YEAR 10 CYCLE 3 BIOLOGY

Year 10 Biology Cycle Three

Key Vocabulary

Aseptic techniques: techniques used to keep out unwanted microorganism.
Antibiotic: drugs used to treat bacterial infections only.
Antibody: a protein produced by lymphocytes. helps neutralise or destroy pathogens.
Antigen: a protein on the surface of a cell.
Bacterial lawn plate: a nutrient agar plate covered in a thin film of bacteria.
Blackspot fungus
Cardiovascular disease: a disease in which the heart or circulatory system does not function correctly.
Chalara dieback: a fungal disease of ash trees that causes leaf loss and bark lesions.
Chemical defence: the use of chemical compounds by organisms to defend against attacks.
Chlamydia: a sexually transmitted disease caused by a bacterium.
Cholera: a bacterial infection of the small intestine that causes diarrhoea.
Communicable disease: any disease that **can spread** from person to person
Health: a state of complete physical, mental and social well-being, not merely the absence of disease.
Immunisation: making someone immune
Monoclonal antibodies: identical antibodies generated from a single lymphocyte clone.
Non-communicable: when a disease cannot spread from animal to animal, or person to person
Pathogen: a disease-causing organism including viruses, bacteria, fungi and protists.
Physical barrier: a barrier that makes it difficult for pathogens to get into the body

Week One

Health is "the state of complete physical, mental and social well being".
Non - communicable: a disease that cannot spread from person to person, e.g. cancer
There are several types of these:

a) **Genetic disorders** caused by faulty alleles passed to offspring.
b) **Malnutrition** when you eat too little of too much which can develop into a **deficiency disease**
c) Influenced by **lifestyle factors (**diet, smoking, exercise, alcohol consumption, drugs) e.g. obesity, cirrhosis, CVD.

Cardiovascular disease is a result of poor circulatory system functioning. The fat mostly linked with CVD is the **abdominal fat** and the method used to measure it is **waist-to-hip ratio.** Treated with **stents, bypass** operations, medicines and lifestyle changes.

Week Two

Communicable disease: a disease that can spread from person to person , e.g. a cold.
Pathogens (disease causing organisms)**: Viruses, bacteria, fungi, protists**
Communicable diseases:
Cholera: caused by **bacteria, spreads** in **water** and causes diarrhoea**.**
Tuberculosis: caused by **bacteria, spreads** in the **air** and causes **lung damage.**
Malaria: caused by **protists,** spread by **animal vectors,** damages blood and liver.
Chalara ash dieback causes **leaf loss** and **bark lesions** in **ash trees,** caused by **fungi** and spreads in the air.
HIV and **Chlamydia** are **viral STIs,** spread during **unprotected sex.**
Stomach ulcers: caused by Helicobacter (bacteria)
Ebola (virus) causes haemorrhagic fever

Week Three

Spread of diseases – pathogens cannot survive for long outside their host, therefore they need to be spread from one host to another to increase in numbers.
The spread of pathogens can be through **contaminated food and water, direct contact** (touch, sexual and oral transmission i.e. STIs and Helicobacter), **airborne** particles (air droplets from coughing and sneezing, wind), **and vectors** (e.g. mosquitos - malaria)
Virus life cycles – viruses are **unable to replicate** on their own, they need a host cell.

1. Viruses can invade plant cells, bacterial cells or human cells (e.g. HIV and Ebola).

Lytic pathway – viruses that cause lysis of a cell during their life cycle.
Lysogenic pathway – the genetic material inserts into the cell's genetic material and replicates every time the cell divides.

Week Four

Plant defences include:
Physical barriers - **cuticle** that is a waxy layer on the surface of leaves, cell walls and a thick layer of bark
Chemical defences – poisons and insect repellents produced, some only when they are attacked. Can be used to treat human diseases and relieve symptoms.
New medicines are produced using chemical substances in laboratories and are tested on **cultures of bacteria** or **human cells.**
Aseptic techniques are used including an autoclave to **sterilise** equipment and growth medium.
Methods of detecting and **identifying** diseases in plants include distribution analysis, observation of visible symptoms, diagnostic testing and elimination of environmental causes.

YEAR 10 CYCLE 3 BIOLOGY

Week Five

The human body has many **defences** against pathogen attacks. Pathogens can usually only enter the body through wounds in the skin or by an animal vector that pierces the skin.

1. **Physical barriers: mucus, cilia, skin**
2. **Chemical barriers:** substances secreted by glands in the body. **lysozymes** (enzymes that break down the cell walls of some bacteria and is secreted in saliva, tears, vaginal fluid and mucus)**, hydrochloric acid** (secreted in the cells of stomach lining, reduces pH to 2 which kills most pathogens)
3. **Sexually transmitted infections** (STIs) caused by pathogens that can survive the natural defences of the reproductive system.
5. Some diseases are **undetectable** and the spread can be reduced by avoiding contact with sexual fluids such as condoms.
6. **Screening** helps identify an infection

Week Six

1. Immune response is the second line of defence. This is how the body responds when a pathogen enters the body:

- **a) antigens** recognised by lymphocytes which trigger an **immune response**
- **b) activated lymphocytes** produce of antibodies that match the antigens
- **c) Antibodies attach** to the pathogen and kill or destroy it
- d) Antigens also trigger the production of **memory lymphocytes**
- **e) memory lymphocytes** remain in the blood for a much faster **secondary response**

2. Immunisation causes an organism to be immune to a pathogen. **Vaccines** are an **artificial** form of immunisation, they contain weakened or inactive form of a pathogens including antigens and can be injected or taken orally and can protect for many years.

Week Seven

1. **Herd immunity** occurs when there is a very low chance of encountering a pathogen because a large percentage (95%) of the population has been immunised with a vaccine.
2. **Antibiotics**: used to treat bacterial infections, work by killing bacteria or inhibiting the cell processes of the bacterium but not the host organism.
5. **Penicillin** was the first antibiotic.
6. There are many kinds of antibiotics that work in different ways because different types of bacteria have **different structures** and do not respond to antibiotics in the same way.
7. **Problem:** many bacteria are evolving rapidly **evolving** rapidly and **gaining resistance** to existing antibiotics and no longer harmed.
8. **New antibiotics** and medicines must be developed to help control infection.

Week Eight

Developing new medicines

1. **Pre-clinical stage:** New medicines tested on cells or tissues in the lab –this is to ensure the medicine can get into the cell and have the **required effect**. To limit side effects. If this is successful the medicine gets tested on animals to check for safety in a whole body.
2. **Small clinical trials:** firstly tested on a small number of **healthy people** to check that it is safe and side effects are minimal.
3. **Large clinical trials:** tested on a large number of **people with the disease** on which the medicine will be treating. This is to work out **correct dosage** and to check for different side effects on different people.
4. Only if a medicine passes all the tests can this be prescribed by a doctor for treatment.

Week Nine

Aseptic technique core practical

1. To investigate the **effect of** concentration of **antibiotic** on **bacterial growth**.
2. It is important to **work aseptically** so that the substances are only tested against one organism and the results are not spoilt by other microorganisms. An autoclave is used to prepare sterile growth medium (agar).
3. **Stage 1-** pour an agar plate using a **petri dish** and inoculate it with the desired bacteria using a sterile inoculating loop, remembering to use the Bunsen burner correctly and keep petri dish and culture vile covered.
4. **Stage 2-** Mark the bottom of the dish in sections and label each concentration. Place the relevant antibiotic discs in each section. Remember the control (sterile filter paper)

Week Ten

5. **Stage 3-** measure the diameter of the clear space around each disk. Work out the radius and calculate the cross-sectional areas.
6. Draw a **area/concentration graph.**

Monoclonal antibody production

1. **Stage1-** an antigen is injected into a mouse and the mouse produces lymphocytes to match the antigen and cancer cells are grown in lab. **Stage 2** – lymphocytes and cancer cells are extracted. **Stage 3-** they are fused to make hybridoma cell.
2. **Hybridoma cells** –made by fusing the lymphocyte that produces the right kind of antibody with cancer cell, this can divide over and over and produce many identical antibodies. These stick to any kind of protein
3. Used in pregnancy sticks, for medical diagnosis of cancer

YEAR 10 CYCLE 3 BUSINESS

Knowledge Organiser

Unit 4: Operations

Production is:
The process of turning raw materials into saleable products and services.

Job production
Making products individually.
Batch production
Making one type of product then switching to make a different product.
Flow production
The production of one product on a continuous assembly line.
Automation
Production involving machinery not controlled by a person.

Week 1 Production Processes

Job production

Advantages	Disadvantages
▪ Products are usually high-quality. ▪ Products can be made to meet the needs of individual customers. ▪ Workers often get more satisfaction.	▪ Costs of production will be high. ▪ Labour costs may be high because job production often requires skilled labour.

Technology is being used more and more in the production of goods and services.

Technological development is making it possible for technology to perform skilled work and reducing the need for human resources.

Week 2 Production Processes

Batch production

Advantages	Disadvantages
▪ The needs of different customers can be met by making batches of different goods. ▪ Batches are made to meet specific orders from customers. ▪ It may be possible to use specialist machines to automate production.	▪ It takes time to switch production from one batch to another - costly. ▪ May have to keep stock of raw materials to be able to switch production. ▪ Less choice of products for customers. ▪ Tasks are repetitive for workers.

Flow production

Advantages	Disadvantages
▪ Large amounts can be made. ▪ Costs of production for each unit is low. ▪ Machinery can be used, helping to recue costs. ▪ Technology can be used to change the products slightly to more are available for customers to choose from.	▪ Goods are mass-produced so quality may be low. ▪ Expensive to set up a production line. ▪ Large stocks of materials need to be kept which can be expensive. ▪ If production stops at any point then production stops everywhere. ▪ Jobs can be repetitive and boring.

Quality is:
about a product being fit for purpose and working in a way that it is supposed to.

Quality control
A system for inspecting the quality of goods and services.
Quality assurance
An approach that involves the whole business focusing on quality.
Returns
Goods which customers take back to the shop because of problems.
Recalls
The business asks for products to be returned because of faults.

Week 3 Quality of Goods & Services

Importance of providing quality products

It avoids waste
If goods are not of a good quality they may not be able to be sold and so the producer has wasted money.

It avoids recalls
If unsatisfactory products are made and sold they will then have to be recalled and the issue resolved at a cost to the manufacturer.

Reputation and sales
Customers will not be happy with poor quality products and may shop elsewhere in the future.

Disrupted production
Production may be disrupted if quality is poor from the start.

Week 4 The Sales Process and Customer Service

Businesses are able to use a range of selling methods. E-commerce:

Pros to the business
Can sell worldwide.
Open 24/7.
Professional look at little cost.
Lower operating costs.

Cons to the business
Worldwide competition.
Problems with delivering and returning goods.
Online security issues.
Technology advances rapidly.

Pros to the customer
Price comparison available.
24/7 availability.
Wider range of products.

Cons to the customer
Lack of personal contact.
Problems returning goods.
Only image of goods seen.
Security.
Cannot pay with cash.

E-commerce
Bringing together the buyer and seller electronically.
Customer service
What a business does to keep customers happy.
Face-to-face selling
Usually completed in a shop where there is direct contact between buyer and seller.
Telesales
Sales completed over the telephone.
After-sales service
Any help and advice given to customers after they have bought a product.

YEAR 10 CYCLE 3 BUSINESS

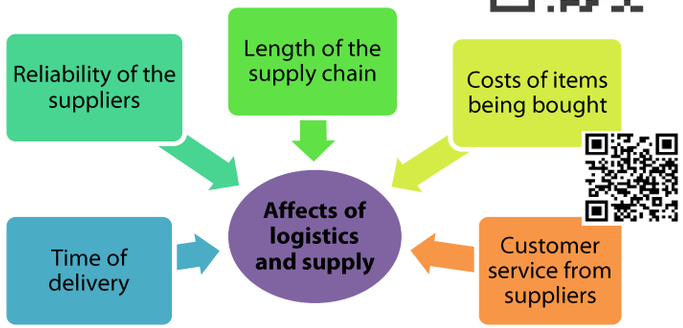
Knowledge Organiser

Logistics
The management of the transportation and storage of goods.
Procurement
The management of purchasing within a business.
Suppliers
Parties who supply goods and/or services to a business.

Week 5 Working with Suppliers

Procurement has a number of roles within a business:

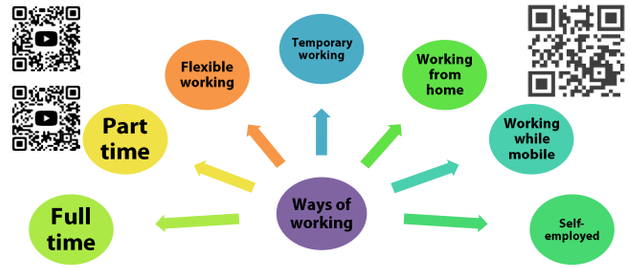
1. Identifying goods and services to buy.
2. Choosing suppliers.
3. Ordering goods and services.
4. Receiving deliveries from suppliers.



Week 6 Organizational Structures

There are two different types of organisation structure:

Advantages of a tall structure	Advantages of a flat structure
▪ The span of control is likely to be narrower meaning that he does not have as many people to look after. ▪ There will be plenty of opportunities for workers to gain promotion which will motivate them to work harder.	▪ Lines of communication are clear - communication will be quicker from top to bottom because there is not as many layers. ▪ Fewer mistakes in communication will be made because there is fewer levels. ▪ People at the bottom may be encouraged to share ideas. ▪ Wider span of control means that managers can delegate work.



Organisation chart
A diagram to show how workers are organised in a business.
Authority
The power that one person has to make decisions.
Chain of command
The order of authority from top to bottom.
Span of control
The number of people a manager is in charge of.
Delegation
Giving someone else permission to make a decision.

Week 7 – Sources of finance

Owners' capital

Advantages	Disadvantages
▪ No need to repay the money. ▪No interest has to be paid. ▪No cost to raise the finance. ▪Readily available.	▪ The owner might not have enough savings to cover the whole finance. ▪May leave the owner short in personal situations.

Retained profit

Advantages	Disadvantages
▪ No interest has to be paid. ▪No need to repay the money. ▪No cost to raise the finance. ▪Readily available.	▪ Business might not have enough profit to cover the whole finance. ▪ May leave the business short in the future in emergency situations.

Week 8 – Sources of finance

Loan

Advantages	Disadvantages
▪ Repayment is spread over time. ▪Business knows exactly how much has to be repaid and when. ▪Money is available quickly.	▪ Interest has to be paid. ▪Business may need to risk an asset as security. ▪Bank will want to see a business plan to ensure they can afford the loan.

Issuing shares

Advantages	Disadvantages
▪ A lot of finance can be raised from many investors. ▪Money does not have to be paid back. ▪No interest is payable.	▪ Dividends may have to be paid to shareholders. ▪Shareholders are entitled to have a say in the running of the business. ▪The business may be taken over by a competitor.

Interest
The amount of money that has to be paid back on borrowed money.
Sale of assets
Items sold by the business.
Crowd funding
Money raised through an appeal to public.
Overdraft
An arrangement with a bank to spend more money than it has in its account.
Retained profit
Profit not distributed to owners.
Loan
Sums borrowed for a certain period at an agreed rate of interest.
Owners' capital
Money from savings put into the business by the owner.

YEAR 10 CYCLE 3 CHEMISTRY

Year 10 Separate Science Cycle Three

Key Vocabulary

Actual yield: the mass of product obtained from an experiment.
Alkali: soluble bases
Base: any substance that reacts with an acid to form water and salt only.
Concentration: amount of a solute dissolved in a stated volume
Decimetre: 1000cm^3
Dynamic equilibrium: When the forward and backward reaction occur at the same rate.
Endothermic: heat energy is taken in, bonds are broken. Less energy is released in forming bonds in the products than required in breaking bonds in the reaction.
Exothermic : heat energy is given out, bonds are made. More heat energy is released in forming bonds in products than is required in breaking bonds. E.g., neutralisation and displacement.
Fertilisers: promote plant growth and contain compounds of phosphorus, nitrogen and potassium.
Indicator is used to know when neutralisation has occurred
Molar gas volume: the volume occupied by one mole of molecules of any gas at room temperature
Reversible reaction: a chemical reaction that occurs in both directions.
Theoretical yield: the maximum mass of product calculated from the balanced equation
Volumetric flask: calibrated to measure a volume accurately

Week One

Percentage yield:
1. Percentage yield compared the actual yield to the theoretical yield.

Percentage yield = $\frac{\text{actual yield}}{\text{theoretical yield}}$ x 100

Reasons percentage yield is less than theoretical yield: incomplete reactions, practical losses during the experiment, unwanted side reactions

Atom economy :

1. **Method** of showing how efficiently a particular reaction makes use of the atoms on the reactants
2. what percentage of the products are the products you want?

Atom economy = $\frac{\text{Mass of desired product}}{\text{Total mass of products}}$ x100

Week Two

Reaction pathways: A % yield calculation gives no indication of the amount of **waste by-products**. A reaction can have a high % yield but a low atom economy, meaning that waste-products are formed. One way to improve atom economy is to find uses for the by-products of the reaction.

A **neutralisation** reaction is when**:**
Acid + base -> Salt + water
The water (H_20) is produced from the H^+ from the acid reacting with the OH^- from the alkali.
$H^+ + OH^- -> H_20$
Concentration of a solution is the mass of solute dissolved in a stated volume of solution.

Concentration(g/dm^3) = $\frac{\text{mass of solute(g)}}{\text{volume of solution(dm}^3\text{)}}$

Alkalis – soluble bases

Week Three

A base is any substance that reacts with an acid to form water and salt only.
Acid-alkali titrations are used to find the exact volume of an acid that **neutralises** a specific volume of alkali or vice versa.
Adding an acid to a known volume of alkali to cause a neutralisation reaction to form a salt and water
This can be done more than once to find an average volume.
If the concentration of 1 solution is known, then the other concentration can be calculated as:

Conc. in mol/dm^3 = $\frac{\text{number of moles of solute}}{\text{volume of solution in dm}^3}$

Number of moles = conc of solution x volume
(mol/dm^3) (dm^3)

Week Four

An indicator is used to know when neutralisation has occurred, the process will then be repeated without the indicator as the solution is heated to remove the water and the indicator is hazardous if heated.

Acid-alkali titration core practical

a) Wear eye protection and avoid skin contact
b) Rinse burette with acid then fill making sure the jet below tap is also full.
c) Record initial volume of acid in burette
d) Rinse a pipette with alkali an fill to the 25.0cm3 mark and empty solution into a conical flask
e) Add a few drops of methyl orange indicator to flask and place ok a white tile under the burette
f) Add acid to flask (alkali) while swirling the flask
g) When indicator starts to change colour rinse tip of burette and sides of flask distilled water then add acid drop by drop until the end-point is reached
h) Record final volume of acid and repeat.

YEAR 10 CYCLE 3 CHEMISTRY

Week Five

Avogadro's law: If the temperature and pressure are the same, equal volumes of different gases contain an equal number of molecules. This allows you to calculate the volumes of gases involved in a reaction.

Molar gas volume

1. the volume occupied by one mole of molecules of any gas at room temperature and pressure = 24dm^3 /24 000 cm^3.
2. 1000cm^3 = 1 dm^3
3. 1 mole = 24dm^3 (24 000 cm^3) of gas
4. 0.1 mole = 2.4dm^3 (2400 cm^3) of gas
5. 0.01 mole = 0.24dm^3 (240 cm^3) of gas

Volume of gas = amount of gas (mol) x molar vol.

Avogadro's constant:

6. 6.02 x 10 ^{23} is the number of particles in one mole of a substance. Half a mole has 3.01 x 10 ^{23}.

Week Six

Fertilisers replace the mineral ions (nitrogen, phosphorus and potassium) needed by plants to promote growth. Nitrogenous fertilisers are a source of **soluble nitrogen** compounds which are produced by combining ammonia to an acid. Ammonia is produced by the Harber process.

Haber process:

1. The formation of ammonia where nitrogen reacts with hydrogen to form ammonia.
2. This process is a **reversable reaction.**
3. **Nitrogen + hydrogen -> ammonia**
4. **$2N_2 + 3H_2$ -> $2NH_3$**
5. **Conditions:** 450 degrees, 200 atmospheres pressure, iron catalyst.
6. The rate of attainment of equilibrium is affected by: temperature, pressure, concentration and the use of a catalyst.

Week Seven

1. The Haber process is an industrial reaction and the conditions that are used are related to the cost of raw materials and energy supplies; the control of temperature, pressure and catalyst used to produce an acceptable yield in an acceptable time.
2. The **ammonia** produced from the Haber cycle can be reacted with **nitric acid** to produce a salt (**Ammonium nitrate**) which can be used as a fertiliser.
3. Fertilisers promote plant growth and contain compounds of phosphorus, nitrogen and potassium.
4. $NH_3 + HN0_3$ -> NH_4NO_3

Week Eight

Production of salts:

1. Small scale (laboratory) – batch process:

- made on demand, so the equipment is used to make a product then washed and can be used to make something else,
- fewer start up costs
- lower running costs.

1. Laboratory scale (industry) – more product,

- a continuous process where reactants are constantly supplied and product made,
- higher start up costs,
- automated – fewer staff.

Week Nine

The **position of equilibrium** can be shifted by:

1. Increasing the temperature shifts equilibrium to the endothermic direction
2. Decreasing the temperature shits equilibrium to the exothermic direction
3. Increasing gas pressure shifts equilibrium to the direction that forms fewer has molecules
4. Decreasing the gas pressure shifts equilibrium to the direction that forms more gas molecules
5. Increasing concentration shifts equilibrium to the direction that uses the substance that has been added up
6. Decreasing the concentration shifts equilibrium to the direction that forms more the substance that has been removed.

Week Ten

Chemical cells and fuel cells.

1. **Chemical cells –** store all their reactants and produce a voltage until one of the reactants is used up – can go flat.
2. Made up of 2 metals, each metal is in a solution of one their salts and connected by a salt bridge.
3. This is an exothermic reaction but the energy is transferred by electricity rather than heating.

Hydrogen – oxygen fuel cells:

1. are supplied with hydrogen and oxygen fuels from outside the cell, no burning takes place and a voltage is supplied as long as reactants are supplied.
2. Hydrogen and oxygen are used to produce a voltage and water is the only product. (+) do not produce carbon dioxide.

YEAR 10 CYCLE 3 DESIGN TECHNOLOGY

Year 10 D & T Cycle 3					
Key Vocabulary	**Sustainability-**To reduce negative impacts on the environment. With the aim to reduce consumption of non-renewable resources,	**Functionality-** whether a design works and helps the users meet their goals and needs.	**Interfacing-**The addition of a material to strengthen a certain area	**Iteration-**a design methodology based on a cyclic process of prototyping, testing, analysing, and refining	**Manufacturing-**is the making of goods by hand or by machine that upon completion the business sells to a customer

Week One

Automation of manufacturing processes offers greater consistency, accuracy, reliability and productivity than human workers

Barcode systems

Two common types of barcode system: **Universal Product Code version 'A'** (UPC-A)

Used in EPOS systems and warehousing

Code 128

Used in transport and shipment tracking

Week Two

Co-operatives

Co-operatives are organisations or businesses that are owned & run by its members.

Fairtrade

Fairtrade is about better prices, decent working conditions & fair terms of trade for farmers and workers in less economically developed countries

FAIRTRADE FOUNDATION

Week Three

Technology push

New technology is often pushed on to the market, driven by research

Often consumers are not aware of the new technology or the advantages it may bring.

Market pull

Consumer driven pressure causes manufacturers to continuously develop new products or add functionality to existing products

Week Four

Planned obsolescence

Products that are only built to last a short amount of time. Once the expected lifespan is determined, manufactures need to appropriately engineer the product in order to last as long as expected.

Ethics and the environment

This includes sustainably sourcing components and materials, ethical production methods, reducing waste, recycling and considerate end-of-life disposal

Week Five

Improving functionality

There are many ways a material can be enhanced to improve its working properties and functionality, these include:

- **Folding**
- **Bending**
- **Webbing**
- **Lamination**
- **Fabric interfacing**

Reinforcing is a way of strengthening materials

Stiffening materials improves working properties such as:

- Strength
- Rigidity
- Flexibility

Week Six

Iterative design process is a cycle of designing, prototyping & testing to develop an idea & achieve the best possible outcome.

Problem describes what you're aiming to solve. It **does not** say how you intend to solve the problem.

Design brief is a paragraph outlining what you plan to do, for whom, where it should be used and why you have decided to follow this route.

Week Seven

Market research revolves around gathering in-depth information about customer/user needs and preferences.

Context: where the product will be used, what conditions it will have to endure and how it will be maintained

Existing products: know what is already out there, varying functions, differing prices & customer opinions.

Designers & companies: the work of past and present designers and companies to inform your own designing.

Week Eight

Design specification

Technical, measurable & justified criteria your product needs to address:

A – Aesthetics
C – Customer
C – Cost
E – Environment
S – Size
S – Safety
F – Function
M – Materials

User centred design (UCD) an iterative design process where designers focus on the users & their needs in each phase of the design process.

Week Nine

Designing and design decisions: **Ergonomics** is the process of designing or arranging products so that they fit the people who use them.

Anthropometrics is the measurement of body sizes at rest and when using products and furniture

Prototype: is a first or preliminary version of a product which can be modified further

Week Ten

Target market

the overall market which is made up of all consumers is divided into groups with common characteristics. The group most likely to buy your product is called the target market

Research strategies include:

- Questionnaire
- Focus groups
- Customer profiling
- User trips
- A day in the life of..

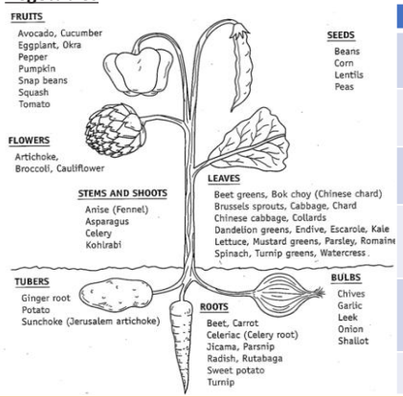
YEAR 10 CYCLE 3 FOOD & NUTRITION

GCSE Food Preparation and Nutrition

Topic: Food Provenance

Classification of foods

Vegetables



Fruits

Classification	Description	Examples
Pomes	Smooth skin. Large fleshy area that is around the core. Often have several seeds.	Apples, pears
Drupes	Contain a single seed, or pit, Surrounded by juicy flesh	Peach, mango, apricot, cherry, plum
Berries	Fragile Pulpy and juicy Tiny seeds in flesh.	Kiwi, Strawberry, Blueberry, raspberry
Melons	Hard outer surface that is smooth or netted. Juicy flesh. Seeds in the centre or in the flesh	Watermelon, winter melon, bitter melon
Citrus	Grow in warm places. Firm rind. Pulpy flesh. Rind often used for flavouring - zest	Lemon, lime, oranges
Tropical fruits	Grow in very warm places. Many fit into the different categories above also.	Pineapple, banana, papaya

Farming methods

Intensive farming:

- This type of farming focuses on producing the maximum yield, at the minimum cost and space. Large fields are used which use chemical herbicides, fertilisers and pesticides.
- Large numbers of animals and poultry being kept in limited space, e.g. caged hens.
- Animals being fed high nutrient feeds in a short period of time to maximise growth in an unnatural way. This can be seen as cruel.
- The use of antibiotics on healthy animals to artificially excel growth. *(Antibiotics use on healthy animals is banned in the EU).* If humans are eating traces of antibiotics, we can build up a resistance to them, meaning they will no longer work to fight infections when we are ill!
- Woodlands and animal habitats are destroyed to make way for large machinery.

Organic farming:

The word organic means natural and without anything artificial. Food which is farmed and sold as organic has to follow strict guidelines:

- The food must not have been grown/reared using chemicals (pesticides, herbicides, fertilisers).
- The welfare of animals is very important, farmers must ensure they are well looked after and are always free range. They cannot be kept in cramped conditions, they must have freedom to roam.
- The use of antibiotics or drugs for healthy animals is banned.
- Farmers must feed animals a 100% organic diet.
- Organic farms must be inspected by outside associations such as the Soil Association.

Genetically modified foods:

Genetically modified foods are foods produced from plants and animals which have had their genetic information changed by scientists. By doing this they can decide precisely, the characteristic they want a plant or animal to have.

Advantages: GM foods can help to fight malnutrition as foods can be developed to contain more nutrients (golden rice). They can help to improve food security as foods can be altered so that they are resistant to pests and diseases. They can also be developed to grow in extreme weather conditions whereas previously they would have been unable to survive. They can also be developed to stay fresh and ripe for longer, meaning that food waste would be reduced.

Disadvantages: We do not know how GM foods will impact our long term health, they could have serious negative consequences but are relatively new so this is not known. Some people do not believe in altering genetics and think that it is unnatural. GM seeds can be expensive. GM crops which are resistance to pests and weeds can cause problems if they grow in unwanted areas and can potentially become superweeds themselves.

Bee populations are suffering through use of pesticides and loss of their habitat. Bees can die if they are contaminated by the chemicals sprayed on plants. If there are no bees, then we have nothing to pollinate our plants, fruits and vegetables. 1/3 of all the food eaten by people relies on bees pollinating plants.

Organic farmers do not use chemical pesticides as these can damage the wildlife and soil. Chemicals leak into the soil and rain washes them into rivers and our drinking waters. Use natural predators such as ladybirds to kill any pests who eat crops. Slug traps are used instead of poison.

Food miles

Food miles are a way of attempting to measure how far food has travelled before it reaches the consumer. It is a good way of looking at the environmental impact of foods and their ingredients. It is the distance from the origin of where the food was grown/made right up until it reaches the consumer's plate.

Why are food miles so bad? Transportation via plane, ships, trucks etc causes pollution which adds carbon dioxide to the atmosphere and adds to global warming. Foods with high food miles, we are increasing our carbon footprint. Also, food requires ice to keep it fresh whilst it is in transit (travelling) so we are often taking water away from countries where there are water shortages and drought.

Carbon footprint: the measure of how much carbon dioxide is **produced when an activity takes place**, such as the making of food. This pint of milk says that 900g of carbon was produced making this product.

How can food miles be reduced?

1. Buy local! Support local farmers by shopping at farm stores rather than large supermarkets. The food will be fresher as it has not travelled so far and farmers/the local community will be provided with income.
2. Grow your own fruit, vegetables, herbs, etc.
3. Check packaging and only buy British.
4. Buy seasonal foods which have more flavour and nutrition as they are at their best.

Seasonal foods: Foods which are available at a certain time of year in a country without being imported. They are at their freshest, tastiest and most nutritious because they are not imported over large distances.

Food security: what factors can negatively impact it?

Food security: The ability to have access to a reliable and healthy food source.

How can we produce enough affordable and nutritious food to feed the world's growing population now and in the future?

This is becoming a bigger challenge as many parts of the world are experiencing the affects of climate change. Flooding and drought in particular are affecting people's ability to grow food.

Food security: how can it be improved?

1. New sustainable methods of farming can be introduced which benefit the farmers and the country.
2. Fair trade schemes can be used to support fair wages for farmers to buy food and support their families. Fair trade schemes also train local farmers and provide them with the education on how to develop their farms and income in a sustainable way.
3. GM foods are developed to make crops more resilient to extreme weather conditions and to contain more nutrition.
4. Reducing food miles by buying locally grown food helps to reduce pollution and carbon emissions. This helps to tackle climate change.
5. Reducing food waste by using leftover food for other dishes (stews, curries, etc) or freezing foods. This will also reduce landfill waste and benefit the environment.

Keywords:

Food miles: It is the distance from the origin of where the food was grown/made right up until it reaches the consumer's plate.

Carbon footprint: The measure of how much carbon dioxide is produced when an activity takes place, such as the making of food.

Seasonal foods: Foods which are available at a certain time of year in a country without being imported. They are at their freshest, tastiest and most nutritious because they are not imported over large distances.

Ethical: Making choices which are caring.

Organic: When chemicals/artificial substances are not used in the farming process. Animal welfare standards are high.

Yield: The amount of produce. E.g. the amount of eggs, wheat, milk, etc.

Intensive farming: Focussed on producing the maximum yield, at the minimum cost and space. Animals are kept indoors in cramped conditions and a large amount of land is needed. Chemical herbicides/pesticides and fertilisers are often used.

Food security: The ability to have access to a reliable and healthy food source.

Primary food processing: The process of changing a raw food material into something that can either be eaten immediately or made into a food product.

Secondary food processing: The process of changing a primary processed food into another type of food product.

YEAR 10 CYCLE 3 FOOD & NUTRITION

Food processing

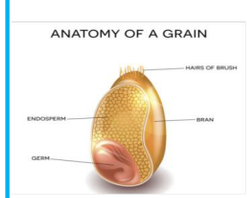
Food processing describes how a raw product is changed in order to make it useful. There are two types of processing.

Primary food processing: The process of changing a raw food material into something that can either be eaten immediately or made into a food product. Examples: milling of wheat into flour, pasteurising milk, jointing and deboning raw meat.

Secondary food processing: The process of changing a primary processed food into another type of food product. Examples: using wheat flour to make bread, using milk to make cheese.

Primary processing

Wheat into flour



Bran: the protective outer layer – the skin.

Wheatgerm: this is the seed from which the new plant grows. In the avocado this is the big stone, and in the wheat seed it is called wheat germ.

Endosperm: this is the starchy food source . The endosperm is essentially just white flour sitting inside a wheat seed waiting to be removed.

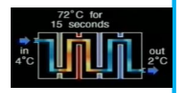
How is whole grain flour made?
The whole of the wheat grain is passed through rollers and the whole grain is used in the flour.

How is plain flour made?
The wholegrain flour is separated into bran, wheatgerm and endosperm (rough semolina). The rough semolina is then passed through rollers to and ground up more to make white plain flour.

Milk heat treatments

Milk contains lots of bacteria and potentially very harmful pathogens. For this reason, milk is not sold to the public without some form of heat treatment.

Pasteurisation: The process of killing harmful bacteria in milk, whilst still preserving the quality of the flavour. It is heated to 72°c for 15 seconds and then cooled quickly to 2°c.



Homogenisation: This is the process of forcing milk at a high pressure through a small space. This breaks up the fat droplets and spreads them out evenly in the milk, preventing a layer of cream forming.

UHT: Milk is heated to 135°C for 1 second and the cooled rapidly. The milk is then packed into sterile containers. UHT milk does not need to be kept in cool conditions if its is unopened. Lasts for 6 months if unopened. Has a slightly sour taste.

Secondary processing

Using flour to make bread

The first step in understanding gluten.
What is gluten? Gluten is the general name for the protein found in flour. Two proteins, gliadin and glutenin are particularly important for making gluten.

gliadin + glutenin + water = gluten

The types of flour used for making bread are high in gluten. (Strong bread flour).

1. Mixing
Flour, salt, fat, water and yeast (sometimes sugar) are mixed together. The yeast is activated by lukewarm temperatures.

2. Kneading
The gluten is developed by stretching the bread and ensuring gliadin and glutenin are thoroughly combined with water.

3. Proving and fermentation
The yeast digests the sugar and begins to ferment (release CO2). The gas helps the bread rise and creates pockets in the dough.

4. Baking and cooling
The bread browns (Dextrinisation) and the protein sets (coagulates).

Using milk to make cheese

Starter culture	A starter culture of non-harmful bacteria is added to the milk. This causes the milk to coagulate (set to a solid) and sour.
Curds and whey	As the milk sets, it separated into curds and whey. The whey is then drained away to leave the curd.
Milling	The mixture is mixed thoroughly, sometimes by hand and sometimes by machines and salt is added. This gives the cheese flavour and also stops the bacteria from being active now that it has done its job.
Moulds	The milled cheese is placed into mould and stacked. This helps it to continue to drain off whey and to start taking the shape of the mould.
Maturing	The milled cheese is then left to mature. This allows the flavour to develop. Sometimes bacteria is sprayed onto the cheese to change the smell, flavour or appearance.

Food preservation

There are two keywords you need to be aware of:
Preserve = to maintain its condition and prevent decomposition.
Spoilage = when food 'spoils' loses its quality, meaning it is less desirable

Food waste

Don't over buy. Keep track of what you've bought and used. Only buy what is needed.
Check the use-by dates of fresh food when you buy it. These are the dates to take notice of, rather than the best-before dates. Only buy what you can use before it expires.
Plan ahead. Think about what you're going to cook and how you'll use the leftovers.
Love your freezer. Freeze foods you do not use.

	Method	Process	Advantages/Disadvantages
Using high temperatures	UHT 	Milk is heated to 135°C for 1 second and the cooled rapidly. The milk is then packed into sterile containers. UHT milk does not need to be kept in cool conditions if its is unopened. Lasts for 6 months if unopened.	Has a slightly sour taste. Must be kept refrigerated when opened. Unopened containers can be kept in room temperature conditions meaning that temperature controlled transportation is not needed for distribution.
	Pasteurisation 	The process of killing harmful bacteria in milk, whilst still preserving the quality of the flavour. It is heated to 72°c for 15 seconds and then cooled quickly to 2°c.	Has very little effect on taste, texture and appearance. Vitamin B2 is reduced through the process.
	Canning 	Foods are placed in liquids and heated to 121°c to increase their shelf life.	Canned food can be kept for 1-2 years unopened. Canned food can taste different as it is submersed in liquid. Canned food can have a lower vitamin content.
Using Cold temperatures	Freezing 	Food can be preserved for up to one year by placing in temperatures of -18°c.	Frozen foods can be kept for 1 year. Has very little effect on nutrition, taste, texture and appearance.
	Chilling 	Food can be preserved for a short amount of time, sometimes a few days, in temperatures of 0-5°c.	Has very little effect on nutrition, taste, texture and appearance.

	Method	Process	Advantages/Disadvantages
Drying	Drying 	Food can be dried using a number of methods such as roller drying and sun drying.	It intensified the flavour. It does change the appearance to make it wrinkled and smaller due to moisture loss.
	Smoking/curing 	Smoking involves exposing food to smoke over a long period of time. This slowly cooks the foods and creates an unsuitable environment for bacteria. Curing involves rubbing salt into food to dehydrate it.	Changed the appearance and taste. Gives quite a strong intense flavour.
Acids, salts and sugars	Making jams/preserves 	Adding sugar to foods and boiling it.	Changes the appearance and texture. Making food into jam also affects the way in which the food can be used. E.g. jam has to be spread onto foods whereas fruit can used as a snack on its own. Increases the sugar content making it unhealthier.
	Pickling 	Immersing foods in a vinegar or brine solution.	Changes the taste of food quite drastically but does provide a much extended shelf life.
Packaging	Modified atmosphere packaging 	Reducing the oxygen content of packaging and replacing it with nitrogen or carbon dioxide. This mix of gases prevents micro organisms from surviving and as a result prevents food from spoiling,.	Has no impact on taste/texture/appearance.
	Vacuum Packaging 	Removing all air from the packaging.	Has no impact on taste/texture/appearance.

YEAR 10 CYCLE 3 HEALTH AND SOCIAL CARE

YEAR 10 Health and Social Care Knowledge Organiser: Component 3 Health and wellbeing

Learning Aim A: Physical and Lifestyle Factors

How can factors such as health and lifestyle choices affect us? Understanding these factors is essential knowledge for your component 3 Health and Social Care exam.

WEEK 1 and 2 : Health and wellbeing – Not just the absence of disease but a holistic attitude:

1. Physical - Healthy body & diet, sleep, shelter and personal hygiene.
2. Intellectual- Healthy brain, learn new knowledge, communicate & solve problems.
3. Emotional - Security, express & deal with emotions, self-concept.
4. Social – Friendships and relationships.

Ill Health - A physical factor which can have a negative effect on health & wellbeing.

1. Acute- Illness starts quickly, lasts for a short period of time. Usually cured e.g. flu.
2. Chronic- Comes on more slowly, lasts a long time. Usually treated but not cured e.g. diabetes.

WEEK 3 and 4 : Genetic Inheritance- Genes inherited from both parents:

1. Inherited characteristics -height, eye colour, hair colour.
2. Inherited conditions-Some alleles (genes) can be faulty & pass on conditions.

Dominant condition- One parent passes faulty allele on e.g. Huntington's.

Recessive condition- Both parents pass faulty allele on e.g. Cystic fibrosis.

3. Genetic predisposition - Some people are more likely to develop a condition due to genetic makeup *i.e. heart disease.*

WEEK 5 and 6: Diet-The balance of foods a person eats:

1. Foods to avoid
 - *Salt* – raises blood pressure.
 - *Saturated fat* – raises cholesterol, heart disease.
 - *Sugar* – rots teeth, high in kcals (energy).

2. Other points
 - Water is important to stay hydrated.
 - Controlled calorie intake can manage weight.

Section	Nutrient
Starchy foods	Carbohydrates (fibre if wholemeal)
Fruit & vegetables	Vitamins Fibre
Meat, fish, eggs, beans	Protein
Dairy	Calcium
Oils	Unsaturated fats

WEEK 7 and 8: Physical Activity

1. **Exercise types-** Gentle e.g. walking/ Moderate e.g. light jog/ Vigorous e.g. football.
2. **How much?** - Adult: approx. 150 mins moderate exercise per week.
3. **Exercise Benefits-** lowers BMI, strengthen bones & muscle. Better memory & thinking skills. Increases confidence and relieves stress. Social interaction and teamwork.
4. **Lack of exercise:** Stiff joints, Poor stamina/strength, Obesity, Stroke, Heart disease and Osteoporosis.

WEEK 9: Personal Hygiene

1. Good personal hygiene- Prevents spread of infection/ Improves self-concept/ Washing/ Brushing and washing hair/ Brushing teeth/ Clean clothes.

1. Effect on PIES of poor hygiene- **Physical**- Catching & spreading disease, Poor body odour, poor oral hygiene/ **Intellectual**– Reduction of opportunities/ **Emotional**– poor self–concept, bullied/ **Social** – social isolation, loss of friendship.

WEEK 10: Substance misuse

1. Alcohol - Men & women should drink less than 14 units/week, 1 unit = one single spirit, 1.5 units = 1 pint, 1 small glass of wine. Can increase risk of addiction & cancers.
2. Smoking & Nicotine – Cigarettes contain nicotine (addictive drug), tar, carbon dioxide & soot which are all harmful. People smoke to relieve stress, peer pressure, or are unable to quit.
3. Drugs – **Legal.** Prescription misuse - When people become addicted to them, take excess, or take someone else's.

YEAR 10 CYCLE 3 MUSIC

Component 2: Musical Skills Development

Week 1	Week 2	Week 3	Week 4	Week 5
SMART Targets **S = Specific** The goal that you are setting yourself needs to be specific. *To be able to perform the opening 8 bars using both left and right hand.* **M = Measurable** How you will know that you have been able to achieve the specific goal that you have identified. *When I am able to perform the opening 8 bars at the correct tempo with no mistakes, then I have achieved my goal.* **A = Achievable** The specific goal that you have set yourself should challenge you to develop but should not be something that you should be able to do if following your plan. *By practicing with correct technique for at least an hour each week making sure to practice all 8 bars equally.* **R = Relevant** The goal that you are setting yourself should be something that is going to help develop your skills overall. *Being able to play confidently with both hands is a key skill for a Keyboard player.* **T = Time-Bound** You should set yourself a clear deadline that you hold yourself accountable to.	**Professional Skills Development** Time Management Self – Discipline Working with Others Correct and Safe use of Equipment Identifying Resources Required Auditing Existing Skills Maintaining a Development Plan **Planning and Communicating Music Skills Development** Planning development processes. Strategies for skills development. Managing equipment and resources. Methods of capturing musical development, such as: recordings, drafts, initial mixes, etc. Having a clear and organised approach to communicating key information. E.g. referencing things in a logical order; use of images, videos and recordings to support written commentaries. Sharing and commenting on work. E.g. Social Media Jam Sessions, mixtapes, demos.	**Accuracy** What is accuracy? Accuracy is how 'right' you are able to perform a piece of music. That means playing the right notes, in the right order, counting all the rhythms and rests correctly and ensuring any additional articulation is performed. Why is accuracy important? Accuracy is important as it shows the level of understanding you have of a piece of music that you are performing. An accurate performance is a well-rehearsed performance. It shows that you have put the work in to create something to the highest possible standard that you can. How can you measure accuracy? One way in which you can assess the accuracy of your performance is to compare it to recordings of other people performing the same piece of music. That doesn't mean you have to copy it exactly – but you can make sure that the fundamental elements are all there. How do you improve accuracy? Improving accuracy is something that takes time and hard work. Practice a piece in small sections, working through passages that you find difficult and practicing slowly before speeding up are good ways of improving accuracy.	**Technique** What is technique? Technique is how you perform your chosen instrument. Are your hands in the right position? Are you sat in the right position? etc. Why is technique important? Proper technique improves the quality of the sound that you are able to produce on your instrument. Poor technique will also limit the difficulty of the pieces that you are able to perform. How can you recognise good or bad technique and how do you improve it? The easiest way to keep track of technique and improve it is to have lessons on your instrument of choice. The specialist teacher will be able to tell you what you are doing right, what you can improve and how to improve it. While it is not possible for everyone to have music lessons there are other ways in which you can keep track of and improve your technique. There are hundreds of useful instructional videos on YouTube that you can use (just check how professional they seem first!) Videoing yourself is another good way to see where improvements could be made.	**Expression** What is expression? Expression is the difference between a good piece of music and a great piece of music. It is all the additional bits that are added to the performance that aren't necessarily on the page; Dynamics, Phrasing, Articulation, etc. Why is expression important? Expression is what makes music sound human – without it a performance can sound somewhat robotic. It is also what makes each performance unique. Every performer will put different expression into their performance that makes it uniquely theirs. How can I show expression within a piece of music? Dynamics – Louds and Softs are one of the easiest ways to add dynamics into a piece of music. Phrasing – Listening carefully to what you are playing and where emphasis should be put. What can I do to improve the expression that I am including? Listen to different recordings of that piece of music. How are other performers interpreting that passages? Would you do the same or something different? From there you can decide what you want to do with the expression that suits you.

YEAR 10 CYCLE 3 MUSIC

Component 2: Musical Skills Development

Week 6

Composition

Composing music is the process of writing it yourself from scratch. The chord sequence, the melody, the bass line, the drum part and any additional elements that you might want to include in a piece of music.

It may also involve writing your own lyrics and making sure that these fit with the musical backing that you have created.

Production

Music Production is the process of developing, creating and refining recorded music for public presentation. It involves processes such as mixing, mastering, recording and sound design.

DAW

Both Composers and Producers use Digital Audio Workstations – software that allows the user to create music from the composition stage and produce it to a point where it is ready for release.

Week 7

Chord Sequences

A collection of different chords in a pattern that provide the bulk of the harmony.

I-V-vi-IV is one of the most common chord sequences used in music of all styles.

Use the tables below to help you choose suitable chords in each key:

Chords In All Major Keys

Major Keys	I	ii	iii	IV	V	vi	vii°
C	C	Dm	Em	F	G	Am	B°
C♯	C♯	D♯m	E♯m	F♯	G♯	A♯m	B♯°
D♭	D♭	E♭m	Fm	G♭	A♭	B♭m	C°
D	D	Em	F♯m	G	A	Bm	C♯°
E♭	E♭	Fm	Gm	A♭	B♭	Cm	D°
E	E	F♯m	G♯m	A	B	C♯m	D♯°
F	F	Gm	Am	B♭	C	Dm	E°
F♯	F♯	G♯m	A♯m	B	C♯	D♯m	E♯°
G♭	G♭	A♭m	B♭m	C♭	D♭	E♭m	F°
G	G	Am	Bm	C	D	Em	F♯°
A♭	A♭	B♭m	Cm	D♭	E♭	Fm	G°
A	A	Bm	C♯m	D	E	F♯m	G♯°
B♭	B♭	Cm	Dm	E♭	F	Gm	A°
B	B	C♯m	D♯m	E	F♯	G♯m	A♯°

Chords In All Minor Keys

Minor Keys	i	ii°	III	iv	v	VI	VII
Cm	Cm	D°	E♭	Fm	Gm	A♭	B♭
C♯m	C♯m	D♯°	E	F♯m	G♯m	A	B
Dm	Dm	E°	F	Gm	Am	B♭	C
D♯m	D♯m	E♯°	F♯	G♯m	A♯m	B	C♯
E♭m	E♭m	F°	G♭	A♭m	B♭m	C♭	D♭
Em	Em	F♯°	G	Am	Bm	C	D
Fm	Fm	G°	A♭	B♭m	Cm	D♭	E♭
F♯m	F♯m	G♯°	A	Bm	C♯m	D	E
Gm	Gm	A°	B♭	Cm	Dm	E♭	F
G♯m	G♯m	A♯°	B	C♯m	D♯m	E	F♯
A♭m	A♭m	B♭°	C♭	D♭m	E♭m	F♭	G♭
Am	Am	B°	C	Dm	Em	F	G
A♯m	A♯m	B♯°	C♯	D♯m	E♯m	F♯	G♯
B♭m	B♭m	C°	D♭	E♭m	Fm	G♭	A♭
Bm	Bm	C♯°	D	Em	F♯m	G	A

Week 8

Bass Line

The bass line usually follows a similar pattern to the chord sequence.

It will use key notes heard in each chord as well as passing notes to add interest.

Drums

Often considered to be the back bone of a piece of music. The style in which you compose your drum beat will help to define the style and mood of the whole song.

Structure

Binary Form: Two contrasting sections – A B.
Ternary Form: Two contrasting sections with the first section returning – A B A.
Rondo Form: Recurring A section with contrasting sections that are different from one another in between – A B A C A D A .
Strophic Form: Verse-Chorus structure commonly heard in popular music. Intro and outro often included as well as Bridge, which is often an instrumental section with different musical material from the other sections.

Week 9

Melody

Writing a melody is often the hardest part of composing a piece of music. A good starting place is to use the notes heard within the chord that is playing at the time and build from there.

Rhythm

Rhythms within a melody should be varied yet feel cohesive. Too repetitive and the listener will get bored, too complicated and it becomes hard to follow.

Think about composing two contrasting melodies for your composition and having them interact in different ways – similar to what you would hear in the verse and chorus of a pop song.

Passing Notes: Notes that sit in between the notes that are found in the chord.

Conjunct: Melody that moves in steps in a smooth and connected way.

Disjunct: Melody that moves in bigger leaps in a disjointed manner.

Week 10

Recording

Recording can be done in several different ways. Live instruments can be played and recorded by a microphone or by plugging directly into a DAW.
Midi instruments, such as keyboards, can also be used to record sounds. These sounds can then be manipulated to sound like any other instrument.

Mixing

Mixing is the process of making sure that all of the individual tracks work together to create a whole. This can be adjusting volume levels, effects used and adding panning to improve the experience for the listener.

Mastering

Mastering is often the final stage in the production process when the song is optimised for playback.

Sound Design

Sound design is a process undertaken to make sure that the textures and timbres of the individual tracks all work together and suit the vision of the end product.

YEAR 10 CYCLE 3 PERFORMING ARTS - Developing Skills and Techniques in the Performing Arts

Week 1 and 2	Week 3 and 4	Week 5 and 6	Week 7 and 8	Week 9 and 10
Key skills and techniques for rehearsal and performance needed to achieve In Component 2. • Practice, repetition and recall to learn dialogue. • Experimentation of skills and techniques. • Interpreting and developing character. • Communication of style/genre. • Communication of themes and ideas. • Applying Health and safety. • Warming up and cooling down. • Response to teacher and peer instruction and feedback. • Reviewing and recording development of skills. • Cooperation. • Application of relevant performance skills for the style and genre chosen. • Application of interpretive skills – expression, character, mood and atmosphere.	**Drama styles** Naturalistic – performance is as close to real life as possible. **Non-naturalistic** – performance is more theatrical, tells a story using techniques such as flash-back, direct address to the audience (breaking the fourth wall), multiple role-play. **Abstract** – uses lots of symbolism, surreal settings, Artaud's theatre of cruelty (making the audience think or feel uncomfortable). **Physical theatre** – performers focus on their bodies, mask work, creating settings and props using bodies of performers, mime and dance work. **Theatre-in-Education** – a play created to teach a lesson, passes on a message, often includes a workshop or discussion of some kind. **Verbatim Theatre** - a play that is scripted using real words from interviews.	**Drama Genres** **Comedy** – funny story, ends happily. **Tragedy** – story shown is sad, ends unhappily, death or downfall of main character(s). **Gritty Realism** – about real-life, usually dealing with poverty, people struggling with their lives. **Historical Drama** – set in a particular historical period, such as, World War 2, Roman times. **Docudrama** – looks like a documentary, with reconstructions included. **Thriller/Horror** – to scare your audience, to make them feel uncomfortable, to make them jump, creates tension/suspense in your audience. **Melodrama** – over the top acting, Victorian drama – lots of entrances and exits. **Farce** – lots of quick entrances and exits, characters just missing each other, comedy.	**Some key scripts you may want to consider** **The Importance of Being Earnest by Oscar Wilde** - a comedy of manners with hints of satire and performed in a slightly melodramatic way. **Blood Brothers by Willy Russell –** a combination of tragedy and musical theatre. It was originally written without songs, so has a different feel to a traditional musical. **Abigail's Party by Mike Leigh** - a realistic comedy. The style is slightly more melodramatic than naturalistic as it was the result of improvisational activities **The Dumb Waiter by Harold Pinter** - an absurdist play. The cast must be two males. It has comic moments and lots of tension.	**Some key scripts you may want to consider** **The Birthday party by Harold Pinter** - an absurdist play. It has comic moments and lots of tension. **Hard to Swallow by Mark Wheeller** - a gritty issue based play on the theme of eating disorders. Based on a true story it is part naturalistic, and often non naturalistic in a physical way. **The Caucasian Chalk Circle by Bertolt Brecht** - a play in the **epic** style. It uses many stylistic devices such as play within a play, irony, satire, humour, imagery, songs, wise sayings, contrast and symbolism, among others. **Antigone by Sophocles –** Greek Tragedy – using all the traditional conventions.

YEAR 10 CYCLE 3 PHYSICS

Year 10 Separate Physics Cycle Three

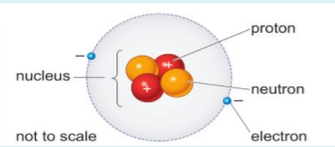
Key Vocabulary

1. **Contamination: If radioactive particles enter body or get on skin**
2. Daughter nucleus – the nucleus produced when an unstable nucleus splits in two.
3. **Displace** – move out of the way.
4. **Dose** – the amount received at one time.
5. **Elastic –** changes shape when there is a force on it but returns to its shape when the force is removed.
6. **Inelastic –** changes shape when there is force on in but does not return to its shape when the force is removed.
7. **Irradiation: Exposure to radiation.**
8. **Isotope** – two atoms of the same element with the same number of protons but different number of neutrons.
9. **Linear relationship –** a relationship between 2 variables by a straight line on a graph.
10. **Non-linear relationship –** a relationship between 2 variables that does not show a straight line on a graph.
11. **Normal** – at right angles to the surface.
12. **Nucleon** – a particle found in the nucleus (neutron or proton).
13. **Pascal (Pa)** – the unit for pressure.
14. **Spring constant** – a measure of how stiff a spring is. The spring constant is the force needed to stretch a spring by 1m.
15. **Up thrust –** objects in a fluid have this force acting on them, this force is due to the difference in pressure above and below the object.

Week One

1. **Structure of the atom**- you need to know the location of the particles in the atom and their charges.

Subatomic Particle	Relative Charge
proton	+1 (positive)
neutron	0
electron	-1 (negative)



2. **An isotope** is where two atoms of the same element have the same number of protons but a different number of neutrons, as a result they have the same atomic number but different mass number.
3. When atoms are energised, electrons can jump to **higher orbits**. Energy is emitted as **visible light** when the electron returns to its original orbit.

Week Two

1. Atoms that absorb sufficient radiation can lose electrons and become **ionized.**
2. **Ionisation** is where atoms form ions (charged particles) due to the loss or gain of electrons.

a. If electrons are lost **positive ions** are formed.
b. If electrons are gained **negative ions** are formed.

2. Radiation that causes electrons to escape is called ionising radiation.
3. **Background radiation** is the radiation that we are constantly exposed to.

a. This may be from cosmic rays (from the sun or stars),
b. Food and drink
c. Medical equipment
d. Radon

Week Three

1. Types of radiation

a. Alpha α– Helium nucleus, blocked by paper.
b. Beta β – High energy electron, blocked by 3mm aluminium.
c. Gamma γ – Part of EM spectrum, blocked by several m of concrete or lead.

Radioactive decay		mass number	atomic number
α	2 protons 2 neutrons emitted	↓4	↓2
β–	Neutron turns into a proton and an electron is emitted	No change	↑1
B+	Proton becomes a neutron and a positron emitted	No change	↓1

Week Four

1. Detecting radiation:

a. Radioactivity can be detected by **photographic film** which turns darker if it is exposed to more radiation.
b. Using a **Geiger-Muller** tube to measure the count rate of radiation

2. **The count rate** is the number of clicks per second.
3. **Radioactive decay** happens when the nucleus of an atom is unstable, and it emits a particle.
4. **Becquerel's (Bq)** is the unit of activity of a radioactive isotope

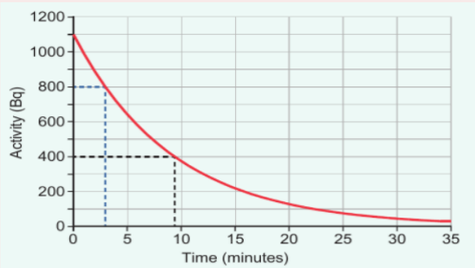
YEAR 10 CYCLE 3 PHYSICS

Week Five

1. **Nuclear equations** show the products formed when a substance decays. **The mass numbers** on either side of the equation must always be **equal.**

$$^{226}_{88}Ra \rightarrow {}^{4}_{2}He + {}^{222}_{86}Rn \quad {}^{131}_{53}I \rightarrow {}^{0}_{-1}e + {}^{131}_{54}Xe$$

2. **Half-life: The time it takes for half of the un-decayed nuclei to decay by half.**
3. Sources used in medical treatments need short half lives and therefore are made close-by.



Week Six

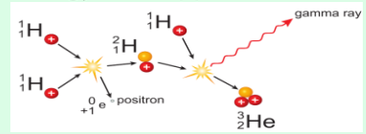
1. Uses of radiation in medicine:-
a. Tracers (a gamma source) is given to patient and then located using gamma cameras.
b. Radioactive glucose is used to detect fast growing cancer cells
c. PET scans detect activity of the brain using radioactive isotopes.
2. Treating cancer:

a. Internal radiotherapy – beta emitter placed inside tumour or nearby. Doesn't always need surgery but patient stays alone in room while source is in place.

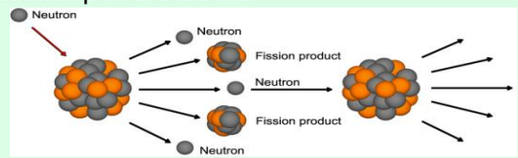
b. External radiotherapy – beams of gamma rays, x-rays or protons directed at tumour from outside body. Lots of low strength beams can be directed at tumour minimising damage to surrounding tissue.

Week Seven

Nuclear fusion is when two small nuclei join together (fuse) to form a larger nucleus. This releases energy and happens in the Sun.



Nuclear fission is when large nuclei break down to form smaller nuclei and release energy. This can trigger a **chain reaction** which if uncontrolled forms an atomic bomb. However controlled can be used in power stations.



Week Eight

Development of ideas about the **solar system**:

- **Ptolemys** (c100-170) – Geocentric model where all the planets, moons and sun orbit Earth
- **Copernnicus** (1473-1543) – Heliocentric model where the Sun is at the centre of the Solar system.
- **Galileo Galilei** (1564-1642)- Telescope helped him discover 4 of Jupiter's moons and support Copernicus's idea.

The **Solar system** consists of the Sun (our star), 8 planets (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune) and the natural satellites (such as our moon); dwarf planets (pluto); asteroids and comets.

1. **Orbits:** most are elliptical, artificial satellites have different orbits depending on what they are used for.
2. Changing orbits: when a body has a constant speed the orbit is circular, however its direction is constantly changing therefore it has a constantly changing velocity.

Week Nine

Weight is the **force of gravity** acting on an object. Weight depends on the **mass** and the gravitational field strength (g) of the Earth.
On **Earth, g = 9.81 N/Kg** so the weight of 1Kg mass is 9.81N.
The **gravitational field strength** on the surface of a body depends on the **mass of the body** and the distance from its centre to its surface (**radius**). The greater the mass and the smaller the radius, the greater its surface gravity.
Star formation and life cycle stages of masses similar to the sun: nebula, protostar and star (main sequence of life cycle like the sun), red giant, white star and black dwarf
Stars have a balance between the thermal expansion and the compression due to gravity and remain stable for 10 billion years.
Life cycles of massive stars: large stars become **red supergiant** and rapidly collapse in a **supernova**

Week Ten

1. Supernovas **4x or more larger** than the sun are pulled together to become a **black hole**
2. Supernovas with **smaller masses**, gravity pulls the remains to form a small, very dense **neutron star**.
3. Red shift- the measure of the shifting of the dark lines towards the red end of the spectrum (indicates moving away from earth)
4. **Big Bang Theory-** 1920, the whole universe and mass started out as a tiny point of concentrated energy and is expanding and gravity caused matter to clump together to form stars. **Cosmic microwave background radiation (CMD)** is evidence supporting this therefore more accepted.
5. **Steady State Theory-** 1948, universe has always existed and is expanding and new matter is continuously created as it expands.

Year 10, Cycle 3

Key terms

Absolute poverty - Not being able to afford the basic things you need to survive in life (e.g. food, clothing).
Achieved status - Social positions are earned through personal talent, merit and effort, not fixed at birth.
Ascribed status - Social positions/status are fixed at birth (due to class) and do not change over time.
Bourgeoisie - The ruling class who owned the means of production and exploited the working class.
Culture of dependency – The welfare system encourages people to stay on benefits rather than support themselves through work.
Glass ceiling - An invisible barrier in employment that prevents some groups such as women or ethnic minorities from gaining promotions.
Life chances - The opportunity/chance of achieving positive or negative outcomes (e.g. healthy/ill, rich/poor) as you progress throughout life.
Power - The ability to get what you want, despite opposition.
Pressure group - A group formed to influence government policy on a particular issue.
Relative poverty - Not being able to afford to meet the general standard of living compared to most other people in their society.
Social exclusion - The inability of some groups in society (e.g. the elderly, the working class) to play a full part in society/access the full benefits.
Social inequality - The uneven distribution of resources (e.g. money or power) and opportunities.
Social mobility - The ability to move up the social ladder.
Social stratification - How society is structured in a hierarchy of layers based on factors such as age, gender.
Status - The social standing or prestige someone is given by other members of society.
Underclass - A group in society who have different attitudes and values to others. They experience long-term unemployment, tend to be reliant on benefits.
Wealth - The ownership of assets (e.g. property, land, jewelry) and savings, shares etc.
Welfare dependency - When individuals are reliant on the government for income for a prolonged period of time.

GCSE Sociology Knowledge Organiser Social stratification

Theories of social stratification

Functionalist - Social stratification is positive for society. Society is based on meritocracy and status is 'achieved' through hard work and effort.
'Role allocation' – Top roles are filled by those who are able, ambitious and competitive – allows society to run smoothly.

Marxists Social stratification is negative for society. Society is based on conflict and status is 'ascribed' – is fixed at birth by class and cannot be changed. Top roles are filled by the bourgeoisie and creates inequality.

Feminists Social stratification is negative for society. Society is based on conflict and patriarchy with the top roles being filled by men and women being lower in the hierarchy.

Social stratification and class

Working class	Middle class	Upper
Unskilled/manual work, lack of formal education	Professional jobs, formal education e.g. University	Aristocracy, elite education, 'titles' given

How is class measured?	NS-SEC: Measures class by occupation (job). Ignores wealth/status as a measure of class.
Does class affect life chances?	Yes - Marxists – status is ascribed, working classes have poorer opportunities in education, employment, health, housing.
	No - Functionalists - status is achieved, society is based on meritocracy – equal chances to succeed. Feminists – gender has more of an influence on life chances than class.
Do we still have different classes in society?	Yes – Marxists – still a divide between the working and middle classes. Life chances are still poorer for the working class, low social mobility. Devine – there is still a separate working class.
	No – Functionalists – meritocracy, more w/c going to university etc. Embourgeoisement – the w/c may be becoming more middle class. Less people may be working class due to chances in occupation.

Social stratification and gender

Policies to reduce inequality - Equal pay act (1970), Sex Discrimination Act (1975), Equality Act (2010).

Does gender affect life chances ?	Yes - Feminists – women have poorer life chances due to patriarchy. Women less likely to be CEOs, to be paid a high wage, face a glass ceiling, pay gap still exists.
	No - Functionalists – society is based on meritocracy. Improvements for women – more likely to attend University, pay gap has decreased, women have a higher life expectancy.
Reasons why	Glass ceiling/patriarchy in the workplace. Gender socialisation – women may take expressive role/lower paid careers.

Factors affecting life chances

Life chances	Life expectancy, income, wealth, employment, education, housing, health.
Class	Education: W/C - poorer GCSE grades. Income: W/C - earn less, minimum wage. Housing: W/C - rented, poor quality. Life expectancy: W/C – lower, poorer health.
Gender)	Education: Girls outperform boys. Employment: Women lower paid, less income/wealth, less likely to be in top jobs. Life expectancy: Women live longer.
Ethnicity	Employment: 20% of black Caribbean men unemployed. Employment: 4% of CEOs are BAME. Education: Poorer GCSEs among some BAME groups and less likely to go to University.
Age	Youth – lower income, higher unemployed. Older age – more at risk of poverty, ageism in the workplace, poorer access to health services.

Other factors – Disability, Sexuality, Religion/beliefs.

Social stratification and ethnicity

Policies to reduce inequality – Race relations act (1976), Equality act (2010).

Does ethnicity affect life chances?	Yes – 4% of CEOs are BAME, some groups have lower life expectancy, glass ceiling/lower paid jobs, poorer GCSE grades.
	No – Laws/policies have reduced inequality, some BAME groups more likely to go to University, differences among groups.

Social mobility

Yes	No
More w/c go to University, achievement is increasing. functionalists- achieved status / meritocracy, statistics may not be accurate.	UK – one of lowest rates of mobility, top jobs more likely to be privately educated, only 35% think they have a fair chance. Marxists – inequality due to capitalism.

GCSE Sociology Knowledge Organiser Social stratification

Key studies

Davis and Moore (functionalist)

Society needs to place people into roles / social positions that need to be filled for society to operate smoothly. Some roles come with higher status (doctors, lawyers). People who fill the top roles are the most able, have the most drive/ambition and are the most competitive.

Marx (Marxist)

Class is an important division, the bourgeoisie have power/control over the proletariat who are exploited for profit. The working class and petty bourgeoisie didn't benefit from the growth of capitalism. Small business couldn't compete and had 'downward social mobility'. The working class are not aware of their exploitation.

Devine

Conducted interviews at a car factory in the 1980s. She found evidence of the working class still being separate and still had working class values. This goes against the idea of embourgeoisement.

Townsend

Conducted surveys on 2000 households about poverty, used relative poverty index and found the government underestimated poverty (6% vs. 22%). Concluded that poverty should be measured using a number of factors.

Murray (New Right)

There is a growing underclass in British society caused by overgenerous welfare benefits. Can be seen in three ways – welfare dependency, juvenile delinquency, loss of traditional values.

Weber

Believed class is important but is not just tied to income/wealth, status and power can affect someone's position in society too.
He thought capitalism actually expanded the middle class and a revolution by the working class is possible.
Distinguished between three types of power in society – charismatic, traditional and rational legal.

Walby (Feminist)

Men have more power in society due to patriarchy. This is shown in 6 ways – paidwork/employment, labour in the home, patriarchal culture, sexuality, male violence and the state. Public patriarchy is now more likely to exist than private patriarchy.

Poverty

Definitions of poverty

Absolute	Relative
Not being able to afford things you need to survive (e.g. food/shelter). Politicians prefer it (looks like less people are in poverty) and is a fixed definition, does not change between countries.	Not being able to afford the general standard of living in society e.g. (internet). Sociologists prefer it (more accurate) and takes into account differences in standards of living between countries.

Reasons / explanations of poverty

Reasons	Poor health, divorce, old age, disability, unemployment, lack of education.
The poor are responsible	Culture of poverty – Socialised within a subculture to accept poverty, see it as normal, unlikely to try and get themselves out of it. Leads to a cycle of deprivation – poverty being passed from one generation to the next.
	Cultural deprivation – May not have the correct norms and values to be motivated to get out of poverty, may seek immediate gratification (e.g. spending money rather than saving)
	Welfare dependency – Overgenerous welfare benefits could mean there's no incentive to work for less than you would receive. Can lead to the poverty trap.
Society is responsible	Class inequality – Marxists argue capitalism is responsible for poverty as the working class are not given opportunities to get out of poverty (low wages and zero hour contracts, low social mobility).
	Globalisation – Has led to a higher cost of living and low minimum wages, with less manufacturing jobs as these have moved abroad.

Are poverty statistics accurate?

Yes	No
Functionalists – official statistics are accurate.	Marxists – statistics underestimate poverty so the working class believe society is fair and do not revolt. Feminists – statistics underestimate female poverty due to lower wages, less opportunities etc. Townsend – governments underestimate poverty and should use relative measures

Is poverty still an issue in society?

Yes	No
Poverty rates are increasing for all age groups (1/5 people). Marxists – minimum wages and zero hour contracts still cause poverty. Feminists – poverty is still an issue for women.	Functionalists – government policies have aimed to reduce poverty. Less people are in absolute poverty now.

Power and authority

Formal power – power from the title/role someone has. Informal – power from respect/appreciation earnt.

Forms of power / authority	Traditional – inherited (e.g. monarchy), based on established customs/traditions.
	Charismatic – shown by a leader with persuasive/inspirational qualities.
	Rational legal – shown by organisations through laws, rules and regulations.
Who has power?	The ruling class have power over the working class (Marxist view).
	Men have power over women (in employment, the home, society, violence, the government) (feminist view).
	Heterosexuals – LGBT may have less power in politics/police etc.
	White individuals – BAME groups under-represented in politics.
	Older people – younger may be excluded from politics (vote at 18).

Power of the state

Political system in the UK – democracy, first past the post system (MPs elected based on votes in constituency). Other systems – dictatorships (one person in power), proportional representation.

Can the public influence the state?	Yes – pluralist view, pressure groups, petitions, protests etc.
	No – conflict approach, Marxists, power of businesses rather than the public.

The underclass

Does the underclass still exist?

Yes	No
Murray – underclass is in Britain, can be seen in welfare dependency, juvenile delinquency and a loss of values. Members of the underclass were blamed for the London riots There are more lone-parent families in the underclass.	Murray blames the victims for being welfare dependent but could be due to divorce etc. Marxists – the underclass are scapegoated to blame for society's problems. Many people who are on benefits still aspire to have paid employment/better themselves.

YEAR 10 CYCLE 3 STATISTICS

Statistics, Yr 10 Cycle 2 & 3
Formulae you need to know for the exam

Sampling

$$\textbf{Stratified sample} = \frac{strata}{total} \times sample\ size$$

Capture-Recapture:

$$\frac{First\ Capture}{Total\ (N)} = \frac{Tagged}{Second\ capture}$$

Representing Data

Angle in a Pie Chart:

$$\frac{Class\ frequency}{Total\ frequency} \times 360$$

Comparative Pie Chart:

$$\frac{r_1}{r_2} = \sqrt{\frac{F_1}{F_2}} \qquad r_1 = r_2 \times \sqrt{\frac{F_1}{F_2}}$$

$r = radius \quad F = Frequency$

Histograms: $\textbf{Area} = \textbf{Frequency}$

$$\textbf{Frequency Density} = \frac{Frequency}{Class\ Width}$$

$$\textbf{Frequency} = Frequncy\ Density \times Class\ Width$$

Averages

$\textbf{Mode} = most\ common$
$\textbf{Modal class} = Class\ with\ highest\ frequency$

$$\textbf{Median (discrete data)} = \frac{n+1}{2} th\ value$$
$$\textbf{Median (grouped data)} = \frac{n}{2} th\ value$$

$\textbf{Mean}, \bar{x}\ \textbf{(discrete data)}$

$$\bar{x} = \frac{\sum x}{n}$$

$\textbf{Mean}, \bar{x}\ (\textbf{frequency table})$

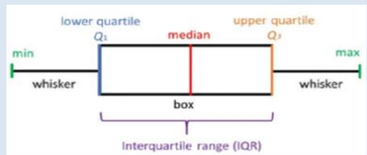
$$\bar{x} = \frac{\sum fx}{\sum f}$$

When data is grouped use the midpoints.

$$\textbf{Weighted Mean} = \frac{\sum(weight \times value)}{\sum weights}$$

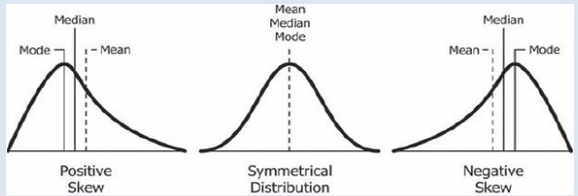
$$\textbf{Geometric Mean} = \sqrt[n]{x_1 \times x_2 \times x_3 \times \cdots \times x_n}$$

Box Plots



Outliers

$$values > UQ + (1.5 \times IQR)$$
$$values < LQ - (1.5 \times IQR)$$



Measures of Dispersion

$$\textbf{Range} = largest\ value - smallest\ value$$

$\textbf{Interquartile Range}\ (\textbf{IQR})$:
$Upper\ Quartile\ (UQ) - Lower\ Quartile\ (LQ)$

$$\textbf{Decile} = \frac{n+1}{10} th\ value$$
$$\textbf{Percentile} = \frac{n+1}{100} th\ value$$

Interdecile Range is the difference between 2 deciles
Interpercentile Range is the difference between 2 percentiles.

$\textbf{Standard Deviation}, \sigma$

The formulae for discrete data are given in exams

Discrete data:

$$\sigma = \sqrt{\frac{1}{n}\sum(x-\bar{x})^2} \text{ or } \sigma = \sqrt{\frac{\sum x^2}{n} - \left(\frac{\sum x}{n}\right)^2}$$

Mean of the squares minus square of the mean

Frequency Table or Grouped Data:

$$\sigma = \sqrt{\frac{\sum fx^2}{\sum f} - \left(\frac{\sum fx}{\sum f}\right)^2}$$

When data is grouped use the midpoints.

Foundation Tier Formulae

Higher Tier Formulae

YEAR 10 CYCLE 3 STATISTICS

Time Series

Moving averages
Calculate mean of values

Seasonal Variation
$Actual\ value - Trend\ value$

Estimated Mean Seasonal Variation
Mean of all the seasonal variations for that season

Predicted Value
$Trend\ Line\ Value\ (from\ graph) + EMSV$

Scatter Diagrams

***Mean Point*, $(\bar{x}, \bar{y})$**
$(Mean\ of\ x\ values, Mean\ of\ y\ values)$

Equation of Line of Best Fit
$y = ax + b$

***Gradient*, a**
$$a = \frac{y_2 - y_1}{x_2 - x_1}$$

Spearman's Rank Correlation Coefficient (SRCC)

$$SRCC, r_s = 1 - \frac{6\sum d^2}{n(n^2 - 1)}$$

This formula is given in the exam

$d = difference\ between\ ranks$
$n = number\ of\ values$

Foundation Tier Formulae

Higher Tier Formulae

Index Numbers

$$\textbf{\textit{Index Number}} = \frac{Price}{Base\ year\ price} \times 100$$

Weighted Index Number
$$\frac{\sum(index\ number \times weight)}{\sum weights} \times 100$$

Chain Base Index Numbers
$$\frac{Price}{Last\ year's\ price} \times 100$$

Rates of Change

$$\textbf{\textit{Crude Rate}} = \frac{Number\ of\ births/deaths}{Total\ population} \times 1000$$

Standard Population
$$\frac{Number\ in\ age\ group}{Total\ population} \times 1000$$

$$\textbf{\textit{Standardised Rate}} = \frac{Crude\ rate}{1000} \times standard\ pop$$

Probability Distributions

Normal Distribution
- Data is continuous
- Distribution is symmetrical
- Mode, median and mean are all approximately equal

Binomial Distribution
- Fixed number of trials (n)
- Each trial has 2 outcomes, success (p) or failure
- All the trials are independent of each other
- Probability of success is constant

$$\textbf{\textit{Standardised Score}} = \frac{Score - Mean}{Standard\ Deviation}$$

Probability

$$\textbf{\textit{P(event)}} = \frac{Number\ of\ successful\ outcomes}{Total\ number\ of\ outcomes}$$

Expected Frequency of Event A
$P(A) \times number\ of\ trials$

Estimated Probability
$$\frac{Number\ of\ trials\ with\ successful\ otcomes}{Total\ number\ of\ trials}$$

Risk
$$\frac{Number\ of\ trials\ in\ which\ event\ happens}{Total\ number\ of\ trials}$$

Relative risk
$$\frac{Risk\ for\ those\ in\ the\ group}{Risk\ for\ those\ not\ in\ the\ group}$$

Mutually Exclusive Events
$\boldsymbol{P(A\ or\ B)} = P(A) + P(B)$

Mutually Exclusive Exhaustive Events
$(PA) + P(not\ A) = 1$

General Addition Law
$\boldsymbol{P(A\ or\ B)} = P(A) + P(B) - P(A\ and\ B)$
$\boldsymbol{P(A \cup B)} = P(A) + P(B) - P(A \cap B)$

Independent Events
$\boldsymbol{P(A\ and\ B)} = P(A) \times P(B)$
$\boldsymbol{P(at\ least\ 1)} = 1 - P(none)$

Conditional Probability
$$\boldsymbol{P(B|A)} = \frac{P(A\ and\ B)}{P(A)}$$