate Choreographer from
1979-87

Dance experience & background
FAGAN

He began performing with Ivy Baxter's Jamaican
National Dance Company while he was still in high
school.
Over the course of a decade, he studied with Alvin
Ailey, Martha Graham, Mary Hinkson and José Limon
He is also influenced by Caribbean and West African
dances

All three choreographers are
dancers and trained to
professional standard. That
means they know lots of steps
and how movement can be put
together.
They have all had a range of
dance styles in their training - ?
They have all choreographed
for different companies -?
They have all led national
dance companies -?

Comparison of the three choreographers

Dance experience & background
BINTLEY

- Combines all aspects of his training – classical ballet, Graham-based technique and popular dance forms

- Blends classical and contemporary techniques

Dance experience & background
BRUCE

- Combines all aspects of his training – classical ballet, Graham-based technique and popular dance forms

- Blends classical and contemporary techniques
Folk dance in "Ghost Dances"
Tap in "Swansong"

Dance experience & background
FAGAN

- Style is a mix of ballet and modern dance, spiced up with his Afro-Caribbean roots.

- He developed the Fagan Technique

- - a unique and evolving vocabulary, which fuses the weight of modern dance, the vitality of Afro-Caribbean movement, and the speed and precision of ballet with the risk-taking experimentation of post modernism.

Comparison of the three set designs

Set Design Comparisons
- GD only has one set design (one backdrop) whereas SL and LK have different set design (Backdrops and extras)for each section of the piece
- All three set design set the dance in a location
- All the three set designs create different moods and meaning
- LK Africa; GD South America but SL has many locations eg) Brazil, Africa, Antarctic, England
- GD has 5 sloping shapes which remain throughout the dance. The dancers use them to sit, lie on
- SL has some extras like seats and tables in the café, but they are removed later and the stage is mostly empty
- LK has major set design with huge sculptures eg) pride rock, elephants graveyard
- SL Set design of a backdrop does not always cover the full stage space eg) Penguins backdrop just covers the middle third of the stage
- Both SL and LK use stage design to enter and exit
- Use of levels in LK both to create visual image and set location
LK uses automation and machinery and is very complex

Comparison of the three choreographers

Be creative and be able to develop ideas
BINTLEY

- His work is guided by a strong sense of morality that results from his own spiritual belief.
- Strong sense of theatre and explores a theme
- Tackles contentious issues
Often finds inspiration in music

Be creative and be able to develop ideas
BRUCE

- Pieces have emotional or dramatic content, make an impact on the audience
- He said ballets are not basically about movement but about ideas
Shown awareness, idealism and sensitivity in dance
- Created works directly concerned with social, political and ecological issues.
- Range of stimuli extensive – literature, art and music

Be creative and be able to develop ideas
FAGAN

- His choreography defies classification with works ranging from his legendary celebration of African culture (THE LION KING) to a haunting portrait of urban life (Griot New York), from a stunning demonstration of technical prowess (Prelude: Discipline is Freedom) to a series of sensuous duets (Until, By & If I & II), and from a moving depiction of fortitude and struggle (Oatka Trail) to a joyous eruption of movement and sound (Woza).

Child Development

Physical factors that affect growth and development

Prenatal

- How well a child will grow and develop can be determined early on, even before they are born. Some health factors begin during pregnancy
- Some life choices can harm an unborn child and so should be avoided in pregnancy

- <u>Genetics and how genetic abnormalities occur;</u>
  - Genes are information cells passed on from our parents
  - *WHO WE ARE* is determined by our genes
  - They decided our sex, our eye colour, our hair colour and our immediate and future health
  - Sometimes there are abnormalities or differences in genes that can cause ill health or disabilities
  - Some disabilities are present at birth
  - Some genetic abnormalities become apparent later
  - Down's syndrome commonly occurs because each cell in the body has three copies of chromosome 21 instead of the usual two. This is sometimes called trisomy 21

<u>Genetics and how genetic abnormalities occur;</u>
- There are physical signs of down's syndrome that affect the way the person looks, such as a flat facial profile and nose and upward-slanting eyes.
- People with down's syndrome might also have a poor muscle tone, meaning they are slower to develop physically.
- People with down's syndrome generally develop speech later and have delays in their learning.

Looking after yourself during pregnancy

Genes- are inherited from both parents and are made up from DNA that give instructions for making up a human, animal or plant

Chromosome – part of a cell that carries the information that determines traits a person will inherit

Foetus- unborn baby growing in the womb

Spina Bifida- a birth defect where bones in the spine do not form properly around the spinal cord

Physical factors that affect growth and development

Prenatal

Mothers mental health

Having mental health problems may result in the mother not seeking care during pregnancy and making poor lifestyle choices. These may have a negative effect on the mother or the growth of her unborn child.
Examples include poor diet, poor hygiene, substance abuse, failure to seek medical help for illness, or difficulty in forming relationships leading to isolation and depression.

Pregnancy involves lots of changes to hormones and can affect the mothers mood and emotions. This is sometimes called 'baby blues' and is perfectly normal after the baby is born. The mothers hormones will soon return to normal after a few days.

Sometimes a persons emotional state means they are not able to think clearly and make good decisions. If someone has significant mental health issues they may feel exhausted or unable to cope, meaning they neglect the needs of their baby. Some people feel such desperation that they might try to harm themselves or their baby. If a professional is concerned about this they will need to give the mother lots of help and support.

HEALTH STATUS

- As children grow older, different factors affect their ability to grow and develop well. It is important for parents and carers to focus on promoting children's good health through diet and exercise.

Young children are more prone to ill health because their immune systems are not fully developed. Young children are also less able to prevent ill health, such as through washing their hands regularly, and helping to prevent the spread of infections through covering their mouths when they sneeze and cough.
There are different types of ill health. All can have a serious impact on children's growth and development. Some types of ill health can be life limiting, meaning that the child is not expected to live an average life span.

Asthma- This is a common chronic disease of the airways in the lungs. It causes wheezing, tightness of chest and coughing. It can, in serious cases, result in death.

Epilepsy - This is a common chronic condition where electrical bursts of activity in the brain causes seizures. These might be experienced in different ways by different people.

-Cancer - This is a common illness that can affect any part of the body. It is where abnormal cells invade or spread in the body., causing damage to healthy tissue and organs. Cancer can be chronic or acute condition. This is because it can cause long-term health issues. However in some cases, it can be treated quickly.
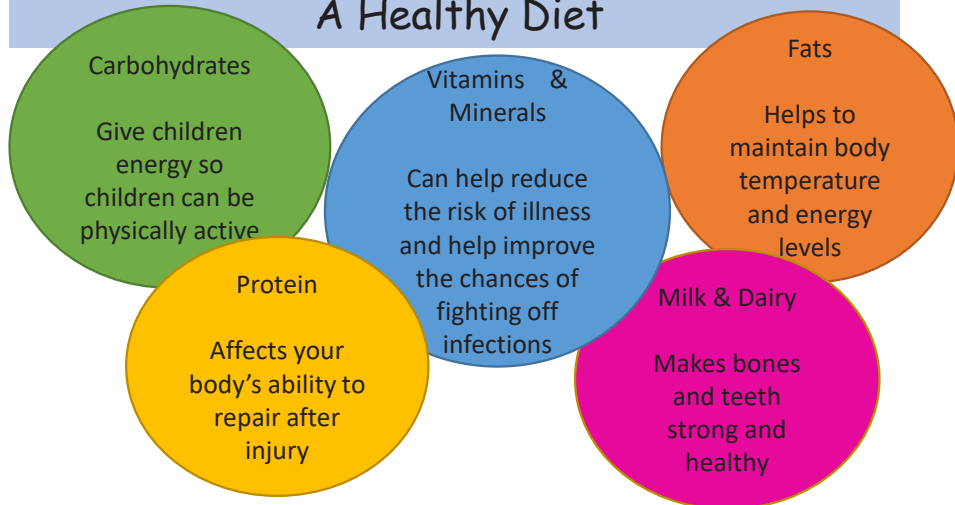
Sepsis - This is a very serious acute condition that can lead to multiple organ failure and death. It is a rare complication of an infection. Treatment is only effective in the early stages and includes anti biotics, fluids and oxygen.

Child Development Tech Award
LAB- Explore Factors that affect growth and development

Hartford
Church of England
High School

CARITAS ET VERITAS

Physical factors that affect growth and development

A Healthy Diet

Carbohydrates — Give children energy so children can be physically active

Protein — Affects your body's ability to repair after injury

Vitamins & Minerals — Can help reduce the risk of illness and help improve the chances of fighting off infections

Fats — Helps to maintain body temperature and energy levels

Milk & Dairy — Makes bones and teeth strong and healthy

How diet affects childrens growth and development

0-18 months – up until 6-9 months, babies only need milk to keep them healthy. Lack of vitamins and minerals can make babies irritable and less likely to sleep well. Sleep is so important as this is when their bodies grow.

18 months – 3 years – children are much more mobile and need foods to give them plemty of energy. Without suitable foods children will become lethargic and less likely to want to be active or learn.

3-5 years – they need to have enough energy to help them to concentrate and learn. Food that is high in sugar leads children to gaining weight and high energy followed by low energy. This can make them behave badly.

Exercise

It is not just what you eat that affects your health
Exercise is another component of being healthy
It is advised that children under the age of 5 are active for at least three hours a day, spread out through the day

Children should maintain a healthy weight and take part in as much activity as possible. Being overweight can affect children's self esteem and confidence. It can lead them to not feeling confident to join in with social activities and this can affect their well being.

How EXERCISE affects childrens growth and development

0-18 months – Babies need to have space to move and stretch their muscles. They need to flex and strengthen their muscles in readiness for crawling and walking. Children at this age have bursts of energy and get tired quickly so they need to rest and sleep often,

18 months – 3 years – as children get older they need to sleep less and can be active for longer. Children need to build up stamina. Without the opportunity to run and enjoy freedom in their movements, they might be delayed in walking and developing their gross motor skills. This can lead to them having more frequent accidents.

3-5 years – children should be physically active for three hours a day. This is to help reduce the risk of obesity and to make sure that children are healthy and growing well. As children get older a daily routine of exercise and fresh air helps them to concentrate and learn.

Physical factors that affect growth and development

Prenatal

Genetics and how genetic abnormalities occur

Maternal nutrition and exercise

Effects of parental drug or substance abuse

Mothers mental health

Premature birth

Health status

Health
Asthma / Epilepsy / Cancer / Sepsis

Diet & Exercise

A healthy diet
Proteins / Dairy / Fats / Vitamins and Minerals

Exercise
Activity / weight / wellbeing

Environmental factors that affect growth and development

Housing

Housing needs

Deprivation / Moving house / Safety

The home

Abuse and neglect

Physical / Sexual abuse / Neglect / Emotional

Parental conflict

Conflict / Aggression / Anxiety

Drugs, alcohol and smoking

Drugs

Accidents / Mental health / Dangerous behaviour

Smoking

Respiratory / Cancer/ Infection

Socio-economic factors that affect growth and development

Discrimination

Treated differently
Gender / Race / Age / Social background / Ability

Social Exclusion
Low income / Lack of opportunities

Race and Culture
Discrimination / Poor attachments/ Minority

Income and poverty

Poverty
Relative poverty / Absolute poverty

Unemployed and Workless Households
State benefits / Early education experiences

Relationships with significant adults

Warmth and affection – babies
Cuddles / Trust / Security

Giving children attention
Eye contact / Communication / Interest

Environmental factors that affect growth and development

HOUSING

There has been lots of research that suggests that where you grow up and what experiences you have shape your future life. Experiencing housing needs, such as not having suitable housing or having to move to temporary accommodation, can be very distressing for children and their families.

Living in a house that is safe and secure is taken for granted by many people.
Not everyone has the luxury of having a roof over their head.
Losing your home or living in poor quality housing is incredibly stressful and can lead to long-term difficulties, such as debt, depression and poor health
This can affect a person's capacity to parent and affect children's well-being.

0-18 months Babies who live in cramped housing might not have a peaceful place to sleep. Noise and light disrupt sleep, leaving babies restless, tearful and unhappy.
The family may not have room to store suitable equipment for babies meaning that they might be more at risk of accidents
Having more space can allow babies to move around, especially as they practise learning to crawl and walk.

18 months – 3 years Children that have to move house often might find it difficult to settle.
Parental stress at moving frequently might lead to family arguments and children not having attention from parents to help them to learn.
Overcrowded accommodation can mean that there is liitle space for children's toys to help them to learn. Having their own space can help children to understand about their own belongings and help them to gain a sense of identity.

3- 5 years Children who move house often might miss out on attending pre-school, nursery or school. This means that they do not start to form friendships with others and this can affect their learning.
Living in a flat might mean children do not have access to an outdoor space to play, so they cannot develop their large muscles as well as those with an outdoor space
Having a quiet place to rest and sleep helps children to wake up refreshed and ready to learn

THE HOME

Not all children live in a home where they are safe
The NSPCC identified that there were over 51,000 children identified as needing protection from abuse.
Do you know what work the NSPCC does?

There are four main types of abuse
PHYSICAL – This is where children are deliberately hurt and can result in injuries such as broken bones, cuts, bruises, burns.

SEXUAL – This is where children are forced or coerced into sexual activity or exposed to sexual activity

NEGLECT – This is failure to meet children's basic needs, which causes them ongoing harm

EMOTIONAL – This is where words or actions are used to affect children's self-esteem and well-being

Services and charities that can help

ChildLine
0800 1111

DON'T WAIT UNTIL YOU'RE CERTAIN
If you are worried about a child and need advice
Call 0808 800 5000, text 88858 or email help@nspcc.org.uk

Socio economic factors that affect growth and development

Discrimination

Discrimination occurs when assumptions are made about a person or group of people and they are treated less favourably as a result.
Discrimination can take place for a variety of reasons, such as gender, race, age, social background or ability.
How true is this statement; All people with blond hair are dumb?

Social exclusion – where someone lives and a low income can lead to them suffering a lack of opportunities compared with other people. The introduction of early years funding has meant that more children are able to go to a child care provider.

Race and culture – Racial and cultural discrimination can have a negative impact on even the youngest children's well being. Even very young children can be the victims of discrimination. For example, babies born of mixed ethnicity might not quite be fully accepted by either ethnic group and this can lead to poor attachments. Some cultural practices, such as dietary requirements, are not well understood by others, leaving children with limited choices of things to eat. This can mean that they miss out on having a balanced diet to support their growth and development.

How discrimination affects children
Children may become shy and withdrawn
Children might feel isolated
Children may find it difficult to form relationships
Children could develop a lack of identity and confusion over who they are. Affecting their self esteem
Children could be less likely to want to join in with activities and mix with others

Income and Poverty

Relative poverty. This is where there is not enough income to afford an ordinary living pattern. Those in relative poverty cannot afford the activities that the average person enjoys.
Absolute poverty. This is when there is not enough income to afford the basics- food, clothing and shelter

Why do some families live in poverty?
-Parents lose their job
-Relationship breakdown
-Borrowing too much money
-Death of a partner
-Injury or inability to work
-Mental health issues
-Victim of crime
-Disability pr illness
-Disasters such as flood or fire

0-18 months The children may have ill fitting clothes that restricts their movements. Parents might fibd buying essentials, such as nappies, difficult
18 months – 3 years As children get older they need more stimulation. Having little money to afford toys and equipment might mean that children do not have the chance to learn through playing to boost their problem-solving skills.
3-5 years – good quality early education can help to transform children's lives when they live in poverty. They may not have clothing or resources that meet their needs – this can impact a child's ability to build relationships with others.

Food Technology

Hartford Church of England High School
CARITAS ET VERITAS
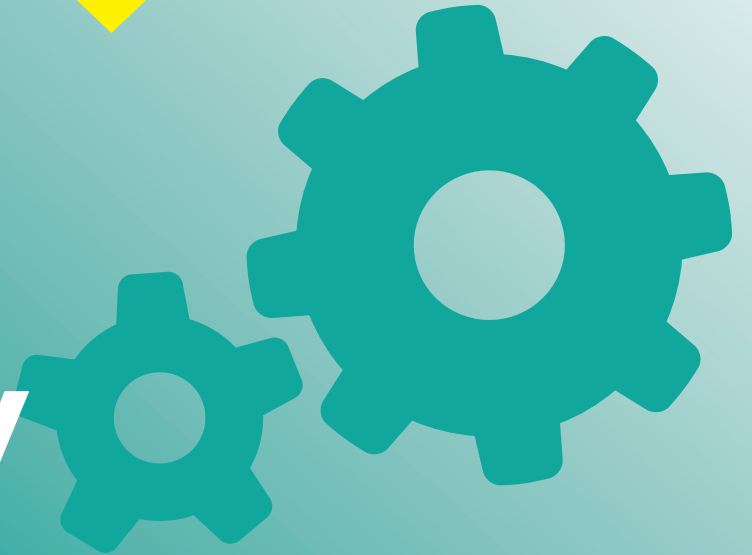
Functions of ingredients
Ingredients provide a variety of functions in recipes.

Carbohydrate, protein and fat
Carbohydrate, protein and fat all have a range of properties that make them useful in a variety of food products.

Carbohydrates perform different functions in food.
They can:
- help to cause the colour change of bread, toast and bakery products (dextrinisation);
- contribute to the chewiness, colour and sweet flavour of caramel;
- thicken products such as sauces and custards (gelatinisation).

Maillard reaction
Foods which are baked, grilled or roasted undergo colour, odour and flavour changes. This is primarily due to a group of reactions involving amino acids (from protein) and reducing sugars.

Dextrinisation
When foods containing starch are heated they can also produce brown compounds due to dextrinisation. Dextrinisation occurs when the heat breaks the large starch polysaccharides into smaller molecules known as dextrins which produce a brown colour.

Caramelisation
When sucrose (table sugar) is heated above its melting point it undergoes physical and chemical changes to produce caramel.

Gelatinisation
When starch is mixed with water and heated, the starch granules swell and eventually rupture, absorbing liquid, which thickens the mixture. On cooling, if enough starch is used, a gel forms.

Proteins perform different functions in food products.
They:
- aerate foods, e.g. whisking egg whites;
- thicken sauces, e.g. egg custard;
- bind ingredients together, e.g. fishcakes;
- form structures, e.g. gluten formation in bread;
- gel, e.g. lime jelly.

Gluten formation
Two proteins, gliadin and glutenin, found in wheat flour, form gluten when mixed with water. Gluten is strong, elastic and forms a 3D network in dough. In the production of bread, kneading helps untangle the gluten strands and align them. Gluten helps give structure to the bread and keeps in the gases that expand during cooking.

Gelation
Gelatine is a protein which is extracted from collagen, present in animal connective tissue. When it is mixed with warm water, the gelatine protein molecules start to unwind. On cooling, a stable, solid network is formed, trapping the liquid.

Denaturation
Denaturation is the change in structure of protein molecules. The process results in the unfolding of the protein's structure. Factors which contribute to denaturation are heat, salts, pH and mechanical action.

Coagulation
Coagulation follows denaturation. For example, when egg white is cooked it changes colour and becomes firmer (sets). The heat causes egg proteins to unfold from their coiled state and form a solid, stable network.

Aeration
Products such as creamed cakes need air incorporated into the mixture in order to give a well-risen texture. This is achieved by creaming a fat, such as butter or baking spread, with sugar. Small bubbles of air are incorporated and form a stable foam.

Fats performs different functions in food.
They help to:
- add 'shortness' or 'flakiness' to foods, e.g. shortbread, pastry;
- provide a range of textures and cooking mediums;
- glaze foods, e.g. butter on carrots;
- aerate mixtures, e.g. a creamed cake mix;
- add a range of flavours.

Plasticity
Fats do not melt at fixed temperatures, but over a range. This property is called plasticity.

Colloidal systems
Colloidal systems give structure, texture and mouthfeel to many different products.

System	Disperse phase	Continuous phase	Food
Sol	Solid	Liquid	Unset jelly
Gel	Liquid	Solid	Jelly
Emulsion	Liquid	Liquid	Mayonnaise
Solid emulsion	Liquid	Solid	Butter
Foam	Gas	Liquid	Whipped cream
Solid foam	Gas	Solid	Meringue

Raising agents
Raising agents include anything that causes rising within foods, and are usually used in baked goods. Raising agents can be:
- biological, e.g. yeast;
- chemical, e.g. baking powder;
- mechanical, e.g. adding air through beating or folding.

Functional ingredients
These are ingredients that are specifically included in food for additional health benefits. They include:
- probiotics – 'good' bacteria that may have a positive impact on human health;
- prebiotics – food ingredients that promote the growth of beneficial microorganisms in the gut;
- sterols/stanols – compounds that can lower cholesterol;
- healthy fats (e.g. omega-3);
- added vitamins and minerals (more than in the original food).

Why is food prepared and cooked?
Food is prepared and cooked to:
- make the food more palatable – improves flavour, texture and appearance;
- reduce the bulk of the food;
- provide variety and interest to meals.

Methods of cooking food
The methods of cooking are divided up into groups. These are based on the cooking medium used. They are:
- moist/liquid methods, e.g. boiling;
- dry methods, e.g. grilling;
- fat-based, e.g. frying.

Selecting the most appropriate way of preparing and cooking certain foods is important to maintain or enhance their nutritional value.
- Vitamins can be lost due to oxidation during preparation or leaching into the cooking liquid.
- Fat-based methods of cooking increase the energy (calories) of the food.
- The use of different cooking methods affects the sensory qualities of the food.

Key terms
Conduction: The exchange of heat by direct contact with foods on a surface.
Convection: Currents of hot air or hot liquid transfer the heat energy to the food.
Functional ingredients: Included in food for additional health benefits.
Heat transfer: Transference of heat energy between objects.
Radiation: Energy in the form of rays.

Tenderisation
- Mechanical tenderisation – a meat cleaver or meat hammer may be used to beat the meat. Cutting into small cubes or mincing can also help.
- Chemical tenderisation (marinating) –the addition of any liquid to flavour or soften meat before cooking.

There are three ways that heat is transferred to food.
- Conduction – the exchange of heat by direct contact with foods on a surface.
- Radiation – energy in the form of rays.
- Convection – currents of hot air or hot liquid transfer the heat energy to the food.
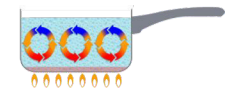
Tasks
1. Choose a recipe that you enjoy or have made recently and explain in detail the functions of the ingredients.
2. Explain the function of raising agents, giving examples of recipes.

Drama

Drama

COMPONENT 2 – Developing Skills and Techniques in the Performing Arts
BTEC Tech Award in Performing Arts (Acting)

Learning Aim A - To develop skills and techniques for performance
- Skills workshops that will teach techniques needed to explore and create short extracts of a play.

Learning Aim B - To apply skills and techniques in rehearsal and performance
- Learn 5-15 minutes of script from Too much punch for Judy and perform to an audience.

Learning Aim C – To review own development and performance
- Provide a logbook which evidences your progress from first workshops through to performance of script.
- This will include strengths, targets and reviews.

Evidence needed:
- Teacher observations
- Recordings of workshops
- Peer observations
- Target setting
- Logbooks

Skills workshops to include:
- Vocal skills
- Physical skills
- Improvisational skills
- Tempo Rhythm
- The Laban Efforts
- Movement and Gesture
- Emotion memory
- Line learning
- Physical theatre
- Interpreting Shakespeare
- Monologue

How to learn lines:

Try writing your lines out by hand - do not type them. This method works well for long scenes with speeches. Writing your lines out by hand forces your mind to connect to the action of writing the lines down and seeing the lines.

Running lines with a partner - The key is to run lines with another actor — not your friend from down the street. Running lines with another actor holds you accountable.

Quiz Yourself - Use a scrap piece of paper to cover up everything but the one line you are trying to memorise. Continue to read the same line over and over again. Once you feel comfortable, try reciting the line without looking at it. If you can, move on to the next line and start the process over again.

Learn the cue lines - these are the lines that lead into yours. By knowing the cue lines, you will be more prompt and you'll be able to deliver your lines in a timely fashion.

Key vocabulary

Naturalism – a style of performance where actors and designers try to create the illusion that what is happening on stage is 'reality'

Verbatim – a form of documented theatre in which plays are constructed from the precise words spoken by people interviewed about a particular event or topic

Physical Theatre– Physical theatre shows that you don't have to use words to express ideas. It uses techniques such as movement, mime, gesture and dance and can be used to explore complex social and cultural issues

Levels - the height you perform a movement – low, medium or high.

Proxemics - distance between characters to show a relationship

Characterisation - creating a character through your movement and dynamic choices

Use of voice – adapting your voice to suit a character requirement. Volume, tone, pitch pace, intonation

Still Image - a silent and motionless depiction of a scene created by actors (plural)

Hot seating – an in-depth questioning of a character

Thought tracking – internal thoughts of a character spoken aloud

Multi-role playing – an actor plays multiple characters

Rehearsal – a practice of the play

Blocking – deciding where an actor should stand during a scene

Drama

COMPONENT 2 – Developing Skills and Techniques in the Performing Arts
BTEC Tech Award in Performing Arts (Acting)
This is a summary of the key terms used to define the requirements in the BTEC components.

Term	Definition		
Accurate	Produce work competently, fit for purpose without significant error.	Detailed	Having additional facts or information beyond a simple response.
Adequate	Acceptable in quality or quantity.	Discuss	Consider different aspects of a topic and how they interrelate and the extent to which they are important.
Analyse	Examine methodically and in detail, typically in order to interpret.	Effective	Show control over techniques, equipment and processes to meet the details and broad aims of a requirement efficiently.
Apply	Put knowledge, understanding or skills into action in a particular context.	Evaluate	Bring together all information and review it to form a conclusion, drawing on evidence, including strengths, weaknesses, alternative actions, relevant data or information.
Appropriate	Select and use skills in ways that reflect the aim.	Explain	Provide details and give reasons and/or evidence to support an argument.
Assess	Present a careful consideration of varied factors or events that apply to a specific situation or identify those that are the most important or relevant and arrive at a conclusion.	Explore	Try out the qualities of materials, techniques or processes through practical investigation, with some record of results.
Coherent	Logically consistent.	Identify	Indicate the main features or purpose of something. Independent Capable of carrying out tasks from given information.
Collaborate	Work jointly with others to produce defined outcomes.	Investigate	Carry out research or trial activities to increase understanding of the application of factual information.
Communicate	To convey ideas or information to others.	Justify	Give reasons or evidence to support an opinion.
Compare	Identify the main factors relating to two or more items/situations, explain the similarities and differences, and in some cases say which is best and why.	Outline	Summarise or indicate the principal features of something or a brief description or explanation with main points.
Competent	Having the necessary knowledge or skill to do something suitably or sufficiently in amount or extent.	Refine	Improve initial work, taking feedback into account.
Comprehensive	Full, covering a range of factors.	Reflect	Think carefully and review information and/or performance, includes articulating ideas, concepts, activities, findings or features.
Confident	Demonstrate secure application of skills or processes, with no need for prompting.	Review	Assess formally based on appropriate evidence or information with the intention of instituting change if necessary.
Consistent	Able to repeat reliably an action that progresses towards achieving an aim.	Secure	Well practised, confident in own ability and skills.
Creative	Using techniques, equipment and processes to express ideas or feelings in new ways.	Select	Choose the best or most suitable option related to specific criteria or outcomes.
Define	State or describe exactly the nature, scope or meaning of something.	Show	Present using practical skills.
Demonstrate	Carry out and apply knowledge, understanding and/or skills in a practical situation.	Simple	Well defined, routine, frequently occurring.
Describe	Give a clear, objective account in their own words, showing recall, and in some cases application, of relevant features and information. Normally requires breadth of content coverage.	State	Express something definitely or clearly.
Support	Guidance and instruction.	Summarise	Gathers together all of the main aspects of a given situation or experience in a condensed format.

French
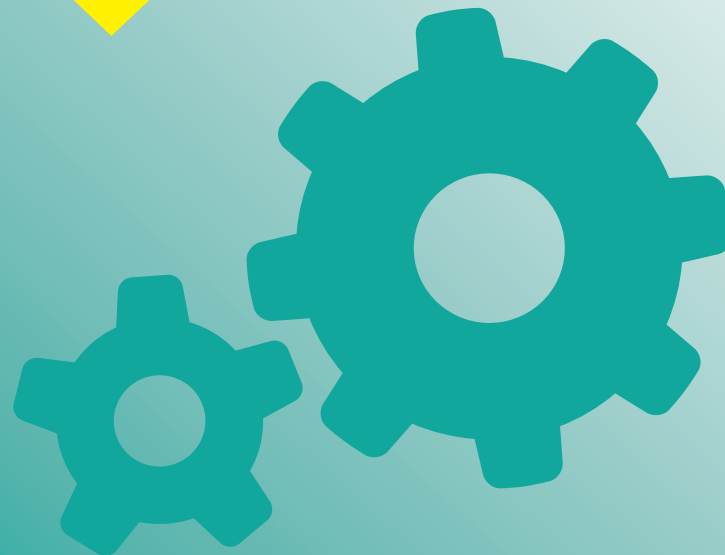
Knowledge organiser: les vacances

Les verbes	
Aller	To go
Voyager	To travel
Réserver	To book
Louer	To rent/hire
Arriver	To arrive
Quitter/Partir	To leave
Retourner	To return
Se reposer/se détendre	To rest
Se bronzer	To sunbathe
Boire un verre/un coup	To have a drink
Manger / Boire	To eat/ to drink
Dîner	To have dinner
Voir	To see/watch
Visiter	To visit
Danser	To dance
Chanter	To sing
Faire du tourisme	To site see
Dormir	To sleep
Passer du temps	To spend time
S'ennuyer	To get bored
S'amuser	To have fun
Se promener	To go for a walk
Rester/Loger	To stay
Nager	To swim

Les verbes	
Faire des excursions	To go on day trips
Faire la connaissance de	To get to know
Porter	To take /carry
Prendre des photos	To take photos
Se plaindre	To complain

Les noms	
Les vacances	Holidays
Le voyage	The journey
Le vol	The flight
Le billet	The ticket
L'horaire	The timetable

Les Pays du Monde

False friends:
Une quinzaine = Fortnight

Les noms	
Le logement	**Accommodation**
Un camping	Camp site
Un chalet	A chalet
Un appartement loué	A rented apartment
Une auberge de jeunesse	A youth hostel
Un dortoir	A dormitory
Une caravane	A caravan
Une chambre d'hôtes	A bed and breakfast
À l'étranger	Abroad
Les installations	**Facilities**
Une pièce	A room
Une chambre simple/individuelle	A single room
Un grand lit	A double bed
Demi- pension	Half board
Pension complète	Full board
Avec vue sur la mer	With sea views
Une salle à manger	Dining room
Une piscine couverte/intérieure	An indoor pool
Le bagage	**Luggage**
Les valises	Suitcases
La clé	The key
Un maillot de bain	A swimming costume
Le papier toilettes/hygiénique	Toilet paper
Un sac de couchage	A sleeping bag
Une tente	A tent
Un passeport	Passport

Knowledge organiser: Les Vacances

Les adjectifs pour décrire

Ennuyeux/euse(s)	Boring
Amusant(e)(s)	Fun
Fatigant(e)(s)	Tiring
Accueillant(e)(s)	Welcoming
Lent(e)(s)	Slow
Long(ue)(s)	Long
Coûteux(euse)(s)	Expensive
Bon marché	Cheap
Animé(e)(s)	Lively
Historique(s)	Historic
Luxueux(euse)(s)	Luxurious
Cassé(e)(s)	Broken
Relaxant(e)(s)	Relaxing
Passionnant(e)(s)	Exciting
Stressant(e)(s)	Stressful
Inoubliable(s)	Unforgettable
Culturel(le)(s)	Cultural
Construit(e)(s) en	Built in …

Attention:
C'était - It was (imperfect)
Ils'elles étaient - they were (imperfect)

Opinions

	Present	Past	Future
Je	J'aime	J'ai aimé	J'aimerai
Il/elle	Il/elle aime	Il/elle a aimé	Il/elle aimera

Les vacances idéales

Mes vacances idéales …	My ideal holidays…
Mes vacances de rêve…	My dream holidays …
Seraient ….	would be
Mon hôtel idéal aurait ..	My ideal hotel would have…
Si je gagnais la loterie, j'irais ..	If I won the lottery, I would go
Si j'étais riche, Je voyagerais ..	If I were rich, I would travel …

To describe your ideal holidays, you need to use the conditional. Remember you need to use the full infinitive but with RE verbs you drop the last ' e ' (Je prendrais)

Conditional

			AR / ER/IR
I	+ ais	We	+ ions
You	+ ais	You all	+ iez
He/she	+ ait	They	+ aient

Nous danserions = We would dance   Il mangerait = He would eat
Je me bronzerais = I would sunbathe
Tu te détendrais = You would rest

Sequencing what happened

Je viens de + infinitive	I have just …
Avant de + infinitive	Before….
Après avoir + past participle	After having + past participle…
Avant/ Après	Before/After
D'abord	Firstly
Puis	Then
Plus tard	Later
Le lendemain	The next day
En arrivant	On arrival
En partant	On departing
Le matin	In the morning
L'après-midi	In the afternoon
Le soir	In the evening

Les noms – Le transport

Je vais .. /Je voyage	I go / I travel
en voiture	by car
Dans une voiture de location	in a hire car
en avion	by plane
en bateau	by boat
en train	by train
en autobus	by bus
en car	by coach
à pied	by foot

Les avantages et les désavantages des vacances

L'avantage des vacances c'est que…	Le désavantage des vacances c'est que …
Le mieux c'est que	Le pire c'est que …

C'est trop cher   It is too expensive
Les vacances peuvent être stressantes   Holidays can be stressful
On peut passer du temps avec ta famille   You can spend time with your family
On peut apprendre d'avantage sur d'autres cultures   You can learn more about other cultures
On peut apprendre des langues   You can learn languages
On peut faire de nouveaux amis   You can make new friends
Je peux me relaxer   I can relax
Tu peux oublier tes soucis   You can forget about your worries

Health and Social Care

The Spec!!!

PASS	**Describe** growth and development across three life stages for a selected individual. **Explain** how different factors have affected growth and development of a selected individual
MERIT	**Compare** the different factors that have affected growth and development across three life stages for a selected individual.
DISTINCTION	**Assess** the changing impact of different factors in the growth and development across three life stages of a selected individual.

Basics

Identify	Establish or indicate who or what (someone or something) is.
Describe	Give a detailed account in words of.
Explain	Make clear to someone by describing it in more detail or revealing relevant facts.
Assess	Give careful consideration to all the factors or events that apply and then identify which are most important, giving reasons. You must also give the advantages and disadvantages and say which one is best
Evaluate	Give careful consideration to the advantages and disadvantages and then explain why they are advantages and disadvantages. Decide which factor is the most important and explain your reasons.
Analyse	Identify the key factors and how they are linked and the explain the importance and relevance of each one.

Life Stages

Infancy	0-2 years. The development of fine and gross motor skills.
Early Childhood	3-8years. Learning to play (solitary, parallel, social).
Adolescence	9-18years. Peer groups develop, emotions are effected by hormones, building relationships, the onset of puberty.
Early Adulthood	19-45years. Starting a family, having attained full growth or maturity.
Middle Adulthood	46-65years. An individual in the transitional age span between young adult and elderly, potential onset of midlife crisis..
Later Adulthood	65+years. Importance of finding meaning and satisfaction in life, potential onset of dementia.

Case Studies

Case Study 1: Joseph, 3 years old. Joseph Smith is 3 years of age and it has been noted that he is not currently hitting the expected milestones in relation to his speech.

Case Study 2: Millie, 78 years old. Millie Dale is 78 years old and suffers with vascular dementia. She has two children who live in the Grimsby area who both work full time and her husband passed away 3 years ago so she lives alone in the village of Healing**.**

Case Study 3: Emily, 26 years old. Married to Gavin who is 28 years old. Emily has a child called Evie who is 18months old. Emily lives in Grimsby and has a close knit family within the area. Emily is returning to work full time and Gavin currently works part time.

Key Words

Puberty	A change in the body where the brain releases hormones and sexual characteristics develop.
Menopause	Physiological changes including the gradual end of menstruation and shrinkage of sexual organs.
Gross motor skills	Gross motor skills are used to control larger muscle groups in the body.
Fine motor skills	Fine motor skills are used to control hands and fingers.
Milestones	A significant stage or event in the development of something.
Abstract thinking	Thinking about something that might not even be there or even exist.
Bonding	Forming an attachment with a parent or carer.
Attachment	Attachment is the close emotional connection between people.
Self-esteem	How much a person likes/values/accepts/ themselves.
Contentment	Contentment is about feeling satisfied and happy with what you have and what you have achieved.
Self-image	Self-image is how an individual will think and feel about themselves and how they imagine other people see them.

Sentence Starters

In addition to…	Alternatively…	For instance…
Another point…	For example…	Whereas…
This can be illustrated by….	However…	Generally…

PHYSICAL **I**NTELLECTUAL **E**MOTIONAL **S**OCIAL

Health and Social Care - Unit 1B - Human Lifespan

Hartford Church of England High School

The Spec!!!

PASS	Explain the impact of a life event on the development of two individuals. Explain how two individuals adapted to a life event, using support.
MERIT	Compare the ways that two individuals adapted to a life event and the role that support played.
DISTINCTION	Assess how well two individuals adapted to a life event and the role and value of support in this.

Basics

Identify	Establish or indicate who or what (someone or something) is.
Describe	Give a detailed account in words of.
Explain	Make clear to someone by describing it in more detail or revealing relevant facts.
Assess	Give careful consideration to all the factors or events that apply and then identify which are most important, giving reasons. You must also give the advantages and disadvantages and say which one is best
Evaluate	Give careful consideration to the advantages and disadvantages and then explain why they are advantages and disadvantages. Decide which factor is the most important and explain your reasons.
Analyse	Identify the key factors and how they are linked and the explain the importance and relevance of each one.

Expected/ Unexpected Life Events

Marriage	Unemployment
Employment	Promotion
Leaving/ starting school	Exclusion/ dropping out of education
Moving house	Imprisonment
Retirement	Ill health
Living with partner	Death
Parenthood	Accident/ injury

Case Studies

Case Study 1: Sarah is 10 years old and entering adolescence. Sarah's behaviour is changing as she starts secondary school and is forming new friendships at school. Sarah and her friends are into fashion and imitate fashion models. Peggy is concerned that Sarah is being influenced by the media.

Case Study 2: Anna's grandparents, Mary and James, live in a small house on the edge of the town. They are both in their early seventies and have retired from work. James used to work in a factory which made glass fibre insulation. Recently James suffered a mild heart attack.

Case Study 3: Maisie, 28 years old. Married to Dan who is 30 years old. Maisie and Dan are planning to start a family. They live in Grimsby. They realise this decision has a massive impact on many areas of their lives.

Key Words

Relationship changes	Altering the way that two or more people connect with each other.
Life circumstances	Factors that play a part in determining aspects of an individual's life.
Expected life events	A major event that changes a person's status or circumstances, such as giving birth, marriage, divorce, death of spouse, loss of job.
Unexpected life events	Events that take individuals by surprise as they do not know that they are going to happen, they are unplanned. Some examples are having an accident or an unexpected death.

Sources/ Type of Support

Family/ friends/ partners	Emotional
Professional carers and services	Information
Community groups	Advice
Voluntary and faith-based organisations	Practical help – financial, childcare, transport

Sentence Starters

In addition to…	Alternatively…	For instance…
Another point…	For example…	Whereas…
This can be illustrated by….	However…	Generally…

PHYSICAL **I**NTELLECTUAL **E**MOTIONAL **S**OCIAL