Haggerston School

cst Community Schools Trust

Year 10 Knowledge Organiser Term 1 2024

Aspiration Creativity Character

Knowledge Organiser - Contents

Term 1

HENRI MATISSE
1869 - 1954

French Artist

Henri Matisse was known for his use of **colour fluid expressions.**

Studied Art at the Academie Julian and was a student of William- Adolphe Bouguereau. He was an admirer of Chardin's work and his **impressionistic influences** came from the Australian painter John Peter Russell.

In 1898 he went to London to study William Turner's work. **Matisse immersed himself in works of other artists and displayed artwork of Rodin, Gauguin, Van Gogh and Cezanne** in his home for which he went into debt.

He made use of **Divisionism** which combines **colours optically instead of mixing the pigments physically.**

Periods:
Fauvism, Modernism, Impressionism, Post-impressionism, Neo-impressionism

Influences:
Paul Cezanne, Paul Gauguin, Paul Signac, John Peter Russell

Famous works:
- **La Peruche et la Sirene**
- **Blue Nude Series**
- **The Dance**
- **Icarus**
- **Women with a Hat**
- **Still life with a Magnolia**
- **The Red Room**

Impressionism developed in France in the nineteenth century and is based on the practice of painting out of doors and spontaneously 'on the spot' rather than in a studio from sketches. Main impressionist subjects were landscapes and scenes of everyday life
Impressionists: Mary Cassatt, Paul Cézanne, Edgar Degas, Édouard Manet, Claude Monet, Camille Pissarro, Pierre-Auguste Renoir, Alfred Sisley

Fauvism is the name applied to the work which is characterised by strong colours and fierce brushwork.
Famous fauvists: Albert Marquet, Charles Camoin, Louis Valtat, Jean Puy, Maurice de Vlaminck, Henri Manguin, Raoul Dufy, Othon Friesz, Georges Rouault, Jean Metzinger, Kees van Dongen and Georges Braque

The fauvists were interested in the scientific colour theories developed in the nineteenth century – particularly those relating to complementary colours.

Complementary colours are pairs of colours appear opposite each other on scientific models such as the colour wheel, and when used side-by-side in a painting make each other look brighter.

COLOR AND LINE
Throughout his career, Matisse searched for a way to unite the formal elements of color and line. On the one hand, he was known as a master colorist: from the non-realistic palette that earned him the designation of a **fauve or "wild beast**" in the first decade of the twentieth century, to the light-infused interiors of his so-called "Nice period" of the 1920s, he followed a course of what he described as "construction by means of color." On the other hand, he was a master draftsman, celebrated for drawings and prints that describe a figure in fluid arabesque lines; "my line drawing is the purest and most direct translation of my emotion," he once said. Through the **cut-outs,** he was finally able to unite these two branches of his practice. He described the process of making them as both "cutting directly into color" and "**drawing with scissors."**

Practical application of art history:
1. Create a drawing of your hand in one of the styles you've learned about from this knowledge organiser.
2.Create sketches of your surroundings (room, objects such as chairs, tables, books, your pencil case, etc), people in the simplified cut out style.
3. Create a composition on your table (books, stationary, clothing) and sketch it in the style of one of the above mentioned art movements. Use colour (e.g. green or red pen, colouring pencils, felt tips, highlighter)
4. Every piece of work should be evaluated using art vocabulary. Compare your work to the artists' examples.

Self Quiz:
1. Can you describe Fauvism and Impressionism?
2. List their characteristics
3. List key artists associated with each movement
4. What is Divisionism?
5. What are the most famous works created by H. Matisse?

ART

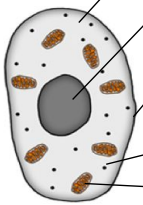
BIOLOGY

AQA Cell Structure

Eukaryotes complex organisms

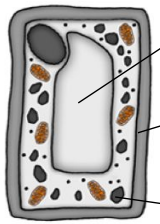
animal cell

plant cell



cytoplasm	*site of chemical reactions in the cell*	gel like substance containing enzymes to catalyse the reactions
nucleus	*contains **genetic material***	controls the activities of the cell and codes for proteins
cell membrane	*semi permeable*	controls the movement of substances in and out of the cell
ribosome	*site of protein synthesis*	mRNA is translated to an amino acid chain
mitochondrion	*site of respiration*	where energy is released for the cell to function

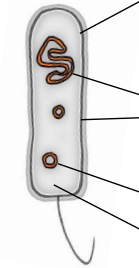
contains all the parts of animal cells plus extras



permanent vacuole	*contains cell sap*	keeps cell turgid, contains sugars and salts in solution
cell wall	*made of cellulose*	supports and strengthens the cell
chloroplast	*site of photosynthesis*	contains chlorophyll, absorbs light energy

Prokaryotes simpler organisms

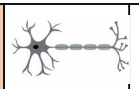
Bacterial cells are much smaller than plant and animal cells



cell membrane	*site of chemical reactions in the cell*	gel like substance containing enzymes to catalyse the reactions
bacterial DNA	*not in nucleus floats in the cytoplasm*	controls the function of the cell
cell wall	***NOT** made of cellulose*	supports and strengthens the cell
plasmid	*small rings of DNA*	contain additional genes
cytoplasm	*semi permeable*	controls the movement of substances in and out of the cell

Specialised cells

specialised animal cells

nerve		*carry electrical signals*	long branched connections and insulating sheath
sperm		*fertilise an egg*	streamlined with a long tail acrosome containing enzymes large number of mitochondria
muscle		*contract to allow movement*	contains a large number of mitochondria long

specialised plant cells

root hair		*absorb water and minerals from soil*	hair like projections to increase the surface area
xylem		*carry water and minerals*	TRANSPIRATION - dead cells cell walls toughened by lignin flows in one direction
phloem		*carry glucose*	TRANSLOCATION - living cells cells have end plates with holes flows in both directions

Cell differentiation

how a cell changes and becomes **specialised** **Undifferentiated** call are called **STEM** cells

animal cell differentiation

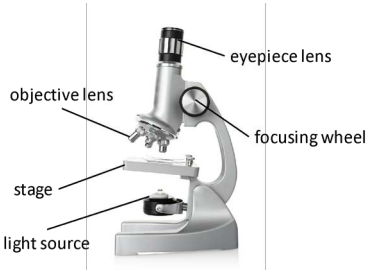
early stages of development only for repair and replacement

plant cell differentiation

all stages of life cycle the stem cells are grouped together in meristems

Microscopy

magnification M = size of image I / real size of the object A



Feature	Light (optical) microscope	Electron microscope
Radiation used	Light rays	Electron beams
Max magnification	~ 1500 times	~ 2 000 000 times
Resolution	200nm	0.2nm
Size of microscope	Small and portable	Very large and not portable
Cost	~£100 for a school one	Several £100,000 to £1 million plus

PREFIXES

Prefix	Multiple	Standard form
centi (cm)	1 cm = 0.01 m	x 10^{-2}
milli (mm)	1 mm = 0.001 m	x 10^{-3}
micro (µm)	1 µm = 0.000 001 m	x 10^{-6}
nano (nm)	1nm = 0.000 000 001 m	x 10^{-9}

largest

smallest

cell	The smallest structural and functional unit of an organism.
nucleus	A structure that contains genetic material and controls the activities of the cell.
chromosome	A thread like structure of coiled DNA found in the nucleus of eukaryotic cells.
DNA	A polymer made up of two strands forming a double helix.
gene	A section of DNA that codes for a specific protein or characteristic.

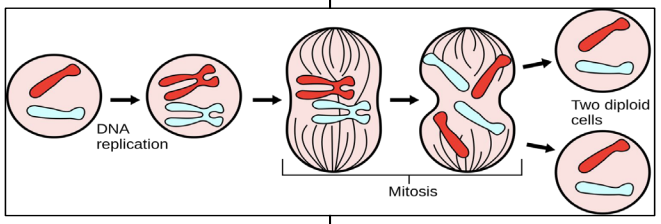
AQA Cell Biology 2

Cell division

MITOSIS AND THE CELL CYCLE

Cells divide in a series of stages. The genetic material is doubled and then divided into two identical cells.

Stage 1	***Growth***	Increase the number of subcellular structures e.g. ribosomes and mitochondria.
Stage 2	***DNA Synthesis***	DNA replicates to form two copies of each chromosome.
Stage 3	***Mitosis***	One set of chromosomes is pulled to each end of the cell and the nucleus divides. Then the cytoplasm and cell membranes divide to form two cells that are identical to the parent cell.



Mitosis occurs during growth, repair, replacement of cells. Asexual reproduction occurs by mitosis in both plants & simple animals.

STEM CELLS

Undifferentiated cell of an organism

Divides to form more cells of the same type, and can differentiate to form many other cell types.

Human Embryonic stem cells	***Can be cloned and made to differentiate into most cell types***	Therapeutic cloning uses same genes so the body does not reject the tissue. Can be a risk of infection
Adult bone marrow stem cells	***Can form many types of human cells e.g. blood cells***	Tissue is matched to avoid rejection, risk of infection. Only a few types of cells can be formed.
Meristems (plants)	***Can differentiate into any plant cell type throughout the life of the pant.***	Used to produce clones quickly and economically, e.g. rare species, crop plants with pest /disease resistance

Treatment with stem cells may be able to help conditions such as diabetes and paralysis. Some people object to the use of stem cells on ethical or religious grounds

Transport in cells

Diffusion ***No*** energy required	***Movement of particles in a solution or gas from a higher to a lower concentration***	E.g. O_2 and CO_2 in gas exchange, urea in kidneys. Factors that affect the rate are concentration, temperature and surface area.
Osmosis ***No*** energy required	***Movement of water from a dilute solution to a more concentrated solution***	E.g. Plants absorb water from the soil by osmosis through their root hair cells. Plants use water for several vital processes including photosynthesis and transporting minerals.
Active transport ***ENERGY*** required	***Movement of particles from a dilute solution to a more concentrated solution***	E.g. movement of mineral ions into roots of plants and the movement of glucose into the small intestines.

ADAPTATIONS FOR DIFFUSION

The greater the difference in concentrations the faster the rate of diffusion.

Small intestines	***Villi – increase surface area, Good blood supply – to maintain concentration gradient, Thin membranes – short diffusion distance.***
Lungs	***Alveoli– increase surface area, Good blood supply – to maintain concentration gradient, Thin membranes – short diffusion distance.***
Gills in fish	***Gill filaments and lamella – increase surface area, Good blood supply – to maintain concentration gradient, Thin membranes – short diffusion distance.***
Roots	***Root hair cells - increase surface area.***
Leaves	***Large surface area, thin leaves for short diffusion path, stomata on the lower surface to let O_2 and CO_2 in and out.***

BIOLOGY

BIOLOGY

AQA INFECTION AND RESPONSE

Antibiotics and painkillers

Antibiotics have greatly reduced deaths from infectious bacterial disease

antibiotics	***e.g. penicillin***	Kill infective bacteria inside the body. Specific bacterial infections require specific antibiotics.
Painkillers and other medicines	***e.g. aspirin, paracetamol, ibuprofen***	Drugs that are used to treat the symptoms of a disease. They do not kill pathogens

Antibiotics cannot be used to treat viral pathogens

It is difficult to develop drugs to kill viruses without harming body tissues because viruses live and reproduce inside cells

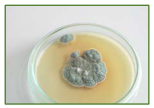
Bacteria can mutate

Sometimes this makes them resistant to antibiotic drugs.

Discovery and drug development

Most new drugs are synthesised by chemists in the pharmaceutical industry.

Traditionally drugs were extracted from plants and microorganisms

Digitalis	***Aspirin***	***Penicillin***
Extracted from foxglove plants and used as a heart drug	A painkiller and anti-inflammatory that was first found in willow bark	Discovered by Alexander Fleming from the *Penicillium* mould and used as an antibiotic
		

Drugs have to be tested and tried 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

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.

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.

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

Created more side effects than expected (fatal in some cases) and are not as widely used as everybody hoped when first developed.

Vaccination

Used to immunise a large proportion of the population 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.

A person is unlikely to suffer the symptoms of the harmful disease and it's spread in a population is prevented

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
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

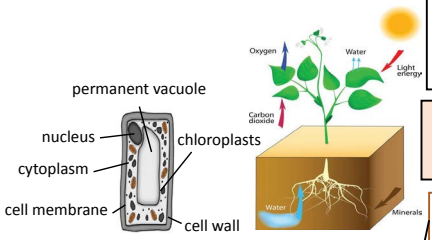
Specific to one binding site on the antigen. Can target specific chemicals or cells in the body

Monoclonal antibodies can be used in a variety of ways

Diagnosis	***Detecting pathogens***	***Detecting molecules***	***Treatment***
e.g. pregnancy test – measure the level of hormones	Can detect very small quantities of chemicals in the blood	Fluorescent dye can be attached so it can be seen inside cells or tissues	Bound to radioactive substance, toxic drug or chemical Cancer cells are targeted to normal body cells are unharmed

BIOLOGY

AQA GCSE BIOENERGETICS part 1



Respiration, stored as insoluble starch, fats or oils for storage, cellulose for cell walls, combine with nitrates from the soil to form amino acids for protein synthesis

Plants use the glucose produced in photosynthesis in a variety of ways

Photosynthetic reaction

The plant manufactures glucose from carbon dioxide and water using energy transferred from the environment to the chloroplasts by light

Photo synthe sis	*Plants make use of light energy from the environment (ENDOTHERMIC) to make food (glucose)*	Carbon dioxide + Water $\xrightarrow{\text{light}}$ Oxygen + Glucose
		$CO_2 + H_2O \xrightarrow{\text{light}} O_2 + C_6H_{12}O_6$

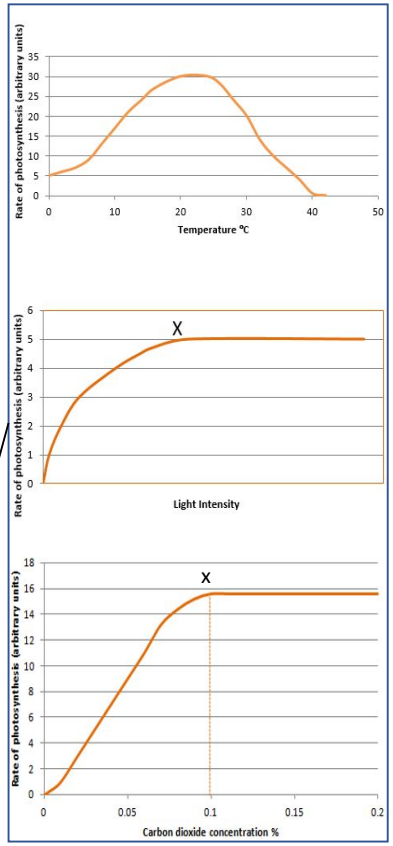
Control conditions in greenhouses to reduce limiting factors can improve crop yields	*Heating*	Used to provide optimum temperatures for maximum plant growth.
	Artificial lighting	Enhances the natural sunlight especially overnight and on cloudy days.
	Extra carbon dioxide	Gas can be pumped into the air inside the greenhouse.

Growers must balance the economics of additional costs of controlling the conditions to maximise photosynthesis with making a profit.

Rate of photosynthesis

The rate of photosynthesis is affected by temperature, light intensity, carbon dioxide concentration, and the amount of chlorophyll

	Factor	How the rate is affected	Limiting factors (why the rate stops going up)
Factors affecting the rate of photosynthesis	**Temperature**	*As the temperature of the environment the plant is in increases rate of photosynthesis increases (up to a point) as there is more energy for the chemical reaction.*	Photosynthesis is an enzyme controlled reaction. If the temperature increases too much, then the enzymes become denatured and the rate of reaction will decrease and stop
	Light intensity	*Light intensity increases as the distance between the plant and the light sources increases. As light intensity increases so does the rate of photosynthesis (up to a point) as more energy is available for the chemical reaction.*	At point X another factor is limiting the rate of photosynthesis. This could be carbon dioxide concentration, temperature or the amount of chlorophyll
	Carbon dioxide concentration	*Carbon dioxide is needed for plants to make glucose. The rate of photosynthesis will increase when a plant is given higher concentrations of carbon dioxide (up to a point).*	At point X another factor is limiting the rate of photosynthesis. This could be light intensity, temperature or the amount of chlorophyll
	Amount of chlorophyll	*Chlorophyll is a photosynthetic pigment that absorbs light and allows the reaction between water and carbon dioxide to occur (photosynthesis)*	Another factor could limit the rate of photosynthesis. This could be light intensity, temperature or the carbon dioxide concentration



Light intensity obeys the inverse square law. This means that if you double the distance between the plant and the light source you quarter the light intensity

Rate of photosynthesis HT Only

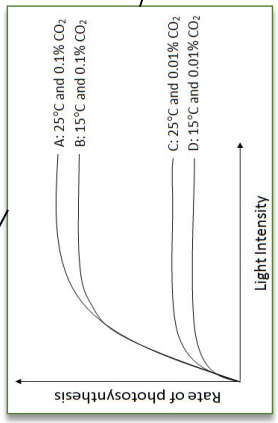
Graph lines C and D: If temperature is increased by 10°C then a slight increase in rate of photosynthesis occurs.

Graph lines A and D: If carbon dioxide concentration and temperature are increased the rate of photosynthesis increases significantly up to a point.

Graph line A: Rate could be limited by temperature and/or amount of chlorophyll. Plant tissue can be damaged when carbon dioxide concentrations exceed 0.1%

Explain graphs of two or three factors and decide which is the limiting factor

Graph Lines A and B: If carbon dioxide concentration is increased from 0.01% to 0.1% then a large increase in rate occurs up to a point.

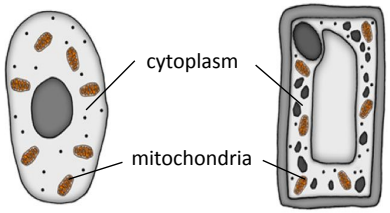


BIOLOGY

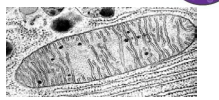
AQA GCSE BIOENERGETICS part 2

Respiration

Cellular respiration is an exothermic reaction which is continuously occurring in all living cells



animal cell | plant cell



Electron micrograph of a mitochondrion

Anaerobic respiration

Respiration when oxygen is in short supply. Occurs during intensive exercise

During hard exercise, muscle cells are respiring so fast that blood cannot transport enough oxygen to meet their needs.

Glucose is partially oxidised to produce lactic acid which builds up in muscle tissue causing them to become painful and fatigued.

glucose → lactic acid

Anaerobic respiration releases a much smaller amount of energy than aerobic respiration.

The incomplete oxidation of glucose causes a buildup of lactic acid and creates an oxygen debt

Aerobic respiration

Respiration with oxygen. Occurs inside the mitochondria continuously

Glucose is oxidised by oxygen to transfer the energy the organism needs to perform its functions.

$C_6H_{12}O_6 + O_2 \rightarrow CO_2 + H_2O$

glucose + oxygen → carbon dioxide + water

Aerobic respiration releases a large amount of energy from each glucose molecule

Anaerobic respiration in plant and yeast cells

The end products are ethanol and carbon dioxide. Anaerobic respiration in yeast cells is called fermentation

glucose → ethanol + carbon dioxide

This process is economically important in the manufacture of alcoholic drinks and bread.

Response to exercise

During exercise the human body reacts to increased demand for energy	*Heart rate increases*	Top pump oxygenated blood faster to the muscle tissues and cells.
	Breathing rate and breath volume increase	This increases the amount of oxygen entering the bloodstream.

During long periods of vigorous activity muscles become fatigued and stop contracting efficiently

The extra amount of oxygen required to remove all lactic acids from cells is called the oxygen debt

Lactic acid builds up in the muscles cells during exercise → Blood flows through the muscle cells and transports the lactic acid to the liver → The liver oxidises the lactic acid and converts it back to glucose

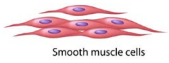
Response to exercise HT only

Metabolism

Metabolism is the sum of all the reactions in a cell or the body

Metabolism	*The energy transferred by respiration in cells is used by the organism for the continual enzyme controlled processes of metabolism.*	Conversion of glucose to starch, glycogen and cellulose.
		The formation of lipid molecules from a molecule of glycerol and three molecules of fatty acid.
		The use of glucose and nitrate ions to form amino acids which in turn are used to synthesise proteins.
		Respiration
		Breakdown of excess proteins to form urea for excretion.

An organism will receive all the energy it needs for living processes as a result of the energy transferred from respiration

For movement	 Smooth muscle cells	To enable muscles to contract in animals.
For keeping warm		To keep a steady body temperature in a cold environment.
For chemical reactions		To build larger molecules from smaller one.

AQA GCSE HOMEOSTASIS AND RESPONSE part 1

BIOLOGY

Homeostasis

Response to internal and external change

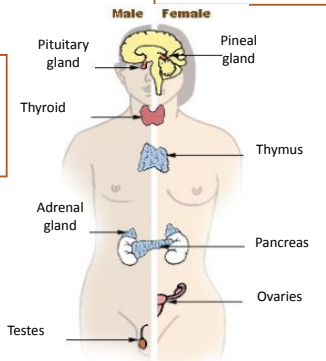
The regulation of internal conditions of a cell or organism to maintain optimum conditions for function.

Homeostasis maintains optimal conditions for enzyme action and all cell functions.

Controls in the human body	
Blood glucose concentration	These automatic control systems may involve nervous responses or chemical responses.
Body temperature	
Water levels	

Human control systems include		
Cells called receptors	Detect stimuli (changes in environment).
Coordination centres	e.g. brain, spinal cord and pancreas that receive information from receptors.
Effectors	Muscles or glands, which bring about responses to restore optimum levels.

Control of blood glucose concentration



Human endocrine system

Endocrine system	*Composed of glands which secrete chemicals called hormones directly into the bloodstream.*	The blood carries the hormone to a target organ where is produces an effect. Compared to the nervous system effects are slower but act for longer.

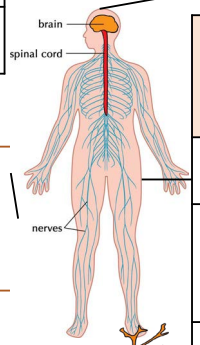
Blood glucose concentration	
Monitored and controlled by the pancreas	
Too high	**(HT only)** Too low
Pancreas produces the hormone insulin, glucose moves from the blood into the cells. In liver and muscle cells excess glucose is converted to glycogen for storage.	Pancreas produces the hormone glucagon that causes glycogen to be converted into glucose and released into the blood.

(HT) Rising glucose levels inhibit the release of glucagon in a negative feedback system. Insulin is released to reduce glucose levels and which cause the pancreas to release glucagon

Diabetes	
Type 1	*Type 2*
Pancreas fails to produce sufficient insulin leading to uncontrolled blood glucose levels. Normally treated by insulin injection.	Obesity is a risk factor. Body cells no longer respond to insulin. Common treatments include changing by diet and increasing exercise.

The human nervous system

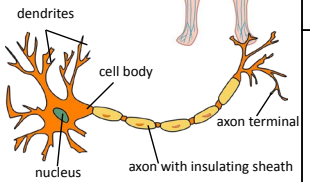
Enables humans to react to their surroundings and to coordinate their behaviour



Information from receptors passes along cells (neurones) as electrical impulses to the central nervous system (CNS)

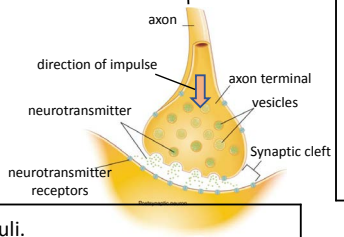
The CNS is the brain and the spinal cord.

Coordinates the response of effectors; muscles contracting or glands secreting hormones



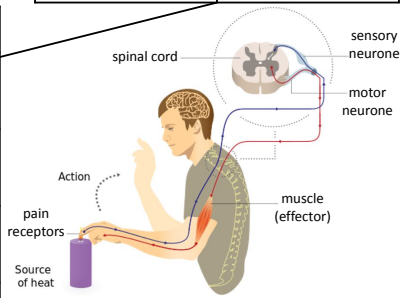
Typical motor neurone

Synapse (gap where two neurones meet).



Stimulus	Lights switch on
⇩	⇩
Receptor	Cells in retina
⇩	⇩
Coordinator	CNS
⇩	⇩
Effector	Muscles connected to iris
⇩	⇩
Response	Pupils get smaller

Reflex arc		
	Receptor	Detect stimuli.
	Sensory neurone	Long axon carries impulse from receptor to spinal cord.
	Synapse	Gap where neurones meet. Chemical message using neurotransmitter.
	Relay neurone	Allows impulses to travel between sensory and motor neurones in the spinal cord.
	Motor neurone	Long axon carries impulse from receptor to effector.
	Effector	Muscle or gland that carries out response.



Reflex actions are automatic and rapid; they do not involve the conscious part of the brain and can protect humans from harm.

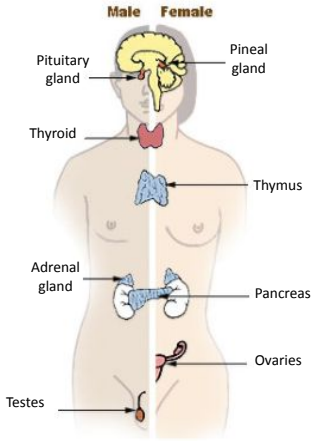
BIOLOGY

AQA GCSE HOMEOSTASIS AND RESPONSE PART 2

Hormones in human reproduction

Negative feedback (HT only)	*Adrenaline*	Produced in adrenal glands, increases breathing/heart rate, blood flow to muscles, conversion glycogen to glucose. Prepares body for 'fight or flight'.
	Thyroxine	Produced in the thyroid gland, stimulates the basal metabolic rate. Important in growth and development.

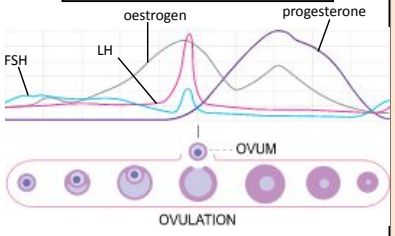
Increasing thyroxine levels prevent the release of thyroid stimulating hormone which stops the release of thyroxine.



During puberty reproductive hormones cause secondary sexual characteristics to develop

Oestrogen (main female reproductive hormone)	*Testosterone (main male reproductive hormone)*
Produced in the ovaries. At puberty eggs being to mature releasing one every 28 days – **ovulation**.	Produced in the testes stimulation sperm production.

(HT only) a graph of hormone levels over time



Menstrual cycle	*Follicle stimulating hormone (FSH)*	Causes maturation of an egg in the ovary.	**(HT)** FSH stimulates ovaries to produce oestrogen.
	Luteinising hormone (LH)	Stimulates release of an egg.	**(HT)** Oestrogen stops FSH production and stimulates LH production in pituitary gland.
	Oestrogen and progesterone	Maintain uterus lining.	

Contraception

Fertility can be controlled by hormonal and non hormonal methods	*Oral contraceptives*	Contain hormones to inhibit FSH production so that no eggs mature.
	Injection, implant, skin patch	For slow release of progesterone to inhibit the maturation and release of eggs for months or years.
	Barrier methods	Condoms or diaphragms which prevent sperm reaching the egg.
	Intrauterine devices	Prevent implantation of an embryo or release a hormone.
	Spermicidal agents	Kill or disable sperm.
	Abstaining	Avoiding intercourse when an egg may be in the oviduct.
	Surgery	Male or female sterilisation.

The use of hormone to treat infertility (HT only)

FSH and LH are used as 'fertility drugs' to help someone become pregnant in the normal way

Hormones are used in modern reproductive technologies to treat infertility

In Vitro Fertilisation (IVF) treatment.

Involves giving a mother FSH and LH to stimulate the maturation of several eggs

The eggs are collected from the mother and fertilised by sperm from the father in a laboratory.

The fertilised eggs develop into embryos.

At the stage when they are tiny balls of cells, one or two embryos are inserted into the mother's uterus (womb).

Potential disadvantages of IVF	Emotional and physical stress.
	Success rates are not high.
	Multiple births risk to mother and babies.

Subject Content	What students need to learn?
1.1.1 The dynamic nature of business	Why new business ideas come about: • changes in technology • changes in what consumers want • products and services becoming obsolete. How new business ideas come about: • original ideas • adapting existing products/services/ideas.

Key Definitions:

Enterprise
Business Enterprise involves starting something of your own. It is usually a business but it might also be a charity or sports club.

Entrepreneurship
An entrepreneur is willing to put his or her career and financial security on the line and take risks in the name of an idea, spending time as well as capital on an uncertain venture.

Why do new business ideas come about?

1. **Changes in consumer demand**

New business ideas come about because of changes in what consumers demand. For example, Activia yoghurts have recently experienced a decrease in demand. This may be because of consumer taste e.g. they now prefer Greek-style yoghurt.

Why do new business ideas come about?

2. **Changes in technology**

New technology is a cause of new business ideas. 3G was launched in 2004 but no mobile phone devices could use it. Apple developed the iPhone in 2007. This was the first mobile phone that could use the 3G technology.

Why do new business ideas come about?

3. **Products and services becoming obsolete**

A product or service is obsolete if no one wants it any longer. There is no longer great demand for chimney sweeps, as few people have an open fire. As people change their behaviour some businesses become irrelevant.

How do new business ideas come about?

1. **Original Ideas**

These are ideas that have not been done before. For example the launch of the iPhone in 2007 which was 3G enabled. This allows a business to gain a competitive advantage over their rivals.

2. **Adapting existing products/services**

Developing new products based on the original one such as Wall's white chocolate magnum.

BUSINESS

BUSINESS

Subject Content	What students need to learn?
1.1.2 Risk and Reward	The impact of risk and reward on business activity: • risk: business failure, financial loss, lack of security • reward: business success, profit, independence.

Rewards:

1. Business Success
2. Profit and wealth
3. Independence

Risk	Reward
Risk is about chance. What is the chance that a particular outcome will occur?	Risks are taken in the hope they will generate *rewards*

Profit = The difference between sales revenue and total costs. If the figure is positive, then the business has made a profit. This is the main aim of most businesses!

Independence = being able to make your own decisions and be your own boss.

Why are entrepreneurs concerned about the following risks?	Reason:
Business failure	Half of UK business start-ups fail within five years. This means they are no longer able to keep trading. It can also be very expensive if they have invested a lot of money.
Financial loss	If a limited company gets into financial trouble they are personally protected from the losses. However, an unlimited company is not. Their own possessions may be seized to cover the debt.
Lack of security	When you start a business you are not guaranteed to get paid each month unlike a regular job. If you have responsibilities this can be a worry.

Subject Content	What students need to learn?
1.1.3 The role of business enterprise	The role of business enterprise and the purpose of business activity: • to produce goods or services • to meet customer needs • to add value: convenience, branding, quality, design, unique selling points. The role of entrepreneurship: • an entrepreneur: organises resources, makes business decisions, takes risks.

Adding Value Example!

- Tyrrells Potato Chips
  - Will Chase had been farming potatoes for 20 years (loss-making)
  - Wanted to produce something with more added value
  - Came up with idea to make hand-fried chips with distinctive flavours and packaging
  - Successfully created a premium product and turned Tyrrells into a profitable business

The role of business enterprise and the purpose of business activity:

1. **To produce goods and services**

A business needs to make goods and services that satisfy consumers wants and needs. The profit made is reinvested by businesses, leading to further growth. Business enterprise has an important role to play in society by creating jobs and wealth.

2. **To meet customer needs**

A business needs to meet customer needs by offering them products and services that they want. A business will not succeed if they are unable to do this.

3. **Adding Value**

Adding value is the difference between the price of the finished product/service and the cost of the inputs involved in making it. There are a number of ways of adding value:

- Convenience and speed: in Britain most people will pay extra to save their own time e.g. takeaways are more expensive than cooking your own meal from scratch.
- Branding: A Nike tick adds tens of pounds to the 'value' of a pair of trainers. A Mercedes badge adds thousands of pounds to a new car.
- Quality and design: Good quality and well-designed products command higher prices as they are more desirable
- Unique selling point (USP): an original feature that competitors aren't offering which customers are willing to pay more for.

The role of a café entrepreneur:

1. **Organising resources:**
   - Physical resources e.g. premises, kitchen equipment
   - Daily resources e.g. drinks, crockery
   - Human resources e.g. good chef
2. **Making important decisions** e.g closing a loss making café
3. **Taking risks** e.g. opening a café in a new location

BUSINESS

BUSINESS

Subject Content	What students need to learn?
1.2.1 Customer needs	Identifying and understanding customer needs: • what customer needs are: price, quality, choice, convenience • the importance of identifying and understanding customers: generating sales, business survival.

Identifying and understanding customers

Identifying customers: Finding out who they are including the following:

- Age
- Gender
- Incomes
- Where they live
- What they want

Understanding customers: Learning why customers do what they do, making it easier to see how to make a product that better suits them.

If a business understands their customers, they can develop a product that they want to buy. As long as it is priced correctly, sold in the right place and marketed effectively, the business is likely to be successful.

They are more likely to generate high volumes and sales and survive for a long period of time.

Key Terms:

Price: For most people price is a critical factor when purchasing. The price point needs to be in line with the type of product and its key features.

Quality: To a customer quality means getting what they want or perhaps better than expected. Businesses aim to delight their customers.

Choice: Giving customers options and increasing the chance that the product will be perfect for the tastes/habits of one type of customer.

Convenience: Making life easier for customers, perhaps by a great location (next to a bus stop) or a product that saves time in preparation or consumption.

Subject Content	What students need to learn?
1.2.2 Market research	The purpose of market research: • to identify and understand customer needs • to identify gaps in the market • to reduce risk • to inform business decisions. Methods of market research: • primary research: survey, questionnaire, focus group, observation • secondary research: internet, market reports, government reports. The use of data in market research: • qualitative and quantitative data • the role of social media in collecting market research data • the importance of the reliability of market research data.

Key Definition: Market research involves gathering information about consumers' needs and preferences.

Methods of Market Research:

Primary: New research the business carries out themselves.

- **Surveys**
- **Questionnaires**
- **Focus groups**
- **Observations**

Secondary: Research carried out in the past either by the business or somebody else.

- **Internet**
- **Market reports**
- **Government reports**

The purpose of market research:

1. To identify and understand customer needs - what do they want?
2. To identify gaps in the market – this allows them to identify which customer requirements are covered and which are not.
3. To reduce the risk of spending a lot of money on developing a product that nobody wants
4. To inform business decisions – by conducting market research a business can make informed business decisions that are more likely to be successful.

The use of data in market research:

Qualitative data: In depth research into opinions and views. It can provide an insight into why consumers buy what they buy. (Detailed)

Quantitative data: Factual research that is based on statistics and data. (Numerical)

The role of social media in collecting data: Social media feedback has now become invaluable. E.g. 48.9% of 7000 Center Parcs visitors rated the experience excellent. This provides quantitative information. Individual comments are also very useful. This provides qualitative information.

Importance of reliability of market research data: Market research is important however you need to be careful that the information is actually valid and reliable. If it is not, then this could influence the business to make the wrong decision.

BUSINESS

BUSINESS

Subject Content	What students need to learn?
1.3.2 Business revenues, costs and profits	The concept and calculation of: • revenue • fixed and variable costs • total costs • profit and loss • interest

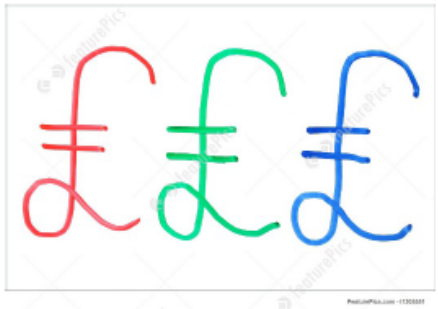
Before a business starts to sell their products and services, money needs to be spent setting up the business so it can run properly.

START – UP COSTS

Start-up costs are not paid on a regular basis and are often one off. E.g. buildings, equipment and machinery.

RUNNING COSTS

A business will also have costs that they have got to pay regularly as a normal part of trading. These are usually paid monthly. These are known as **running costs.** Eg. Rent, raw materials, **wages.**



COSTS are the spending that is necessary to set up and run a business.

FIXED COSTS

Are costs that **DON'T** change when sales go up or down i.e. they **DO NOT** vary with output. E.g. Rent, salaries, insurance.

VARIABLE COSTS

Are costs that **DO** change when sales go up or down. i.e. they **DO** vary with output. E.g Raw materials, electricity, wages.

Variable Costs = Variable cost per unit x Output

TOTAL COSTS

All the costs a business must pay in a set period of time.

Total Costs = Fixed Costs + Variable Costs

REVENUE

Revenue is the money generated from selling products/services. It is often referred to as sales revenue. **Revenue = Selling price x Quantity Sold**

PROFIT

Profit is the amount of money the business has to keep once all costs have been covered.

Profit = Sales Revenue – Total Costs

If the figure is **positive**, the business has made a **profit**. If it is **negative**, the business has made a **loss.**

INTEREST

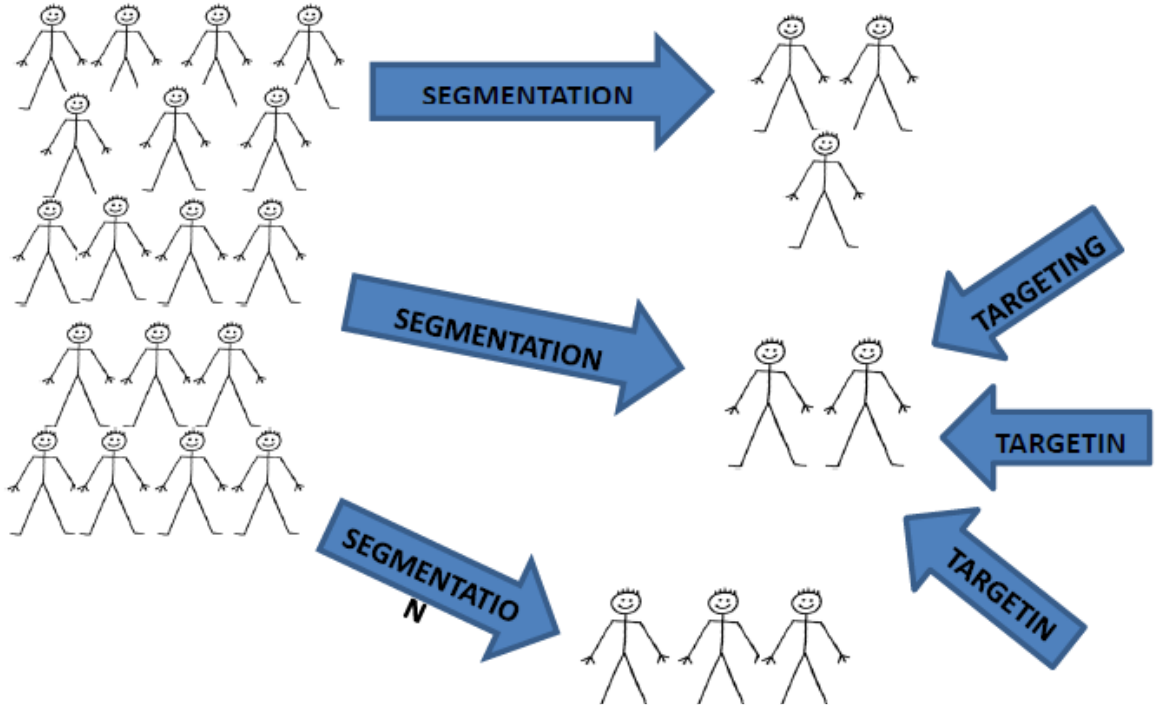
Interest is the **cost of borrowing** money. When you take out a bank loan you must may back the amount with interest. E.g. a loan of £100 at a rate of 5% interest you pay back £105.

It is also the **reward for saving**. If you saved £100 in your bank account with an interest rate of 1%, by the end of the year you would have £101 in your account.

Subject Content	What students need to learn?
1.2.3 Market segmentation	How businesses use market segmentation to target customers: • identifying market segments: location, demographics, lifestyle, income, age • market mapping to identify a gap in the market and the competition.

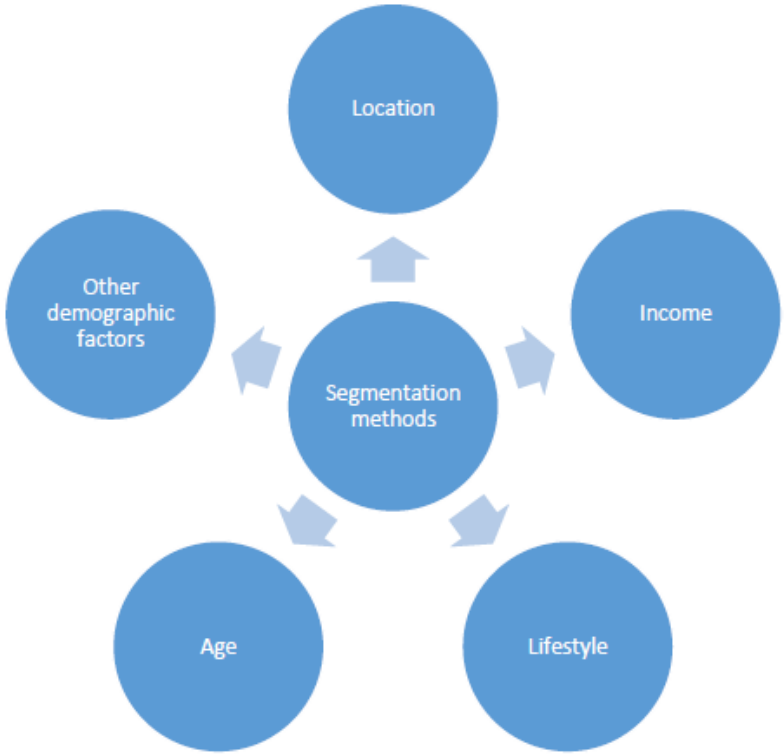
Market Segmentation:

Market segmentation means dividing customers within a market into smaller groups with common wants or needs. The business then creates/finds a product or service that fulfils those wants or needs.



Segmentation methods:

- **Location:** Are their regional differences in preference? E.g. Yorkshire tea in the North of England.
- **Income:** Is their income high or low? What is their disposable income like?
- **Lifestyle:** Are they vegetarian? What are their hobbies/sports?
- **Age:** Which age bracket should you focus on? Under 18's? Over 50's?
- **Other demographic factors:** Gender, race religion?

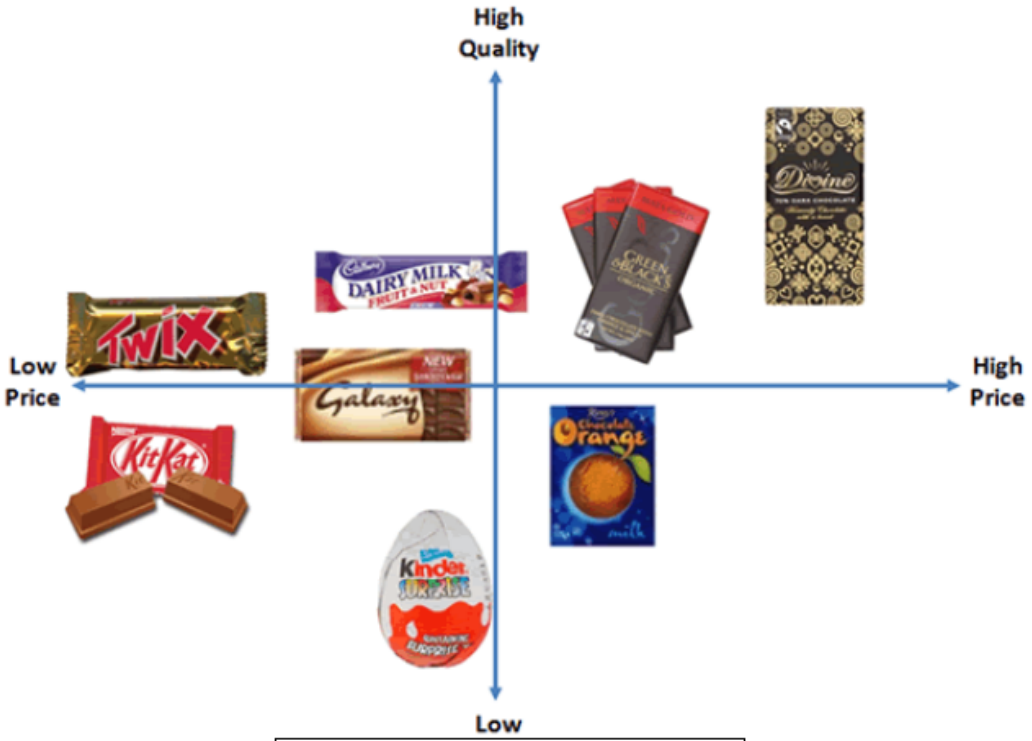


BUSINESS

BUSINESS

Subject Content	What students need to learn?
1.2.3 Market segmentation	• market mapping to identify a gap in the market and the competition.

Market mapping measures where existing brands sit on a two factor grid. For example, high/low quality and high/low price.



Market map of the chocolate market!

Market mapping involves setting out the key features of a market on a diagram, then plotting where each brand fits in.

Businesses use market mapping to identify ***gaps*** in the market or to show where a particular section of the market is overcrowded.

They aim to produce a product that fills the ***gap*** in the market.

If they can do this successfully, there is more chance that the product will be successful as that part of the market is not

Key Terms:

The Competition: companies operating in your market or market sector.

Gap in the market: An area on a market map where few or no existing brands operate, implying a business opportunity to fill an unmet consumer need.

Subject Content	What students need to learn?
1.2.4 The competitive environment	Understanding the competitive environment: • strengths and weaknesses of competitors based on: price, quality, location, product range and customer service • the impact of competition on business decision making.

The competitive environment:

The strength of competition between companies in the same market.

What are the **strengths** and **weaknesses** of your competitors:

- Prices: What do they charge for their products?
- Quality: This is now more important than ever before, if your competitor's products are poor quality it could lose them customers.
- Location: Location, location, location! Is still as important as ever. You may have a good business with loyal customers but if a new business opens up in a better location they may be in danger.
- Product range: it is important to have a range of different products so all customer needs can be met or they will go to a competitor.
- Customer service: Customers expect efficiency. , speed and politeness. In some areas after sales service is just as important.

Careful analysis of the local competition is a must for a new business! If all rivals are really strong, you may decide not to set up at all. Unless you know how you can be better than the competition, you should not risk your money.

Competition forces businesses to be at their best – always!

- Offer good products and a good service
- Keep prices down
- Bring in new, innovative products or services to break away from fierce price competition.

Fierce competition may force a firm to:

- Cut costs by cutting staff – bad for the staff and also service may decline
- Tale short term action such as price cutting which may damage the long term health of the business
- Adopt unethical practices such as dumping waste materials or injecting water into meat to plump it up

BUSINESS

BUSINESS

Subject Content	What students need to learn?
1.3.1 Business aims and objectives	What business aims and business objectives are. Business aims and objectives when starting up: • financial aims and objectives: survival, profit, sales, market share, financial security • non-financial aims and objectives: social objectives, personal satisfaction, challenge, independence and control. Why aims and objectives differ between businesses.

Aim: Business aims are the broad targets that an entrepreneur has at the back of their mind.

Objective: Business objectives are clear, measurable targets of how to achieve business aims. (The stepping stones for how they are going to achieve them.)

Financial	Non-Financial
Survival	Personal satisfaction
Break even	Challenge
Improve reputation	Independence
Increase motivation of staff	Control
Increase market share	Helping others
To grow	Being your own boss
To sell in a new market – e.g. abroad	Something to be proud of

Ethical and socially responsible objectives – organisations like the Co-op or the Body Shop have objectives which are based on their beliefs on how one should treat the environment and people who are less fortunate

Charities, social enterprises and voluntary organisations – their aims and objectives are led by the beliefs they stand for e.g. Divine Chocolate want to support the cocoa growers by giving back profits to help them get education and jobs so they are no longer living in poverty

Public sector businesses like the leisure centre, schools, doctors or library in Witney are run to not only generate a profit but provide a service to the public. This service will need to meet the needs of the less well off in society or help improve the ability of the economy to function: e.g. cheap and accessible transport service

Subject Content	What students need to learn?
1.3.2 Business revenues, costs and profits	• break even level of output • margin of safety. Interpretation of break even diagrams: • the impact of changes in revenue and costs • break even level of output • margin of safety • profit and loss.

Calculating break even without using a graph.

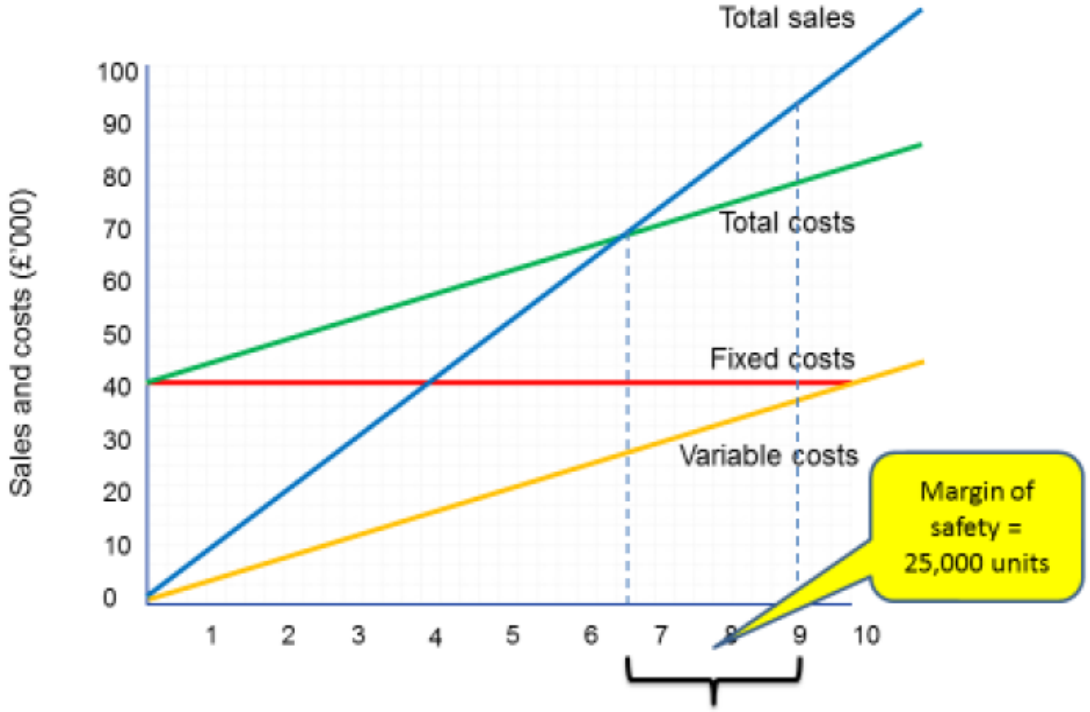
Break even charts can be time consuming to make so often a formula is used instead:

BREAK EVEN = FIXED COSTS

(SELLING PRICE – VARIABLE COST PER UNIT)

BREAK EVEN =

The point at which **sales revenue = total costs**. At this point the business is nether making a **profit** nor a **loss**.



MARGIN OF SAFETY =

The difference between the break even level of output and actual level output.

MOS = CURRENT OUTPUT – BREAK EVEN OUTPUT

In this example = 90,000 – 65,000 = **25,000 units**

BUSINESS

BUSINESS

Subject Content	What students need to learn?
1.3.3 Cash and cash-flow	The importance of cash to a business: • to pay suppliers, overheads and employees • to prevent business failure (insolvency) • the difference between cash and profit. Calculation and interpretation of cash-flow forecasts: • cash inflows • cash outflows • net cash flow • opening and closing balances.

Key Definitions:

Cash: 'The money a firm holds in notes and coins and in its bank account.'

Cash Flow: 'The movement of money in and out of the business.'
Cash Flow forecast: 'Estimating the likely flows of cash over the coming months – therefore showing the state of a business's bank balance

Cash Flow

Cash flow is the money that flows into and out of the business on a day to day basis

Money that flows INTO the business are known as CASH INFLOWS

Money that flows OUT of the business are known as CASH OUTFLOWS

Why is cash important?

Cash is like air; profit is like food. You need cash all the time but you can survive for a while without profit.

Cash is needed to:

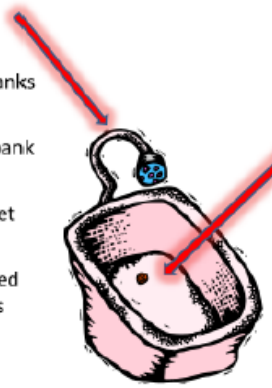
- Pay suppliers
- Overheads e.g rent
- Employee wages

Cash and profit are DIFFERENT – you need to remember this and understand the reasons why

If a business does not have enough cash to pay for these things it is likely they will fail as they will have become **insolvent.** (Not enough cash topay their debts.)

IN

- Sales
- Loans from banks
- Interest on money in the bank (savings)
- Sale of an asset (like a Lorry)
- Money invested by a businesses owners
- Grants from governments



OUT

- Purchase of stock/raw materials
- Wages/salaries
- Interest on loans
- Bills (electricity)
- Rent/mortgage
- Taxes
- Business rates
- Start up costs

Cash flow forecast

- Cash IN
- Cash OUT
- Net cash flow – the difference between cash in (inflows) and cash out (outflows). You want this to be in CREDIT
- Opening balance – a businesses cash position at the start of the month (*Use last months closing balance)*
- Closing balance – how much a business has at the end of the month. **It is calculated by: adding the net cash flow and the opening balance**. This figure then becomes the opening balance for next month

Subject Content	What students need to learn?
1.3.4 Sources of business finance	Sources of finance for a start-up or established small business: • short-term sources: overdraft and trade credit • long-term sources: personal savings, venture capital, share capital, loans, retained profit and crowd funding.

Short term finance:

This is money the business borrows and pays back within **one** year.

Long term finance:

This is money the business borrows and pays back over a long period of time, **over one year.**

Short Term Finance

Overdraft: This allows a business to spend more money than it has in its account. The bank and business will agree on a limit and interest is charged when the account goes overdrawn.

Trade Credit: This is when businesses buy raw materials and components and pay for then at a later date, usually within 30-90 days.

Long Term Finance

Personal savings: Owners may be planning to set up their own business for a number of years. This will involve regular saving in order to have enough capital to set up the business/keep it running.

Venture Capital: These are industry experts who invest in small and medium sized businesses in return for a stake in the company.

Share capital: This is money raised through the selling of shares in the business. There are two main types – ordinary shares and preference shares.

Bank loans: This is an arrangement where the amount borrowed must be repaid over a clearly stated period of time, in regular instalments. The amount is paid back with interest.

Retained Profit: Profit kept within the business that is not paid out in dividends to the shareholders. This source of finance is the best if the business wants to expand.

Crowd funding: Raising capital online from many small investors to fund a project. (This does not involve the stock market)

BUSINESS

CHEMISTRY

AQA GCSE QUANTITATIVE CHEMISTRY 1

Relative formula mass (M_r)

M_r	*The sum of the relative atomic masses of the atoms in the numbers shown in the formula*	The sum of the M_r of the reactants in the quantities shown equals the sum of the M_r of the products in the quantities shown.

$2Mg + O_2 \rightarrow 2MgO$

$48g + 32g = 80g$

$80g = 80g$

Mass changes when a reactant or product is a gas

Mass appears to increase during a reaction	*One of the reactants is a gas*	Magnesium + oxygen → magnesium oxide
Mass appears to decrease during a reaction	*One of the products is a gas and has escaped*	Calcium carbonate → carbon dioxide + calcium oxide

Conservation of mass	*No atoms are lost or made during a chemical reaction*	Mass of the products equals the mass of the reactants.

Balanced symbol equations	*Represent chemical reactions and have the same number of atoms of each element on both sides of the equation*

Limiting reactants (HT only)

The reactant that is completely used up	*Limits the amount of product that is made*	Less moles of product are made.

Chemical measurements

Whenever a measurement is taken, there is always some uncertainty about the result obtained	*Can determine whether the mean value falls within the range of uncertainty of the result*	1. Calculate the mean 2. Calculate the range of the results 3. Estimate of uncertainty in mean would be half the range

Yield is the amount of product obtained	*It is not always possible to obtain the calculated amount of a product*	The reaction may not go to completion because it is reversible.
		Some of the product may be lost when it is separated from the reaction mixture.
		Some of the reactants may react in ways different to the expected reaction.

Measured in mass per given volume of solution (g/dm^3)	*Conc. = mass (g) / volume (dm^3)*	HT only Greater mass = higher concentration. Greater volume = lower concentration.

Amounts of substances in equations (HT only)

Percentage yield is comparing the amount of product obtained as a percentage of the maximum theoretical amount	*% Yield = Mass of product made / Max. theoretical mass x 100*	A piece of sodium metal is heated in chlorine gas. A maximum theoretical mass of 10g for sodium chloride was calculated, but the actual yield was only 8g. *Calculate the percentage yield.* Percentage yield = 8/10 x 100 =80%

Using moles to balance equations (HT only)

The balancing numbers in a symbol equation can be calculated from the masses of reactants and products	*Convert the masses in grams to amounts in moles and convert the number of moles to simple whole number ratios.*

Chemical amounts are measured in moles (mol)	*Mass of one mole of a substance in grams = relative formula mass*	One mole of H_2O = 18g (1 + 1 + 16) One mole of Mg = 24g
Avogadro constant	*One mole of any substance will contain the same number of particles, atoms, molecules or ions.*	6.02×10^{23} per mole One mole of H_2O will contain 6.02×10^{23} molecules One mole of NaCl will contain 6.02×10^{23} Na^+ ions

Number of moles = mass (g) / A_r or mass (g) / M_r

How many moles of sulfuric acid molecules are there in 4.7g of sulfuric acid (H_2SO_4)?
Give your answer to 1 significant figure.

$\frac{4.7}{98} = 0.05$ mol ← (M_r of H_2SO_4)

Chemical equations show the number of moles reacting and the number of moles made	*$Mg + 2HCl \rightarrow MgCl_2 + H_2$* *One mole of magnesium reacts with two moles of hydrochloric acid to make one mole of magnesium chloride and one mole of hydrogen*	If you have a 60g of Mg, what mass of HCl do you need to convert it to $MgCl_2$? A_r : Mg =24 so mass of 1 mole of Mg = 24g M_r : HCl (1 + 35.5) so mass of 1 mole of HCl = 36.5g So 60g of Mg is 60/24 = 2.5 moles Balanced symbol equation tells us that for every one mole of Mg, you need two moles of HCl to react with it. So you need 2.5x2 = 5 moles of HCl You will need 5 x 36.5g of HCl= 182.5g

CHEMISTRY

Oxidation **I**s **L**oss (of electrons) **R**eduction **I**s **G**ain (of electrons)

HT ONLY: Reactions between metals and acids are redox reactions as the metal donates electrons to the hydrogen ions. This displaces hydrogen as a gas while the metal ions are left in the solution.

Ionic half equations (HT only)

For displacement reactions	***Ionic half equations show what happens to each of the reactants during reactions***	For example: The ionic equation for the reaction between iron and copper (II) ions is: **$Fe + Cu^{2+} \rightarrow Fe^{2+} + Cu$** The half-equation for iron (II) is: **$Fe \rightarrow Fe^{2+} + 2e^-$** The half-equation for copper (II) ions is: **$Cu^{2+} + 2e^- \rightarrow Cu$**

Reactions with acids

Reactions with acids	***metal + acid → metal salt + hydrogen***	**magnesium + hydrochloric acid → magnesium chloride + hydrogen** **zinc + sulfuric acid → zinc sulfate + hydrogen**

Acids react with some metals to produce salts and hydrogen.

Extraction using carbon

Metals less reactive than carbon can be extracted from their oxides by reduction.	For example: **zinc oxide + carbon → zinc + carbon dioxide**

Oxidation and reduction in terms of electrons (HT ONLY)

Reactions of acids and metals

Reactions of acids

Extraction of metals and reduction

Unreactive metals, such as gold, are found in the Earth as the metal itself. They can be mined from the ground.

AQA Chemical Changes 1

Acid name	Salt name
Hydrochloric acid	Chloride
Sulfuric acid	Sulfate
Nitric acid	Nitrate

Neutralisation of acids and salt production

sodium hydroxide + hydrochloric acid → sodium chloride + water

calcium carbonate + sulfuric acid → calcium sulfate, + carbon dioxide + water

Reactivity of metals

	Reactions with water	Reactions with acid
Group 1 metals	***Reactions get more vigorous as you go down the group***	***Reactions get more vigorous as you go down the group***
Group 2 metals	***Do not react with water***	***Observable reactions include fizzing and temperature increases***
Zinc, iron and copper	***Do not react with water***	***Zinc and iron react slowly with acid. Copper does not react with acid.***

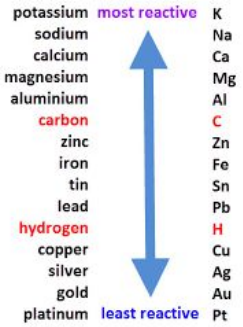
The reactivity series

Neutralisation	***Acids can be neutralised by alkalis and bases***	An **alkali** is a soluble base e.g. metal hydroxide. A **base** is a substance that neutralises an acid e.g. a soluble metal hydroxide or a metal oxide.

Metal oxides

Metals and oxygen	***Metals react with oxygen to form metal oxides***	**magnesium + oxygen → magnesium oxide** $2Mg + O_2 \rightarrow 2MgO$
Reduction	***This is when oxygen is removed from a compound during a reaction***	e.g. metal oxides reacting with hydrogen, extracting low reactivity metals
Oxidation	***This is when oxygen is gained by a compound during a reaction***	e.g. metals reacting with oxygen, rusting of iron

Metals form positive ions when they react	***The reactivity of a metal is related to its tendency to form positive ions***	The reactivity series arranges metals in order of their reactivity (their tendency to form positive ions).
Carbon and hydrogen	***Carbon and hydrogen are non-metals but are included in the reactivity series***	These two non-metals are included in the reactivity series as they can be used to extract some metals from their ores, depending on their reactivity.
Displacement	***A more reactive metal can displace a less reactive metal from a compound.***	Silver nitrate + Sodium chloride → Sodium nitrate + Silver chloride

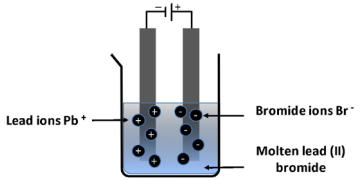


CHEMISTRY

Electrolysis

Process of electrolysis	*Splitting up using electricity* — When an ionic compound is melted or dissolved in water, the ions are free to move. These are then able to conduct electricity and are called electrolytes. Passing an electric current through electrolytes causes the ions to move to the electrodes.
Electrode	*Anode Cathode* — The positive electrode is called the anode. The negative electrode is called the cathode.
Where do the ions go?	*Cations Anions* — Cations are positive ions and they move to the negative cathode. Anions are negative ions and they move to the positive anode.

Extracting metals using electrolysis	*Metals can be extracted from molten compounds using electrolysis.*
	This process is used when the metal is too reactive to be extracted by reduction with carbon.
	The process is expensive due to large amounts of energy needed to produce the electrical current. Example: aluminium is extracted in this way.



Higher tier: You can display what is happening at each electrode using half-equations:
At the cathode: $Pb^{2+} + 2e^- \rightarrow Pb$
At the anode: $2Br^- \rightarrow Br_2 + 2e^-$

Electrolysis of aqueous solutions

The ions discharged when an aqueous solution is electrolysed using inert electrodes depend on the relative reactivity of the elements involved.

At the negative electrode	Metal will be produced on the electrode if it is less reactive than hydrogen. Hydrogen will be produced if the metal is more reactive than hydrogen.
At the positive electrode	Oxygen is formed at positive electrode. If you have a halide ion (Cl^-, I^-, Br^-) then you will get chlorine, bromine or iodine formed at that electrode.

AQA Chemical Changes 2

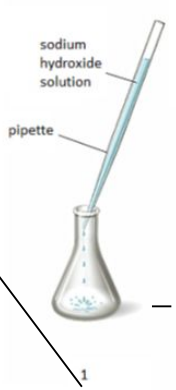
Reactions of acids

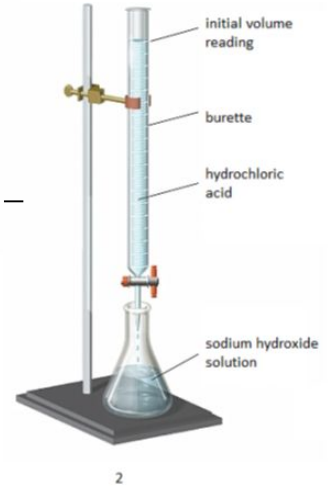
Strong and weak acids (HT ONLY)

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.*

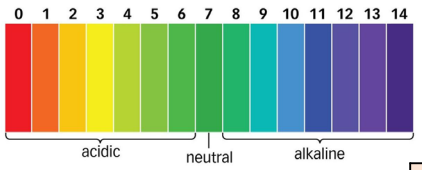
Soluble salts

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.*





The pH scale and neutralisation



You can use universal indicator or a pH probe to measure the acidity or alkalinity of a solution against the pH scale.

In neutralisation reactions, hydrogen ions react with hydroxide ions to produce water:
$H^+ + OH^- \rightarrow H_2O$

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

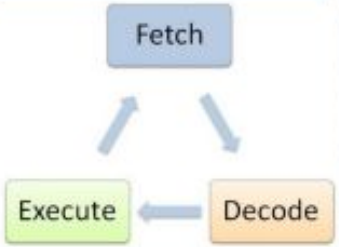
1.1 SYSTEMS ARCHITECTURE

KEY CONCEPTS

- Computer systems take data (input), process it and then output it.
- **Embedded systems** are computers built in to other devices like washing machines. They are dedicated to a single task so they are efficient.
- **Clock speed:** the number of instructions a processor can carry out per/second. Higher clock speed = faster CPU.
- Number of **Cores:** The more cores a CPU has the more instructions it can carry out at once (multitasking). More cores = faster processing.
- **Cache size:** A larger cache gives the CPU faster access to more data

FETCH – DECODE – EXECUTE CYCLE

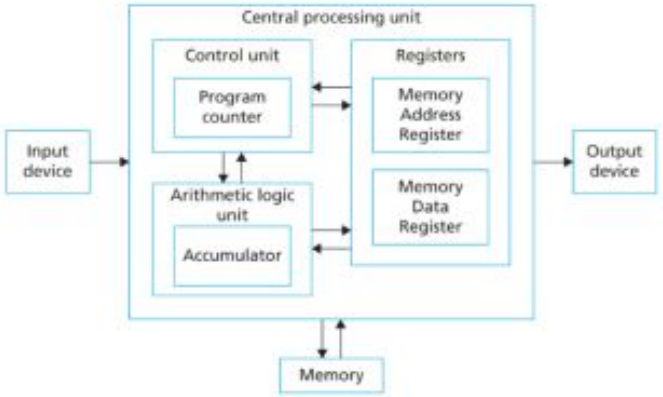
CPU **fetches** instruction from the RAM
(Copies memory address to MAR, copies
Instruction to MDR & adds 1 to PC.
CU **decodes** the instruction from the MDR
Instruction is **executed** by the CU
The next instructions is fetched and
The cycle repeats.



EXAM QUESTIONS

1. Explain how cache size, cores and clock speed affect the performance of the CPU.
2. Define what is meant by an embedded system
3. What is the purpose of the ALU?
4. Explain the role of the CPU registers (MAR and MDR)
5. Explain how the fetch decode execute cycle works

THE CENTRAL PROCESSING UNIT (CPU)



Control Unit (CU): executes instructions and controls the flow of data in the CPU.

Program counter: holds the memory address for the instruction of each cycle.

Arithmetic Logic Unit (ALU): does all of the calculations and logic operations.

Accumulator: holds the result of any calculations in the ALU.

Cache: very fast memory that stores regularly used data so that the CPU can access it quickly.

MAR (Memory Address Register): holds the address about to be used by the CPU.

MDR (Memory Data Register): holds the actual data or instruction being processed by the CPU.

COMPUTER SCIENCE

COMPUTER SCIENCE

1.2 MEMORY and 1.3 STORAGE

RANDOM ACCESS MEMORY (RAM)

- RAM is the computer's main memory that holds the data, programs and files while they are being used.
- RAM is volatile (power off = the data is lost)
- The CPU will fetch instructions from the RAM in the fetch – decode – execute cycle.
- When the RAM is full the computer uses **VIRTUAL MEMORY**. It uses the secondary storage as temporary RAM so that the computer can continue running (but slowly).

READ ONLY MEMORY (ROM)

- The ROM is on a chip build into the motherboard
- It contains the BIOS (boot up sequence for the computer)
- ROM is non-volatile (data still stored after power is off)

TYPES OF STORAGE

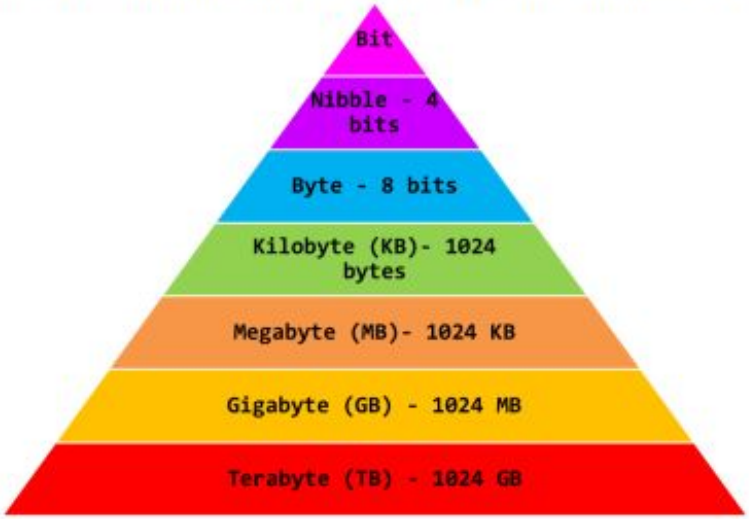
- Secondary Storage: where all data including the programs are stored when they are not being used.

Storage	Key Information
Hard Disk Drive (HDD)	Magnetic, has moving parts, large capacity, lower cost than SSD
Solid State Drive (SSD)	Flash memory, no moving parts, more robust than HDD, faster and more expensive than HDD
Flash memory	e.g. USB memory sticks, memory cards.
Optical Storage	e.g. CDs, DVDs. Cheap, portable and fairly robust.
Magnetic tape	Used for archive storage (backups). Very large capacity, low cost, slow.

Storage device comparison factors: speed, cost, durability, robustness, capacity and portability.

STORAGE CAPACITY

Some storage methods such as a HDD or SSD have a large capacity (they can store lots of data. Other devices such as CDs and SD cards have smaller capacity. Measurements of capacity are shown below:



1000 instead of 1024 could be used when doing your conversion calculations, because you will not be allowed a calculator in your exam.

EXAM QUESTIONS

1. Explain how the RAM works with the CPU in the fetch –decode – execute cycle
2. Explain the difference between volatile and non-volatile memory giving an example of each
3. Tom is buying a new laptop, he is not sure whether to get a magnetic HDD or SSD. Discuss the benefits and drawbacks of each.

2.2 PROGRAMMING TECHNIQUES

DATA TYPES

Data Type	Definition
String	Text eg: "Hello"
Integer	Whole number eg: 32
Float/Real	Decimal number eg: 1.2
Boolean	Two values eg: true or false
Character	A single character eg: b

VARIABLES AND CONSTANTS

Variable – A value which may change while the program is running. Variables can be local or global.

Local Variable – a variable which can only be used within the structure they are declared in.

Global Variable – a variable which can be used in any part of the code after they are declared

Constant – A value which cannot be altered as the program is running.

OPERATORS

Operator/Function	Definition
Exponentiation	Raises a number to a power eg: 2**3 OR 2 ^3 ($=2^3$)
Quotient/DIV	Gives the whole number after a division
Remainder/MOD	Gives the remainder part of a division
==	Is equal to
! or <>	Is not equal to
<	Is less than
>	Is more than

ARRAYS

One-Dimensional Arrays- this is like a list. In this example an array has been created called students. The list can hold 3 items (as shown).

```
array students [3]
students [0] = "Bob"
students [1] = "Dave"
students [2] = "Bob"
```

This command would print the second item (1) From the array. It would print "Dave".

```
print(students[1])
```

Two-Dimensional Arrays – these are lists within lists (like a table)

```
Grades=[["Bob", "22%", "44%"], ["Dave", "85%", "100%"]]
```

The code above creates the 2D array. The code Below would output:
"Bob's first test score was 22%"

	0	1	2
0	Bob	22%	44%
1	Dave	85%	100%

```
print("Bob's first test score was " + Grades [0, 1]
```

COMPUTER SCIENCE

COMPUTER SCIENCE

2.2 PROGRAMMING TECHNIQUES CONTINUED

PROGRAMMING CONSTRUCTS

A Sequence is when there are programming steps that are carried out one after another.

Selection is where there are different paths in your code eg: IF, ELIF, ELSE

Iteration is when there is repetition (loops) in code. This could be a WHILE loop (do something WHILE a condition is met) or a FOR loop (do something for a set number of times)

This count-controlled loop would print "Hello World" 8 times.:

```
for i=0 to 7
      print ("Hello")
next i
```

These condition controlled loops would check if a password's correct:

```
while answer != "letmein123"
      answer=input("Enter password")
endwhile
```

```
do
      answer=input("Enter password")
until answer=="letmein123"
```

STRING MANIPULATION

0	1	2	3
W	o	r	d

The characters in a string are numbered starting with position 0.

Function	Purpose
x.length	Gives the length of the string
x.upper	Changes the characters in the string to upper case
x.lower	Changes the characters in the string to lower case
x[i]	Gives the character in position i. Eg: x[2] = "r"
x.substring(a,b)	Gives the characters from position a with length b. Eg: x.subString(1,2) = or
+	Joins (concatenates) two strings together

FILE HANDLING

Myfile=openRead("myfile.text")	Opens the file in read mode
Myfile=openWrite("myfile.text")	Opens the file in write mode
Myfile.writeLine ("Hello")	Writes a line to the file
Line1=myfile.readLine()	Reads one line of the file
Myfile.close()	Closes the file
endOfFile()	Used to determine the end of a file

IF/ELSE AND SWITCH/CASE FOR SELECTION

IF ELSE

```
If choice == "a" then
   print("You chose A")
elseif choice=="b" then
   print("You chose B")
else
   print("Unrecognised choice")
```

SWITCH/CASE

```
Switch entry:
   case "A":
      print("You chose A")
   case "B":
      print("You chose B")
   default:
      print("Unrecognised choice")
```

Beginner's Python Cheat Sheet - Lists

What are lists?

A list stores a series of items in a particular order. Lists allow you to store sets of information in one place, whether you have just a few items or millions of items. Lists are one of Python's most powerful features readily accessible to new programmers, and they tie together many important concepts in programming.

Defining a list

Use square brackets to define a list, and use commas to separate individual items in the list. Use plural names for lists, to make your code easier to read.

Making a list

```
users = ['val', 'bob', 'mia', 'ron', 'ned']
```

Accessing elements

Individual elements in a list are accessed according to their position, called the index. The index of the first element is 0, the index of the second element is 1, and so forth. Negative indices refer to items at the end of the list. To get a particular element, write the name of the list and then the index of the element in square brackets.

Getting the first element

```
first_user = users[0]
```

Getting the second element

```
second_user = users[1]
```

Getting the last element

```
newest_user = users[-1]
```

Modifying individual items

Once you've defined a list, you can change individual elements in the list. You do this by referring to the index of the item you want to modify.

Changing an element

```
users[0] = 'valerie'
users[-2] = 'ronald'
```

Adding elements

You can add elements to the end of a list, or you can insert them wherever you like in a list.

Adding an element to the end of the list

```
users.append('amy')
```

Starting with an empty list

```
users = []
users.append('val')
users.append('bob')
users.append('mia')
```

Inserting elements at a particular position

```
users.insert(0, 'joe')
users.insert(3, 'bea')
```

Removing elements

You can remove elements by their position in a list, or by the value of the item. If you remove an item by its value, Python removes only the first item that has that value.

Deleting an element by its position

```
del users[-1]
```

Removing an item by its value

```
users.remove('mia')
```

Popping elements

If you want to work with an element that you're removing from the list, you can "pop" the element. If you think of the list as a stack of items, pop() takes an item off the top of the stack. By default pop() returns the last element in the list, but you can also pop elements from any position in the list.

Pop the last item from a list

```
most_recent_user = users.pop()
print(most_recent_user)
```

Pop the first item in a list

```
first_user = users.pop(0)
print(first_user)
```

List length

The len() function returns the number of items in a list.

Find the length of a list

```
num_users = len(users)
print("We have " + str(num_users) + " users.")
```

Sorting a list

The sort() method changes the order of a list permanently. The sorted() function returns a copy of the list, leaving the original list unchanged. You can sort the items in a list in alphabetical order, or reverse alphabetical order. You can also reverse the original order of the list. Keep in mind that lowercase and uppercase letters may affect the sort order.

Sorting a list permanently

```
users.sort()
```

Sorting a list permanently in reverse alphabetical order

```
users.sort(reverse=True)
```

Sorting a list temporarily

```
print(sorted(users))
print(sorted(users, reverse=True))
```

Reversing the order of a list

```
users.reverse()
```

Looping through a list

Lists can contain millions of items, so Python provides an efficient way to loop through all the items in a list. When you set up a loop, Python pulls each item from the list one at a time and stores it in a temporary variable, which you provide a name for. This name should be the singular version of the list name.

The indented block of code makes up the body of the loop, where you can work with each individual item. Any lines that are not indented run after the loop is completed.

Printing all items in a list

```
for user in users:
    print(user)
```

Printing a message for each item, and a separate message afterwards

```
for user in users:
    print("Welcome, " + user + "!")

print("Welcome, we're glad to see you all!")
```


COMPUTER SCIENCE

COMPUTER SCIENCE

Beginner's Python Cheat Sheet — If Statements and While Loops

What are if statements? What are while loops?

If statements allow you to examine the current state of a program and respond appropriately to that state. You can write a simple if statement that checks one condition, or you can create a complex series of if statements that idenitfy the exact conditions you're looking for.

While loops run as long as certain conditions remain true. You can use while loops to let your programs run as long as your users want them to.

Conditional Tests

A conditional test is an expression that can be evaluated as True or False. Python uses the values True and False to decide whether the code in an if statement should be executed.

Checking for equality

A single equal sign assigns a value to a variable. A double equal sign (==) checks whether two values are equal.

```
>>> car = 'bmw'
>>> car == 'bmw'
True
>>> car = 'audi'
>>> car == 'bmw'
False
```

Ignoring case when making a comparison

```
>>> car = 'Audi'
>>> car.lower() == 'audi'
True
```

Checking for inequality

```
>>> topping = 'mushrooms'
>>> topping != 'anchovies'
True
```

Numerical comparisons

Testing numerical values is similar to testing string values.

Testing equality and inequality

```
>>> age = 18
>>> age == 18
True
>>> age != 18
False
```

Comparison operators

```
>>> age = 19
>>> age < 21
True
>>> age <= 21
True
>>> age > 21
False
>>> age >= 21
False
```

Checking multiple conditions

You can check multiple conditions at the same time. The and operator returns True if all the conditions listed are True. The or operator returns True if any condition is True.

Using and to check multiple conditions

```
>>> age_0 = 22
>>> age_1 = 18
>>> age_0 >= 21 and age_1 >= 21
False
>>> age_1 = 23
>>> age_0 >= 21 and age_1 >= 21
True
```

Using or to check multiple conditions

```
>>> age_0 = 22
>>> age_1 = 18
>>> age_0 >= 21 or age_1 >= 21
True
>>> age_0 = 18
>>> age_0 >= 21 or age_1 >= 21
False
```

Boolean values

A boolean value is either True or False. Variables with boolean values are often used to keep track of certain conditions within a program.

Simple boolean values

```
game_active = True
can_edit = False
```

If statements

Several kinds of if statements exist. Your choice of which to use depends on the number of conditions you need to test. You can have as many elif blocks as you need, and the else block is always optional.

Simple if statement

```
age = 19

if age >= 18:
    print("You're old enough to vote!")
```

If-else statements

```
age = 17

if age >= 18:
    print("You're old enough to vote!")
else:
    print("You can't vote yet.")
```

The if-elif-else chain

```
age = 12

if age < 4:
   price = 0
elif age < 18:
    price = 5
else:
    price = 10

print("Your cost is $" + str(price) + ".")
```

Conditional tests with lists

You can easily test whether a certain value is in a list. You can also test whether a list is empty before trying to loop through the list.

Testing if a value is in a list

```
>>> players = ['al', 'bea', 'cyn', 'dale']
>>> 'al' in players
True
>>> 'eric' in players
False
```

Vocabulary of Voice

Monotone – One tone
Clarity – All words are audible and enunciated (said fully and clearly)

Volume – Loud or quiet
Accent – Changes in way you say words depending on where you live and/ or social class
Pace (speed), pause (stopping for a moment) and pitch (high or low)
Emphasis – making certain words stand out

Intonation – The rise and fall of the voice
Tone – the feeling in your voice

Component 1 Questions

What was your initial response to the stimuli and what were the intentions of the piece?
What work did your group do in order to explore the stimuli and start to create ideas for performance?
What were some of the significant moments during the development process and when rehearsing and refining the work?
How did you consider genre, structure, character, form, style and language throughout the process?
How effective was your contribution to the final performance?
Were you successful in what you set out to achieve?

Genre - a category or 'type' given to plays based upon the conventions used e.g. tragedy, comedy, farce and melodrama.
Structure –The arrangement of, and relationship between, the parts of a play e.g. scenes, acts and cyclical.
Character - a person portrayed in a drama, novel, or other artistic piece.
Form and style – Drama techniques
Language - Words

GCSE DRAMA – COMPONENT 1

Vocabulary of Physicality

Every – Eye contact: Looking at the audience or another performer
Friday – Facial expressions: using your face to express feelings
My –Movement: moving your body/ body parts from one place to another
Naughty – Non-verbal communication: communicating meaning without using words
Brother – Body language: using your body to communicate meaning
Puts – Pace (speed) and pause (stopping for a moment)
Grandma's – Gesture – the way you move your hands
Massive – Mannerisms: something someone does with face or body repeatedly
Slippers – Stillness: no movement

Sentence Stem

As a performer,
As a director,
As a designer,
Describe – to use drama words to create a picture of what you did/ saw.
When we/ I/ they ___ (link to "extract" and describe the drama).
Analyse – in depth understanding drawing out layers of meaning.
Evaluate – a well justified judgement.
This effectively communicates (explain/ analyse the drama with link to purpose/ intentions) to the audience.

Challenge: Vary evaluative word by identifying what it made the audience think and feel e.g. shocking.

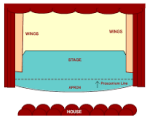
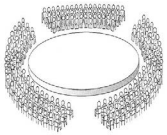
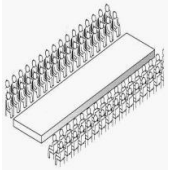
Self Quiz – LOOK, COVER, WRITE, CHECK & CORRECT

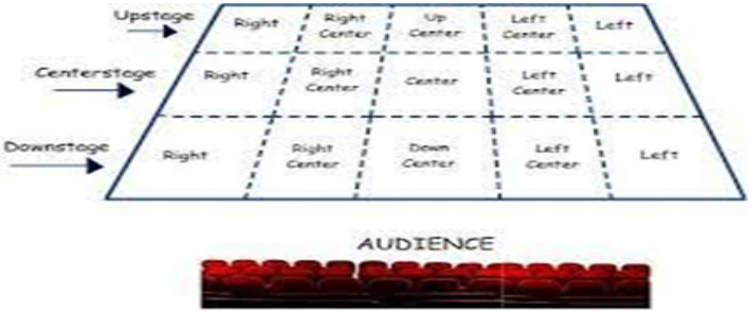
Use the acronym and mnemonic to help you remember key vocabulary and definitions.
Use the definitions to ensure you understand the questions you will answer in your portfolio.
Think about recent practical work, use the sentence stems to describe , analyse and evaluate the process and performance.

DRAMA

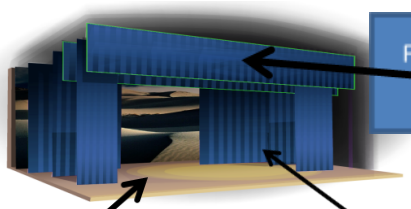
DRAMA

GCSE Drama – Theatre

Stage Type	What does it look like?	Advantages and disadvantages
Proscenium arch		Advantages: Excellent sight lines, excellent staging and set possibilities, traditional form of theatre. Disadvantages: Audience feel removed because of fourth wall, set can be limited to existing structure.
End on		Advantages: Excellent sight lines, more inclusive experience than PA for the audience. Disadvantages: Quite minimal so limits set
Thrust		Advantages: Audience have an immersive and inclusive experience, visually interesting. Disadvantages: sight lines and limited set and staging.
Theatre in the round		Advantages: Audience have an immersive and inclusive experience, visually interesting. Disadvantages: sight lines and limited set and staging.
Traverse		Advantages: Audience have an immersive and inclusive experience, visually interesting, audience can see each other Disadvantages: sight lines mean audience might see two different shows, limited set and staging.
Promenade		Advantages: Audience have an immersive and inclusive experience, locations can complement the work, an alternative theatre experience. Disadvantages: non-linear, fragmented plot, break intension.



Wooden flats create set walls.



Fly space is the area above the stage.

Traps are doors going under the stage floor.

Wings are the areas at the side of the stage.

Self Quiz: LOOK, COVER, WRITE, CHECK & CORRECT

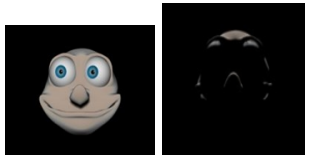
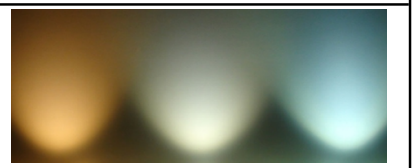
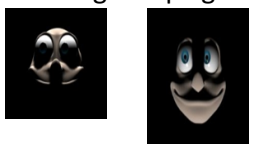
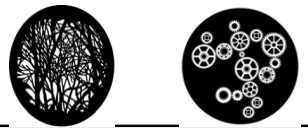
List the stage types and describe the audience position.

Identify advantages and disadvantages for both.

Draw and label a stage

DRAMA

Theatre Lighting

1. Lanterns and lighting states		2. Lighting and lighting angles	3. Colour and effects
Fresnel – A common lantern with soft edges. A series of fresnels can evenly cover the stage with light to create a 'wash'. Coloured gels can be used. Barn doors can be used to focus the light.		Front light Back light 	 Warm Neutral Cool
Profile – This lantern is long and thin and can be used to create spotlights. A shutter and gate mechanism allow control over the beam of light to sharp or soft edge. Gobos can be used with profile lanterns.		Down light Up light 	Coloured lighting **gels** 
Flood – This lantern produces a clear wide-angled light, but there's little control over the spread of the light. Coloured filters can be used with this lamp.		Side light 	Gobos create patterns 
Parcan produces a strong beam of light that is suitable for creating bold colours on stage. Par cans can be identified by their rounded shape. Coloured filters can be used with this lantern.		**Hand held lighting and pendant bulbs** hanging in fly space. 	**Strobes** rapidly pulse to create a special effect (for example to make the actors appear like they are moving in slow motion).

Keywords: lantern, lighting states, colour, intensity, soft focus, sharp focus, shadows, series, beam.

Self Quiz – LOOK, COVER, WRITE, CHECK, & CORRECT lanterns and lighting states table

1. List the reasons lighting is used in theatre.
2. Reflect on a theatre production you've seen. Can you identify the lighting used? What was the reason for this decision? What was the effect on the audience?

DRAMA

Context – what was happening at the time the play was written and set		Plot – the story	
1912	**1945**		
Edwardian era, or 'Golden Age', the time period in which the play is set.	Post WW1 (1914-1918) WW2 (1939-1945) Britain, the time in which the play was written and first performed.	**Act One**	The play opens with a celebratory dinner party. Sheila and Gerald are to be married and Birling and Company will work closer with Crofts Ltd.
The British Empire – A military power.	Britain suffered the effects of two world wars.		Birling holds court and begins to make a series of statements we, as the audience, know to be fallacious.
Britain was a global economic power however high exploitation of working classes.	Two recessions since 1912 resulted in economic instability for all, declining industry and high unemployment.		The Inspector enters and informs the party of the suicide of Eva Smith. Starting with Birling, he begins to interrogate the family.
Social Inequality Rigid social hierarchy benefitting upper classes. Little social mobility. No welfare state.	Increased power of working classes through trade unions (an organisation of workers who join forces and become an official organisation working to protect workers' rights e.g. fair pay and better working conditions). Trade unions grew in power in the early 19th century particularly after WW2.		The Inspector interrogates Sheila and the incident at Milward's is outlined.
Conservative and liberal domination in politics for two centuries.	The Labour Party won the General Election in 1924, 1929 and, overwhelmingly, in 1945.	**Act Two**	The Inspector focuses his line of inquiry towards Gerald and the name Daisy Renton is first introduced. Gerald's affair is exposed.
Support for working classes provided by charities.	Labour introduce the welfare state and the creation of the NHS (1945-48)		Mrs Birling recounts the request for financial assistance made by a pregnant 'Mrs Birling' and shows no remorse for the refusal that she herself orchestrated.
Gender inequality. Rigid, stereotypical gender roles. Men had more sexual freedom.	Increased gender equality. Gender roles are less distinct with more women in the workplace to take the roles previously filled by men before the war e.g. police officer. Women won the right to vote in 1928.		The Inspector, via a series of leading questions, induces Mrs Birling to say that the man responsible for the pregnancy should be punished and forced to take responsibility. Eric enters.
Deeply entrenched capitalist system.	More awareness of socialism.	**Act Three**	Eric tells of a series of liaisons and how he has stolen money from Mr Birling to support the mother of an unborn child.
Deeply entrenched inequality benefitting Tzars in Russia.	1917 – Russian revolution and the emergence of communist state.		The Inspector proportions the blame to each of the characters and performs his final speech.
Melodrama and musical comedies are popular for many.	AIC first performed in Russia in 1945 then London in 1946. British theatres bombed and damaged, relocated, opening and closing erratically. Musicals, detective thrillers, Shakespeare revivals and films are popular. Emergence of serious dramas exploring political and social issues. AIC had a mixed response from the audience.		The family squabbles and points fingers. Gerald re-enters to suggest the whole thing was a hoax. The old, and Gerald, take this as a cue to alleviate any responsibility whereas the young are repentant. The phone rings…

Dramatic techniques: Tension – a feeling of nervousness, anxiety and excitement; climax – build up of tension; cliff hanger - a dramatic and exciting ending leaving the audience uncertain and creating suspense; dramatic irony – audience aware of something the characters are not; foreshadowing – subtle hints or predictions of later action; symbolism – one thing meaning, or representing, another; didactic – telling/ teaching; status – power or position of a character; coup de theatre (a dramatically sudden action or turn of events); well made play (genre) – popular in 19th century taking the audience and characters on a journey from ignorance to knowledge ending with a return to order; morality play (genre) – allegorical play presenting a lesson about good conduct and character; detective thrillers or 'whodunnit' play (genre) – a detective story in which the audience is given the opportunity to engage in the same process of deduction as the protagonist in the investigation of a crime.

Daldry's production – You are pretending as a director/ designer that YOU ARE HIM and these are YOUR IDEAS. Do NOT reference him.			
Set description– naturalistic and symbolic	**Analysis**	**Lighting – real lighting and stage lighting**	**Analysis**
Doll's house on stilts. House opens up at front, steps down to stage floor, house tips and falls, furniture breaks, crockery shatters, performed on/ through wreckage.	Cloistered, unrealistic life of Edwardian upper classes. Reality and truth exposed; difficult, unsettling to face responsibility and a need for change; less distinct class and gender boundaries.	Priestley's lighting stage direction: "The lighting should be pink and intimate until the INSPECTOR arrives and then it should be brighter and harder." Fresnel lantern with soft pink gel, light from open fire, chandelier, table lamps, candelabra. Series of Fresnel lanterns creating a wash of strong, cold white light.	Cloistered, celebratory, comfortable, warm. Then harsh, difficult to hear, interrogation, exposing the truth and reality.
Cobblestones, rubble and debris on stage floor.	War time Britain - time written and first performed; the blitz.	Cyclorama projection: clouds moving, weather changing, night and day.	Creates atmosphere (pathetic fallacy) and sense of time passing.
Cyclorama projection: clouds moving, weather changing, night and day.	Creates atmosphere (pathetic fallacy) and sense of time passing.	Contrast between dimly lit, cool white light on stage with warm glow from doll's house	Contrast in social class, ignorant of the harsh reality of life for many in Edwardian Britain.
Telephone box tilted in stall box, street lamps and radio downstage.	All characteristics of 1940s Britain.	House lights in the auditorium come on for, 'Millions and millions of Eva Smiths…" speech.	Timeless message about equality and collective responsibility applicable for characters and audience.
Costume description	**Analysis**	**Props and stage furniture description**	**Analysis**
Birling men: typical Edwardian dinner dress for men, tail coats, dinner jacket, trousers, waistcoat, pristine white short and white bow tie.	Represents upper social class, wealth, privilege, cloistered, superior and detached.	Inspector's notebook, photograph of Eva.	Interrogation, control and omniscience.
Birling women: Typical Edwardian long evening gowns, satin, lace, beading, chiffon, burgundy, long white gloves, hair pinned up and jewellery (pearls, brooch).	Represents upper social class, wealth, privilege, colourised, superior and detached.	Glasses, cigar.	Represents upper class – social status, wealth, privilege.
Inspector Goole: Typical dress of 1940s, beige trench coat, modest 1940s brown suit and trilby.	From the future, generic class, 1940s a time of economic uncertainty after 2 world wars.	Mahogany dining furniture. Cut glass port glasses and decanter.	Represents upper class – social status, wealth, privilege.
Edna: Drab beige & brown, dress of 1940s, apron, scarf in hair.	A unique position, a servant of time but complicit with IG.	**Staging and stage space desc.** Doll's house centre stage. Family descends from doll's house for interrogation. Elements of 1940s downstage.	Self-importance, capitalism Hierarchy, facing reality, foreshadowing future. Moving forward, a need for change, audience in future.

Self Quiz: LOOK, COVER, WRITE, CHECK & CORRECT design description and analysis

1. Can you add another idea for set; lighting; costume; props and stage furniture; and, staging and stage furniture.

DRAMA

DT

ACCESS FM Analysing a Product

Aesthetics
Does the product look good?
Does it make good use of colour and texture?
What has inspired it's appearance? (E.g. is it organic? Is it industrial?)

Cost
What is the estimated cost of the product?
What is the retail price?
What is the relationship between the two?
Is the product affordable?
Does it offer value for money?
What is the product's cost in relation to the income of potential buyers/users?

Safety
How has the designer considered safety issues in the products design?
Think about the ways it is being used and how different parts have been joined together.
Are there any risk assessment issues in relation to the use of the product?

Size
Are the product's proportions appropriate for its use?
If you increased or decreased the products size, would it look or function better?

Customer
Who is the product designed for?
How and where would they use it?
What effect will it have on their lives and relationships?
Will it add value?
How is the product promoted to attract customers?
Has the designer considered how people will interact with the product?
Does the product target a particular age group or sector of people?
What assumptions have been made about the potential buyers/users?

Environment
What is the product's impact on the environment?
What happens to the product after use?
How long will it last?
What factors limit/lengthen its life span?
Can it be repaired? Can parts be replaced?
How easily can it be recycled?
Who would pay for the cost of recycling?

Function
Does the product do the job it was intended to do?
How does it work?
How easy is it to use?
What effects will using it have, including those beyond intended use and user?

Material
What materials are used to make the product and why?
Would another type of material work better?
What impact could the designers choice of material have on the environment?
Where do the materials and other resources needed for production come from?
Are they likely to run out?

Annotating Design Ideas

What do you like / dislike about the appearance?	How do you think this design appeals to your target user?	How is this design environmentally friendly / sustainable?	Have you labelled the design with measurements?	Are there any safety issues you need to point out?
What could you do to make this design look better?				What are the functions/features of this design idea?
What materials are you going to use to create this design?				Why have you chosen these materials?
What joints/fixings will be used to create this design?				How could you make this design safer?
What tools/machines/ processes could be used to create this?				Are there any functions / features you could add?
What could you do to make this design more sustainable?	What finishes would you apply to this design to achieve its appearance?	What could you improve about the design?	Why are you using the materials you have suggested?	How are you going to make sure it is accurate?

Evaluating and testing - Testing and evaluation should be continually carried out and used to modify a designer's ideas throughout the whole **iterative design** process

Client feedback - Have a clear idea of what the target users are looking for, initial ideas may have been misinterpreted

Target market feedback - Honest and critical feedback at the prototype stage can offer developments

Expert opinion - Professionals in industry can provide insightful and appropriate feedback

Analysing testing results - To record their findings, designers will take pictures and written notes from observations of users operating or wearing their product, as well as gathering users' opinions on this experience.

Qualitative data - is information that cannot be measured and is often based on opinion, for example favourite colour

Quantitative Data - is information that can be measured and written down with numbers, for example length

Face to face - **conversational interviews** give designers the chance to ask questions and help users form an opinion by offering options for new iterations

Against specification - This is where a specific list of **criteria** is written that a designer can follow as a set of rules. During the iterative design process, this specification should be referenced to and designs evaluated against it to ensure the final solution is the best fit.

What are you describing?

Line
Colour
Shape
Form
Pattern
Decoration
Surface
Texture
Space
Functional elements
Prototype
Features
Motion

harmony
balance
emphasis
neutral
integrated

Descriptive words

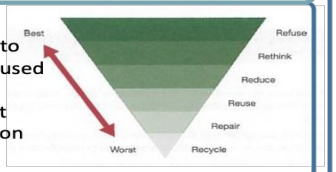
feminine - masculine
futuristic - nostalgic
elegant - not elegant
mature – immature
dynamic – static
simple – complex
streamlined – rugged
steady – unsteady
contemporary – traditional
avant-garde – conservative
formal – casual
delicate – rough
dazzling – ordinary
rational – emotional
reliable – unreliable
innovative – imitative
heavy – light
varied – monotonous
truthful – exaggerated
consistent – inconsistent

aggressive – submissive
old – young
cold - warm
comfortable – uncomfortable
excited – calm
strong - weak
soft – hard
organic - mechanical
smooth – sharp
flat – curved
straight - fluid
functional - ornamental
detailed - plain
volume/ bulbous/ bulging
unified
stylized
peculiar
rare
innovative/novel/radical
unity

Sustainability and the 6 R's

The 6 R's

The 6 Rs are an important checklist. They are used by designers to reduce the environmental impact of products. They can also be used to evaluate the environmental impact of other products.
The hierarchy of sustainability places the strategies that are best for the planet about those that have a greater negative impact on the environment.



1. Refuse

The first stage in the process is to ask whether the proposed product, part, purchase or even journey is required at all. Asking the question 'Is it really necessary?' can play a major role in reducing the demand on materials. Simply not using something saves 100% of what you have chosen not to use. Example include:

- Using your own carrier bag rather than purchasing a new one.
- Walking or cycling to school instead of being driven.
- Not using products such as some pesticides that are known to be harmful to the environment.
- Not eating (or using) products that are over-farmed, over-fished or on the endangered list.

2. Rethink

Consumers have a growing number of choices to make about where and on what they spend their income. Greener and more sustainable options are not always the cheapest or the best, but making informed decision and rethinking ones spending power can play a huge part in conserving resources.
Deciding on the design of a product, e.g. the materials being used in its production, will directly affect its sustainability. The types of questions designers need to ask are:

- Are the materials locally sourced?
- Are they sustainably produced?
- Is it essential to use this material, of which there is a finite supply?

By rethinking how the product is likely to be made, the product can often be redesigned in a more responsible way.

3. Reduce

Reduction is often the result of having re-thought a design or action. Materials and energy are saved due to efficient manufacturing practices and the use of clever design, incorporating sustainable materials.

- Modern materials that are lighter and stronger than traditional ones have contributed to the miniaturisation of products, saving material and energy in manufacture and use.
- Reducing the complexity or number of parts a product uses and reducing the number of different materials in a product makes recycling easier.
- In factories, schools and hotels, fitting motion sensitive lighting and smart heating systems can significantly reduce energy usage.
- Many large companies employ staff to conduct 'energy walks' to turn off unused appliances and lights and to ensure windows and doors are shut to conserve heat.

4. Reuse

Reusing products multiple times for the same purpose is also known as **primary recycling.** Reusing a product in a different way from the one it was designed for is known as **secondary recycling.**
The classic glass milk bottle is reused many times before it reaches the end of its useful life, as which point it is recycled. A plastic milk bottle, however, is intended to be used only one, although it can have many different subsequent uses.
Donating to and buying from charity shops extends the life of products and in recent years there has been a resurgence of in products having second lives, thanks to websites such as eBay, Freecycle or Gum tree.

ebay freecycle Gumtree

It is also becoming popular for furniture and other household items to be **upcycled** with a coat of paint and some minor repairs or adaptations, extending their useful life by many years.

5. Repair

Being able to repair a product when it is broken or worn is a way of extending its life and delaying the purchase of a new one. Repairing is a positive option over replacement as it means that only some parts of the product are replaced. This creates jobs for skilled people who conduct repairs and stimulates a spare parts market.
Unfortunately, repairing products has become harder over years. Growing number of products are not design to be repaired. There are a number of reasons why items may be designed this way, but it is usually because they are cheaper to replace than repair. Some products, especially modern electronic products, are designed to last only a few years as technology dates quickly and older products will be superseded by newer, faster, more efficient models. This is called **planned obsolescence.**

6. Recycle

Tertiary recycling, although a very important stage, is lower down the hierarchy of preferred options because most materials that are recycled this way tend to be of lower quality than the original material. It takes a lot of energy to recycle materials.
This form of recycling requires the reprocessing of the material and in many cases involves chemicals and/or heat to recover the recycled materials. In an ideal world, tertiary recycling would remove all recyclable materials from our household waste so that only biodegradable materials would be left. Only very few parts of the world are set up to cope with this level of processing.

7. Sustainability

Our planet has to provide all of our basic human needs, such as food, shelter and warmth.
Designers now have a much better understanding of which materials are sustainable and which are not. The general principle is that resources fall into two categories:
Finite resources – are ones which are in limited supply or cannot be reproduced.
Non-finite resources – are ones which are in abundant supply and are unlikely to be exhausted.

8. Recyclable materials

Once all useful and recyclable materials are removed, the majority of the remaining waste is organic matter and can be processed in one of two ways; **'Recover'** or **'Rot'**. Food waste and garden waste can be processed at a high temperature and turned into compost. The waste can also be buried in **landfill** sites where the resulting methane gas from the rotting matter is collected and burned and used to generate heat or electricity in the same way.

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Materials

1. Woods

Man-Made Woods

	Description	Uses
Medium density fibreboard (MDF)	•Has a smooth, even surface •Easily machined and painted •Available in water and fire-resistant form •Often veneered or painted to improve its appearance	•Furniture and interior panelling
Chipboard	•Made from chips of wood glued together with urea formaldehyde (glue) •Usually veneered with an attractive hardwood or covered in plastic laminate	•Kitchen and bedroom furniture •Shelving and general DIY Work
Plywood	•A very strong board, constructed of layers of veneer or piles, which are glued together with the grains at 90° to each other •Interior and exterior grades available.	•Furniture making •Boat building and exterior work
Hardboard	•A very cheap particle board •Can have a laminated plastic surface	•Kitchen unit and furniture back panels

Hard Woods

	Description	Uses
Oak	•A very strong, light-brown wood •Open grained •Very hard, but quite easy to work with	•High quality furniture •Beams used in building •Veneers
Mahogany	•Reddish-brown in colour •Easy to work with	•Indoor furniture •Shop fittings •Bars •Veneers
Beech	•A straight- grained hardwood with a fine texture •Light in colour •Very hard but easy to work with •Can be steam bent	•Furniture •Toys •Tool handles
Ash	•Open grained •Easy to work with •Pale cream colour, often stained black •Can be laminated (i.e. sliced into veneers which are glued together)	•Tool handles •Sports equipment •Furniture •Ladders •Veneers

Soft Wood

	Description	Uses
Pine	•Pale-yellow coloured with dark lines and a fine, even texture. •Medium in weight •Stiff and stable •Inexpensive	•Readily available for DIY work •Mainly used for constructional work and simple joinery •Furniture

2. Plastics

	Properties:
Acrylic	•Hard wearing •Will not shatter •Can be coloured •Bathtubs, School Projects, Display signs
Polypropylene	•High Impact strength •Softens at 150°C •Can be Flexed many times without breaking •School chairs, Crates
High Impact Polystyrene (HIPS)	•Light but strong •Widely available in sheets •Used for casings of electronic products
Polythene (LDPE)	•Weaker and softer than HPDE. •Lightweight •Carrier Bags + Squeezy Bottles
Polythene (HDPE)	•Stiff strong plastic •Used for pipes and bowls •Buckets
Urea formaldehyde	•Colourless plastic •Can be coloured •Door and cupboard handles, Electrical fittings

3. Material Properties

Strength
The ability of a material to stand up to forces being applied **without it bending, breaking, shattering or deforming in any way.**

Elasticity
The ability of a material to **absorb force and flex in different directions, returning to its original position.**

Ductility
The ability of a material to **change shape (deform) usually by stretching along its length.**

Malleability
The ability of a material to be **reshaped in all directions without cracking.**

Hardness
The ability of a material to **resist scratching, wear and tear and indentation.**

Toughness
A characteristic of a material that **does not break or shatter when receiving a blow or under a sudden shock.**

3. Metals

	Properties:
Aluminium	•Light Weight •Light grey in colour •Can be polished to a mirror like appearance •Rust resistant
Mild Steel	•Heavy •Dark grey in colour •Rusts very quickly if exposed
Stainless Steel	•Heavy •Shiny appearance •Very resistant to wear / rust.
Cast Iron	•Re melted pig iron with some quantities of other metals •Strong in compression. •Brittle
Copper	•Reddish brown metal. •Soft •Excellent conductor of heat and electricity
Brass	•Yellow metal •Hard •Alloy

4. Composites

Carbon Fibre	GRP Fibreglass
Expensive in comparison to other materials. Very good strength to weight ratio. Used in the manufacture of high end sports cars and sports equipment.	GRP is composed of **strands of glass which are woven to form a flexible fabric. The fabric is normally placed in a mould and polyester resin is added.** **Glass reinforced plastic is lightweight** and has **good thermal insulation properties.** It has a **high strength to weight ratio**

Papers and Boards

1. Paper

Type	Description and uses
Layout paper	• lightweight, thin white paper • used for initial ideas • takes colour media well • low cost
Tracing paper	• thin, translucent paper • making copies of drawings • high cost
Cartridge paper	• good quality white paper • available in different weights • general purpose work • can be used to make simple models • medium cost
Bleedproof paper	• smooth, hard paper • used with water-based and spirit-based felt-tip pens • medium cost
Grid paper	• printed square and isometric grids in different sizes • a guide for quick sketches and working drawings • low cost

2. Selection of materials or components

When selecting materials and components considering the factors listed below:

- Functionality: application of use, ease of working
- Aesthetics: surface finish, texture and colour.
- Environmental factors: recyclable or reused materials, product mileage.
- Availability: ease of sourcing and purchase.
- Cost: bulk buying.
- Social factors: social responsibility.
- Cultural factors: sensitive to cultural influences.
- Ethical factors: purchased from ethical sources such as FSC.

What is the FSC? http://www.fsc-uk.org/en-uk/about-fsc/what-is-fsc/fsc-principles

3. Boards

Type	Description and uses
Corrugated card	• strong and lightweight • used for packaging protection and point of sale stands • available in different thicknesses
Duplex board	• large foam-based board • different finishes available including metallic and hologrammatic • used for food packaging, e.g. take-away pizza boxes
Foil lined board	• quality cardboard with a aluminium foil lining • ideal for ready made meals or take away meal cartons • The foil retains the heat and helps keep the food warm
Foam core board	• very light, very stiff and very flat. • It has a white, rigid polystyrene foam centre, with smooth white paper laminated onto both faces. • It is easy to cut with a knife, a mount cutter or on a wall cutter • great for modelling
Ink jet card	• Has been treated so that it will give a high quality finish with inkjet ink • available in matt and gloss
Solid white board	• top quality cardboard made from quality bleached wood pulp. • used for hard backed books and more expensive items • excellent print finish

4. Paper and Boards- Stock sizes and weights

Paper and board is available in sizes from A0 (biggest) to A7 (smallest).
The most common size is A4.
Each size is half the one before, eg A4 is half the size of A3.
They are also sold by weight:
GSM – grams per square metre.

Card thickness or calliper is traditionally measured in **Microns**. 1000 **Microns** = 1mm, so the higher the value, the thicker the **card** or paper.

5. Properties of paper and boards.

Type	Weight or thickness	Uses	Relative cost (10= high)
Newsprint	50gsm	Newspapers	1
Layout Paper	60gsm	Sketches and tracing	3
Tracing Paper	70 gsm	Tracing	4
Sugar Paper	90gsm	Cheap mounting work	2
Inkjet/Photo paper	150-230gsm	Photos/Presentations	9
Board (Card)	230-750 microns	Model-making	5
Mount Board	230-1000 microns	Model-making, High picture quality mounting	9
Corrugated Card	3000-5000 microns	Packaging protection	5

7: KEY WORD FOCUS

You should be able to explain the meaning of each of these words by the end of this rotation.

GSM	Grams per Square Metre
Microns	Thickness of paper or card. 1000microns =1mm thickness

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Textiles

1. Fabrics

Natural Fabrics

Cotton	Soft, good absorbency, prints well, machine washable, strong breathable	Origins from the Cotton Plant.	Uses: Jeans, towels, Shirts, dresses, underwear
Wool	High UV protection, flameproof, breathable, durable insulating	Origins from Sheep.	Uses: Jumpers, Coat, blankets
Silk	Smooth, Soft, Strong	Origins from the silk worm.	Uses: Wedding dresses, lingerie.
Linen	Strong, cool in hot weather	Origins from the flax plant	Uses: Trousers, tops.
Leather/Suede	Strong, hardwearing, durable.	Origins from the skin of animals, mainly cows.	Uses: Jackets, Trousers, Shoes.

Synthetic fabrics

Polyester	Durable, wrinkle resistant, stain resistant	Uses: Shirts, jackets. Also used in safety belts, conveyor belts and tyre reinforcement.
Polyamide (Nylon)	Durable, high abrasion resistance	Uses: Sportswear, carpets.
Elastane (Lycra)	Stretchy, durable, high stain resistance	Uses: Sportswear, Swimwear, tights.
Viscose	Soft, comfortable, absorbent, easily dyed.	Uses: Dresses, linings, shorts, shirts, coats, jackets and outerwear.
Acrylic	Absorbent, retains shape after washing, easily dyed, resistance to sunlight.	Uses: Jumpers, tracksuits, linings in boots.

1. Fabrics

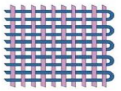
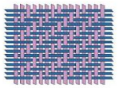
Blended and mixed Fabrics

These fabrics take on the positive characteristics of their combinations

Cotton/Polyester	Easy care and crease resistant	Uses: School shirts.

2. Fabric Construction

Woven

Plain Weave	Extremely strong and hard wearing	
Twill Weave	Extremely high strength and abrasion resistant.	

Knitted

Knitted fabrics	Stretchy, soft and comfortable.	

Non-Woven

Bonded Fabrics	These are webs of fibres held together by glue or stitches.	
Felted Fabrics	Felt is made by combining pressure, moisture and hear to interlock a mat of wool fibres.	

3. Care Labels


Washing Label- will usually have a max. temp number included


Hand Wash only


Do not wring out


Tumble Dry


Iron on low heat. The more dots the higher the heat setting

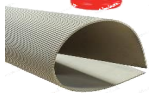

Do not bleach

Smart and Modern Materials

1. Modern Materials

1.Corn Starch Polymers – plastics that are **biodegradable** and not toxic to the environment. They are easy to recycle.

Name	Uses	Characteristics
Polylactic acid (PLA)	• Disposable food and drink containers • 3D Printed Items	• Smooth or textured finish. • Easy to Colour • Easy to mould • Fully biodegradable
Polyhydroxybutyrate (PHB) Biopol™	• Bottles • Pots • Disposable food containers	• Smooth or textured finish. • Easy to Colour • Easy to mould • Fully (but slowly) biodegradable.



2.Flexible MDF – Is made from wood pulp fibres in the same way as standard MDF, with the addition of grooves cut along the length of the board leaving about 2mm of the MDF intact which allows the MDF to become flexible.

3.Titanium – Pure titanium does not react with the human body and is used by the medical profession for artificial joints and dental implants. It has a high strength to weight ratio and has excellent corrosion resistance.

4.Graphene – thinnest material ever discovered, a million times thinner than a human hair, 200 times stronger than steel. It is transparent, impermeable and highly conductive.

5.Nanomaterials - Their use in electronics has helped miniaturisation whilst improving conductivity. IN the textiles industry, they have been used as protective coatings to improve water resistance and give UV protection.

6.Metal Foams - Porous metal structures, often made from Titanium and Aluminium use as little as 25% of the mass. This makes them extremely lightweight but retaining most of the properties of the base material.

2. Smart Materials

A material that reacts to an external stimulus or input to alter its functional or aesthetic properties.. They can react to heat, light, pressure, moisture and electricity.

Name	Stimulus	What it does?	Uses
2.1 Thermochromic pigments	Heat	Changes colour when heat is applied.	• Flexible thermometers • Temperature indicators • Novelty goods
2.2 Photochromic pigments & particles	UV Light (Natural Light)	Changes colour in sunlight/UV Light	• Transition Lens Sunglasses • Nail varnish • Clothing • Novelty goods
2.3 Shape memory alloy Nitinol	Heat or Electricity	Returns to original/pre set shape when heated to 70°C or electricity is applied.	• Glasses Frames • Fire Sprinklers • Dental Braces • Surgical Stents
2.4 Polymorph	Heat	Becomes mouldable by hand when heated to 62°C	• Personalisation of products • Repairs • Prototyping & Modelling
2.5 Quantum Tunnelling Composite	Pressure	Varies the amount of electrical current depending on pressure applied.	• Touch sensitive pads • Wearable technology • Variable speed controls
2.6 Piezoelectric Material	Movement , stress or electricity	Stress or movement produces electrical signal or ***vice versa.***	• Mobile phone speakers and microphones • Gas Lighters ignition spark
2.7 Litmus Paper	Levels of PH in substances.	Changes colour spending on chemical balance.	• Scientific experiments • Soil testing for gardener/farmers • Testing swimming pools and fish tanks

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New and Emerging Technologies

New technologies are those that are currently being developed or will be developed in the next 5 to 10 years, and which will alter the business and social environment.
Examples: **Fuel-cell vehicles** Zero-emission cars that run on hydrogen.

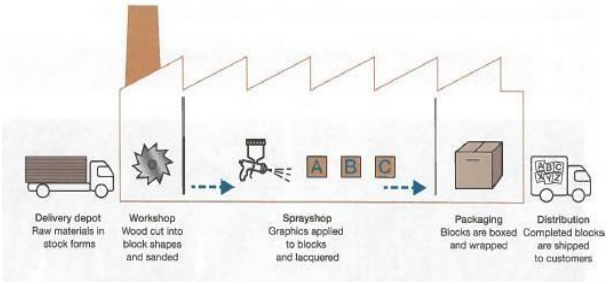
Additive manufacturing
The future of making things, from printable organs to intelligent clothes

Automation and the use of robotics

As industry has grown new and emerging technologies have changed the way designers, architects and engineers work.
Intelligent machines and robotics have replace machine operators and engineers.
The development of work now almost always involves the use of **Computer Aided Design (CAD)**.
This software can carry out complex tasks such as virtual stress testing this is called **Computer Aided Testing (CAT)**.
Designs can be produced to look 3D so customers can give opinions before **prototyping** begins.

Buildings and the place of work

The development of the internet has changed how data is transferred. This has lead to people being able to work together remotely (from different buildings or countries).
Projects can be sent to machines using **computer aided manufacturing (CAD)** techniques including **computer numerical control (CNC)** machines such as laser cutters and rapid prototyping (RPT) machines such as 3D printers.
Physical layout of buildings for production should be logical to increase efficiency. This will reduce unproductive time, movement and waste materials.
Here is an example of a simplified production line that might produce wooden blocks.



Enterprise

An idea that is developed into a business proposal for a product that has commercial viability.
Products developed in this way require a patent to protect the idea so that other companies cannot use it without permission this is called a registered trademark.

Co- operatives

A farm, business, or other organization which is owned and run jointly by its members, who share the profits or benefits.

Crowdfunding

Funding a project or venture by raising money from a large number of people who each contribute a relatively small amount, typically via the Internet.

Virtual marketing and retail

Virtual marketing the use of search engines positioning and ranking, banner advertising, e-mail marketing and social media in order to reach a wider audience to promote a product.

Fairtrade

Trade between companies in developed countries and producers in developing countries in which fair prices are paid to the producers.

People, Culture and Society

People

Consumer Choice

Growth of global manufacturing has lead to a wider variety of products being available, prices of products are kept low because of the wider competition.

Technology Push

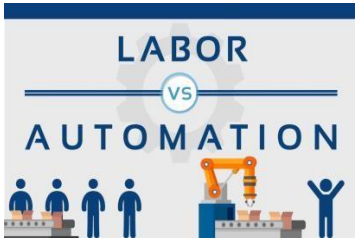
Advances in technology and science lead to the development of new products. Research and Development (R&D) Departments are used within large companies to ensure they can create new and exciting products.

1993 APPLE NEWTON PDA

1996 PALM SERIES

2012 SAMSUNG GALAXY

Advances in touchscreen technology



Society

Companies putting the environment and people before profit. Examples:

- Carbon Neutral Products
- Use of renewable materials
- Reduction of carbon emissions/greenhouse gasses
- Use of recycled materials
- Products designed to be 100% recyclable
- Promotion of Fairtrade
- Reduction of transportation
- Non profit organisations that reinvest money to support good causes
- Consideration to designing products for the elderly or disabled
- Consideration to different religious groups

4 main ways to consider the population when designing

Type of Production	Example
One size fits all	Door Frames Baths
A range of sizes to cover all	Shoes Clothes
Adjustability to allow use by all	Car Seats Shower head height
Adaptability to support location or user	Children's booster seats Car roof bars

Culture

A combination of ideas, beliefs, customs and social behaviours of a society or group of people.

Fashion and Trends

Designers developing products that are influenced by 'the latest thing'.

Faiths and Beliefs

Designers being responsible for the impact their design choices may have on a community.

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Production techniques

1. CAD – Computer Aided Design

Advantages of CAD	Disadvantages of CAD
Designs can be created, saved and edited easily, saving time	CAD software is complex to learn
Designs or parts of designs can be easily copied or repeated	Software can be very expensive
Designs can be worked on by remote teams simultaneously	Compatibility issues with software
Designs can be rendered to look photo-realistic to gather public opinion in a range of finishes	Security issues - Risk of data being corrupted or hacked
CAD is very accurate	CAD Software
CAD software can process complex stress testing	

2. CAM – Computer Aided Manufacturing

Advantages of CAM	Disadvantages of CAM
Quick – Speed of production can be increased.	Training is required to operate CAM.
Consistency – All parts manufactures are all the same.	High initial outlay for machines.
Accuracy – Accuracy can be greatly improved using CAM.	Production stoppage – If the machines break down, the production would stop.
Less Mistakes – There is no human error unless pre programmed.	Social issues . Areas can decline as human jobs are taken.
Cost Savings – Workforce can be reduced.	


Laser Cutter


Robots


Barcode Scanner


AGV – Automated Guided Vehicle

3: Production Techniques

3.1 Flexible Manufacturing Systems (FMS) : involves an assembly of automated machines commonly used on short-run batch production lines where the products frequently change.

3.2 Lean Manufacturing: It aims to manufacture products just before they are required to eliminate areas of waste including:

- Overproduction
- Waiting
- Transportation
- Inappropriate processing
- Excessive inventory
- Unnecessary motion
- Defects

3.3 Just In Time (JIT) : Items are created as they are demanded. No surplus stock of raw material, component or finished parts are kept.

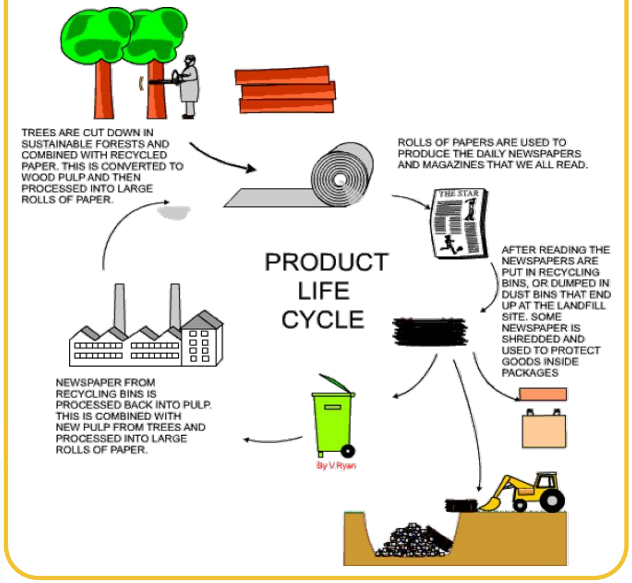
Advantages of JIT	Disadvantages of JIT
No warehousing costs	Reliant on a high quality supply chain
Ordered secured before outlay on parts is required	Stock is not available immediately off-the-shelf
Stock does not become obsolete, damaged or deteriorated	Fewer benefits from bulk purchasing

4. Scales of Production

One off: when you make a unique item
Batch: when you make a few/set amount
Mass: when you make thousands
Continuous: open ended production

1. **Planned obsolescence -** Planned obsolescence is when a product is deliberately designed to have a specific life span. This is usually a shortened life span.
2. **Design for maintenance -** Products are often designed to be thrown away when they fail... This can be achieved by designing products that can be repaired and maintained.
3. **Disposability** – Some products are designed to be disposable.

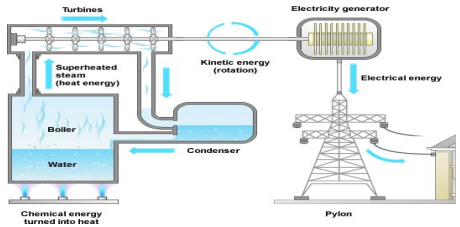
4. **Product Lifecycle -**



Energy systems

Energy Types

1. Fossil Fuels – Non-renewable energy

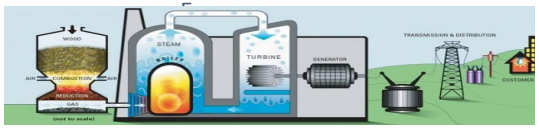


In a thermal power station fuel such as coal, oil or gas is burned in a furnace to produce heat - chemical to heat energy.

- this heat is used to change water into steam in the boiler.
- the steam drives the turbine - heat to kinetic energy
- this drives the generator to produce electricity - kinetic to electrical energy.

Some experts believe that fossil fuels will run out in our lifetime.

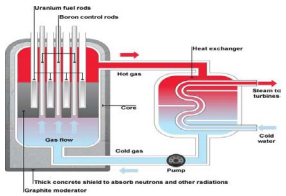
Energy Types 2. Biomass Energy –Renewable



Biomass is an industry term for getting energy by burning wood, and other organic matter. Burning biomass releases carbon emissions, but has been classed as a renewable energy source in the EU and UN legal frameworks, because plant stocks can be replaced with new growth.

3. Nuclear Energy – Renewable energy

Energy Types



The main nuclear fuels are **uranium** and **plutonium**. In a nuclear power station nuclear fuel undergoes a controlled chain reaction in the reactor to produce heat - nuclear to heat energy.

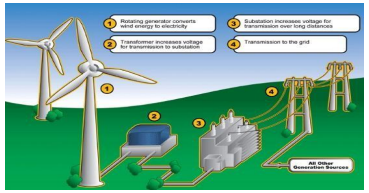
- heat is used to change water into steam in the boiler.
- the steam drives the turbine (heat to kinetic energy)
- this drives the generator to produce electricity - kinetic to electrical energy.

Energy Types

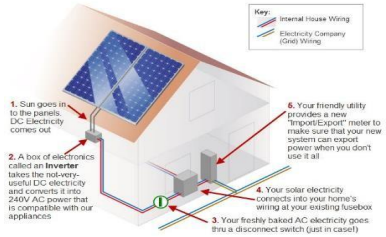
8.Batteries

Alkaline batteries are the most common type of domestic batteries, they are disposable but contain chemicals that are bad for the environment. Fortunately more and more battery recycling banks are appearing now where most of the battery can be reused. **Rechargeable batteries** are better for the environment and more economical in the long run (High initial purchase price). Their lifespan decreases with every charge.

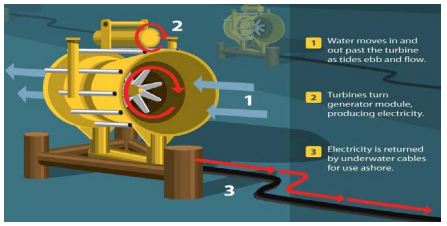
Energy Types 4. Wind energy



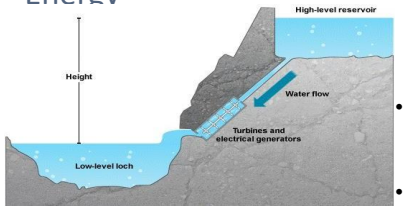
5. Solar Energy – Renewable Energy



Tidal energy



7. Hydroelectricity – Renewable Energy



- In a hydroelectric power station water is stored behind a dam in a reservoir. This water has gravitational potential energy.
- The water runs down pipes (potential to kinetic energy) to turn the turbine
- The turbine is connected to a generator to produce electricity (kinetic to electrical energy).

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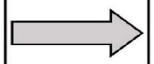
Mechanical devices

1: Mechanical Devices - Motion

There are four types of motion:

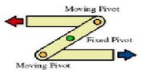
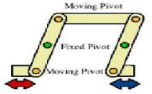
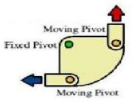
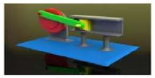
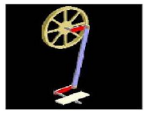
Linear Motion is movement in one direction along a straight line.		
Oscillating Motion This motion is similar to reciprocating motion, but the constant movement is from side to side along a curved path.		
Rotary Motion Examples of circular motion include a ball tied to a rope and being swung round in a circle		
Reciprocating Motion, this is repetitive up-and-down or back-and-forth linear motion		

2: Mechanical Devices – Levers

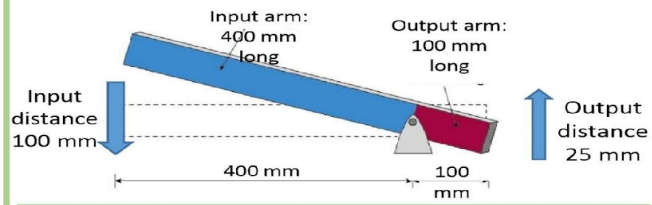
There are three classes of levers.

Class One A class one lever has its input on one side of the fulcrum and its output on the other.		
Class Two A class two lever has its input at one end of the lever, its output in the middle and fulcrum at the other end.		
Class Three A class three lever has its output at one end of the lever, its fulcrum at the other with its input in the middle.		

3: Mechanical Devices – Linkages

Reverse motion linkage	The reverse motion linkage changes the direction of the input motion so that the output travels in the opposite direction. If the input is pulled the output pushes and vice versa. It uses a central bar held in position with a fixed pivot (fulcrum) that forces the change in direction and two moving pivots which are connected to the input and output bars.	
Parallel motion or push/ pull linkage	The push/pull linkage maintains the direction of the input motion so that the output travels in the same direction. If the input is pulled the output is pulled and so on. It uses three linking bars, four moving pivots and two fixed pivots.	
Bell crank linkage	The bell crank linkage changes the direction of the input motion through 90 degrees. It can be used to change horizontal motion into vertical motion or vice versa. It uses a fixed pivot and two moving pivots.	
Crank and slider	The crank and slider linkage changes rotary motion into reciprocating motion or vice versa. It uses a crank which is held with a fixed pivot. A connecting rod uses two moving pivots to push and pull a slider along a set path.	
Treadle linkage	The treadle linkage changes rotary motion into oscillating motion or vice versa. It uses a crank which is held with a fixed pivot. A connecting rod uses two moving pivots and a further fixed pivot to create a windscreen wiper motion.	

4: How to work out a levers distance of travel



Output ÷ Input x Input distance = Output distance

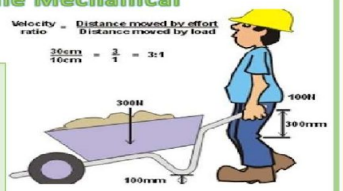
100 ÷ 400 x 100 = 25 mm

5: How to work out the Mechanical Advantage

Or use the following formula:

MA = Load / Effort = 300N / 100N = 3 / 1

This is written as 3:1 or just MA of 3

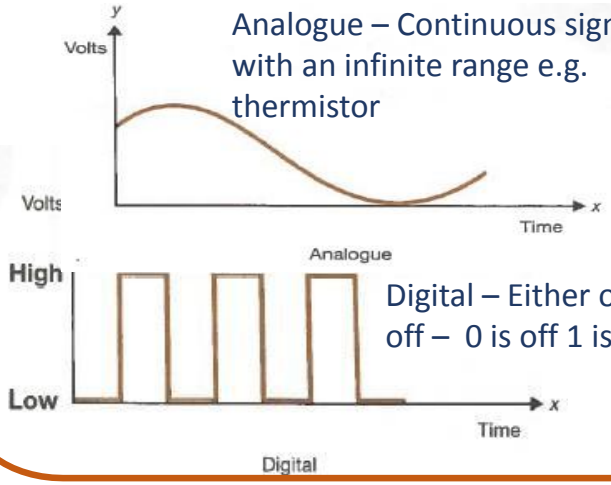


Electronic systems and processing

1. Processes

Components that process electronic signals and enable output devices to perform tasks. This is controlled by an integrated circuit (IC)
e.g. A microcontroller

2. Digital and Analogue Signals



Analogue – Continuous signal with an infinite range e.g. thermistor

Digital – Either on or off – 0 is off 1 is on

3. Counters

Counters – Keep count of how many times something occurs, output information to a **seven segment display.**

4. Programming

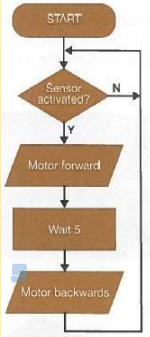
Micro controllers also called Peripheral interface controllers (PICs) can be programmed to perform differently by a computer.

Timers

Devices used to perform specific tasks. 2 types monostable and astable.

Monostable – output turned on for a set period of time e.g. Automatic doors

Astable – fluctuates between on and off – oscillating output e.g. Seat Belt alarm in a car



Start:

Decision: Has the motion sensor (PIR) connected to the input been activate

If NO, continue to wait for the PIR to be triggered by movement.

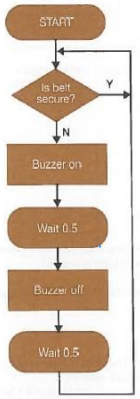
If YES, continue with the program.

Output: The motor turns on and opens the doors.

Process: Delay for 5 seconds; the motor is on long enough to open the doo and let people through.

Output: The motor turns on again in reverse and the doors automatically clo

The circuit loops back to the top awaiting the next trigger of the PIR.



Start:

Decision: Has the seatbelt been fixed into the seatbelt clip?

If YES, loop back to the start of the program.

If NO, continue with the program sequence.

Output: The buzzer turns on.

Process: Delay for 0.5 seconds; the buzzer stays on during this time.

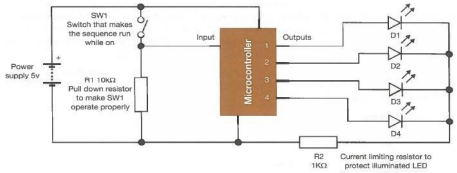
Output: The buzzer turns off.

Process: Delay for 0.5 seconds; the buzzer stays off during this time.

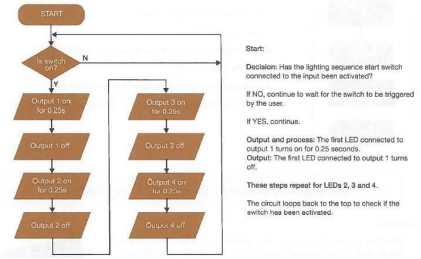
The circuit loops back to the top to check if the driver still has seatbelt unfastened.

5. Programming 2

Microcontrollers – How a microcontroller would control a bike light.



Program for the microcontroller to make LED's flash in sequence



Start:

Decision: Has the lighting sequence start switch connected to the input been activated?

If NO, continue to wait for the switch to be triggered by the user.

If YES, continue.

Output and process: The first LED connected to output 1 turns on for 0.25 seconds.
Output: The first LED connected to output 1 turns off.

These steps repeat for LEDs 2, 3 and 4.

The circuit loops back to the top to check if the switch has been activated.

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ECONOMICS

OCR GCSE ECONOMICS Paper 1: Introduction to economics Section 2.1 – THE ROLE OF MARKETS

KEY TERMS	
Specialisation	the process by which individuals, firms, regions and whole economies concentrate on producing those goods and services that they are best at producing.
Division of labour	Where workers specialise in one area of the production process.
Market	A way of bringing together buyers and sellers to buy and sell goods and services.
Market economy	An economy in which scarce resources are allocated by the market forces of supply and demand.
Factor market	Market where the services of the factors of production are bought and sold.
Product market	Market where final goods or services are offered to consumers, businesses and the public sector.

SECTORS OF THE ECONOMY

		
Primary	**Secondary**	**Tertiary**
The direct use of natural resources, such as the extraction of basic materials and goods from land and sea.	Where raw materials are manufactured into goods AND construction.	All activities in an economy that involve the idea of a service.
Farming, Mining, Fishing.	Manufacturing, Construction.	Banking, tourism, education, retail, accountancy

Summary of the UK Economy in terms of the importance of the sectors:

In 2020, the primary sector contributed around 0.58% to UK GDP.
17.04% came from the secondary sector.
82.8% came from the tertiary sector

	BENEFITS	COSTS
FOR A WORKER	• Increased skill – higher earning potential. • Increased job satisfaction • Increased standard of living.	• Boredom– monotony of doing the same thing every day • Deskilling – specialised workers may lose ability to do other jobs • Unemployment – if demand falls in the market or risk of replacement by robots
FOR WORKERS – CRUCIALLY DEPENDS HOW MUCH SKILL IS REQUIRED FOR THE JOB		
FOR A PRODUCER	• Higher output – total production will increase • Higher productivity – workers who concentrate on one task will become quicker at it • Higher quality – when firms focus on what they're best at • Economies of scale	• Dependency issues – only as strong as your weakest link • Workforce problems – workers may become demotivated and leave the job • Reliance on other firms to produce – can lead to supply issues • Diseconomies of scale
FOR A REGION	• Efficient use of resources • Job creation – work created near people's homes • Infrastructure development – to support an industry – e.g. Silicon Valley	• Over reliance on demand in one particular industry – could lead to unemployment • Resource's could be used up - unsustainable – e.g. Coal mining in UK • Competition from other areas in the same markets could lead to job losses
FOR A COUNTRY	• Increased employment • Increased international trade • Improved standard of living • Increased government revenue • Economies of scale	• Unemployment – as economy changes • Over-dependence – too narrow a focus on fewer products could lead to issues if demand falls in those markets • Over-exploitation – natural resources depletion • Negative externalities

OCR GCSE ECONOMICS Paper 1: Introduction to economics Section 2.2 and 2.3 – Demand and Supply

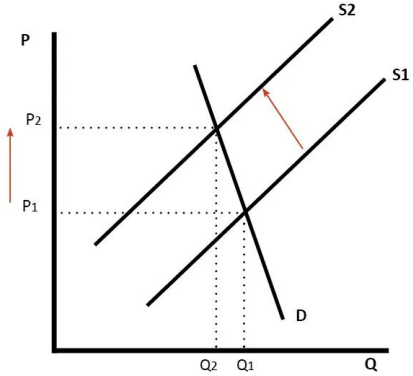
Key Words

Demand	The willingness and ability to purchase a good or service at any given price in a given period of time.
Law of Demand	This describes the negative relationship between quantity demanded and price, meaning that if price increases then demand falls.
Individual demand	The demand for a good or service by an individual consumer.
Market demand	The total demand for a good or service, found by adding together all individual demands.
Supply	The willingness and ability of firms to provide goods and services at any given price in a given time period.
Law of Supply	This describes the positive relationship between quantity supplied and price, meaning that if price increases then supply does too.
Individual Supply	The supply of a good or service by an individual producer.
Market Supply	The total supply of a good or service as a result of adding together all individual producers' supplies.

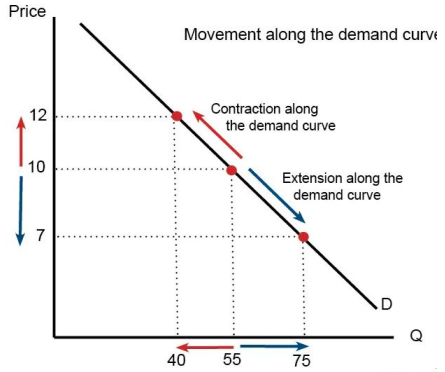
FACTORS AFFECTING:

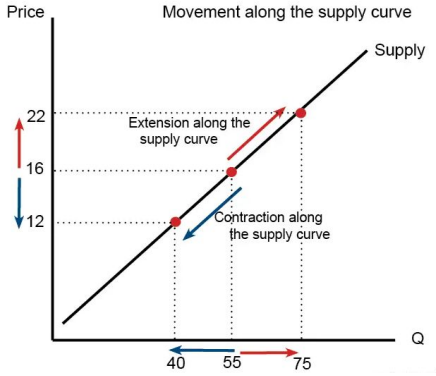
DEMAND	SUPPLY
Income	Costs of Production
Marketing	Taxes and Subsidies
Tastes and fashion	Technology
Substitutes and Complements	Climate
Government Policies	Number or Size of firms
Economic Situation	Government regulation
Price Expectations	

Demand curve shifting to the right ←



Supply curve shifting to the left ←



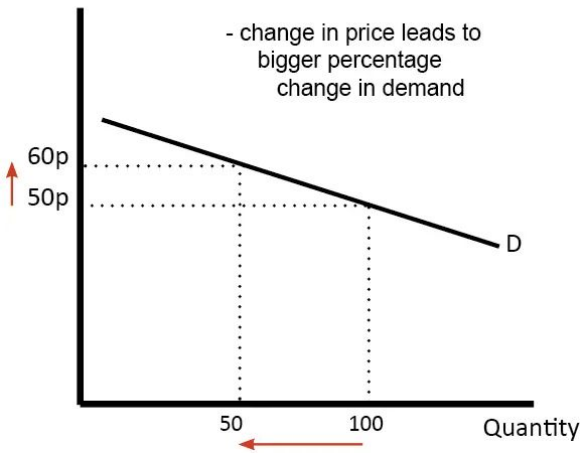


ECONOMICS

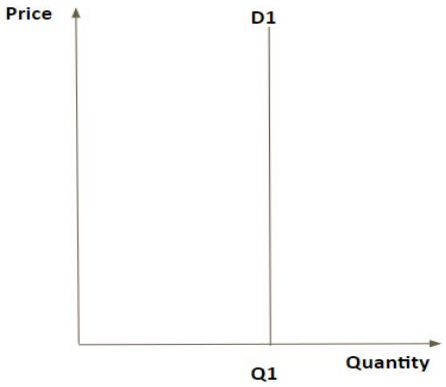
ECONOMICS

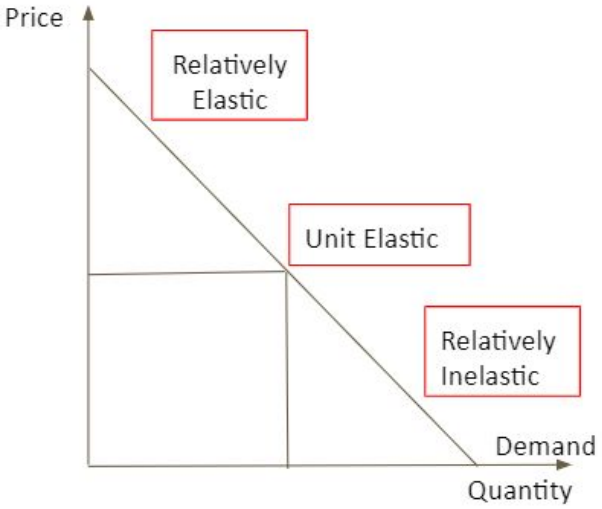
OCR GCSE ECONOMICS Paper 1: Introduction to economics Section 2.2 Elasticity of Demand

Elastic demand



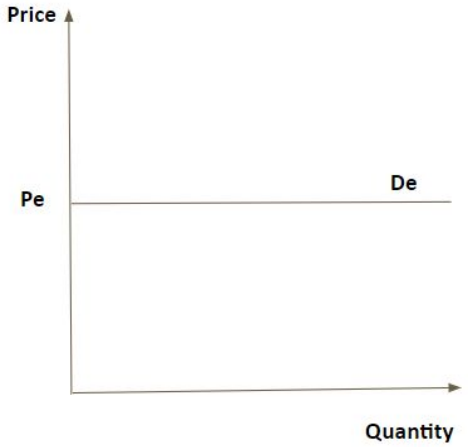
Perfectly Inelastic Demand





Inelastic demand

Perfectly Elastic Demand



$$\text{Price Elasticity of Demand (PED)} = \frac{\%\triangle \text{in Qd}}{\%\triangle \text{in P}}$$

$$\text{Income Elasticity of Demand (YED)} = \frac{\%\triangle \text{in Qd}}{\%\triangle \text{in Y}}$$

$$\text{XED} = \frac{\%\ \Delta \text{Qd of Good A}}{\%\ \Delta\ \text{P of Good B}}$$

OCR GCSE ECONOMICS Paper 1: Introduction to economics Section 2.2 Elasticity of Demand

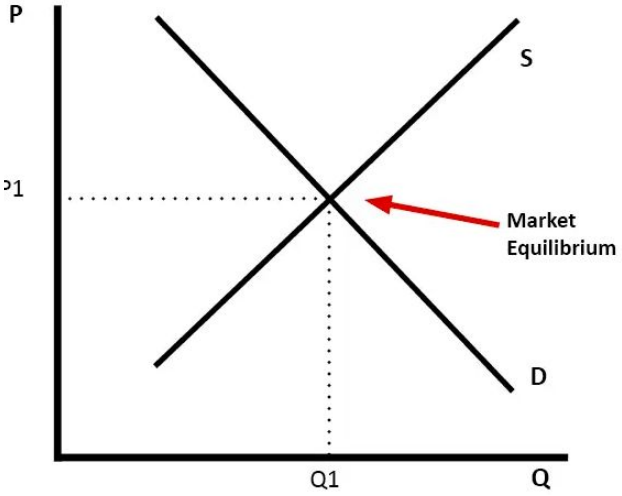
- **Price elasticity of demand (PED): Measures the responsiveness of quantity demanded to a change in the price of the product.**
- **Price elastic (PED): Value is between -1 and infinity** e.g. -5 = Very elastic (the higher the number = more elastic)
- **Price inelastic (PED): Value is between 0 and -1** e.g. -0.1 = very inelastic (the closer to 0 = more inelastic)
- **Unitary Elastic (PED): Value is -1** (perfectly proportional response to change in price, e.g. 10% rise in price = 10% fall in sales.
- **Perfectly inelastic (PED): Value is 0**
- **Total Revenue: Price (P) x Quantity (Q)**
- **Income Elasticity of Demand (YED):** A measure of the responsiveness of demand to a change in consumer incomes.
- **Normal good (YED):** The quantity demanded will increase as consumer income rises **(YED will be a positive number)**
- **Necessity (YED):** Necessity is a normal good with a **YED that is positive but less than 1**, e.g. 0.6
- **Inferior good (YED):** The quantity demanded will tend to fall as income rises. (**YED will be a negative number)**
- **Luxury good (YED):** A luxury good is a normal good with a **YED that is positive, and greater** than 1, e.g. 3.2
- **Cross elasticity of demand:** A measure of the sensitivity of quantity demanded of a good or service following a change in the price of some other good or service.
- **Substitute good (XED): Goods with a positive XED are substitutes,** since a rise in the price of Good A = Rise in demand of Good B
- **Complement good (XED): Goods with a positive XED are complements,** since a rise in the price of Good A = fall in demand of Good B

ECONOMICS

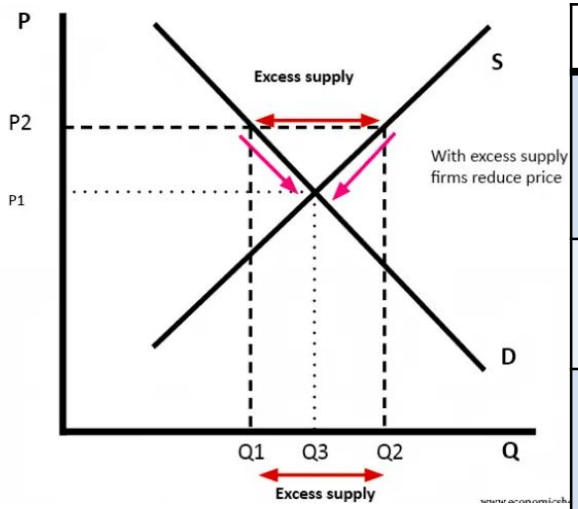
ECONOMICS

OCR GCSE ECONOMICS Paper 1: Introduction to economics Section 2.4 – Price

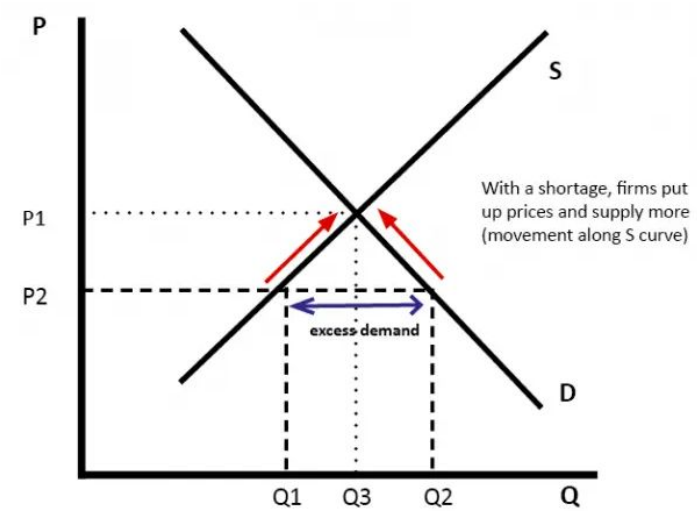
Market in Equilibrium



Market when the price is above equilibrium



Market when the price is below equilibrium



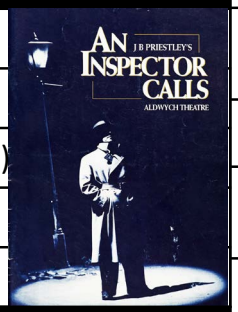
Key Words	
Price	The sum of money you have to pay for a good or service. It is determined by the interaction of supply and demand.
Equilibrium price and quantity	Where the quantity supplied exactly matches the quantity demanded.
Market demand	The total demand for a good or service, found by adding together all individual demands.
Allocation of Resources	How scarce resources are distributed among producers, and how scarce goods and services are allocated among consumers.
Determination of Price	The interaction of the free market forces of demand and supply to establish the general level of price for a good or service.
Market Forces	Factors that determine price levels and the availability of goods and services in an economy without government intervention.

Act	Plot
One	*The play opens with a celebratory dinner party. Sheila and Gerald are engaged and Birling and Company will work closer with Crofts Ltd. On the surface, the atmosphere is happy and light-hearted.*
	The ladies leave the men to have a 'man to man' chat. Mr Birling lectures Gerald and Eric that a man needs to look after himself and his family and not worry about the wider community.
	Inspector Goole enters and informs the party that he has come to investigate the suicide of a young working-class girl called Eva Smith. Starting with Birling, he begins to interrogate the family.
	After seeing a photograph, Birling admits that he used to employ Eva Smith but discharged her when she became one of the ring-leaders of a strike asking for higher wages. Birling refuses to take any responsibility.
	Sheila enters and the Inspector moves on to question her. When she is shown a photograph of Eva, Sheila admits that it was her fault that Eva was sacked from Milwards. She feels terribly guilty and responsible for Eva's death. When the Inspector states that Eva, in despair, changed her name to Daisy Renton, Gerald reaction reveals that he knew her too.
Two	*Gerald's affair is exposed: he confesses that he met "Daisy Renton" at the local Variety Theatre bar and 'rescued' her from Alderman Meggarty. Gerald ended the affair when he had to go away on business. Sheila hands back her engagement ring but respects Gerald's honesty. In contrast to her daughter, Mrs Birling is scandalised. Gerald leaves to go for a walk.*
	Inspector Goole now shows a photograph to Mrs Birling. She grudgingly admits that Eva had come to ask for financial assistance from the Brumley Women's Charity Organisation because she was pregnant. Mrs Birling was the chairwoman and persuaded the committee to turn down the girl's appeal because she had the impudence to call herself Mrs Birling.
	Mrs Birling shows no remorse for refusing to help Eva Smith. Mrs Birling denounces the father of the child, claiming it is his responsibility and that he needs to be made an example of. Sheila is horrified as she (and the audience) realises that Eric is involved. Eric enters.
Three	*Eric confesses his involvement with Eva Smith: he had met her in the same bar, had got drunk and had accompanied her back to her lodgings where he almost turned violent before she let him in. When she discovered that she was pregnant she refused to marry Eric because she knew he didn't love her, but she did accept gifts of money from him until she realised it was stolen - Eric admits that he stole the money from Mr Birling's office.*
	The Inspector delivers his message about responsibility then leaves. Mr and Mrs Birling are concerned about covering up their involvement, whereas Sheila and Eric are aware of the personal tragedy and feel guilty.
	The Birlings gradually begin to question whether the Inspector was real. Sybil and Arthur agree that it makes all the difference; Eric and Sheila disagree as even if he was a fake, what he's shown them is real.
	Gerald re-enters. He has also had suspicions and found out that there is no Inspector Goole on the police force, which Birling confirms with a phone call. The older Birlings, and Gerald, take this as a cue to alleviate any responsibility whereas the young are repentant and continue to protest that they need to learn a lesson about their responsibility.
	Then the telephone rings. Mr Birling answers it: an inspector is on his way to ask questions about the suicide of a young girl...

Character	
The Inspector	*A mysterious man who claims to be a police inspector. He is investigating the suicide of Eva Smith.*
Mr Arthur Birling	*A successful factory owner and head of the Birling family. He is well respected in Brumley.*
Mrs Sybil Birling	*Arthur's wife. She is Head of the Brumley Women's Charity and is obsessed with etiquette and her status in society.*
Sheila Birling	*The Birlings' daughter. She is in her early twenties and engaged to Gerald*
Eric Birling	*The Birlings' son. He is a secret alcoholic. He will inherit his father's business.*
Gerald Croft	*A wealthy aristocrat of around thirty, the son of Lord and Lady Croft, heir to Croft Limited, and engaged to Sheila Birling*
Eva Smith / Daisy Renton	*The victim of the play. We never see her. She might be lots of different girls – we can see her as a symbol, an 'everyman'.*
Edna	*The Birlings' parlour maid. She is the only working class woman on stage. She announces the Inspector's arrival.*

Key Themes

- Responsibility
- Social Class
- Age (the generation gap)
- Gender
- Inequality



Dramatic devices and terminology

Cyclical structure	Lighting
Stage directions	Dramatic irony
Props and costume	Cliffhanger
Symbolism	Entrances and exits

Vocabulary

Capitalist: a business person

Conservative: traditional values

Didactic: teaching (a moral lesson)

Dramatic irony: when the audience know something that the characters do not

Elitist: one who believes that society should be led by the upper classes

Empathetic: feeling / understanding for others

Euphemism: a soft word in place of a harsh one

Foreshadowing: a warning of a future event

Hierarchy: a society where people are ranked by status

Infantilize: treat like a child

Patriarchy: a society where men are in power

Socialist: one who believes in sharing of wealth in society

Social conscience: feeling responsible for others in society

Status quo: the existing state of things

Context

John B Priestley was born into a working class family in Yorkshire. Priestley was a **socialist** and concerned about social inequality in Britain. During WWII he broadcast a popular weekly radio programme which was cancelled by the BBC for being **too left wing**. Priestley supported the Labour Party.

The Edwardian era – the play is SET in Britain in 1912. Thought of as a 'Golden Age' because it was a period of peace and prosperity when Britain was powerful. In reality, there was a rigid social hierarchy and the lower and upper classes were very divided. Only men who owned property could vote – no women were allowed to vote, and there was little help from government for people in poverty.

Post-war values – the play was WRITTEN in 1945. Britain had become a more equal society – by 1928 all men and women over 21 could vote. The country had been through two world wars and a global economic recession (1930s) which increased unemployment and poverty. People from different classes had fought together in the war – there was now a desire for change and a strong sense of collective social responsibility.

Key historical dates –
1912 – The sinking of the Titanic
1914-18 – WW1 in which Priestley served
1917 – The Russian Revolution
1918 – Women over thirty /owned property were given the right to vote.
1928 – All men and women over 21 given the vote
1936 – General Strike
1939-46 – WW2
1945 – *An Inspector Calls* first performed in the Soviet Union (it was performed in Britain in 1946 at the New Theatre in London)
1945 - **Clement Attlee (**Labour) wins a landslide victory against Winston Churchill (Conservative) in the General Election
19 – Welfare state culminates in creation of the National Health Service

Morality Play – religious plays written in the Middle Ages which teach the audience how to behave and warn against the dangers of sin. Priestley makes his morality play secular by having the moral judge be a police inspector rather than God.

ENGLISH

ENGLISH

LP2 Q5

AQA English Language Paper 2 Section B

Overview: This task requires you to write an engaging article, speech or letter. The tasks are non fiction style but you can make up your facts and examples. You should make sure your tone and ideas are suitable for the audience you are writing for. The question will be on a similar theme to the texts you will look at in section A of the paper.

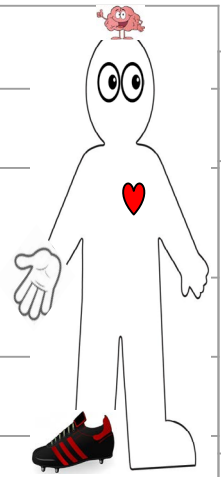
Marks available: 24 marks for content and organisation and 16 marks for SPaG accuracy.

How to revise: 1. Self quiz this knowledge organiser 2. Self quiz and practise using the AFOREST techniques 3. Plan and write your answers to these practice questions	'Cars are noisy, dirty, smelly and downright dangerous. They should be banned from all town and city centres, allowing people to walk and cycle in peace.' Write a letter to the Minister of Transport arguing your point of view on this statement. 'We should all have to give at least 10% of the money we earn to charity.' Write a speech for school arguing your point of view on this statement.

Grade 8-9 tips:

- Use a blend of persuasive devices and figurative devices.
- Try using humour and irony to create a convincing tone.
- Regularly read opinion pieces (or columns) in the news.
- Have one idea or image that you refer to throughout, or craft an extended metaphor.

Vocabulary	Meaning
unorthodox	Unusual
unquestionably	Definitely
ludicrous	Ridiculous
extraordinary	Unusual
nonetheless after all	In spite of
indisputably	without doubt
ideology	System of beliefs
status quo	The way things have always been
ethics	Rules about right and wrong
hypocrisy	Claiming to be one thing but doing the opposite (to be a hypocrite)
paradox	A contradictory statement
ambitious	Having desire to succeed
usurp	Take by force
treachery	Betrayal of trust



How to Structure your Writing: The Body Plan

Section	Techniques	Paragraph Starter
The **handshake**: A powerful introduction 	Direct address Refer to the purpose of the piece: *(readers / audience / name of the person if it's a letter')*	*Imagine a world where…*
The **brains** of the matter: Sound knowledgeable 	Facts and statistics The opinion of an expert	*Evidently, …*
Appeal to the **heart**: An emotive argument 	Emotive language Anecdote (personal or about a real/made up other person)	*Take (me / name of person) …*
Kick the opposing argument off the pitch 	Acknowledge the other side of the argument but state why your case is stronger	*While some people may say...*
Look to the future: Finish with a call to action 	Imperative language Refer to the purpose of the piece: *Readers, as you put down this magazine I want you to…* *Audience members. As you leave this assembly hall today I want you to…* *(Name of person) as you finish reading this letter I want you to...*	

AQA English Language Paper 2 Section A

THE BASICS

- In June of your Year 11.
- Paper 2 is worth 50% of your English Language GCSE.
- Section A Reading is worth 25% of your GCSE and takes 60 minutes.
- You will be given two nonfiction texts to read: one modern, one 19th century.
- They will be on a similar topic.
- Section B Writing is worth 25% of your GCSE and takes 45 minutes.
- You have four questions to answer in Sec+on A Reading.
- You should use a highlighter to help you with this paper.

QUESTION 1 - 4 MARKS
True or false?
What will the question look like?

Read lines 1 to 12 of Source A. Choose four statements below which are **true**:

A	Pandas are dangerous.	❍
B	Pandas eat human flesh.	❍
C	The man loves a panda.	❍
D	China is made of Pandas.	❍
E	We should do more to educate pandas.	❍
F	The panda was driving under the influence.	❍

- Be quick: it's only worth four marks.
- Read the questions and answers carefully: have you chosen the right lines?
- Have you spotted any trick questions? Running out of time? Have a guess and move on. You've nothing to lose.

QUESTION 2 - 8 MARKS
Summary of comparisons
What will the question look like?

Read Source A and Source B. Write a summary of the differences in the pandas' habitats in zoos and in the wild.

- Highlight the key focus of the question: they do not just ask for a general comparison.
- This is basically a fact-based comparison— not attitudes or ideas. Look for quotations which allow you to show your intelligence, not the obvious.
- Show layers of interpretations but do not bother with technical terms.
- The question could ask you to compare differences or similarities.

How do I write it?
One difference is in Source A… while in Source B…
For example, in source A is tells us "quote". This implies…
In Source B it tells us "quote". This implies… Another difference is…

(repeat).

QUESTION 3 - 12 MARKS
Language focus
What will the question look like?

Now look at Source B. Read lines 12 to 40. How does the write use **language** to make the zoo sound unpleasant?

- Highlight the key focus of the question: they do not just say "write about language".
- Highlight the techniques you can find which allow you to be able to discuss impressions, impact and connotations.
- Try to begin with word/meaning based points.

How do I write it?
To describe the zoo as …. the writer uses…
powerful verbs adjectives adverbs a simile repetition a list metaphor onomatopoeia

For example it says, "…..quote …."

(Zoom in on a single word) The word "…." suggests… implies.. makes the reader feel/think… because …

(repeat)

QUESTION 4 - 16 MARKS
Attitudes and methods comparisons
What will the question look like?

Compare the different attitudes to the topic in Source A and Source B.

- compare their attitudes
- compare the methods they use to present these attitudes

- Note down pairs of differing attitudes/feelings between the two sources; eg impressed/ disgusted, approving/shocked. They do not need to be opposites, just differences.
- For each pair, find language techniques and quotations to show how the writer communicates their attitudes/thoughts/feelings.
- This is the answer with the most marks in the Reading Section: it should be longer.
- The question could ask you to compare differences or similarities.

How do I write it?
One difference is that Source A has the attitude that… whereas Source B has more the attitude that…
For example, Source A tells us "..quote…"
This suggests… This implies … because…
(Repeat).

Examples of attitudes/ feelings impressed by.. concerned about… amused by… indignant about… shocked by… approving of… admiring of… critical of… frustrated by…

ENGLISH

FOOD PREP & NUTRITION

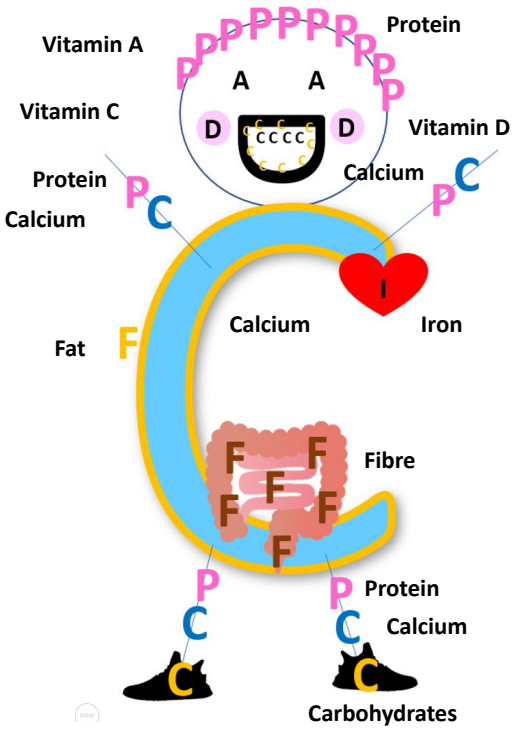
Year 10/Term 1

Food Preparation & Nutrition

Macronutrients: Nutrients that are needed in large amounts
Micronutrients: Nutrients that are needed in small amounts
Complementary Actions: Some nutrients need to work together for the body to utilise them fully. For instance **Vitamin c** is needed to **absorb iron** and **vitamin D** is needed to **absorb calcium**

Protein:
Proteins fall into 2 groups: HBV (High Biological Value) and LBV (Low Biological Value). HBV contain all the essential amino acids that the body needs whereas LBVs are missing more than one.

HBV: Meat, Diary, Fish, Eggs, Chicken, Quorn, Tofu, Soya
LBV: Chickpeas, Lentils, Nuts, Kidney beans, cereals (wheat, rice etc) and peas.



Try to remember the Nutrients person, when thinking about the functions of nutrients in the body

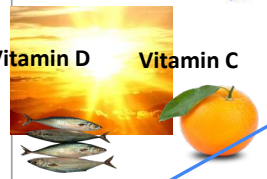
Vitamin A: needed to maintain healthy eyes & see in dim light.

Vitamin C: needed by the body to fight infections. Most fruit contains vitamin C, especially citrus fruits.

Needed also to absorb iron

Vitamin D: Needed by to maintain healthy skin

And needed to absorb calcium

Nutrient	Function	Source
Carbohydrates	-Broken into Starch and Sugar -Starch foods are called complex carbohydrates and release energy over a long period of time. -Sugar are called simple carbohydrate. They release energy quickly. Lactose, Fructose and Sucrose are all Sugars.	
Fibre	-Prevents constipation -Absorbs poisonous waste from digestive food -Stays undigested but helps move digested food through our system	
Protein	-Helps repair and grow new cells (muscles and body tissue) -Provides some energy	
Fat	-Insulates the body from the cold -Cushions your bones and organs from any damage caused by knocks. -Stores energy	
Vitamins	Unlike the other nutrients, they are only needed in small amounts. They are generally used to: -Controls chemical reactions -Keeping the body healthy and preventing some diseases linked to a poor diet -Regulate the function and repair of cells	
Minerals	Unlike the other nutrients, they are only needed in small amounts. They are generally used to: -Turn the food we eat into energy -Build strong bones and teeth - Control body fluids	
Water	-Our bodies are 65% water. It is vital for our body to stay hydrated. -Chemical reactions in our cells take place in water. -Waste products are passed out of our bodies in water. -Our blood transports substances that are dissolved in water. -Water is in sweat that cools us down	

Whole grain foods are high in **fibre.** It can also be found in the skins of fruits

Saturated fats = bad fats. Found in meat, dairy, processed and fried foods

Unsaturated fats = good fats.

Both should be eaten in small amounts as fat is energy dense

Iron found in red meat and spinach. Needed to create red blood cells.

Vitamin C is needed to absorb iron

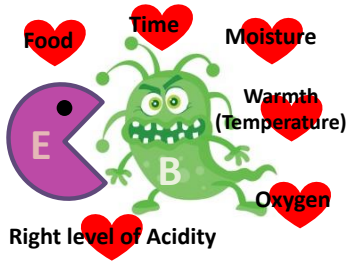
Calcium found in all diary foods. Needed to grow and maintain bones, teeth and fingers nails.

Vitamin D is needed so calcium can be absorbed

Year 10 | Food Preparation & Nutrition

Food Spoilage

When a food deteriorates in quality or becomes unsafe to eat it is called **spoiled.** This can happen through natural **decay** caused by **enzymes** or **bacterial contamination**. Both **enzymes** and **bacteria** need the right **conditions** to work. If these conditions are changed then the rate of food spoilage will change. Speeding up if in excess or slowing down if reduced.



*Above: **Conditions** needed to cause Food Spoilage **(FAT-TOM)***

When foods become spoiled they change texture, shape, taste and their aroma will become more pungent. Strawberries will become very soft, furry, they may start to grow fur, shrink in size whereas bread becomes dry and starts to grow mould

Bacteria: pathogenic micro-organism that can cause illness if consumed.

Enzymes: Biological catalysts in living things that speed up chemical reactions. Depending on the circumstance the chemical reaction could start the process of decay, ripening and also browning*.


Ripening


Enzymic Browning

***Enzymic Browning:** The discolouration (browning) in fruit and veg due to the reaction of enzymes with cut flesh (e.g half an apple) and oxygen.

Consider where would you store vegetables to make them last longer?

Food Poisoning: an illness that is caused by consuming food or water that has been contaminated by specific **pathogenic bacteria** (examples of which are below)

Campylobacter: found in raw poultry and meat, milk and untreated dirty water
E. Coli: found in beef (especially mince beef) raw milk (milk that has not been heat treated), dirty water.
Salmonella: found in raw and undercooked poultry, eggs and raw milk
Listeria: soft cheeses, cheese made from unpasteurised milk, salad vegetables and pates
Staphylococcus Aureus: found on people (especially on hands, nose, mouth, skin, in cuts and skin infections), raw milk, cold cooked meats and dairy products

Contamination: The transfer and subsequent presence of harmful bacteria or chemicals in food or preparation area. There are 4 types of contamination:

Biological Contamination: Any transfer of bacteria from human, animal or food to food or preparation area. Including sneezing, coughing, blood, pus/transfer of bacteria from animal to their food product -meat, eggs, milk/transfer of bacteria from unclean hands

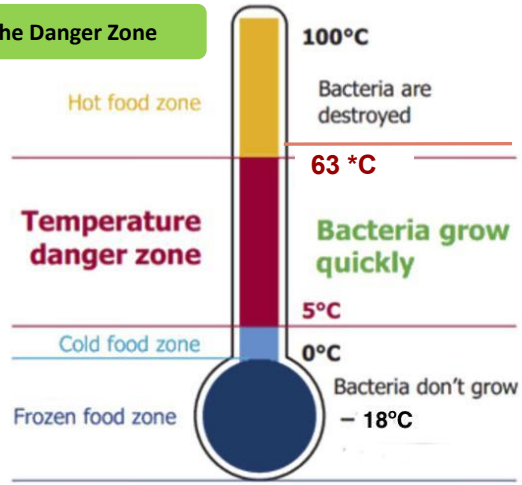
Cross contamination: is an example of biological contamination, it refers to the transfer of bacteria from raw meat to ready to eat foods

Physical Contamination: when a tangible object (you can see or feel) falls into food eg. hair, finger nails, plasters, plastic, dirt. Physical contaminants can act as vehicles to transfer of bacteria

Chemical Contamination: any transfer of chemicals eg, bleach, pesticides, cleaning product and perfume.

The Danger Zone

- The **temperature danger** zone is between 5*C and 63*C, when it is easiest for harmful bacteria to grow in food
- Minimise the time that food spends at these temperatures in order to keep food safe
-Refrigerated food needs to be kept at 5*C of below
- Hot food needs to be kept at 63*C of above



High Risk Foods

High Risk Foods are foods that have the idea conditions for the growth of bacteria. They often are high in protein and moisture. Preventing **cross contamination** is especially important when using high risk foods.

NB: The risk is reduced when food is cooked thoroughly however can return unless consumed or stored correctly. Think **FAT-TOM!**

FOOD PREP & NUTRITION

GEOGRAPHY

Paper 1: Coastal Management

Relief of the UK

Relief of the UK can be divided into uplands and lowlands. Each have their own characteristics.

Key

Lowlands

Uplands

Areas +600m: Peaks and ridges cold, misty and snow common. i.e. Scotland

Areas -200m: Flat or rolling hills. Warmer weather. i.e. Fens

Types of Erosion

The break down and transport of rocks – smooth, round and sorted.

Attrition	Rocks that bash together to become smooth/smaller.
Solution	A chemical reaction that dissolves rocks.
Abrasion	Rocks hurled at the base of a cliff to break pieces apart.
Hydraulic Action	Water enters cracks in the cliff, air compresses, causing the crack to expand.

Types of Transportation

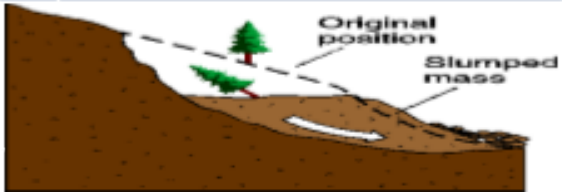
A natural process by which eroded material is carried/transported.

Solution	Minerals dissolve in water and are carried along.
Suspension	Sediment is carried along in the flow of the water.
Saltation	Pebbles that bounce along the sea/river bed.
Traction	Boulders that roll along a river/sea bed by the force of the flowing water.

Mass Movement

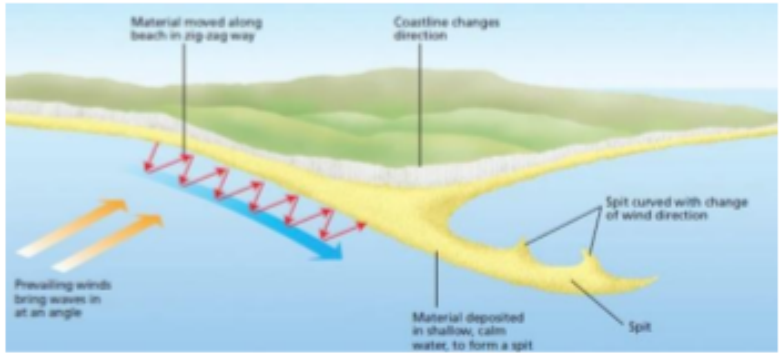
A large movement of soil and rock debris that moves down slopes in response to the pull of gravity in a vertical direction.

1	Rain saturates the permeable rock above the impermeable rock making it heavy.
2	Waves or a river will erode the base of the slope making it unstable.
3	Eventually the weight of the permeable rock above the impermeable rock weakens and collapses.
4	The debris at the base of the cliff is then removed and transported by waves or river.



Formation of Coastal Spits - Deposition

Example: Spurn Head, Holderness Coast.



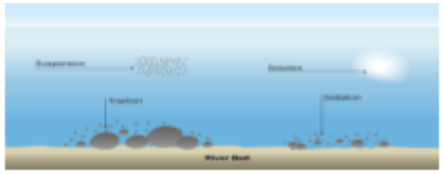
1) **Swash moves up the beach at the angle of the prevailing wind.**
2) **Backwash moves down the beach at 90° to coastline, due to gravity.**
3) **Zigzag movement (Longshore Drift) transports material along beach.**
4) **Deposition causes beach to extend, until reaching a river estuary.**
5) **Change in prevailing wind direction forms a hook.**
6) **Sheltered area behind spit encourages deposition, salt marsh forms.**

Paper 1: Coastal Management

Types of Weathering

Weathering is the breakdown of rocks where they are.

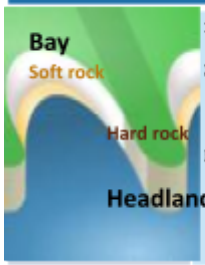
Carbonation	Breakdown of rock by changing its chemical composition.
Mechanical	Breakdown of rock without changing its chemical composition.



What is Deposition?

When the sea or river loses energy, it drops the sand, rock particles and pebbles it has been carrying. This is called deposition.

Formation of Bays and Headlands

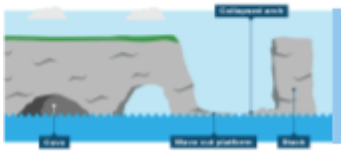


1) Waves attack the coastline.
2) Softer rock is eroded by the sea quicker forming a bay, calm area cases deposition.
3) More resistant rock is left jutting out into the sea. This is a headland and is now more vulnerable to erosion.

Coastal Defences

Hard Engineering Defences		
Groynes	Wood barriers prevent longshore drift, so the beach can build up.	• Beach still accessible. • No deposition further down coast = erodes faster.
Sea Walls	Concrete walls break up the energy of the wave . Has a lip to stop waves going over.	• Long life span • Protects from flooding • Curved shape encourages erosion of beach deposits.
Gabions or Rip Rap	Cages of rocks/boulders absorb the waves energy, protecting the cliff behind.	• Cheap • Local material can be used to look less strange. • Will need replacing.
Soft Engineering Defences		
Beach Nourishment	Beaches built up with sand, so waves have to travel further before eroding cliffs.	• Cheap • Beach for tourists. • Storms = need replacing. • Offshore dredging damages seabed.
Managed Retreat	Low value areas of the coast are left to flood & erode.	• Reduce flood risk • Creates wildlife habitats. • Compensation for land.

Formation of Coastal Stack



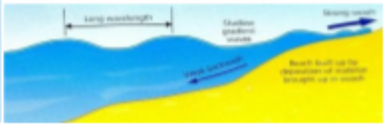
Example: Old Harry Rocks, Dorset

1) Hydraulic action widens cracks in the cliff face over time.
2) Abrasion forms a wave cut notch between HT and LT.
3) Further abrasion widens the wave cut notch to from a cave.
4) Caves from both sides of the headland break through to form an arch.
5) Weather above/erosion below –arch collapses leaving stack.
6) Further weathering and erosion eaves a stump.

Size of waves

- Fetch how far the wave has travelled
- Strength of the wind.
- How long the wind has been blowing for.

Types of Waves

Constructive Waves	Destructive Waves
This wave has a **swash that is stronger** than the backwash. This therefore builds up the coast.	This wave has a **backwash that is stronge** than the swash. This therefore erodes the coast.
	

How do waves form?

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

Longshore Drift

Swash brings sediment up the beach at the angle of the prevailing wind, backwash brings the sediment back down due to gravity.

GEOGRAPHY

GEOGRAPHY

Paper 2: The Global Pattern of urban change

Links: BBC bite size Oak National Global urbanisation

NEE Megacity case study: Rio de Janeiro

Location: South-east Brazil on Atlantic Ocean

Importance: UNESCO World Heritage Site, 2014 World Cup, 2016 Olympics

Population: 12.5 million (metropolitan area)**:**

Reasons for growth: Major industrial, commercial and tourist centre (jobs), healthcare, education, infrastructure e.g. water/electricity

Where are the migrants from?
Amazon basin (Brazil), South American countries, South Korea and China for new business opportunities, Skilled workers US & UK e.g HSBC

Opportunities: Formal employment e.g. services, informal employment e.g. street vendors

Challenges: Favelas (Rochina largest) Favella unemployment up to 20%, traffic congestion, air pollution, water pollution, 25% poorest children not in school

Solutions: new sewage works, Pacifying Police Units, Complex de Alemao (cable car), Favela Bairro Project

UK City: London

Importance: Capital of England, London Stock Exchange

Urban Regeneration: Stratford

De-industrialisation left it one of the most deprived communities in the country, where unemployment was high and levels of health were poor. Regeneration was part of a successful 2012 Olympic bid.

	2014	2021
Unemployment	9.4%	5.8%
Life expectancy	75.7(male) 79.8 (female	78.97 (male) 83.11 (female)
5 + good GCSE grades	62%	74%

Social: New school -Chobham academy, 10,000 new homes

Economic: 20,000 jobs by 2030 (few for local people though), Westfield, Here East

Environmental: Olympic park has replaced contaminated land and waterways. New bike lanes and walkways.

East Village: Sustainable housing development - green roofs, rainwater used for flushing toilets, CHP - Combined heat & power is 30% efficient, half of homes affordable

Urbanisation: increase in amount of people living urban areas such as towns or cities

Mega city: A city with a population of 10 million or more

Rural - Urban migration: the movement of people from rural to urban areas

Push factor: causes someone to want to leave a place e.g. natural disasters, war

Pull factors: attracts some to a place e.g. job opportunities, better education.

Natural increase: when birth rate exceeds the death rate

Regeneration: improving former industrial areas or housing to improve them

Gentrification: wealthier (mostly middle-income) people move into, renovate, and restore housing and sometimes businesses in inner cities or other deteriorated areas formerly home to poorer people.

Migrants in Britain, c800-present

Summary: The study begins c800 AD, with the arrival of Viking settlements in England, and continues with a survey of key migrant groups in the medieval period and the way that these groups helped to shape social, religious and government structures that persisted for centuries. The study then follows the impact of the Reformation and expansion of trade in the early modern period, when changes in religion and global connections made migration to England desirable for different reasons. In the eighteenth and nineteenth centuries, the impact of Britain's industrialisation and its growing empire led to the arrival of migrants from its colonies, and elsewhere. This movement continued into the twentieth century and was encouraged by the creation of the Commonwealth, government legislation following the Second World War and global events in the late twentieth and early twenty-first centuries. Each of these significant migratory episodes had an impact in Britain and this will be considered alongside the experiences of migrant groups.

Key concepts c800–c1500: Migration in medieval England

1: The causes for migration	Key factors impacting migration patterns: **Government** Anglo Saxon kingdoms were united under one government in 927 for the first time (the Kingdom of England). The Witan were the main council of advisers to Anglo Saxon rulers. These systems continued under the Normans after 1066. By 1500 England was governed by the monarch, his advisers and a parliament of Lords and Commons. This was only used when the monarch needed money or approval on an important law. **Economics and Trade:** Monarchs collected taxes England was rich in resources and its trading links with Europe grew in this period, making it more attractive for invaders and settlers **Religion:** Christianity had spread throughout England. People worshipped in churches, monks lived in monasteries and looked after the poor and the sick. By 1500 England was a Catholic Christian country and an important part of the Christian world (Christendom) **Attitudes in Society :** During this period England was a feudal country, meaning most people lived and worked on land owned by a wealthy and powerful lord or baron Most English people had no say in the law and lived in small villages where they worked on the land. Education was often limited and knowledge and understanding of the outside world was minimal
	Vikings: raided from 789, invaded and conquered to gain power, control and fertile land from agriculture. Arrived with the Great Viking army in 865 and eventually conquered and settled in the Dane Law Normans: Invaded in 1066 and were victorious under William the Conqueror at the Battle of Hastings. Jewish migrants: from 1070 onwards Jewish merchants were invited to lend money. They were exempt from the Pope's law that Christians could not charge other Christians interest on loans. They lent money to support castle building Low Country and Lombardy migrants: Rich Lombardian bankers arrived in the 1220s searching for profit. Weavers were invited in 1270 to boost trade.
2: The experience of migrants	Vikings - able to settle comfortably due to violent measures at first, and then the actions of King Cnut in allowing Anglo Saxons to keep positions of power Normas - settled successfully due to violence like in the Harrowing of the North, laws and systems such as the feudal system and the Forest laws Jews - settled comfortably at first due to their economic value, but were banished in 1290 after growing anti-semitism Low Country and Lombardians from Europe - settled comfortable due to economic value and impact on the cloth trade. Hanseatic League set up by North german Merchants. These groups were targeted due to economic jealousy in the 1380s
3. The impact of migrants	Vikings - impacted language, government/law. Introduced 'Things' and trials Normans - impacted language, landscape, land ownership - vital importance of the feudal system which fundamentally changed the structure of English society (kept key Saxon traditions but put Normans in charge Jewish loans supported monarchs (generated 8% of royal profit) and helped wealth to prosper (ending in 1290) Migrant Flemish weavers and merchants changed England's economy from primary to secondary, bankers from Lombardy made a trading centre
4. Case study	**The conquest**: York was built where two rivers meet, flowing out to the North sea - this made the town a very good location for trade. The rivers also meant there was a lot of fertile soil around for farming. The Vikings captured York in 866 and named the region Jorvik. **The settlement:** Before the Vikings York's population was around 1,000, however between 866 and 950 under the Vikings around 15,000 people migrated to York and it became an extremely multicultural city with Anglo-Saxons, Vikings, Irish, Scottish and Dutch people living all together. **Trade:** There were a huge amount of skilled tradesmen and craftsmen living in York, and archaeologists have discovered evidence of jewellery makers, potters, glassmakers, blacksmiths, metalworkers and many more. There were also people working in the mint, their job was to melt down silver and gold and making them into coins for trade. **Viking York and Anglo Saxon England:** Viking coins from Jorvik (York) have been found across England. In 927 the Anglo-Saxons took over York again, and there were ongoing battles for the next 27 years. Despite these ongoing wars and battles, the Anglo Saxons and Vikings seemed to have lived and traded quite happily together

Key developments

c800	Viking raids on the north coast of England
866	York captured by Vikings
878	Peace was agreed between the Saxons and Vikings, leading to the establishment of the Danelaw
1016 -1035	Viking King Cnut rules over England.
1066	Norman Conquest put the Normans in control of England
1070	William I invited Jewish merchants from Rouen to settle in England
1100–35	Henry I issued a Charter of Liberties, defining the privileges of Jews and their legal status as the property of the king
1190, 1244, 1255	Massacres of Jews in York, London and Lincoln
1266	Henry III granted a charter to German Hansa merchants, giving them a lot of control over the English wool trade
1290	Edward I issued an edict expelling Jews and encouraged Italian bankers to come to Britain
1370	The Black Death reached England, creating a shortage of workers and artisans, which created encouraging conditions for European migrants
1469	The Hanseatic merchants' trading area in London, The Steelyard, was attacked.

Key words

Migrant- a person who arrives from another place
Migration - the act of moving from one place to another
Settle - to stay and establish roots in a place
Conquer - to overcome and take control
Colonise - to settle and take control over
Anglo Saxon - people who migrated from Europe and lived in England from the 5th Century
Viking - people from Scandinavian countries (Norway, Sweden, Denmark) invaded England in the 9th Century
Fertile - land that is able to support the growing and farming of food
Succession - the process of deciding who should be the next king or queen
Normandy - An independent state in North West France
Diaspora - The scattering of a population that had once all lived together
Jewries - areas where Jews lived and worked together within a town or city
Black Death - A pandemic that killed nearly 60% of the population of England
Jarldom - a large area of land ruled by a Viking Jarl (King)
Things - regions and local meeting to settle criminal disputes and make laws
Danelaw - area of England that Vikings settled in and ruled

HISTORY

HISTORY

Key concepts: c1500–c1700: Migration in early modern England	
1 The causes for migration	**Huguenot** migrants were French protestants who were persecuted by Catholic France. Generally skilled workers with colleagues and friends in England **Palatine** migrant were poor farmers from Palatine and other German states - looking for work **Jewish** people came quietly back to England from 1656 having been invited by Oliver Cromwell **Africans** had been living in England since before 1500, some had escaped slavery, others had escaped Spain Most **Indian** immigrants were brought to England by the families with whom they worked in India, other were sailors who jumped ship when arriving in England
2 The experience of migrants	**Huguenot** settlement was successful because they had a range of useful skills. They joined businesses already in existence in England being run by family and friends **Palatines** had few useful skills so they were eventually transported to Ireland and America **Jews** were quietly settled in England and worked at a range of jobs from selling rags to high level banking **Gypsies** were feared and hated; laws were passed to try and keep them out of England **Africans** and Indians more often worked as servants (suffered from discrimination
3 Impact of Migrants	**Huguenots** skills in silk weaving boosted cloth trade; invested in bank of England and helped establish London as a major financial centre **Jews** were forbidden from entering many areas of work and so they concentrated on working as financiers and merchants **Dutch** migrant workers drained the Fens, creating thousands of acres of fertile land in the 1640s **Individual** migrants worked as artists in the royal courts, added words to the English language, wrote England history, printed books and changed fashion for rich people
4 Case studies	**Sandwich and Canterbury** both recognised that skilled Flemish and Walloon weavers could help its economy and trade Sandwich invited the Flemish, Canterbury later invited the Walloons These communities were very successful and improved trade in the area. They were allowed to set up their own churches and organise themselves There was some fear English businessmen would lose jobs to these groups. Because of this the Walloons in Canterbury created their own trades **Huguenots:** Huguenots settled and work in Soho and Spitalfields in London Huguenots silk weakening skills created work and prosperity Huguenot churches kept their culture alive, provided support and respectability

Key developments	
1511	An illustration shows John Blanke, a trumpeter, providing evidence of Black migrants as independent workers in England
1517	'Evil May Day' riots in London
1530, 1554, 1562	Royal proclamations issued about the status of Gypsies
1560s	Walloon migrants (from modern Belgium)
1560s-1570s	John Hawkins led several voyages transporting Africans to the Americas; Britain's growing involvement in the slave trade resulted in some enslaved Africans being brought to Britain
1600	East India Company founded
1642-1651	English Civil War
1620–1650s	Cornelius Vermuyden carried out major projects to drain and reclaim land in England
1656	Oliver Cromwell re-admitted Jews to Britain
1660	Royal Africa Company founded
1685	French Protestants, called Huguenots, had settled in England after the St Bartholomew Day Massacre in 1572 but the number of migrants increased after 1685, when Protestantism was banned in France

Key words

Feudal System - a system of of land lending that meant the monarch had total control over all levels of society
Anti-Semitism - Hostility to and prejudice against Jewish people
Hanseatic League - North German merchants who dominated commerce in Europe 13th-15th Century
Mint - a place that legally produces coins
Reformation - a movement that criticised and then eventually broke away from the Catholic church
Rabbi - A Jewish religious leader and teacher
Parish registers - a record of all the marriages, baptisms and deaths in an area
Lascar - Indian sailor
Royal Exchange - A centre of commerce for the City of London
National Debt - the amount of money a government has borrowed
Glorious Revolution - the removal of Catholic King James II, replaced by William Duke of Orange
Huguenots - French protestants
Palatines - Poor German protestants
Flemish - a group of people from the region of Belgium
Walloons - French speaking protestants from the Spanish Netherlands
Guild - an association of craftspeople and merchants who had power over what was produced in their industry
Protestant work ethic - the value attached to hard working
Spitalfields - an area of trade in East London

Key concepts: c1700–c1900: Migration in eighteenth- and nineteenth-century Britain	
1 The causes for migration	**Industrialisation** resulted in internal migration from rural areas to towns Many **catholics** migrated from Ireland became of bad land management which had led to famine and starvation By 1750 Britain was the dominant slave trading nation forcing over 3 million black Africans to slavery in the West Indies and North America **Jewish, Asian, German and Italian** migrants chose to go to Britain because it was a country where they felt safer and more able to use their skills British Empire **By 1900 Britain ruled one fifth** of the world's land and a quarter of the world's population Britain took control of **India** from the east India Company in 1858 Britain acquired a vast amount of land in **Africa** in the years after 1885 such as Egypt and Sudan Merchants in port cities like **Liverpool** became extremely rich from the trade of sugar - this was based on slave labour in the British colonies of the West Indies
2 The experience of migrants	Thousands of migrants in British cities lived in overcrowded, unsanitary tenement buildings. Poor Irish migrants worked as navvies and labourers. **Many Jewish migrants worked in sweatshops. Until emancipation, Jews were not allowed to join Parliament.** Some black Africans who had fought for the British in the American Civil War were deported to Sierra Leone. The J**ames Somerset case e**stablished no enslaved person could be taken from Britain and sold Asian **ayahs and lascars** were often abandoned in Britain by those who brought them to the country European Germans and Italians found different ways of making a living and generally settled well
3 The impact of migrants	Black African played a large part in bringing about the **abolition** of the slave trade in 1807 Irish and Italian navvies dug **roads and canals and built docks and railways** Jewish migrants established successful **retail** outlets such as Marks & Spencers Germans helped set up successful **industrial** companies. Italians brought street music and street food to britain Individuals such as Marx, Engels and Reuter created new **ideas** and **businesses**
4 Case studies	**Liverpool** Largest and most successful ports in the world, cotton industry and trade with America made it very profitable Irish migrants arrived after famines, some to go to America, some to settle in liverpool Liverpool life was tough but Irish migrants built a strong community and legacy Growing trade links meant sailors from india, China and Africa became common in the city, migrant communities developed bringing their own cultures to the city **East End Jews** Thousands of EE Jews arrived in crowded East End 1890-1900 particularly Whitechapel and Liverpool Much of the area was slum housing, little sanitation and poor working conditions, unions were against sweatshop labour Hostility towards Jews grew especially with the hunt for Jack the Ripper

Key developments	
1709	German Palatine migrants settled temporarily near London
1789	Olaudah Equiano published his autobiography
1807, 1833	Legislation: abolition of slave trade (1807); abolition of slavery (1833)
1815-1858	Jewish Emancipation Acts
1829	Catholic Emancipation Act
1840s	Railway mania involving extensive construction of railway lines Famine in Ireland
1880s	Many Jews settled in the East End of London, often seeking refuge in response to pogroms in Russia

Key words

Industrialisation - the development of industries in a country on a large scale (mass production in factories)
Agriculture - farming crops or livestock
Refugees - people feeling war, conflict or persecution in another country
Transatlantic slave trade - the trade of enslaved people from West Africa to the Americas and crops to Britain
Famine - when there is little or no food
Steam power - heating water to create power
Urban - relating to a city or large town
East India Company - private trading company that first opened the trading route between Britain and India
Slums - informal housing, often of a very poor quality
Relief - help given to poor people
Tenement - a run down and overcrowded building
Navvies - the mean who dug canals and built railways
Fenian - a member of the Irish Republican Brotherhood who wanted independence from Britain
Sweatshop - a place where people worked long house in poor conditions
Abolitionist - people who campaigned to abolish the slave trade
Chartist - a working class movement aiming to gain political rights
Capitalist system - an economic system based on private ownership and profit
Communism - a system where all property is owned by the community and each person contributes according to their ability and receives according to their needs

HISTORY

HISTORY

Key concepts: c1900–present: Migration in modern Britain	
Causes of Modern Migration	**Parliament**:Some women were given the vote in 1918, all women were given equal voting rights with men from 1928 1948 parliament created the NHS - a free service paid for by taxation Legislation was passed protecting workers' rights e.g. Equal Pay Act 1970 and Equality Act 2010 Legislation regarding nationality and migration was passed fiving greater legal rights and protection e.g. Aliens Act 1905 and Race Relations Act 1965 1975 Britain joined the EU allowing greater freedom of movement from Europe to the UK. Britain left in 2016 **Industry**: World wars changed the demand on production and supply in Britain to keep the army equipped During WWII ports and factories needed rebuilding after bombing. Aeroplanes and turbine ships made moving from country to country easier. In 1980s many coal mining and ship building businesses closed because they couldn't compete with the cheap labour in other countries **British Empire:** Soldiers from across the Empire fought on the side of Britain in both world wars. After WWII the countries of the British Empire gained their independence. British Commonwealth was set up in 1926 - The Commonwealth had 54 member states and was seen by some as a 'family' **Media and public attitudes:** In 1900 Britain's population was largely white British, by 2000 most cities in Britain had become far more multicultural, with migrants groups playing a very central part to life there Increased migration and presence of migrant groups often led to a hostile reaction to change and far right, anti-immigrant parties like the National Front gained support Many welcomed migrants, but for many migrants prejudice and racism was part of everyday life National newspapers and television became a huge part of everyday life and had a vast impact on shaping public opinion. Many felt that parts of the medica encouraged feelings of hostility and suspicion, however many in the media campaigned against prejudice
Reasons for Migration	**War, Persecution as well as government action and the changing context of British society:** the World Wars (WWI and WWII encouraging the Kindertransport, the passage of enemy aliens and the arrival of refugees from Belgium) The end of the British Empire, and splitting of Pakistan and India leading to the arrival of many Asian migrants. decolonisation leading to the influx of Asian Migrants from Uganda (1972) and Kenya (1967) **The Commonwealth;** EU membership; legislation on immigration and nationality, including the Aliens Act (1905) and British Nationality Act and the joining of the 1973 Britain joined the European Economic Community (EEC) allowing people to move freely between member countries. **United Nations Convention on Refugees**. This meant that Britain and all other countries that signed had to offer asylum (protection to people fleeing another country out of fear or persecution). Numbers claiming asylum increased and by 2002 there were nearly 85,000 applications.
2 The experience of migrants	During the first world war many British Germans were **interned** as enemy aliens. In the Second World War there was much less enthusiasm for interning enemy aliens - Polish veterans however were welcomed **Tension over jobs w**as an issue. Lascars took on many shipping jobs during the WWI. Returning seamen wanted their jobs back leading to violence in ports Groups like the BUF and BNP made recist c**ampaigns against migrant**s. In April 1968 Enoch Powell's Rivers of Blood Speech called for sending immigrants back **Violence was a continual problem,** from the Battle of Cable Street (1936) to riots in Brixton (1981) Burnley 2001 and other towns and cities
Impact of migrants	**Immigration was restricted** by Acts in 1962, 1968 and 1971. Equality for migrants was addressed in Acts in 1965, 1968 and 1976 **Migrants worked** in important industries, especially the NHS and transport, facing discrimination and racial abuse Migrants have taken part in political activism - BLM, social justice movements and Doreen Lawrence's story The far right National Front and BNP **opposed immigration.** They were opposed by pressure groups Migrants helped to **change the appearance** of cities and towns and to enrich the culture with festivals, music, art, sports achievements and food
3 Case studies	**Bristol in the mid-twentieth century:** Mass arrival in the 1940s-60s of Caribbean migrants led to discrimination in employment and housing - mny landlords refused to rent leading to gathering in the St Paul's area The St Paul's Carnival began 1968 and is a yearly celebration of Caribbean culture 1963 Bristol Bus Boycott saw mass action taken against the BBC's colour bar - resulting in mass media attention, involvement of the government and eventual changing of racist policies against hiring black drivers **Leicester after 1945:** Increased migration due to job availability, established Asian Welfare Societies and religious tolerance Council initially accepting of the community due to economic skill however declared the city was full in 1972, provoking angry reactions from trade Unions and National Front Huge economic impact of Asian businessmen who revived the failing merchant economy throughout the 80s and a visible cultural impact seen on the Golden Mile and in the Mela and Diwali celebrations

Key developments	
1905	Aliens Act
1914-1918	First World War
1931	Dr Harold Moody established the League of Coloured Peoples
1936	Battle of Cable Street, London
1939-45	Second World War
1948	British Nationality Act; migrants from the Caribbean arrived in Britain on the Empire Windrush
1963	Bristol Bus Boycott
1965	Race Relations Act
1972	Ugandan Asians arrived in Britain
1973	Britain joined the European Economic Community
1981	Race riots in several British cities British Nationality Act

Key words

Schochetim - a Jew who has been especially trained to slaughter animals
Colonies - a colony is a country ruled by a larger one
Dominions - a country that self-governs within the British 'Commonwealth' of nations
Evacuees - children forced to leave their home for safety during war
Windrush Generation - the generation of Caribbean migrants who came to rebuild Britain 1948-73
Economic migrant - people migrating for a better standard of living and employment
United Nations - an international organisation that aims to maintain world peace
Asylum - protection provided by a country to someone who has fled their own country
Brexit - Britain leaving the EU
Interned - to hold someone prisoner for political reasons
British Union of Fascists - A British political party formed in 1932
National Front - a far right political party based on anti-immigrant and fascist views
British National Party - far right fascist party founded 1982
Decolonisation - granting colonies their independence
Colour bar - denying an ethnic minority access to rights based on their race
Institutional racism - racism embedded in an institution or organisation that influences the way in which people work there

I can find the nth term of a linear sequence

- Sparx U498

I can rearrange formulae - Sparx U181

I can plot coordinates and find midpoints

- Sparx U789, U933

I can plot linear functions - Sparx M932

I can use the gradient and y intercept of linear graphs

- Sparx M544, M888

I can find parallel and perpendicular functions

- Sparx U898

I can plot quadratic equations - Sparx U989

Worked Example:

Find the nth term of this sequence

5, 9, 13, 17, 21, 25

5, 9, 13, 17, 21, 25

+4 +4 +4 +4 +4

The difference is 4: the nth term will start 4n

Write 4n above the sequence (4 times tables)

4 8 12 16 20 24

5, 9, 13, 17, 21, 25

What do we need to do to 4n to get our sequence?

4 8 12 16 20 24

+1 +1 +1 +1 +1 +1

5, 9, 13, 17, 21, 25

The nth term is 4n + 1

Worked Example:

Find the nth term of this sequence

30, 27, 24, 21, 18

30, 27, 24, 21, 18

-3 -3 -3 -3

The difference is -3: the nth term will start -3n

Write -3n above the sequence (Negative 3 times tables)

-3 -6 -9 -12 -15

30, 27, 24, 21, 18

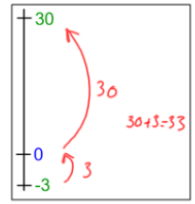
What do we need to do to -3n to get our sequence?

-3 -6 -9 -12 -15

+33 +33 +33 +33 +33

30, 27, 24, 21, 18

The nth term is -3n + 33



Make **p** the subject

$T = 2p - 6$

+6 +6

$T + 6 = 2p$

÷2 ÷2

$\frac{T+6}{2} = p$

Make **x** the subject

$a = 3x^2$

÷3 ÷3

$\frac{a}{3} = x^2$

$\sqrt{\ } \quad \sqrt{\ }$

$\sqrt{\frac{a}{3}} = x$

Make **y** the subject

$b = \sqrt{y + 1}$ means $b = \sqrt{(y+1)}$

$b^2 = y + 1$

$-1 \quad -1$

$b^2 - 1 = y$

MATHS

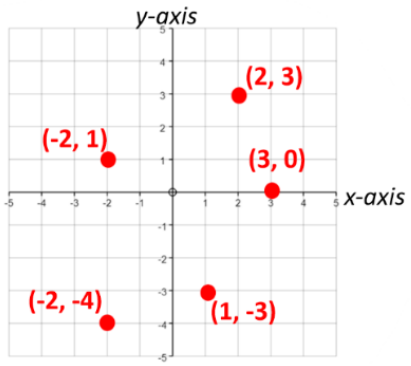
MATHS

The horizontal axis on a graph is labelled the **x-axis**

The vertical axis on a graph is labelled the **y-axis**

The position of a point on a graph is given by its **coordinates**.

Coordinates are given as (x, y)
x is the value of the point on the x-axis
y is the value on the point on the y-axis



Find the midpoint of (6, 5) and (-4, 10)

(6, 5)
(___, ___)
(-4, 10)

What is half way between 6 and -4,
What is half way between 5 and 10?

(Add the x-values and half it, add the y-values and half it)

$$\left(\frac{6 + -4}{2} \quad , \quad \frac{5 + 10}{2}\right)$$

(-1, 7.5)

Example

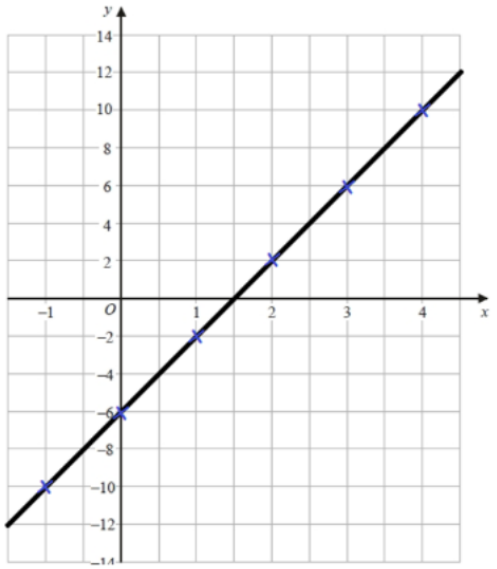
(a) Complete the table of values for $y = 4x - 6$

Substitute each value of x into the equation to calculate the value of y

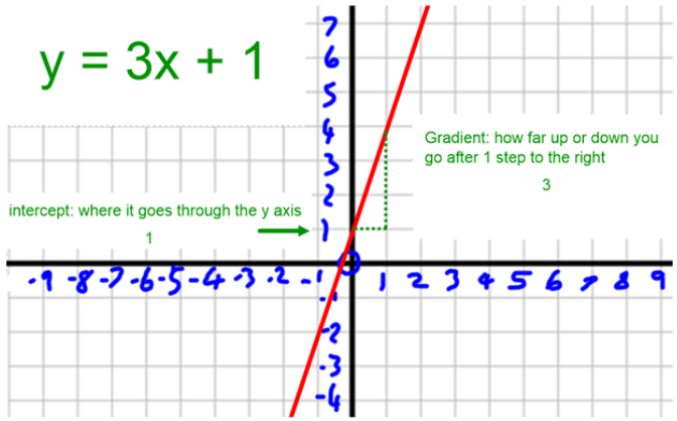
x	−1	0	1	2	3	4
y	**-10**	**-6**	−2	**2**	**6**	10

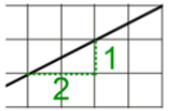
(4 x -1) - 6 (4 x 0) - 6 (4 x 2) - 6 (4 x 3) - 6

(b) On the grid, draw the graph of $y = 4x - 6$ for values of x from −1 to 4



- *Plot each coordinate*
- *They must make a straight line!*
  If they don't, only plot the coordinates that were already in the table
- *Draw your line across the whole graph*





Gradient is $\frac{\text{difference in y}}{\text{difference in x}}$

Gradient is ½

Find the equation of the line between (1, 5) and (3, 11)

Gradient = $\frac{11-5}{3-1} = \frac{6}{2} = 3$

So $y = 3x + c$

Pick one of the co-ordinates
I pick (1,5)
So x is 1 and y is 5.

So
$5 = 3 \times 1 + c$
$5 = 3 + c$
$5-3 = c$
$c = 2$

So the equation of the line is
$y = 3x + 2$

Write an equation that would be parallel to

$y = 4x - 5$

and go through the co-ordinate (3, 15)

If they are parallel then they have **the same gradient**

$y = 4x + c$

We have to find the y intercept so that the line goes through (3, 15)

Substitute in x = 3 and y = 15

$15 = 4 \times 3 + c$
$15 = 12 + c$
$-12 \quad -12$
$3 = c \longrightarrow y = 4x + 3$

Don't forget to write the answer!

Write an equation that would be perpendicular to

$y = 2x + 3$

AND passes through the point (8, 2)

If they are perpendicular then the gradient is the **negative reciprocal**

$y = -\frac{1}{2}x + c$

We have to find the y intercept so that the line goes through (8, 2)

Substitute in x = 8 and y = 2

$2 = -\frac{1}{2} \times 8 + c$
$2 = -4 + c$
$+4 \quad +4$
$6 = c \longrightarrow y = -\frac{1}{2}x + 6$

Don't forget to write the answer!

Write an equation that would be perpendicular to

$y = \frac{2}{3}x - 6$

AND passes through the point (8, 2)

If they are perpendicular then the gradient is the **negative reciprocal**

$y = -\frac{3}{2}x + c$

We have to find the y intercept so that the line goes through (8, 2)

Substitute in x = 8 and y = 2

$\frac{3}{2} \times 8$ is $8 \div 2 = 4$
$4 \times 3 = 12$

$2 = -\frac{3}{2} \times 8 + c$
$2 = -12 + c$
$+12 \quad +12$
$14 = c \longrightarrow y = -\frac{3}{2}x + 14$

Don't forget to write the answer!

MATHS

MATHS

Example

(a) Complete the table of values for $y = x^2 - 2x + 2$

Substitute each value of x into the equation to calculate the value of y

REMEMBER: A negative squared will give a positive answer
Subtracting a negative is the same as adding

$(1)^2 - 2(1) + 2$
$1 - 2 + 2 = 1$

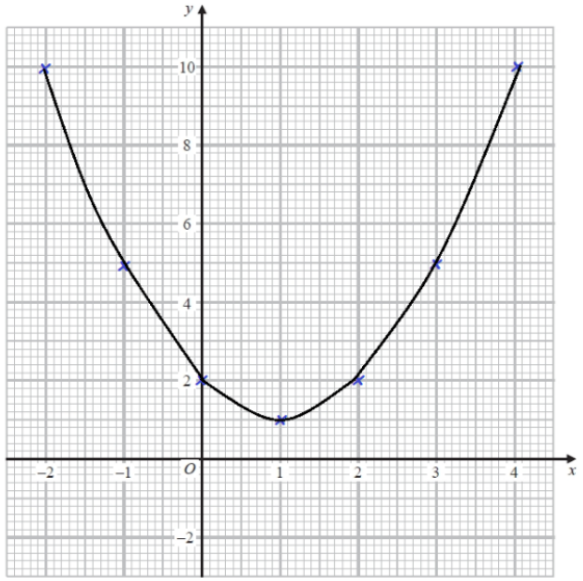
x	–2	–1	0	1	2	3	4
y	10	**5**	2	**1**	**2**	5	**10**

$(4)^2 - 2(4) + 2$
$16 - 8 + 2 = 10$

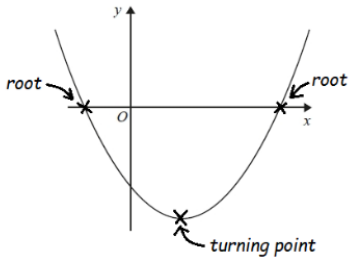
$(-1)^2 - 2(-1) + 2$
$1 - -2 + 2$
$1 + 2 + 2 = 5$

$(2)^2 - 2(2) + 2$
$4 - 4 + 2 = 2$

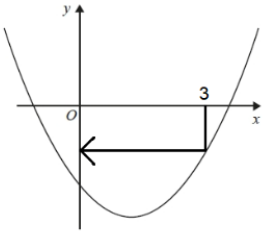
(b) On the grid, draw the graph of $y = x^2 - 2x + 2$ for values of x from –2 to 4



- *Plot each coordinate*
- *Quadratics are reflective!*
- *If it isn't reflective go back and check your coordinates, you might have made a mistake with the negative*
- *Draw it in one single line, it is ok if you slightly miss a point. Don't go back and make the line thicker*



Estimate the value of f(3)

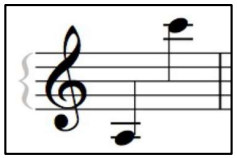


This question is asking us what is the y value of the function if the x value is 3.

Go to 3 on the x axis and read off the y value of the drawn line

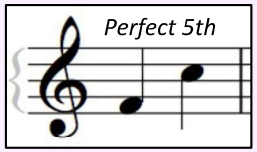
Melody – Knowledge Organiser

Pitch



How high or low a note is

Interval

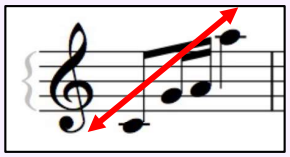


The distance between any two notes.

Motif

A fragment of a melody.

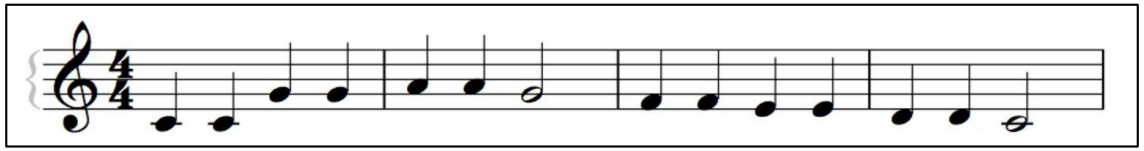
Range



The difference between the lowest and highest notes

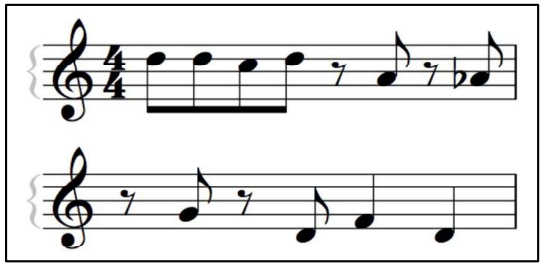
Phrase

A longer melodic idea. Musical "sentences" are constructed from phrases.



Hook/riff

A memorable repeated melodic idea designed to catch the ear of the listener.



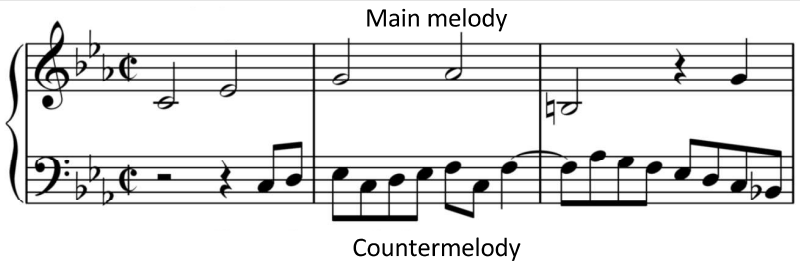
Melodic movement

Steps – movement between notes that are next to each other in the scale
Skips – movement equal to two steps. You "skip" over a note in the scale
Leaps – `any movement that is larger than a skip
Scalic – when a section of a melody moves along using notes in scale order
Chromatic – movement using steps including notes that are not in the key
Passing note – notes which link chord tones

Scale/mode

A group of notes which a melody is based on e.g. major, minor, blues, chromatic, dorian

Countermelody



Compositional devices

Repetition – repeat a melodic idea
Sequence – repeat a melodic idea but starting on a different note
Imitation – repeat a melodic idea in another instrument
Variation – change the melodic idea slightly
Ostinato – constant repetition of a melodic idea
Inversion – turn the melodic idea upside down
Retrograde – play the melodic idea backwards

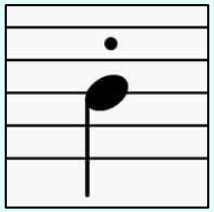
MUSIC

MUSIC

Articulation – Knowledge Organiser

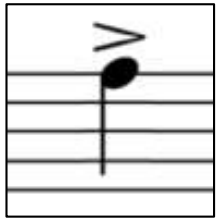
ARTICULATION means *how* you play or sing a note. It is an important part of performing music **EXPRESSIVELY**.

Staccato



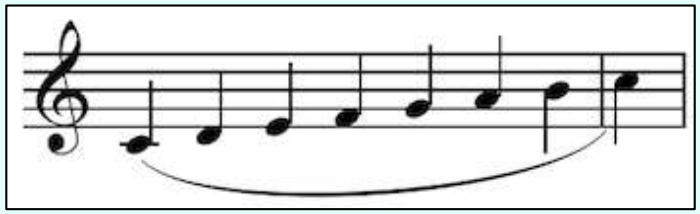
Performed short and briefly. Notes sound detached from each other.

Accent



Emphasise a note so that it sounds louder than others.

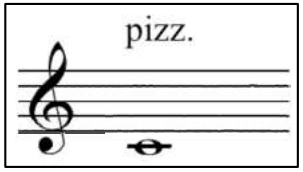
Legato



Perform the notes smoothly. Notes sound connected to each other.
A smooth articulation between two notes is called a **SLUR**.

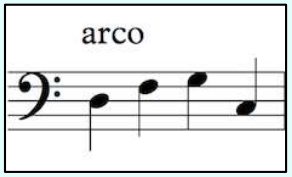
Orchestral Strings

Pizzicato



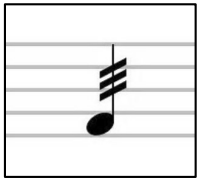
Perform the notes by plucking them with the fingers.

Arco



Perform the notes by using the bow.

Tremolo



Continuously play the note with the bow rapidly to produce a trembling effect.

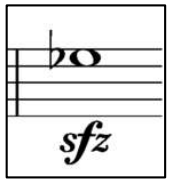
Other Articulations

Vibrato – a slight "wobbling" of the pitch of a note for expression. An important vocal technique as well as for instruments.

Tonguing – the technique used by brass and wind players. Faster rhythms often require the technique of double or triple tonguing.

Bend – guitarists can use their fingers to bend the string from one note to another. Brass and wind players can also do this with different mouth shape and air pressure.

Sforzando



A sforzando is a type of accent. The note should be played with a sudden, strong emphasis.

Slides

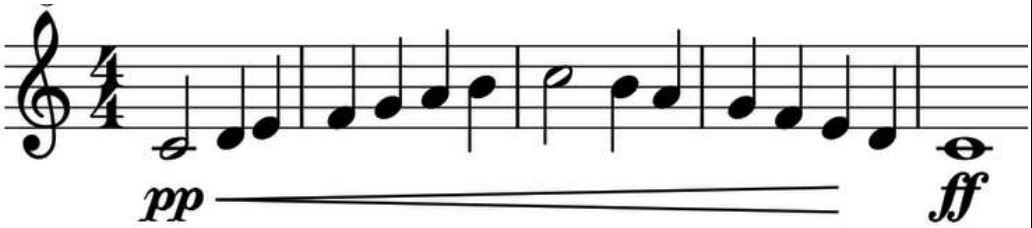
Glissando – a dramatic slide between a wide range of notes. For example, running the fingers along the strings of a harp.

Portamento – a smooth slide between two notes. Used frequently by singers.

Dynamics – Knowledge Organiser

DYNAMICS refer to how loud or soft music is played. It is an important part of performing music **EXPRESSIVELY**.

Fortissimo	*fff*	**VERY LOUD**
Forte	*f*	**LOUD**
Mezzo-forte	*mf*	**Fairly Loud**
Mezzo-piano	*mp*	Fairly Soft
Piano	*p*	Soft
Pianissimo	*pp*	Very Soft



On a musical score the dynamic markings are always placed **UNDERNEATH** the stave.

Sometimes composers place extreme dynamic markings on a score to express that they want the music to be played as loud or as soft as is humanly possible!

ffff

pppp

Crescendo

Gradually getting louder

Diminuendo

Gradually getting softer

MUSIC

MUSIC

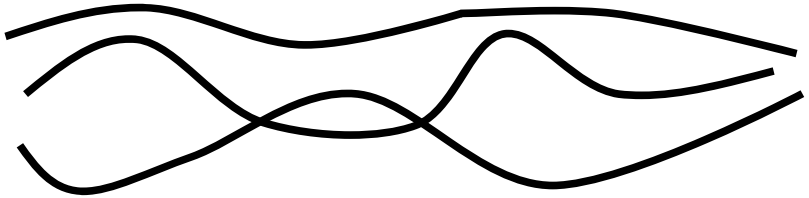
Texture – Knowledge Organiser

TEXTURE is what we call the different layers and parts of a musical piece and how they fit together.

Monophonic

A single melodic voice or instrument

Polyphonic

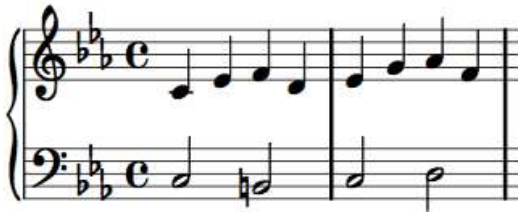


Different musical lines that interweave with each other

Homophonic

A texture based on chords

Examples of THIN texture	Examples of THICK texture
Solo instrument	An orchestra
Acoustic guitar and vocal	A rock band
Piano and cello	A samba ensemble



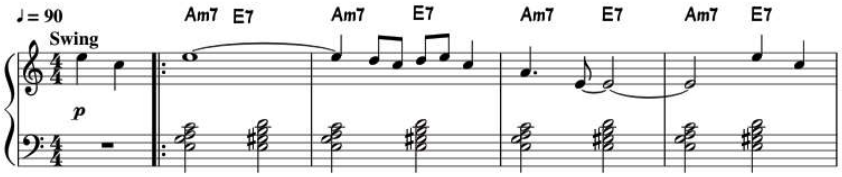
Counterpoint

Two or more different melodies playing together.

Unison

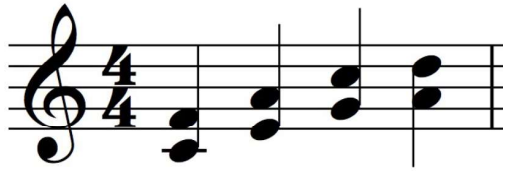
When two or more voices or instruments sing/play exactly the same thing at the same time

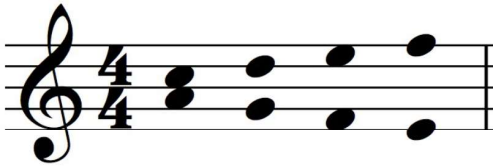
Melody and accompaniment



Parallel Motion

Notes moving in the same direction keeping the same interval .





Contrary motion

Notes moving in opposite directions; one up, the other down.

Structure and Form – Knowledge Organiser

STRUCTURE - the different sections of a piece or music and how they are ordered.

Typical Pop Song Structure

Intro – Verse 1 – Verse 2 – Chorus – Verse 3 – Middle 8/Bridge – Verse 4 – Chorus – Outro

Intro

The introduction sets the mood of a song. It is often instrumental but can occasionally start with lyrics.

Verses

Verses introduce the song theme. There are usually new lyrics for each verse which helps to develop the song's narrative

Choruses

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

Middle 8/Bridge

This section adds some contrast to the verses and choruses by using a different melody and chord progression.

Binary Form

Music that has two sections. These are labelled A and B.

A B

Ternary Form

Music that has three sections. The A section is heard again after B.

A B A

Rondo Form

A recurring theme (A) contrasted by different sections.

A B A C A D A E

Theme & Variation

A composition can be developed using the **VARIATION** technique.
A main theme is composed then the following sections vary this theme in some way, by altering for example:

MELODY – RHYTHMS – CHORDS – TEMPO – INSTRUMENTATION – KEY

Instrumental Solo

Solos are designed to show off an instrumentalists skills.
Rock, jazz and blues often feature solos on instruments such as piano, sax, guitar and drums

Strophic Form

When all of the verses are sung to the same music.

Through Composed

When each section has different music. No section is repeated.

MUSIC

MUSIC

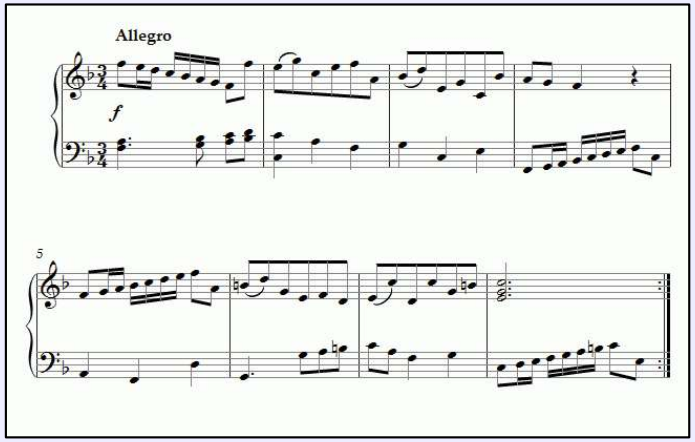
Tempo – Knowledge Organiser

TEMPO means how fast or slow a piece of music is – it is the speed of music

The **TEMPO** of a piece of music is most commonly indicated in two ways – an Italian word and beats per minute **(B.P.M.)**

Italian term	English meaning	B.P.M.
Largo	Slowly and broadly	40 - 60
Adagio	Slowly (but not as slow as largo)	60 - 75
Andante	At a walking pace	75 - 105
Moderato	At a moderate pace	105 - 120
Allegro	Quite fast	120 - 155
Vivace	Quick and lively	155 - 175
Presto	Very fast	175 - 200

Tempo markings are placed at the start of the score above the stave



There are also some terms which indicate a change in tempo during a piece

Italian term	English meaning
Accelerando	Gradually speeding up
Ritardando/Rallentando	Gradually slowing down
Ritenuto	A sudden slowing down
Rubato	A highly expressive technique where a performer plays with flexible tempo

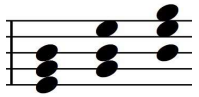
Harmony – Knowledge Organiser

HARMONY – how chords are used in a piece of music.

Triad

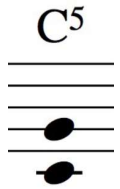
A basic type of chord made up of three notes

Inversion



Rearranging the order of the individual notes of a chord

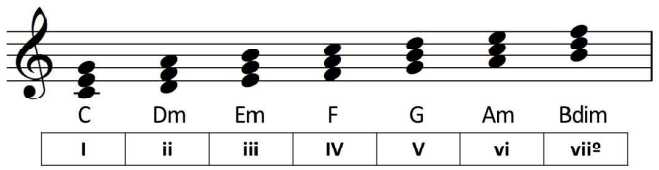
Power Chord



A chord using only the 1st and 5th scale degrees; no 3rd

Arpeggio – playing the individual notes of a chord one after another
Cadence – a movement between two chords at the end of a phrase
Chromatic – music that uses chords that are not naturally found in the key
Diatonic – music that use only chords that belong to the key
Dominant – the fifth chord (V) of a key
Harmonic rhythm – the rate at which the chords change in a piece
Modulation – when the harmony shifts to a new key
Primary triads – chords I IV and V in a key
Progression – a sequence of chords put together
Seventh – adding the 7th degree of the scale to a triad
Tonic – the first chord (I) in a key

Chord Functions in a Key – Roman Numeral System

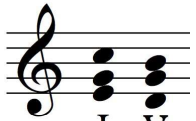
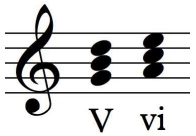
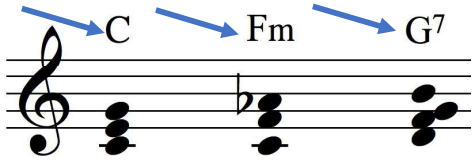


Building Chords Using Scale Degrees

C	D	E	F	G	A	B
1	2	3	4	5	6	7

Example: Minor triads are built using the 1 b3 and 5 degrees of a scale so a C minor triad contains the notes C Eb G

Major Triad	Minor Triad	Major 7th chord	Minor 7th chord	Dominant 7th chord
1 3 5	1 b3 5	1 3 5 7	1 b3 5 b7	1 3 5 b7

Perfect Cadence "The strongest one"	Plagal Cadence "The Amen one"	Imperfect Cadence "The cliffhanger one"	Interrupted Cadence "The hidden twist one"	Chord Symbol
				

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Instrumentation (Orchestral) – Knowledge Organiser

Strings


Violin


Viola


Cello


Bass


Harp

Brass


Trumpet


French horn


Trombone


Tuba

Woodwind

Flute


Clarinet


Saxophone


Oboe


Bassoon

Percussion


Timpani


Snare Drum

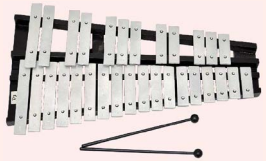

Cymbals


Tambourine


Chimes


Xylophone


Bass Drum


Glockenspiel

Keyboard Instruments


Harpsichord


Piano

Organ

Instrumentation (Rock and Pop) – Knowledge Organiser


Electric Guitar


Acoustic Guitar


Bass Guitar

Drum Kit


Lead Vocals


Backing Vocals


Brass Section


String Section


Piano


Electric Piano


Organ

Technology


Synthesizer

Guitar Effects

Sampling/ Looping


MIDI Sequencing/Recording Software

Effects Processors

Amplifier

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Rhythm – Knowledge Organiser

When you combine any two or more notes or rests you create a **RHYTHM**.

Basic Note and Rest Lengths

Semibreve	Minim	Crotchet	Quaver	Semiquaver
4 Beats	2 Beats	1 Beat	½ Beat	¼ Beat
Note / Rest			Adjacent quavers can be joined together with a **BEAM**	Adjacent semiquavers can be joined together with a **BEAM**

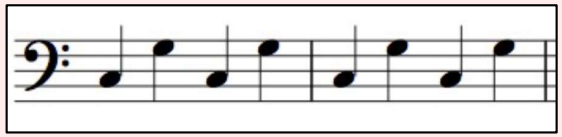
Dotted Notes and Rests

A dot placed after a note or rest tells you to increase the note or rest by **HALF ITS ORIGINAL VALUE**

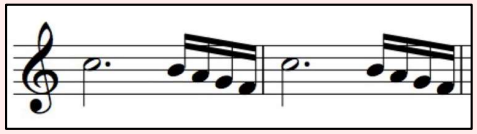
- 1 Beat
- 1 and a half beats
- 2 Beats
- 3 Beats

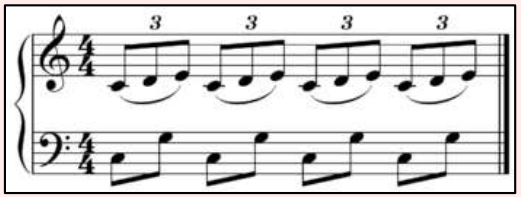
Types of Rhythms

This bass line would be described as having a **CROTCHET** rhythm



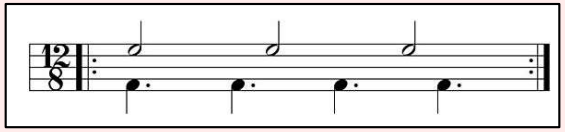
DOTTED MINIM and **SEMIQUAVER** rhythm





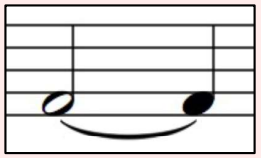
POLYRHYTHM
Two or more different rhythms with the same **METRE** played at the same time

CROSS RHYTHM
Two or more rhythms played at the same time but with conflicting **ACCENTS** often in different **METRES**



Ties

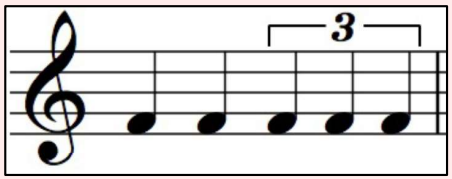
A **TIE** joins two notes of different values



Here you would play the first note and hold it for 3 beats (2+1)

Triplets

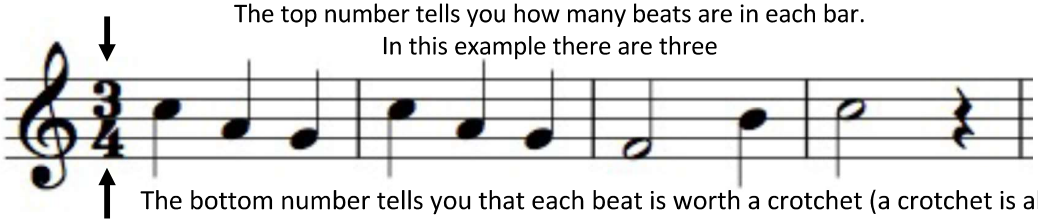
A **TRIPLET** is 3 notes played where there is usually only space for 2



Time Signature – Knowledge Organiser

A **TIME SIGNATURE** gives you information on how the beats are arranged in a piece of music. It is also known as **METRE**

The top number tells you how many beats are in each bar.
In this example there are three

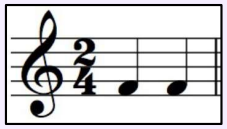
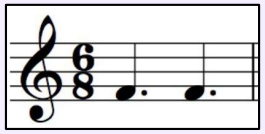
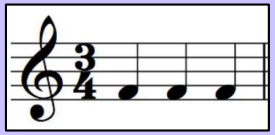
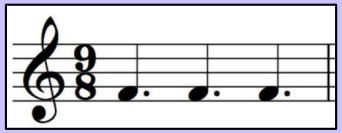
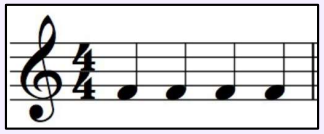
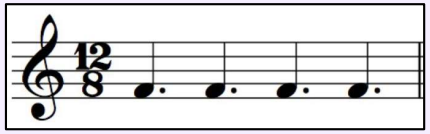


The bottom number tells you that each beat is worth a crotchet (a crotchet is also known as a quarter note hence the number 4 used to denote it)

Number **2** on the bottom = **MINIMS**

Number **4** on the bottom = **CROTCHETS**

Number **8** on the bottom = **QUAVERS**

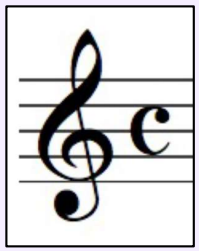
Simple Metre	Compound Metre
	
	
	

There are two main types of metre: **SIMPLE** and **COMPOUND**

Simple time signatures have beats that can be broken down into two notes

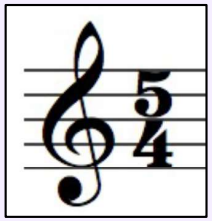
Compound time signatures have beats that can be broken down into three notes.

In compound time signatures each beat is represented by a dotted crotchet which can be broken down into three quavers



The vast majority of music is written with a 4/4 time signature.

This is so common it is known as COMMONTIME and can be denoted using a letter C instead of using numbers



IRREGULAR METRE

Sometimes music is written in a metre containing odd numbers of betas in each bar

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AoS2: Concerto Through Time

What is a Concerto?

1. Solo and Orchestra	Uses a solo instrument (solo concerto) OR a group of soloists (concerto grosso) with an orchestral
2. Three Movements	1. Fast 2. Slow 3.Fast
3. Virtuosity	The soloist shows off the capabilities of the instruments and or the solo performer
4. Metre	Common or Simple time most commonly used in concertos (4/4; 3/4; 6/8)

Key Terms

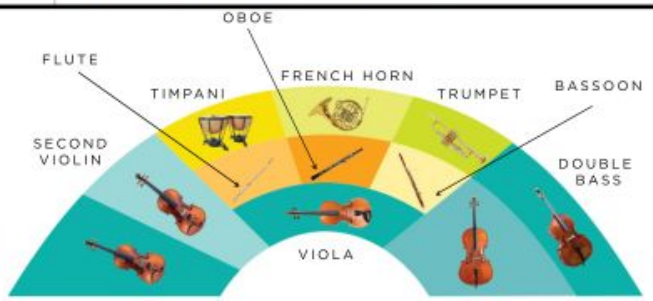
1. Acciaccatura	An ornament: a very quick, "crushed" grace note (before the main note)
2. Alberti Bass	A broken chord accompaniment figure, usually played in quavers
3. Appoggiatura	A slightly longer grace note
4. Cadenza	Orchestra stops whilst the soloist has a virtuosic solo section (sometimes improvised)

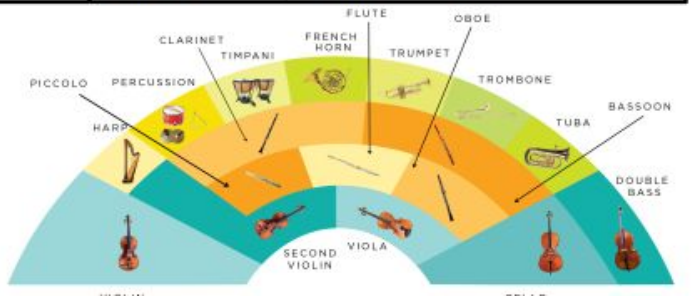
5. Chromatic Harmony	Harmony that uses complex chords, using notes that are not part of the scale (accidentals)
6. Concertino	The group of soloists in a concerto grosso
7. Concerto Grosso	A concerto with a group of soloists instead of just one
8. Continuo	Continuous bass line, played by a bass instrument (cello) and a chord instrument (harpsichord)
9. Contrapuntal	Polyphonic. Lots of independents melodic lines playing together.
10. Diatonic Harmony	Music in a major or minor key - often based around primary chords
11. Doubled	When the melody is played by another instrument
12. Ground Bass	A short repetitive theme in the bass line whilst other parts vary over the top
13. Mordent	An ornament: changing quickly to the note above or below the main note.
14. Ornament	Decorative notes, e.g.: acciaccaturas, appoggiaturas, trills etc
15. Ripieno	The orchestral backing in a concerto grosso
16. Rubato	Momentarily not keeping to strict tempo to allow a slight quicken/slow of expression
17. Sequence	When a melodic idea/motif is repeated higher or lower each time
18. Terraced Dynamics	Either loud or soft. No crescendo or diminuendo
19. Trill	An ornament: alternating quickly between two notes next to each other
20. Tutti	A section of music where everybody plays
21. Valves	On brass instruments they allow all notes to be played (as opposed to just the harmonic series)
22. Virtuosic	Difficult to play/showing off

Baroque		Classical		Romantic	
1600-1750	Corelli; Vivaldi; Bach	1750-1810	Mozart; Haydn; Beethoven	1810-1910	Brahms; Tchaikovsky; Mendelssohn
1. **Small orchestra**, consisting of strings and **continuo** section (bass line and chords)		1. **Medium sized orchestra**, with separate woodwind section including clarinets. **No continuo**		1. **Large orchestra**, more likely to include large **brass** and **percussion** sections	
2. **Concerto Grosso** very popular during this period		2. More likely to have **horns and timpani** used and contrasting dynamics with ***cresc*** and ***dim***		2. **Brass** instruments now have **valves** giving them a larger range	
3. **Diatonic harmony**, mostly based on **primary chords** (I, IV, V)		3. **Diatonic harmony** still		3. Solo concertos much **longer**, more **virtuosic** and **cadenzas** not longer improvised but written	
4. Heavy use of **ornamentation**		4. Use of **equal length question and answer phrases**, known as **periodic phrasing**		4. More **chromatic harmony**, creating more **dissonance**, allowing more emotional/dramatic moods	
5. Often uses **contrapuntal** texture and use of **sequence** a lot to develop melody		5. **Melody and accompaniment** main type of texture, with orchestra often playing **homophonically**		5. **More** contrasting **dynamics**, **tonality** and **pitch** used to create emotional/dramatic moods	
6. **Terraced** dynamics due to the use of the **harpsichord**		6. Introduction of **cadenzas** at the end of the first movement in particular		6. **Modulations** to more **distantly related** keys.	

Changes to the Orchestra

Strings	Violin; Viola; Cello; Double Bass	The number of strings increases to be able to be heard over the growing orchestra over time.	
Woodwind	Flute; Oboe; Bassoon	+ Clarinets	+ Piccolo; Cor anglais; Bass clarinet; Contrabasson
Brass	Trumpet; Horn (rarely used)	Used more often	+ Trombone; Tuba
Percussion	Timpani		+ Snare; Bass drum; Cymbals; Glockenspiel
Other	Harpsichord	Harpsichord fell out of use with the invention of the piano	





AoS3: Rhythms of the World

Indian Subcontinent

Indian Classical

1. It is highly **improvised,** with performers communicating with each other throughout the performance
2. Melodic lines are heavily **ornamented** using techniques such as **pitch/note bend, runs** and **glissando**
3. Famous performers include **Ravi Shankar** (sitar) and **Alla Rakha** (tabla)

1. Raga	A set of pitches, similar to a scale, used as the basis of the improvised melody	**5. Alap**	The opening section - slow and only with the raga and drone instruments playing	**9. Sarangi**	A stringed, violin-like instrument played with a bow
2. Drone	A repeated note or set of notes repeated throughout a piece	**6. Gat**	The main, middle section - a clear pulse is developed with the introduction of the tala	**10. Bansuri**	A wooden flute used in Indian Classical music
3. Tala	A cycle of beats that repeat and are played by the tabla	**7. Jhala**	The fast climax of the piece	**11. Sarod**	A lute used in Indian Classical music
4. Sitar	A stringed, guitar-like instrument. Its distinctive sound is due to a number of 'sympathetic strings'	**8. Tanpura**	A stringed instrument used to play the drone	**12. Tabla**	A pair of drums, with of a wide variety of sounds and pitches

Bhangra

1. Vocal melodies have a **small range,** but are heavily **ornamented** using **microtonal intervals**
2. Most modern bhangra follows a standard **pop song structure,** and contains **shouts of 'Hoi'** on the off beats
3. Famous performers include **Punjabi MC**

1. Dohl	Double-headed barrel drum, played with a strick	**4. Synthesiser**	An electronic keyboard instrument		
2. Tumbi	A high-pitched, single-stringed instrument	**5. Sampling**	Taking an extract from one recording and using it in another		
3. Chaal	The rhythm used in bhangra, played on the dhol and tumbi	**6. Harmonium**	A small keyboard instrument which requires pumping bellows to produce a sound similar to an accordion		

Mediterranean and Middle eastern

Greek

1. **Irregular** time signatures (5/8, 7/8) are often used, but not always, with the use of **irregular rhythms** played using **accented notes**
2. Simple melodies with lots of **ornamentation**, often **harmonised in thirds**
3. Major and minor chords used, with the **tonic and dominant notes** of the chord emphasised **in the bass**

1. Bouzouki	A stringed instrument that is played using a plectrum, similar to a guitar.
2. Defi	A Greek hand drum with bangles attached.
3. Doumbek	A goblet drum, similar to a djembe, but played with a lighter, faster touch.

Palestinian

1. Melodies are **improvised** around the **maqam** with lots of **ornamentation.** Vocals are highly **melismatic**
2. Textures can be **monophonic,** however often **hetrophonic** textures can be heard with multiple instruments playing and decorating melody lines at once

1. Maqam	A set of pitches, similar to a scale, used as the basis of the improvised melody	**3. Oud**	A pear-shaped stringed instrument played with a pick.
2. Wazn	A rhythmic pattern of beats that repeat and are played by the tabla	**4. Zither**	Similar sounding to a harp, this string instrument is played on ones lap and plucked or strummed

Israeli

1. Israeli music tends to adopt **more Western musical instruments**, rather than Arabic, like Palestinian music
2. Melodies most often played on **violin, clarinet** or **accordion** with heavy **ornamentation**
3. Usually in **2/4 or 4/4**, with a **fast tempo** for dancing, which has a gradual **accelerando**
4. **Melody and accompaniment** texture with **chords** played **off-beat** and **bass** playing **every beat**, often playing **alternating tonic and dominant** notes

1. Hammer on	Sharply bringing a finger down on the fingerboard of a stringed instrument, causing a note to sound	**2. Pull off**	"Pulling" the finger off a string on a fingerboard of stringed instrument, causing a note to change in pitch

Latin and South American

Calypso

1. Originally **song often accompanied by one instrument** with lyric that tell a story or commented on politics/society
2. Famous calypso artists include **Mighty Sparrow,** but now calypso is more commonly associated with performance on **steel pans**
3. Simple harmony using the **primary chords**, often played in a **major key**
4. Verse/chorus structure in **4/4** time with **syncopated** and **dotted rhythms**

1. Tenor/ping ping	Highest pitch steel pans that play the melody
2. Altos/guitars/cellos	Steel pans that play the chords
3. Bass	Low pitch steel pans that play the bass line of the music

Samba

1. In **2/4 or 4/4** it is highly **polyrhythmic** and uses **call and response between the repinique player and the rest of the ensemble**
2. **Moderately fast** tempo using sudden stops to create excitement in the otherwise repetitive style known as the **batacuda**

1. Agogo	A bell like instrument that can produce two pitches	**7. Cowbell**	Percussion bell		
2. Apito	A whistle used in Samba	**8. Cuica**	A friction drum with a large pitch range, produced by changing tension on the head of the drum.		
3. Batacuda	African-influences Brazilian percussive style, played by an ensemble known as a bateria	**9. Guiro**	A percussion instrument consisting of a notched gourd which is scraped by a stick		
4. Clave rhythm	The rhythm used in Samba usually played on the claves	**10. Repinique**	High pitch Tom Tom drum that is played by the leader of the ensemble		
5. Claves	An instrument consisting of two sticks beaten together	**11. Surdo**	Large drum which provides the basic rhythmic pulse of the music		
6. Conga	Two tall drums of equal height but different diameters, which create different pitches	**12. Timbale**	Two small drums played with sticks, sounding like high pitched tom-toms		

Key Terms

1. Accelerando	A gradual increase in tempo
2. Call and response	One instrument plays a 'call', and the rest of the performers respond
3. Cross rhythm	A complex polyrhythm that uses different 'conflicting' rhythms
4. Dotted Rhythms	A rhythm in which the beat is unequally subdivided into a long dotted note and a short note.
5. Improvisation	Make something up on the spot
6. Microtones	Notes between the semitones of Western classical music
7. Ornamentation	Fast notes that are added to a melody as decoration, for example a trill
8. Ostinato	A repeated rhythmic pattern
9. Pitch/Note Bend	Slightly changing the pitch of a note on a stringed instrument, by pulling down of the string
10. Polyrhythm	Many different rhythms played at the same time
11. Slide/Glissando	To glide or slide from one note to the next
12. Syncopation	Playing or accenting rhythms that are off the main beat
13. Tremolo	A rolling effect, created by the fast repetition of notes (on the bazouki in Greek and steel pans in Calypso)
14. Triplets	Three notes played in the time of two
15. Virtuosic	Playing with a high level of technical ability (showing off)

African Drumming

1. Learnt **aurally** African drumming relies on layers of **ostinato** which have a **steady pulse**
2. Played for **entertainment** but also at special events such as **weddings, births and funerals**

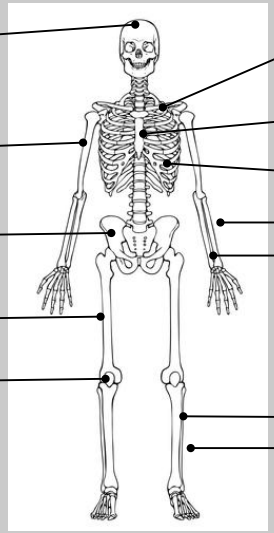
1. Master Drummer	The leader of the group in n African ensemble, often the most virtuosic of the group
2. Agogo	A bell like instrument that can produce two pitches
3. Dundun	A large double headed drum played with a stick
4. Djembe	A single headed, goblet drum that is played with the hands
5. Marimba	A percussion instrument with wooden bars that are hit with mallets
6. Mbira	A wooden board with metal tines on it that are plucked with thumbs
7. Shekere	A rattle made from a hollowed out gourd covered in beads
8. Talking drum	A drum played with a hooked stick, and contains string that can be tightened and loosened to alter the pitch

MUSIC

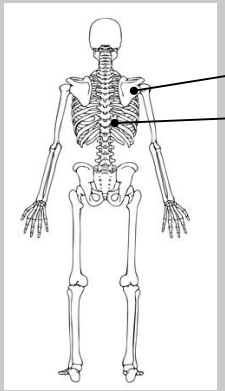
PE

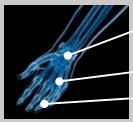
The structure and functions of the skeletal system

Structure of the skeletal system



Structure of the skeletal system



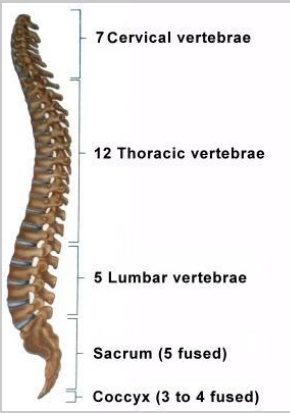


Vertebral Column

The vertebral column is divided into 5 sections. It is made up of irregularly shaped bones called vertebrae.

Each vertebra is protected with cartilage to prevent friction.

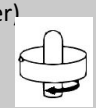
The vertebrae protects the spinal cord.



Function of the skeleton

- Protection of vital organs
- Muscle attachment
- Joints for movement
- Blood cell production (platelets, red and white)
- Storage of calcium and phosphorus

Classification of joint



- Pivot (neck – atlas and axis)
- Hinge (elbow and knee)
- Ball and socket (hip and shoulder)
- Condyloid (wrist)

Connective tissue

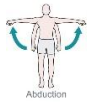
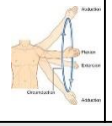
Ligaments – attaches bone to bone to add joint stability.

Tendons – attaches muscles to bone and contributes to joint movement as a result of muscle contraction.

Classification of bones

Long (leverage)	Short (weight bearing)	Flat (protection + muscle attachment)	Irregular (protection and muscle attachment)
Clear shaft region to the bone. *i.e. femur, humerus & phalanges* 	Light, small and very strong. *i.e. carpals tarsals* 	Broad surface area for muscle attachment. *i.e. cranium* 	Assist the functioning of certain joints. *i.e. Patella/vertebrae* 

Joint movements

Flexion	Adduction	Rotation	Dorsi-Flexion (ankle joint)
Decreasing the angle at a joint (bending) 	Limbs moving towards the midline of the body. 	A twisting/turning action around a joint. 	When the toes are turned up to the body. 
Extension	**Abduction**	**Circumduction**	**Planter-Flexion (ankle joint)**
Increasing the angle at a joint (straightening) 	Limbs moving away from the midline of the body. 	A combination of flexion, extension, adduction & abduction. 	When the toes are pointed away from the body. 

PHYSICS

AQA Electricity

Electrons carry current. Electrons are free to move in metal.

Cell	Battery	Switch	Lamp	Ammeter	Volt meter	Diode	LED	LDR	Fuse	Resistor	Variable resistor	Thermistor
Store of chemical energy	*Two or more cells in series*	*Breaks circuit, turning current off*	*Lights when current flows*	*Measures current*	*Measures potential difference*	*Current flows one way*	*Emits light when current flows*	*Resistance low in bright light*	*Melts when current is too high*	*Affects the size of current flowing*	*Allows current to be varied*	*Resistance low at high temp*

Circuit symbols

Current and Charge

Current	*Flow of electrical charge*	Ampere (A)
Potential difference (p.d.)	*How much electrical work is done by a cell*	Volts (V)
Charge	*Amount of electricity travelling in a circuit*	Coulombs (C)

Charge = Current X time — Q = I X t

Controlling current

Changing current	*Change the p.d. of the cells*
	Add more components
Ammeter	*Set up in series with components*
Voltmeter	*Set up parallel to components*

Current, potential difference and resistance

R = V ÷ I

Resistance = Potential difference ÷ Current

Resistance (Ω)	*A measurement of how much current flow is reduced*
The higher the resistance, the more difficult it is for current to flow.	
Increasing resistance, reduces current.	
Increasing voltage, increases current.	

Thermistor	LDR
Resistance varies with temperature	*Resistance varies with light intensity*
Resistance decreases as temperature increases.	Resistance decreases as light increases.

Ohmic conductor	*At a constant temperature, current is directly proportional to the p.d. across the resistor.*	
Filament lamp	*As current increases, the resistance increases. The temperature increases as current flows.*	
Diode	*Current flows when p.d. flows forward. Very high resistance in reverse.*	

Current – Potential difference graphs

Series and parallel circuits

Series circuit	Current is the same in all components.	Total p.d. from battery is shared between all the components.	Total resistance is the sum of each component's resistance.
Parallel circuit	Total current is the sum of each component's current.	p.d. across all components is the same.	Total resistance is less than the resistance value of the smallest individual resistor.

Series	Parallel
A circuit with one loop	*A circuit with two or more loops*

Total p.d	*If cells are joined in series, add up individual cell values*

Energy transfers

Work is done when charge flowing.

Power (W) = potential difference X current — R = V X I

Power = (current)^2 X resistance — P = I^2 X R

Energy transferred = Power X time — E = P X t

Step-up transformers	Step-down transformers
Increase voltage, decrease current	*Decrease voltage, increase current*
Increases efficiency, reduces heat loss.	Makes safer for houses.

Domestic uses and safety

National Grid	*Distributes electricity generated in power stations around UK*

Alternating current	
p.d. switches direction many times a second, current switches direction	*p.d. remains in one direction, current flows the same direction*
Generator.	Cell or battery.

'Earthing' a safety device; Earth wire joins the metal case.

Mains supply
Frequency 50Hz, 230V

3 pin plug			
	Live - Brown	Carries p.d from mains supply.	p.d between live and earth = 230V
	Neutral - Blue	Completes the circuit.	p.d. = OV
	Earth – Green and Yellow stripes	Only carries current if there is a fault.	p.d. = 0V

Static electricity

PHYSICS only

Like charges	*Repel*
Unlike charges	*Attract*

Static electricity	*Electrical charge is stationary*	When two insulating material are rubbed together, electrons move from one material to the other.

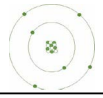
Shocks	Walking on carpet causes friction. Electrons move to the person and charge builds up. When the person touches a metal object, the electrons conduct away, making a spark.
Electric fields	Charged objects create electric fields around them. Strongest closest to the object. The field direction is the direction of force on a positive charge. Add more charge increases field strength.

PHYSICS

AQA ATOMIC STRUCTURE

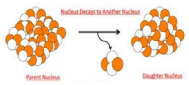
Atom structure

Radius of an atom 1 X 10^{-10}m



Electrons gained → Negative ion

Electrons lost → Positive ion



Atom	*Same number of protons and electrons*
Ion	*Unequal number of electrons to protons*
Mass number	*Number of protons and neutrons*
Atomic number	*Number of protons*

Particle	Charge	Size	Found
Neutron	None	1	In the nucleus
Proton	+	1	In the nucleus
Electron	-	Tiny	Orbits the nucleus

Isotope	$^{6}_{3}Li$		$^{7}_{3}Li$	
Different forms of an element with the same number of protons but different number of neutrons				

Discovery of the nucleus

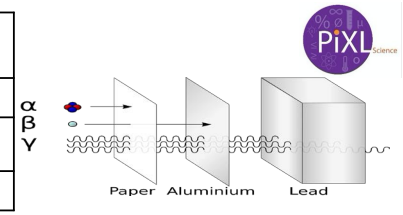
Democritus	Suggested idea of atoms as small spheres that cannot be cut.
J J Thomson (1897)	Discovered electrons– emitted from surface of hot metal. Showed electrons are negatively charged and that they are much less massive than atoms.
Thomson (1904)	Proposed *'plum pudding'* model – atoms are a ball of positive charge with negative electrons embedded in it.
Geiger and Marsden (1909)	Directed beam of alpha particles (He^{2+})at a thin sheet of gold foil. Found some travelled through, some were deflected, some bounced back.
Rutherford (1911)	Used above evidence to suggest alpha particles deflected due to electrostatic interaction between the very small charged nucleus, nucleus was massive. Proposed mass and positive charge contained in nucleus while electrons found outside the nucleus which cancel the positive charge exactly.
Bohr (1913)	Suggested modern model of atom – electrons in circular orbits around nucleus, electrons can change orbits by emitting or absorbing electromagnetic radiation. His research led to the idea of some particles within the nucleus having positive charge; these were named protons.
Chadwick (1932)	Discovered neutrons in nucleus – enabling other scientists to account for mass of atom.

Atoms and Isotopes

Atoms and Nuclear Radiation

Radioactive decay	*Unstable atoms randomly emit radiation to become stable*
Detecting	*Use Geiger Muller tube*
Unit	*Becquerel*
Ionisation	*All radiation ionises*

Decay	Range in air	Ionising power	Penetration power
Alpha	Few cm	Very strong	Stopped by paper
Beta	Few m	Medium	Stopped by Aluminium
Gamma	Great distances	Weak	Stopped by thick lead

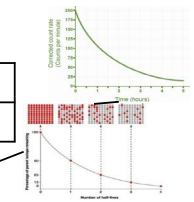


Decay	Emitted from nucleus	Changes in mass number	and atomic number
Alpha (α)		-4	-2
Beta (β)		0	+1
Gamma (γ)	Electromagnetic wave	0	0
Neutron	Neutron	-1	0

$^{238}_{92}U \rightarrow {}^{234}_{90}Th + {}^{4}_{2}He$

$^{14}_{6}C \rightarrow {}^{14}_{7}N + {}^{0}_{-1}e$

$^{99}_{43}Tc \rightarrow {}^{99}_{43}Tc + \gamma$



Contamination	*Unwanted presence of radioactive atoms*
Irradiation	*Person is in exposed to radioactive source*

PHYSICS ONLY: Hazards and uses of Radioactive emissions and of background radiation

Half life	*The time taken to lose half of its initial radioactivity*
Sievert	*Unit measuring dose of radiation*
Background	*Constant low level environmental radiation, e.g. from nuclear testing, nuclear power, waste*

Uses	*Different isotopes have different half lives*	Short half-lives used in high doses, long half lives used in low doses.
Tracers	*Used within body*	Isotope with short half life injected, allowed to circulate and collect in damaged areas. PET scanner used to detect emitting radiation. Must be beta or gamma as alpha does not penetrate the body.
Radiation therapy	*Used to treat illnesses e.g. cancer*	Cancer cells killed by gamma rays. High dose used to kill cells. Damage to healthy cells prevented by focussed gamma ray gun.

Nuclear fission and fusion

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.
Concrete	Neutrons hazardous to humans – thick concrete shield protects workers.

PHYSICS ONLY: Nuclear energy

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 nuclei. Process also releases energy.	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

Christian Beliefs

Topic	Christian View	Importance	Impact on Christians Today
The Trinity	* The Trinity is the belief that God is three things in one, God the Father, Son and Holy Spirit	* The Trinity is important as it shows the oneness of God – he is the Creator, Saviour and Guide * The Nicene Creed is a statement from the Church confirming the Trinity	* Christians use the Trinity to guide their worship and belief – they can call on any part of God for help * They can be inspired by the loving relationship * Christians are baptised in the name of the Trinity
Creation	*Creationist Christians believe the world was created in 6 actual days by God *Liberal Christians believe God created the world by the Big Bang	* Creation is important to Christians as they believe the Trinity was present - Jesus was the Word and the Holy Spirit was there to protect *Creation shows God's power/ love for humans	* It is important that Christians today are stewards of the Earth and look after and protect God's creation * Christians also have a duty to have children and populate the Earth
The Incarnation	* Christians believe that Jesus Christ is the Son of God and came down to Earth in human form	* Jesus came to this world to build a relationship with humans * It shows God loves the world and everyone in it	* Christians believe that Jesus understands humans and our problems – he can sympathise with us and understand our suffering
The Last Days of Jesus Life	* Key events include, The Last Supper, Betrayal, Arrest, Trial, Crucifixion, Resurrection and Ascension	* They teach of Jesus's last actions and of God's power and plan for humanity * They also show Jesus as a role model for others	* Christians follow Jesus's examples in life and death – he taught them how to have a relationship with God through love and worship
Salvation	* Salvation is the belief that Jesus died for our sins. *Atonement means that Jesus restored the relationship between humans and God	* It means everything Jesus taught is true * Humans sins are forgiven – people can have a true relationship with God * It shows there is an afterlife - heaven	* Christians believe that Jesus's death allows them to have eternal life – but they must also live a good life * Christians have a duty to follow Jesus's example and live a good life to get into heaven
Eschatology	*Christians believe that when they die they will be judged by God and go to heaven or hell *Catholics also believe in purgatory	* Jesus said that those who believe in him will have eternal life *It is a reward for faithful people * It offers hope for the future	* Christians will try and live a good life to be rewarded by God in the afterlife *They will be comforted to know that if they are suffering there is a better place with God
The Problem of Evil	* There are two types of evil, moral and natural – evil existing in the world challenges God's existence	* If God is all loving and powerful how can he allow evil things to happen? *This can challenges Christians beliefs	* If God exists but isn't all powerful and loving – should Christians really worship him? * If he isn't all loving – should they still worship him? * If he isn't all powerful – should they still worship him?
Solutions to the Problem of Evil	* There are three Christian responses to evil: Biblical Solutions, Theoretical Solutions and Practical Responses	* Biblical responses to look the Bible for solutions such as The Fall of Man and the story of Job * Theoretical responses look at how we can resolve the problem through Free Will * Practical responses are things we can do today	* The Biblical and Theoretical solutions would restore a Christians faith * They may take part in Practical responses such as praying, raising money for charity or taking part in intersession groups

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Christian Beliefs

Key Quotes	Linked Topics
'I baptise you in the name of the Father, Son and Holy Spirit'	Trinity
'In the beginning was the Word'	Trinity / Creation / Incarnation
'All things have been created through him and for him. He is before all things, and in him all things hold together'	Trinity / Creation
'The Word became flesh and made his dwelling among us'	Trinity/ Incarnation
'Christ died for our sins according to the scriptures, that he was buried, that he was raised'	Jesus's Last Days
'He was taken up before their very eyes'	Jesus's Last Day / Salvation
'I am the way and the truth and the life. No one comes to the Father except through me.'	Salvation / Eschatology
'Whoever believes in him shall not perish but have eternal life'	Salvation / Eschatology
'My comfort in my suffering is this: Your promise preserves my life'	Salvation / Eschatology / Evil & Suffering
'The fear of the Lord – that is wisdom, and to shun evil is understanding'	Evil & Suffering

Key Words	Meaning	Key Words	Meaning
Atonement	Restoring the relationship between God and humans	**Trinity**	The belief that God is made of 3 parts, the Father, The Son and The Holy Spirit
Eschatology	Christian teachings of life after death	**Nicene Creed**	The statement released by the Church that confirms the Trinity
Purgatory	The Catholic belief that there is a place in-between heaven and hell	**Holy Spirit**	The part of God that exits in the world as a guide to humanity
Immortal Soul	The view that the soul lives on after death and never dies	**Omnipotent**	God is all powerful
Day of Judgement	A time when God assesses a person's life and actions	**Omnibenevolent**	God is all loving
Moral Evil	Evil caused by humans	**Omniscient**	God is all seeing and all knowing
Natural Evil	Evil caused by nature	**Eternal**	God if forever – there is not beginning or end to him
Inconsistent Triad	The argument that God cannot be all loving and all powerful if evil exists in the world	**Creationism**	The belief that the Bible is 100% FACT and the world was created in 7 actual days
Intercession	When Christians gather to pray for those suffering	**Liberal Christian**	Is more open in their views. The Bible is a story to help guide us not fact
Vale of Soul Making	Humans have a choice in life to overcome evil and make good choices	**The Word**	Means Jesus
Omnipresent	God is always there	**Free Will**	Given by God - we can make our own choices and decisions in life
The Fall of Man	When Adam and Eve were banished from the Garden of Eden	**Stewardship**	Looking after the world so it can be passed onto the next generation
Original Sin	The idea that the first sin was committed by Eve which let evil into the world	**Incarnation**	When Jesus became flesh again - human
Repentance	Being sorry for your sins	**Immanuel**	'God with us'
		Crucifixion	When Jesus was nailed to the cross and left to die
		Ascension	When Jesus was take up to heaven
		Resurrection	Rising from the dead – God recreates a new body in heaven
		Salvation	When Jesus dies to save us from sin

Muslim Beliefs

Topic	Muslim View	Importance	Impact on Muslims Today
Muslim Beliefs	• There are many schools of Islam who believe in the same beliefs and practices. • Some differ – e.g. Sunni and Shi'a.	Muslim beliefs are influenced by the following: **Allah, Holy books (e.g. Qur'an and Hadith), Angels, Prophets (e.g. Prophet Muhammad - ProMo) Shariah law, The Ummah, 5 pillars.**	
The Six Beliefs	• 6 beliefs are the main beliefs of Sunni Muslims: **Tawhid, Malaikah, Akhirah, Holy books, al-Qadr, Nubuwwah (**prophethood**)** • Shi'a Muslims accept some in their 5 roots.	• The 6 beliefs unite all Sunni Muslims • They help Sunni Muslims understand Islam better. • They support Sunni Muslims in how they should live their lives • The 6 beliefs support what beliefs they should have.	• Muslims will recite the Tawhid in their prayers each day. • They read the Qur'an and look to it for advice. • Muslims live their lives knowing that Allah will judge them on their actions in their life.
The Five Roots of Usul as'Din	• 5 roots are main beliefs of Shi'a Muslims: **Tawhid, Adl** (Allah's justice), **Nubuwwah, Imamah** (successors of Muhammad), **Mi'ad** – Judgement and resurrection.	• These unite Shi'a Muslims as they are the key beliefs. • The 5 roots help Shi'as understand Islam better	• Shi'a Muslims will try to be aware of these beliefs so that they can become better Muslims and understand Allah and His teachings.
The Nature of Allah	• Islam is a monotheistic religion – One God. • Allah is understood by reading the Qur'an • 8 characteristics: **Tawhid** (one)**, Immanence** (Closeness), **Transcendence** (beyond understanding), **Omnipotence** (Powerful), **Beneficence** (loving), **Mercy**, **Fairness** and **justice**, **Adalat** (just)	Muslims feel that the characteristics of Allah help: • Understand him better and follow his teachings. • Strengthen their relationship with Allah. • Encourage Muslims to strive to be better.	• Allah is hard to understand because He is God, but the 99 names given to him help Muslims reflect on the roles he has and how this influences their lives. • They will follow the way He wants them to live their lives.
Risalah	• Risalah is the belief in messengers of Allah: Prophets. These include: **Adam, Ibrahim, Isma'il, Musa, Dawud, Isa, Muhammad**	• Prophets have been acting for Allah for 1000s of years. • Muslims believe there are nearly 124,000 prophet but only 25 are mentioned in the Qur'an (these are **Rasuls**)	• Muslims follow the teachings of prophets when they read the Qur'an or learn about their history. • Some important occasions involved prophets (Night of Power) and these are commemorated by Muslims today.
Holy Books	• Muslims recognise 5 holy books (**Kutub**), although the Qur'an is the most important for Muslims, some Judeo-Christian books hold importance. **Kutub – Qur'an**, **Sahifah** - Scrolls, **Injil** - Gospel, **Zabur** - Psalms and **Tawrat** - Torah	• The Qur'an was believed to have been revealed by Allah to Muhammad over 23 years. • The Qur'an (meaning 'recitation') is written in Arabic as it was when Muhammad heard it • The Qur'an is split into Surahs (chapters) and is used for prayer and guidance.	
Malaikah	• Angels of Allah are messengers for God. • They do not have free will or physical bodies but can take on human form when needed.	**Jibril** – Revealed the message of the Qur'an to ProMo **Izra'il** – Angel of death – reminding Muslims of judgement Mika'il – Angel of Mercy and sustenance – rewards those who live good lives	• Jibril – Muslims focus on the teachings of the Qur'an • Izra'il – They live their life with judgement in mind. • Mika'il – Muslims see it is possible to be rewarded after death
Al-Qadr	• Al Qadr or predestination is important as it is the concept of fate or destiny – Muslims think that Allah can know and control everything. • Accepted as one of 6 beliefs by Sunnis but not fully accepted by Shi'a Muslims.	Muslims focus their ideas of al Qadr on the day of judgement. • Once this day comes there is nothing more they can do. • Everything is the will of Allah. Reacting the right way to this will mean a reward of judgement day. • People are responsible for their own sins.	• Muslims want to live good lives to ensure reward in the afterlife • They are constantly aware of their thoughts and actions in line with Allah and their obligations. • They try to help others as it suggests in teachings.
Akhirah	• Akhirah is life after death and is one of the most important beliefs in Islam. **Death Barzakh Judgement Al Jannah or Jahannam**	• Muslims believe in the resurrection of all bodies for judgement. • Barzakh is the stage between death and judgement. • Two angels inspect the record of a person's life at judgement. • Al Jannah is paradise and Jahannam is Hell.	• Muslims are aware that Allah is always watching. • They will remember to ask for forgiveness from sin. • Every action they perform is a way of worshipping God • They try to be good Muslims.

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Muslim Beliefs

Similarities and differences between Christian and Muslim views on Life after death	**Similarities** • Life is a test • Places of eternal reward and eternal punishment • Resurrection	**Differences** • Christians accept the sacrifice of Jesus to forgive the sins of humans. Muslims believe only the sinner can ask for forgiveness. • Purgatory is not the same as Barzakh. • Christians don't think angels record deeds of a person.

Key Quotes	Linked Topics
'Believe in Allah, and His angels, and His books, and His messengers, and in the Last Day, and in the decree of Allah' ***Hadith***	Six beliefs (you can use any part of this quote)
'He is God the One, God is eternal. He begot no one nor was He begotten. No one is comparable to Him' ***Surah 112***	5 roots, Tawhid
'Every community has been sent a warner (prophet).' ***Surah 35***	Risalah
The Qur'an is nothing less than a revelation that is sent to him (Muhammad). ***Surah 53***	Holy books
'Take the straight path towards Him, the angels come down to them' ***Surah 41***	Malaikah
'He has subjected the sun and the moon each to purpose its course for an appointed time; He regulates all things.' ***Surah 13***	Al Qadr
'…every human being is free to choose between good and evil. However, in relation to religion, there are some spheres of destiny which are predetermined and unchangeable.' ***Muslim Scholar, Mirza Tahir Ahmad***	Human freedom and al-Qadr
'Then they will say, "who will bring us back?" Say, "The One who created you the first time."' ***Surah 17***	Akhirah
'The fire will scorch their faces and their lips will be twisted in pain.' ***Surah 23***	Judgement, Hell (Jahannam)

Key Word	Meaning	Key Words	Meaning
Akhirah	Life after death – when the Day of Judgement takes place	Allah	The Arabic name for God
Al-Qadr	Predestination – the belief that Allah has fixed some things in the universe that can't be changed	Hadith	Sayings of the Prophet Mohammed
Barzakh	Stage between death and the time of judgement	Qur'an	The Holy book of Islam
Resurrection	The belief that humans will be raised again in the next life	Shia Muslim	Muslims who believe that leaders should be related to the Prophet Mohammed
Khalifah	A religious leader representing Allah or a Prophet	Sunni Muslim	Muslims who believe that leaders don't have to be related to Mohammed – just good leaders
Surah	A chapter of the Qur'an	Tawhid	The belief in one God - Allah
The Six Beliefs	The six most important beliefs in Islam	Usul ad'Din	The Five Roots of Islam
Kutub	The Holy Books of Islam	Omnipotent	Allah is all powerful
Jannah	Paradise (Heaven)	Risalah	Communication through the Prophets
Jahannam	Hell	Prophet	A messenger chosen to pass on messages from Allah
Jibril	Angel: Communicates with the Prophets	Mohammed	The most important Prophet in Islam
Izra'il	Angel: The angel of death – takes souls to Allah	Revelation	Communication from Allah often through angels
Mika'il	Angel: Ensures life on Earth in maintained	Malaikah	Arabic name for Angels

SOCIOLOGY

Paper 1 & 2 Sociological Approaches

Key introductory terms

Sociology	The study of society. Sociologists look at a range of factors in someone's social world.
Society	A social grouping that shares the same geographical territory and has the same political authority and expectations.
Culture	The whole way of life of a group of people in society e.g. clothes, food, music.
Norms	These define appropriate and expected behaviour in different certain settings e.g. classroom, cinema, restaurant.
Values	Ideas and beliefs that people have about what is desirable and worth striving for e.g. privacy & respect
Socialisation	Learning the norms and values of your culture and society.
Primary socialisation	This takes place in early childhood and is where we learn basic behaviours and skills we need. Family are responsible.
Secondary socialisation	This takes place in later childhood and beyond, learn norms, values and culture. Agencies include education and media.
Nature	The idea that behaviour and characteristics are innate (we are born with them) and due to biology.
Nurture	The idea that behaviour and characteristics are learnt from our environment (sociologists believe this)
Social structures	These form society's framework and set limits and guide behaviour e.g. family, class.
Social processes	The ways that humans are affected by their interactions with others in society e.g. racism.
Social issues	These form society's framework and set limits and guide behaviour e.g. family, class.
Status	A person's social standing or position in society. This can be affected by gender, age, class etc.

Functionalist approach

Key sociologist: Durkheim
- Society is positive and is in harmony
- There is value consensus – everyone agrees on what is important
- Society is like a human body, we need all parts of it to be able to function
- Agencies such as family, education and crime all help to keep society running smoothly and these are positive
- No group in society has more power than another group

But... Functionalists are accused of viewing society too positively.

Marxist approach

Key sociologist: Karl Marx
- Society is negative and is based on conflict
- Capitalism creates a divide between two social classes
- The ruling class (bourgeoisie) own the businesses and exploit the working class (proletariat) for profit
- Family, education, crime etc. all work to keep the class divide and benefit the ruling class
- The working class do not realise they are being exploited
- The only way to overcome this inequality is a revolution (and society becoming communist)

Feminist approach

- Society is negative and is based on conflict
- Society is divided by gender and is based on patriarchy (male domination and power)
- Men have power and dominance in society and women are oppressed
- Family, education, crime etc. all work to keep the gender divide and exploit women
- For example, women may be victims of domestic abuse and may be taught gender roles that limit their opportunities in society

Weber's approach

- People's ideas, values and skills have more of an influence on their position in society than class and money
- Status (someone's social position) is not always linked to their class/money
- E.g. some people have high status but do not have a lot of money (junior doctors) whereas some people may have low status but lots of money (lottery winners)

Interactionist approach

- Society does not influence everyone in the same way
- Everyone's experiences are different, you can't generalise about behaviour
- People can be labelled as something (e.g. clever, naughty) which can affect how they see themselves
- People might accept and live up to the label through a self-fulfilling prophecy

New Right approach

- Society should be based on traditional values such as marriage
- People should not be reliant on welfare benefits as this can create an underclass
- Nuclear families are the best type (with a married mum and dad) and lone-parent families can cause issues

Consensus vs. conflict theories

Consensus theories
- These theories believe society is based on consensus (agreement) and is in harmony
- Everyone shares the same norms and values and no one group has more power than another
- E.g. functionalism

Conflict theories
- These theories believe society is based on conflict (disagreement) and is divided
- People in society have different norms/beliefs/values
- Some groups have more power than others
- E.g. feminism, Marxism

SOCIOLOGY

Paper 1 & 2 Research Methods

Key methods terms

Aim	A general statement about what a sociologist expects to find out in research
Hypothesis	A prediction about what the sociologist expects they will find in research
Pilot study	A small test-run of a study which is carried out before the main study to check for any problems (e.g. equipment)
Sampling	How participants are chosen to take part in a study (e.g. volunteer, opportunity)
Primary data	Data which is collected first hand by the researchers (e.g. using a questionnaire or interview)
Secondary data	Data that already exists and is used by the researcher (e.g. official statistics, letters)
Quantitative data	Data which IS in the form of numbers
Qualitative data	Data which is NOT in the form of numbers and tends to be visual or in letters (e.g. diaries, photographs)
Validity	The accuracy of the findings – how truthful the data is.
Reliability	How consistent the findings are. If we repeated the study, would we find the same results?

Sampling methods

Random – all participants have an equal chance of being chosen (e.g. names out of hat)
✓Less biased and likely to be more representative
×May not be fully representative – could choose all males
Volunteer – participants choose/self-select to take part (e.g. responding to an advert)
✓Easy to gain a sample, less likely to drop out
×May not be representative – only certain people will agree
Opportunity – participants who are available are chosen
✓Easy to gain a sample × may not be representative
Stratified– participants chosen according to % in the population
✓Most representative × difficult for the researcher to do

Primary research methods

Method	Advantages	Disadvantages
Questionnaires	✓Participants are likely to be honest as anonymous ✓Can be given to a large sample so more representative	×Participants may not understand the questions ×May not be honest as want to appear desirable
Structured interviews (set questions)	✓Can compare responses easily between participants ✓Less likely to be biased as set questions	×May not get full detail or gain a deep understanding ×Cannot ask additional questions
Unstructured interviews (no set questions)	✓Can get full detail and a deep understanding ✓You can build rapport/relationship so may be more honest	×May not get full detail or gain a deep understanding ×Cannot ask additional questions
Group interviews	✓Can gain a variety of opinions ✓May be more honest as have group support	×Some participants might take over the interview ×Participants might be embarrassed to be honest
Participant observation (researcher joins group)	✓ May understand behaviour more as joining in ✓Can ask questions to help with research	×Could be biased as too involved ×Difficult to note behaviour so may not be accurate
Non-participant observation (watches from a distance)	✓ Less likely to be biased as not involved ✓ Easier to note behaviour so more likely to be accurate	×May not get full understanding of behaviour as not involved in the group
Longitudinal study (follows a group over time)	✓Can look at the influence of different factors over time ✓Can gain detailed information of the group you study	×Participants may drop out of the study ×Sample is likely to be small so not representative

Secondary sources of data

Method	Advantages	Disadvantages
Official statistics (quantitative)	✓Often large sample sizes – more representative ✓Easy to analyse and compare over time as quantitative ✓ Likely to be accurate as collected by the government	×May not give reasons for behaviour (just trends) ×May not include all behaviours e.g. crime statistics may ignore the dark figure
Documents (qualitative) e.g. letters, diaries, school reports	✓Lots of detailed data as qualitative ✓Can find reasons behind behaviour	×May be small sample sizes and not representative ×May be time-consuming to analyse ×Could be biased and not valid

Triangulation and mixed methods

Where a sociologist uses more than one method to find out lots of information about a topic e.g. using a questionnaire, interview and observation.
Is used to:
Gain more data on a topic
Check the validity/accuracy of the data
×But, the data may be difficult compare as it is collected using different methods.

Paper 1 Families

Key terms

Breadwinner - The person in the family who earns the money, usually the male.
Cereal packet family - The 'ideal' nuclear family shown in the media and advertising.
Cohabitation - When two partners live together in a relationship without being married.
Commune - Self-contained and self-supporting communities where childcare, property etc. are shared.
Conjugal roles - The domestic roles of married partners- who does what in the home.
Domestic division of labour - The division of tasks such as housework and childcare in the family.
Double shift - When women are in full time employment and be responsible for household tasks.
Expressive role - Traditionally a woman's role in the family according to Parsons, where they look after the emotional needs of the family.
Extended family - A family which contains members beyond the nuclear
Family diversity - This means there are a range of families in society today e.g. lone-parent, reconstituted, same-sex.
Household - One or more people who live at the same address but may not related e.g. university students.
Instrumental role - Traditionally the male's role within the family to be the breadwinner and provide financially for the family.
Lone-parent family - A family of one parent and their dependent children Usually headed by the mother.
Neo-conventional family - A typical nuclear family but where both parents go to work.
Nuclear family - A family of one man and one woman with their dependent children. Patriarchy - Male power and dominance over women.
Reconstituted family - A family of one man and one woman with children from previous relationships.
Secularisation - A decline in religious belief and activity.
Stratified diffusion - How the roles adopted by those at the top of the social hierarchy
(richer families) filters down to the rest of society.
Symmetrical family - Families which are equal on both sides where partners have joint roles

Sociological views of families

Functionalist

The family is a key social structure as it performs several essential functions for individuals and society. Murdock argue it performs four vital functions:
1. Sexual Function: regulates sexual behaviour that is approved by society, prevents breakdown and maintains stability
2. Reproductive function: creates the next generation to fill roles needed
3. Economic function: providing shelter, food & clothes, economic cooperation
4. Socialisation function: provides primary socialisation and learning of shared norms and values

Parsons – the family performs two important functions today
1. Primary socialisation
2. Stabilisation of adult personalities (warm bath theory)

× Functionalists ignore the dark side of the family and the impact of diversity

Marxist

The family helps to maintain the class divide and benefits capitalism. This happens in three main ways:
1. Inheritance: money and wealth is passed down in richer families through inheritance and is not shared with the working classes
2. Consumerism – families are targeted as consumers who buy products, children use 'pester power', profits go to the ruling class
3. Socialisation – children learn to accept hierarchy and that someone is in charge meaning they accept it in the workplace and don't revolt

Zaretsky – The family provides an 'illusion' that society is fair and this maintains capitalism as it prevents a revolution

× Marxists ignore positive functions and that not all families benefit capitalism

Feminist

The family helps to maintain the gender divide and promotes patriarchy in society (male dominance and power). This happens through:
1. Men acting as the breadwinner in the family (they usually earn more) so have more control and power
2. Women often have a double shift or triple shift and take on the majority of unpaid housework
3. Domestic abuse from men in the family
4. Gender socialisation in families teaching stereotypical roles for boys and girls

× Feminists ignore that some women may enjoy/choose the housewife role and that positive changes have been made

New Right

Nuclear families are the ideal family type and are the best for members and society because:
- They promote traditional values such as marriage
- Children grow up with two role models (for better socialisation)
- They are more likely to be financially stable and less likely to be reliant on benefits (and become part of the underclass)

They see lone-parent and same-sex families as causing problems for society

Family diversity

	Increase or decrease	Reasons why
Nuclear	↓	Secularisation Increase in divorce Changing position of women
Reconstituted	↑	Increase in divorce Changing attitudes Greater individualism
Lone parent	↑	Increase in divorce Changing position of women Changing attiudes
Same sex	↑	Changing laws (gay marriage is legalised) Changing atittudes
Beanpole	↑	Increase in life expectancy Decrease in the birth rate
Neo-conventional	↑	Changes in law (equal pay) Changing attitudes Changing position of women
Cohabitating couple	↑	Changing attitudes Changing position of women Increase in divorce
One person household	↑	Increase in divorce Longer life expectancy Greater individualism

Alternatives to families

Living alone (increasing among younger and older individuals)
Living in a commune (shared property, resources, childcare etc.
An example: Living in a kibbutz

SOCIOLOGY

SOCIOLOGY

Paper 1 Families

Key studies

Rapoport and Rapoport (functionalist)

Families are changing, there is increasing diversity
Five different aspects of family diversity: organisational (eg internal divisions of domestic labour), cultural (beliefs and values), class (eg how the family's position in the social class system affects the availability of resources), life course (stage in the family life cycle) and cohort (historical period).

Parsons (functionalist)

Family has two basic functions which are common to all families in all societies: primary socialisation of children and the stabilisation of adult personalities e.g to give and receive emotional support

Young and Willmott (functionalist)

Large scale social survey (over 2,000 respondents in Greater London and surrounding areas)
Families are more symmetrical with both husband and wife make similar contributions to the running of the household eg shared chores and decisions. More common in working cladss families.
Stage 4 is the 'managing director family'. This is work centred and the wife is responsible for home and children – more common in middle class families

Zaretsky (Marxist)

The family also helps to maintain capitalism in society. He thinks that the family helps to provide an ' illusion ' that society is fair and provides a safe haven away from exploitation at work. Women become responsible for personal relationships within the family. This cushions them from capitalism.

Delphy and Leonard (Feminist)

Men benefit the most from the exploitation of women's labour. They believe that the family has a central role in maintaining patriarchy. Women are oppressed because even when wives have paid employment outside the home they still have to carry out household tasks which are not equally shared

Oakley (Feminist)

Segregated conjugal roles adopted by men and women are part of the conventional family also known as the 'cereal' packet' family. This contains married parents and at least one child, the father is the breadwinner and the mother stays at home to look after the house and Children. This type of family may actually exploit women and support patriarchy.

Criticisms of families: isolation, loss of functions, lack of contact, dysfunctions, patriarchy

Changing patterns of marriage

Trends	Reasons	Impacts
First time marriages are decreasing	Secularisation / changing attitudes Changing position of women Increasing cost of marriage	Less married nuclear families More cohabitating couples
Remarriages are increasing	Secularisation / changing attitudes Increase in divorce / changes to divorce laws	More reconstituted families Serial monogamy
Age of first time marriage is increasing	Changing position of women Increasing cost of marriage Changing attitudes	More couples cohabitate before marriage
Increase in same-sex marriages	Changing attitudes Changes in law	

Is marriage still important?

Yes	No
Remarriages are increasing Same sex marriages are increasing Married persons tax allowance was introduced (policies encourage marriage) People still aspire to be married	First time marriages are decreasing Cohabitation is more acceptable Divorce is increasing (suggesting marriage isn't valued) Some couples choose a civil partnership

Changing patterns of divorce

Trends in divorce	42% of marriages end in divorce The divorce rate has increased compared to 30 years ago The divorce rate has declined slightly over the past 10 years but is still high
Reasons for increases in divorce	Changes in law – Divorce reform act (1969) widened the grounds for divorce (to include irretrievable breakdown), waiting time for a divorce decreased from 3-1 years Changing attitudes – More acceptable to divorce Changing position of women – greater financial independence
Sociological views of divorce	Functionalist – divorce can lead to fewer dysfunctional families and greater harmony. Divorce creates jobs to help the economy. Divorce shows people have higher expectations of marriage. Marxist – divorce is more common in working class families due to stress/inequality caused by capitalism, Feminist – divorce can be positive to allow women to escape patriarchal relationships.

Changing relationships

Families over time

Pre-industrial: Extended families, worked as a productive unit, families performed most functions
Industrial: Nuclear families, male took on breadwinner role, government took over functions from families
Contemporary: Family diversity, diversity of roles, smaller families

Gender roles

Wilmott and Young: Families are more symmetrical with shared contributions and equal roles.
Reasons for symmetrical families: changing attitudes, commercialisation of housework.
Stratified diffusion: roles filter from middle to working class (will become less equal)

Are gender roles more equal?

Yes	No
Symmetrical families – joint conjugal roles The New Man Women take part in decision making	Double shift/triple shift The New Man is myth – women still responsible (men cherry pick) for housework/childcare Men still make the most important decisions ¼ women are victims of domestic abuse (evidence of patriarchy)

Parents and children

Relationships in the past: Parents had authority, strict discipline, children 'seen and not heard'
Relationships today: Parents show less discipline, children have more freedom, families are more child-centered
Reasons for changes: women are having less children (families are more child-centered), greater emphasis on children's rights, families more likely to be dual worker
Toxic childhood: children poisoned by junk culture of media and food, leading to poor behaviour and development

Extended families

In pre-industrial era, extended families were important
Extended families may be less important today due to: seeing less of each other (living far away), may only see for special occasions
Extended families may still be important today due to: Grandparents helping with childcare, better technology to keep in contact, still common in some cultures

SOCIOLOGY

Paper 1 Education

Key terms

Comprehensive school - A type of school introduced in 1965 where all students are educated together regardless of ability.
Correspondence principle - schools reflect the workplace and through learning routine and obedience, children are prepared to be exploited in capitalist life.
Cultural capital - The skills and knowledge middle class parents have that they can use to give their children an advantage in the education system.
Deschooling - An alternative form of education proposed by Illich where formal schools are replaced by other methods of education such as home schooling.
Ethnocentric curriculum - A curriculum (things that are taught) that focuses on a particular ethnicity
Formal curriculum - The subjects and topics that are directly taught in schools
Further education - Education after compulsory level
Gendered curriculum - How stereotypes and expectations about gender are promoted through both the formal and hidden curriculum.
Hidden curriculum - Things that are indirectly learnt in school (in and outside on lessons) e.g. competition.
Labelling - Attaching a name or trait to a person or group e.g. smart. This is often based on a stereotype
Marketisation - 1988 act and aimed to bring competition and choice into education
Material deprivation - When students lack the money and the things that money can buy to succeed
Meritocracy - The functionalist view that all students have an equal chance in education and success is based on ability and effort
Selective schools - Where students are selected for a school based on certain criteria such as academic ability or religion
Social capital - The networks of relationships/contacts that middle class parents have to help pupils succeed
Social cohesion - When individuals in society are brought together and share the same norms and values.
Social mobility - Movement up the social ladder (e.g. working class to middle class
Vocationalism - Education focused on more practical or technical skills aimed at a certain job or career

Sociological views of Education

Functionalist	Education is positive as it prepares individuals for work and creates a stable society All pupils have an equal chance to succeed as education is based on meritocracy **Durkheim** – Education transmits shared norms and values, promoting social cohesion. Schools act like a 'mini society' encouraging cooperation. **Parsons** – Education acts as a 'bridge' between family and society, children are judged by 'universalistic standards' and have an equal chance to succeed. × Education may not benefit all students equally (due to class, gender)
Marxist	Education is negative as it helps to maintain the class divide and benefits the middle classes who have a better chance of succeeding. Education prepares working class pupils for low paid jobs and to accept capitalism. **Bowles and Gintis** – 'correspondence principle' – school corresponds to (reflects) the workplace through teaching obedience, accepting boredom and to be motivated by external rewards (qualifications or pay) × Could be outdated as pupils are prepared for a range of jobs today
Feminist	Education is negative as it helps to maintain the gender divide and transmits patriarchal values and ideas. Females learn to adopt the stereotypical 'expressive'/housewife role in society through gender stereotypes shown in textbooks, the majority of headteachers being male and being encouraged to take 'softer' subjects which could lead to lower paid jobs than males. × Could be outdated as girls are encouraged to take 'STEM' subjects and more females are becoming headteachers.

What is taught in schools

Formal/official curriculum – Things that are directly taught in schools (e.g. English/maths) and this is mainly through the National Curriculum in England	**Hidden curriculum** – Things that are indirectly taught in education (rules, routines, regulations) and competition, hierarchy and gender roles

Functions of education

Serving the economy	**Social mobility**	**Social cohesion**	Secondary socialisation
Education provides qualifications/skills which prepares pupils for jobs. This helps the economy as essential roles are filled in society.	Education helps pupils move up the social class ladder through gaining qualifications and skills (through work and effort)	Education teaches shared norms and 'British' values which unites society and brings everyone together with shared beliefs.	Education is an agency of secondary socialisation teaching norms, values, beliefs, ideas through the formal curriculum and hidden curriculum.

Types of schools

State	Funded by the government (state) Free to attended (admissions by catchment) Teach the National Curriculum
Independent / private	Not funded by the government (state) Parents usually pay for their children to attend Do not have to teach the National Curriculum Usually have smaller class sizes and improved facilities / opportunities
Grammar	These select pupils based on academic ability Pupils must pass the 11+ to attend High ability pupils can be 'challenged' and 'stretched' in these schools
Faith	These select students if they are of a certain faith (e.g. Christian, Catholic, Muslim) Religious beliefs are promoted in school life and focused on in RE
Academies	These receive funding directly from the government (rather than the local authority) and have more control over how to spend it Do not have to follow the National Curriculum and may have different term dates
Free school	These can be set up by charities, universities, communities etc. and have control over how to spend funding, set term dates etc. Do not have to follow the National Curriculum and are 'all ability' schools
Special schools	These educate children with Special Educational Needs (SEN) and may follow a different curriculum Pupils can receive more one-one support and the use of special facilities/equipment

Alternatives to schooling

Deschooling – Illich believed schools should be replaced with alternative forms of education (e.g. homeschooling) where their learning is more personalised and less likely to promote capitalism
Homeschooling – Where children are educated at home by parents/tutors etc. rather than in school. They must receive a full time education and are inspected by the local authority. Gives children more personalised one-one support and less chance of behaviour issues.

SOCIOLOGY

Paper 1 Families

Key studies

Durkheim (functionalist)

Major function of education is the transmission of society's norms and values. Education (especially history) provides the link between the individual and society. School enables children learn to cooperate with those who are neither their family or their friends so they can function in society. Rules should be strictly enforced to promote self-discipline and for society to run smoothly.

Parsons (functionalist)

School acts as a bridge between the family and society, taking over as the main agency of socialisation. Schools are based on meritocracy – ability and effort, not money. In school an individual is judged on universalistic standards. Schools socialise children into the basic values of the wider society, maintaining value consensus.

Bowles and Gintis (Marxist)

Correspondence principle – Schools reflect the workplace, students are prepared for work e.g accepting authority (hierarchy), this means that they don't question their position. They do not believe that schools are meritocratic. Class determines achievement.

Willis (Marxist)

Conducted a participant observation of boys in a Midlands secondary school. Working class boys joined a counter school subculture where they avoided attending lessons and resisted any attempt to control their behaviour. They were not obedient. Willis concludes that this prepared them for the kinds of jobs that they would have in the future. These would be unskilled or semi-skilled and quite repetitive.

Ball (Interactionist)

Conducted a participant observation at Beachside Comprehensive to look at the effect of setting / teacher expectations on achievement.
Pupils in lower sets were more likely to be working class, were not given as much support, were labelled and more likely to be disruptive as a result.

Ball and Gerwitz (Interactionist)

They used a range of methods to look at the effect of marketisation and parental choice.
They found that increased parental choice and league tables led to pressure for schools to introduce setting and streaming and to focus on higher ability students to improve their exam results. Middle class parents were better able to use their choices to get their children into higher achieving schools.

Factors affecting achievement

In school factors	Out of school factors
Setting and streaming **Setting** – pupils are in different sets for different subjects, **streaming** – in the same ability set for all subjects Improves achievement – pupils in higher sets could be challenged Could decrease achievement in lower sets	**Parental values** 1) Parents may value education and see it as important so encourage their child to work hard, get them a tutor etc. 2) Parents may not value education and don't see it as important so don't encourage their children
Mixed ability teaching The opposite to setting/streaming where all abilities are taught together Improves achievement – higher ability could help lower ability but could mean they are not 'challenged' or are held back	**Cultural deprivation** Children may not learn the correct norms and values to succeed in education (could affect working class children)
Teacher expectations/labelling Teachers could label pupils because of stereotypes which could lead to a self-fulfilling prophecy Improves achievement – if pupils accept positive label, could decrease achievement if pupils accept negative label	**Material deprivation** Parents may 'lack money and the things that money can buy' so cannot afford resources for their child to succeed (e.g. revision books, a computer) or may not have a quiet place for them to study
Subcultures / peer groups Pupils may join subcultures who have their own set of norms and values Improves achievement – joining 'pro-school' subcultures which value education, working hard (more likely with females), could decrease achievement if join 'anti/counter school subcultures who don't value education (more likely with males)	

Ethnicity and achievement

Trends	Chinese students are the highest performing ethnic group, black pupils and gypsy/Roma pupils are among the lowest performing (also white British)
Ethnicity is important	Material deprivation – some ethnic groups are more likely to be living in low income households so pupils could lack money to buy resources and succeed Cultural deprivation – some cultures may not value education as highly as others (such as Chinese families) and so do not encourage/push pupils Ethnocentric curriculum – the national curriculum may only be focused on White British culture and show negative aspects of other cultures (e.g. in history) – could decrease motivation Teacher labelling – teachers may label some ethnicities - self-fulfilling prophecy
Not important	Higher % of ethnic minorities going to University Worst performing group = white, working class boys

Class and achievement

Trends	Working class pupils achieve less 5 A*C grades than middle class pupils Achievement gap between FSM and non-FSM Working class less likely to go to University
Class is important	Material deprivation – w/c may lack resources to study Cultural deprivation/parental values – w/c parents may not value education as highly W/c parents may lack cultural capital (knowledge/skills) and social capital (social networks) to help their children succeed W/c pupils more likely to join counter school subcultures (Willis)
Class is not important	Functionalism – education is based on meritocracy (ability and effort not money) A higher % of w/c pupils are going to Uni Other factors (gender, ethnicity) more important

Gender and achievement

Trends	Girls are more likely to achieve 5 A*-C than boys, girls outperform boys at A Level in most subjects
Gender is important	Gender socialisation – girls may be socialised to be more hard-working and obedient so are better suited to achieve in school (boys may be more boisterous and less hard-working) Teacher expectations – girls may be labelled as bright but boys could be labelled as lazy or trouble makers Subcultures – girls more likely to join pro-school whereas boys more likely to join anti-school
Gender is not important	Functionalism – all pupils have an equal chance Marxists – class is more important in achievement The gender gap in achievement could be narrowing

Policies in education

To **improve standards** – Ofsted, league tables, academies
To **increase competition** – Marketisation, league tables. Ofsted
To improve **opportunities for low income pupils** – EMA, longer compulsory education
To make education fairer – comprehensive system (1965) which replaced the tripartite system)

SPANISH

Home, town, neighbourhood and region. (THEME 2) (FOUNDATION)

1. ¿Cómo es tu ciudad o tu barrio? (What is your city/neighbourhood like?) Quizlet list / **¿Prefieres vivir en el campo o en la ciudad?** (Do you prefer to live in the countryside or the city?) Quizlet list

Mi ciudad es… *My city is* **Mi barrio es** *My neighbourhood is* **Lo mejor/peor de mi ciudad / barrio es que es…** *The best/worst thing about my city / neighbourhood is that it is…*	**Moderna/a** *-modern* **Antigua/o-***old* **Pequeña/o-***small* **Grande** *-big* **Enorme**- *huge* **Agradable**-*Pleasant* **Bonito/a-***Pretty* **Tranquilo/a** *-Calm* **Ocupada/o** *-Busy*	**Prefiero vivir en la ciudad/ el campo** *I prefer to live in the city / the countryside* **Mi hermano/hermana prefiere vivir en el campo / la ciudad** *My brother/sister prefers to live in the countryside / city*	**Porque tiene…** *Because it has* **Dado que no tiene** *Because it doesn't have* **Puesto que tenemos** *Because we have* **Ya que no tenemos** *Because we don't have*	**Un ayuntamiento** (town hall) **Un cine** (a cinema) **Un mercado** (a market) **Un museo** (a museum) **Un parque** (a park) **Un polideportivo** (a sports centre) **Una gama amplia de restaurantes** (a wide range of restaurants) **Una biblioteca** (a library) **/Una bolera** (a bowling alley) **Una iglesia** (a church) / **mezquita** (mosque)/ **templo** (temple) **Una piscina** (a swimming pool)/ **Una carnicería** (butcher's) **comisaría** (police station)/ **zapatería** (shoe shop) **tienda de ropa** (clothes shop) **Árboles** (trees) / **Animales** (animals) **Bosques** (forest) / **Lagos** (lakes)/ **Cultura** (culture) **Diversiones** (fun things)
Mi ciudad era *My city was* **Mi barrio era** *My neighbourhood was*		**El año pasado me encantaba vivir en el campo** *Last year I used to love to live in the countryside*	**Pero en el pasado no había** *But in the past there wasn't* **porque antes había** *because before there was/were*	

2. ¿Qué te gustaría cambiar en tu ciudad/ tu barrio? *(What would you like to change in your city/neighbourhood?)* Quizlet list

En mi ciudad me gustaría construir más- *In my city I would like to build more* **Si tuviera la oportunidad, me gustaría tener-** *If I had the opportunity, I would like to have*	**Institutos -** *schools* **hospitales -** *hospitals* **aparcamientos -** *parking lots* **cafetería -** *coffee shop* **supermercado -** *supermarket* **agencia de viajes-** *travel agency* **oficina de turismo-** *tourist office* **gimnasios**- *gyms* **polideportivos**- *sports centres* **parque de atracciones**- *theme park*	**Además, si fuera posible, me gustaría mejorar-** *in addition, if it were possible, I would like to improve* **Por otro lado, a mi padre le gustaría mejorar-** *on the other hand, my father would like to improve*	**las calles -** *the streets* **el carril bici**- *the bike lane* **el metro**- *the underground* **la estación de trenes**- *the train station* **las zonas peatonales**- *the pedestrian areas* **la plaza mayor**- *the main square* **semáforos**- *the traffic lights* **el puente**- *the bridge* **los edificios**- *the buildings* / **las casas**- *the houses*
Mi ciudad/barrio ha cambiado mucho porque ahora tenemos - *my city/neighbourhood has changed a lot because now we have*			

SPANISH

Home, town, neighbourhood and region. (THEME 2) (FOUNDATION)

3. ¿Cómo es tu casa o tu piso? (How is your house/flat like?) Quizlet list

Vivo en una casa enorme- *I live in a huge house*

Vivo en un bloque de pisos *-I live in a block of flats*

Mi familia y yo vivimos en un chalet - *my family and I live in a detached house*

Mi hermano y yo vivimos en una granja - *my brother and I live in a farm*

Mi hermana vive en una casa con jardín- *my sister lives in a house with a garden*

Mi casa es…
My house is
Mi piso es…
My flat is…

Mi casa ideal sería
My ideal house would be

Mi piso en el pasado era
My flat in the past was

Moderna/o (*modern***)**
Antiguo/a (*old***)**
Grande (big)
pequeño/a (*small***)**
Enorme *(huge)*
Espaciosa/a (*spacious*)
cómoda *(comfortable)*
tradicional *(traditional)*

Mi casa/ piso tiene…
My house/flat has…

Antes, mi casa / piso tenía
Before, my house /flat used to have

Mi casa ideal tendría
My ideal house would have

tres dormitorios *(3 bedrooms)*
dos cuartos de baño *(two bathrooms)*
una cocina amplia *(a spacious kitchen)*
un comedor *(a dining room)*
un estudio*(a study)*
un salón*(a living room)*
un aseo *(a toilet)*
un jardín *(a garden)* **un sótano** *(a basement / cellar)*

En la cocina hay… - *In the kitchen there is / there are…*
un fregadero - *kitchen sink*
un microondas- *microwave*

En el salón hay… - *In the living room there is / there are…*
una alfombra- *a carpet*
un sillón / un sofá- *a sofa/couch*
una mesa y sillas - *a table and chairs*

En el baño hay… - *In the toilet there is / there are…*
un lavabo- *a sink/washbasin/* **una ducha-** *a shower*
una bañera- *a bath/* **un espejo-** *a mirror*

En el dormitorio hay… - *In the bedroom there is / there are…*
una cama- *a bed/* **unas cortinas-** *some curtains*
armarios- *wardrobes/* **estantes-** *shelves*

Además, está situado/a en el centro/sur/este/oeste/norte
In addition, it is located in the centre/south/east/west/north

Por otro lado, hay muchos de bosques / selvas
On the other hand, there are many woods / rainforests

Además, está cerca de volcanes / sierra
In addition, it is close to volcanoes / mountains

Pero estaba entre el desierto y la sierra
But it used to be between the desert and the mountain range

Grammar Non-Negotiables: Key verbs in different tenses Quizlet

DPR9: Imperfect	DPR9: Preterite	DPR8: Perfect	DPR8: Present	DPR11: Conditional
había = there used to be **teníamos** = we used to have **era** = it used to be **(description)** **estaba en=** it used to be in **(location)** **tenía=** it used to have **visitaba=** I/he/she used to visit	**Fui a** = I went to **tuve la oportunidad de** = I had the opportunity to **fuimos a =** we went to **visité** = I visited **visitamos** = we visited **mi hermano fue a**= my brother went to	**hemos invertido mucho dinero en** = we've invested lots of money in **hemos tenido problemas con** = we've had problems with **he decidido**= I have decided **Hemos decidido**= we have decided **Ha decidido**= he/she has decided	**hay** = there is/are **tiene** = it has **tenemos** = we have **tenemos que** = we have to **se puede** = you can **vamos=** we go **voy=** I go **Suelo ir=** I usually go **Solemos ir=** we usually go	**me gustaría visitar** = I'd like to visit **Me gustaría ir a** = I would like to go to **nos encantaría tener** = we would like to have **deberíamos** = we should **visitaría** = I would visit **Iría** = I would go

SPANISH

Home, town, neighbourhood and region. (THEME 2) (HIGHER)

1. ¿Cómo es tu ciudad o tu barrio? (What is your city/neighbourhood like?) / **¿Prefieres vivir en el campo o en la ciudad?** (Do you prefer to live in the countryside or the city?) Quizlet 1.1

Mi ciudad es… *My city is*
Mi barrio es *My neighbourhood is*

Lo mejor/peor de mi ciudad / barrio es que es… *The best/worst thing about my city / neighbourhood is that it is…*
Lo que más/menos me gusta de mi ciudad / barrio es que es… *What I like the most/ the least about my city / neighbourhood is that it is…*

Mi ciudad era *My city was*

Mi barrio era *My neighbourhood was*

Lo mejor de mi ciudad es que era *The best thing about my city is that it was*

Moderna/a -*modern*
Antigua/o-*old*
Pequeña/o-*small*
Grande -*big*
Enorme- *huge*
Maravilloso/a- *Marvellous*
Asombroso/a- *Astonishing*
Agradable-*Pleasant*
Bonito/a-*Pretty*
Tranquilo/a -*Calm*
Ocupada/o -*Busy*

Prefiero vivir en la ciudad/ el campo
I prefer to live in the city / the countryside

Mi hermano/hermana prefiere vivir en el campo / la ciudad
My brother/sister prefers to live in the countryside / city

Hace cinco años prefería vivir en la ciudad *Five years ago I used to prefer to live in the city because*
El año pasado prefería vivir en el campo *Last year I used to prefer to live in the countryside*

Porque tiene…
Because it has
Dado que no tiene
Because it doesn't have
Puesto que tenemos
Because we have
Ya que no tenemos
Because we don't have

Pero en el pasado no había
But in the past there wasn't
Aunque en el pasado no teníamos
Although in the past we didn't have

Un ayuntamiento (town hall) / **Un bar/muchos bares** (bars/many bars)
Un castillo (a castle) / **Un cine** (a cinema)/ **La Oficina de correos** (post office) / **Un mercado** (a market) / **Un museo** (a museum)
Un parque (a park) / **Un polideportivo** (a sports centre)
Un puerto (a harbour) / **Un teatro** (a theatre)
Una gama amplia de restaurantes (a wide range of restaurants)
Una biblioteca (a library) / **Una bolera** (a bowling alley)
Una iglesia (a church) / **mezquita** (mosque)/ **templo** (temple)
Una piscina (a swimming pool)/ **Una playa** (a beach) /
Una pista de hielo (an ice rink)/ **carnicería** (butcher's)/
comisaría (police station)/ **librería** (bookshop) **pastelería** (pastry shop)
peluquería (hairdresser's)/ **zapatería** (shoe shop)
tienda de ropa (clothes shop)
Árboles (trees) / **Animales** (animals) /**Tiendas** (shops)
Bosques (forest) / **Lagos** (lakes)/ **Cultura** (culture)
Diversiones (fun things)/ **calles amplias** (wide streets)

2. ¿Qué te gustaría cambiar en tu ciudad/ tu barrio? *(What would you like to change in your city/neighbourhood?)* **Quizlet 1.2**

En mi ciudad me gustaría construir más- *In my city I would like to build more*
Si fuera alcalde/alcaldesa, mejoraría - *If I were the mayor, I would improve*
Si tuviera la oportunidad, construiría- *If I had the opportunity, I would build*

Mi ciudad ha cambiado mucho porque ahora tenemos - *my city has changed a lot because now we have*
En mi barrio hemos construido- *In my neighbourhood we have built*

Centros educativos - *educational centres*
hospitales - *hospitals* / **floristería -** *flower shop*
aparcamientos - *parking lots*
cafetería - *coffee shop*/ **supermercado -** *supermarket*
agencia de viajes- *travel agency*
oficina de turismo- *tourist office*
tiendas de segunda mano- *second hand shops*
gimnasios- *gyms*
polideportivos- *sports centres*
carnicería *butcher's*/ **comisaría** *police station*
librería *bookshop* / **pastelería** *pastry shop*
peluquería *hairdresser's* / **zapatería** *shoe shop*
parque de atracciones- *theme park*

Además, si fuera posible, mejoraría - *in addition, if it were possible, I would improve*

Por otro lado, a mi padre le gustaría mejorar- *on the other hand, my father would like to improve*

Hemos decidido construir más- *we have decided to build more*
El alcalde/ la alcaldesa en mi ciudad ha decidido mejorar- *the mayor in my city has decided to improve*

las calles - *the streets*/ **las avenidas -** *the avenues*
la red de transporte- *the transport network*
el carril bici- *the bike lane* / **el metro**- *the underground*
la estación de trenes- *the train station*
la estación de autobuses- *the bus station*
las zonas peatonales- *the pedestrian areas*
la plaza mayor- *the main square*
semáforos- *the traffic lights*
el puente- *the bridge* / **la rotonda**- *the roundabout*
las fuentes- *the fountains* / **los bancos**- *the benches*
los edificios- *the buildings* / **las casas**- *the houses*

SPANISH

Home, town, neighbourhood and region. (THEME 2) (HIGHER)

3. ¿Cómo es tu casa o tu piso? (How is your house/flat like?) Quizlet 1.3

Vivo en una casa adosada- *I live in a semi-detached house*
Vivo en un bloque de pisos *-I live in a block of flats*
Mi familia y yo vivimos en un chalet - *my family and I live in a detached house*
Mi hermano y yo vivimos en una granja - *my brother and I live in a farm*
Mi hermana vive en una casa con jardín- *my sister lives in a house with a garden*
Vivo de alquiler en un apartamento con mi hermano *I live renting an apartment with my brother*

Mi casa es… *My house is*
Mi piso es… *My flat is…*
Mi casa ideal sería *My ideal house would be*
la casa de mis sueños sería- *my dream house would be*
Mi piso en el pasado era *My flat in the past was*

Mi casa/ piso tiene… *My house/flat has…*
Antes, mi casa / piso tenía *Before, my house /flat used to have*
Mi casa ideal tendría *My ideal house would have*

Moderna/o (*modern***) - Antiguo/a (***old***)**
Grande (big)- pequeño/a (*small***)**
Enorme *(huge)***/Espaciosa/a** (*spacious*)
amplia/o / espaciosa/o *(spacious)*
cómoda *(comfortable)*
tradicional *(traditional)*
Está* sucia/o *(it is dirty)*
Está* limpia/o *(it is clean)*

tres dormitorios *(3 bedrooms)*
dos cuartos de baño *(two bathrooms)*
una cocina amplia y bien equipada *(a spacious, well-equipped kitchen)*
un comedor recién renovado *(a recently refurbished dining room)*
un estudio*(a study)***/un salón***(a living room)*
un aseo *(a toilet)* **/ un jardín** *(a garden)* **un sótano** *(a basement / cellar)*

En la cocina hay… - *In the kitchen there is / there are…*
un fregadero - *kitchen sink*
un lavaplatos / lavavajillas- *dishwasher*
un microondas- *microwave*

En el salón hay… - *In the living room there is / there are…*
una alfombra- *a carpet*
un sillón / un sofá- *a sofa/couch*
una mesa y sillas - *a table and chairs*
unas plantas- *some plants*

En el baño hay… - *In the toilet there is / there are…*
un lavabo- *a sink/washbasin/* **una ducha-** *a shower*
una bañera- *a bath/* **un espejo-** *a mirror*

En el dormitorio hay… - *In the bedroom there is / there are…*
una cama- *a bed/* **unas cortinas-** *some curtains*
armarios- *wardrobes/* **estantes-** *shelves*

Además, está situado/a en un valle
In addition, it is located in a valley

Por otro lado, está lleno/a de bosques / selvas
On the other hand, it is full of woods / rainforests

Además, estaría rodeado/a de volcanes / sierra
In addition, it would be surrounded by volcanoes / mountains

Por otro lado, estaría a … metros sobre el nivel del mar
On the other hand it would be… metres above sea level

Pero estaba entre el desierto y la sierra
But it used to be between the desert and the mountain range

Por otro lado, tiene unos impresionantes paisajes naturales
On the other hand, it has some amazing natural landscapes

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había = there used to be **teníamos** = we used to have **era** = it used to be **(no) se podía** = you could (not) **la gente pensaba que** = people used to think that **estaba en=** it used to be in (location) **tenía=** it used to have **visitaba=** I/he/she used to visit	**Fui a** = I went to **tuve la oportunidad de** = I had the opportunity to **fuimos a =** we went to **visité** = I visited **visitamos** = we visited **mi hermano fue a**= my brother went to **Mi hermana pensó que** = my sister thought that…	**hemos invertido mucho dinero en** = we've invested lots of money in **hemos tenido problemas con** = we've had problems with **he notado cada vez más problemas con** = I've noticed more and more problems with **he decidido**= I have decided **Hemos decidido**= we have decided **Ha decidido**= he/she has decided	**hay** = there is/are **tiene** = it has **tenemos** = we have **tenemos que** = we have to **se puede** = you can **vamos=** we go **voy=** I go **Suelo ir=** I usually go **Solemos ir=** we usually go	**me gustaría visitar** = I'd like to visit **invertiría dinero en** = I'd invest money in **nos permitiría** = it'd allow us to **deberíamos** = we should **visitaría** = I would visit **Iría** = I would go **Visitaríamos** = we would visit **Iríamos** = we would go

KS4 Textiles

As a means to further develop your critical thinking and interpretation/analytical skills, as well as a means to develop your cultural capital and creativity, it is important for your to expose yourself to the work of a range of Textile designers/artists. This year, two of the Textiles artists you will be looking at are discussed below:

Billie Zangewa

Billie Zangewa (born in 1973 in Blantyre, Malawi) is a half-Malawian, half-South African artist who hand sews silk fabrics to create collage tapestries, and who now lives in Johannesburg. Since 2004, her art has featured in international exhibitions including at the Paris Art Fair at the Grand Palais in Paris.
Zangewa's work is autobiographical and centralizes Black femininity and everyday domesticity and motherhood. Her artistic approach is indicative of the artist's expressing resistance to the oppression she faces through self-love.

Zangewa works primarily with raw silk offcuts in intricate hand-stitched collages, creating figurative compositions that explore her intersectional identity in the contemporary context and challenge the historical stereotyping, objectification and exploitation of the black female body. Working in a flat, colourful style, she depicts narratives concerned with experience: both personal and universal. These narratives do not make grand gestures or even overt political statements, but rather focus on mundane domestic preoccupations; universal themes connecting us to each other. Almost always the protagonist in her works, Zangewa becomes a heroine whose daily life is revealed through the scenes she illustrates.

Zangewa's finished tapestries celebrate imperfection with their raw, irregular edges and often large pieces seemingly cut out of the tapestry that seem to impede on the scene. This tactic also works to break any illusions of the work being painted on canvas.

Sheila Hicks

Sheila Hicks (born 1934) is an American artist. She is known for her innovative and experimental weavings and sculptural textile art that incorporate distinctive colours, natural materials, and personal narratives.
Working primarily with fibre; Hicks creates vibrant and dynamic sculptures and wall hangings that refer to traditional artisan textiles such as weaving, knitting, knotting, and braiding. Her fibre forms – with their bright colours – whether shaped into vertical cords, disks, or horizontal tubes, present a visual experience.

TEXTILES

TEXTILES

KS4 Textiles

In Textiles Design we use a range of specialist techniques in order to decorate textiles to make them more aesthetically pleasing and interesting. The information below explains some of the techniques you will explore this year.

Tufting

Tufting is the act of a needle punching through a backing material in the form of a loop. The traditional method is to stretch Monks Cloth over a frame and punch yarn through it using a tufting gun or tufting needle. Depending on loop heights, these loops can add texture, dimension, and, if cut, the “cut pile” can add a velvet like appearance to the tufted area.



Fabric Painting

Fabric painting simply refers to any painting done on a fabric. It encompasses everything from ancient artifacts with intricate resist paintings to the painting a young child may do on a t–shirt. Fabric painting has been around for thousands of years.

3D Shibori

3D Shibori is a technique for adding texture and shaping textiles. You wrap items into fabric, secure them with thread and set them with heat, and in this way the process leaves a "memory on cloth" – a permanent record, whether of patterning or texture, of the particular forms of resistance to the change. Cloth holds the memory of action performed on it!

Wet Felting

Wet felting involves creating rectangular fabric made of several layers of wool (not plant or synthetic fibres because those won't felt well), applying water and mild soap, and sponging or agitating the wool to encourage the fibres to lock together

Lino Printing

Lino Printing is a form of block printing that involves carving a pattern or design into a linoleum, rubber or vinyl surface that can then be printed from. The recesses carved out leave the design in relief and it is the raised design that the ink is applied to and then transferred to the paper when pressure is applied by hand or printing press.

Screen Printing

Screen printing, also known as silk screening or silkscreen printing, is the process of transferring a stencilled design onto a surface using a mesh screen, ink, and a squeegee (a rubber blade). The basic process of screen printing involves creating a stencil on a mesh screen and then pushing the ink to create and imprint the design on the below surface.

SPaG

Grammar: Write in sentences

A sentence is a group of words that make sense. Sentences start with a capital letter and end with a full stop, question mark or exclamation mark. All sentences contain **clauses.** You should try to use a range of sentences when writing. There are three main types of sentences.

Simple sentence: A sentence containing one main clause with a subject and a verb.

He reads.
Literacy is important.

Compound sentence: Two simple sentences joined with a conjunction. Both of these simple sentences would make sense on their own. Varying conjunctions makes your writing more interesting.

He read his book because it was written by his favourite author.
Literacy is important so students had an assembly about reading.

Complex sentence: A longer sentence containing a main clause and one or more subordinate clause (s) used to add more detail.
The main clause makes sense on its own. However, a subordinate clause would not make sense on its own, it needs the main clause to make sense. The subordinate clause is separated by a comma (s) and/or conjunction. The clause can go at the beginning, middle or end of the sentence.

He read his book even though it was late.
Even though it was late, he read his book.
He read his book, even though it was late, because it was written by his favourite author.

How can you develop your sentences?

1. Start sentences in different ways. For example, you can start sentences with adjectives, adverbs or verbs.
Adjective: Funny books are my favourite!
Adverb: Regularly reading helps me develop a reading habit.
Verb: Looking at the front cover is a good way to choose a reading book.

2. Use a range of **punctuation**.

3. **Nominalisation**
Nominalisation is the noun form of verbs; verbs become concepts rather than actions. Nominalisation is often used in academic writing. For example:
It is important to **read** because it helps you in lots of ways.
Becomes: **Reading** is beneficial in many ways.

Germany **invaded** Poland in 1939. This was the immediate cause of the Second World War breaking out.
Becomes: Germany's **invasion** of Poland in 1939 was the immediate cause of the outbreak of the Second World War.

Connectives and Conjunctions	
Cause And Effect	Because So Consequently Therefore Thus
Addition	And Also In addition Further (more)
Comparing	Whereas However Similarly Yet As with/ equally/ Likewise
Sequencing	Firstly Initially Then Subsequently Finally After
Emphasis	Importantly Significantly In particular Indeed
Subordinate	Who, despite, until, if, while, as, although, even though, that, which

Haggerston School

LITERACY KNOWLEDGE ORGANISER

Year 10 Knowledge Organiser

cst Community Schools Trust

Haggerston School

Aspiration Creativity Character