



ASH MANOR SCHOOL
Aspire & Achieve

Year 10 Spring Term Knowledge organiser

Name:

Tutor group:

Tutor:

Tutor room:

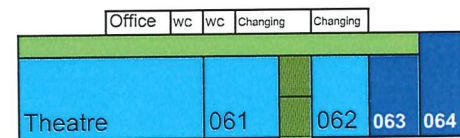
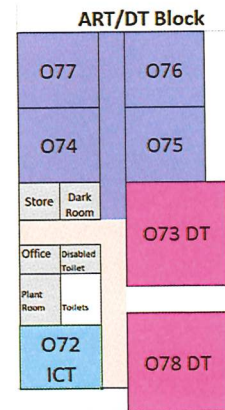
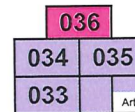
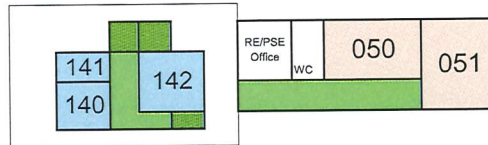
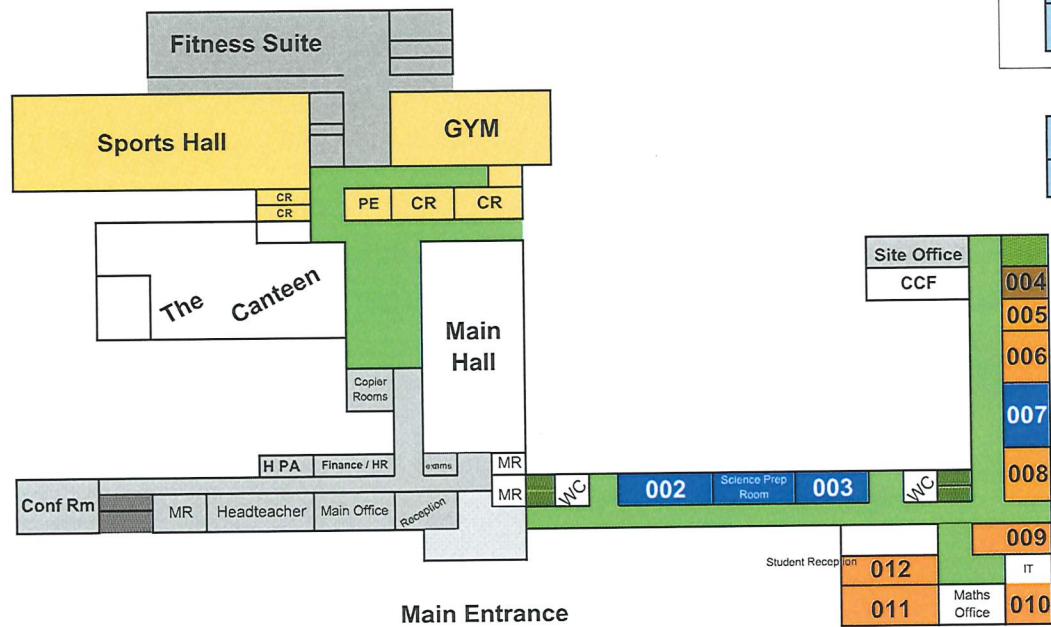
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Key School information

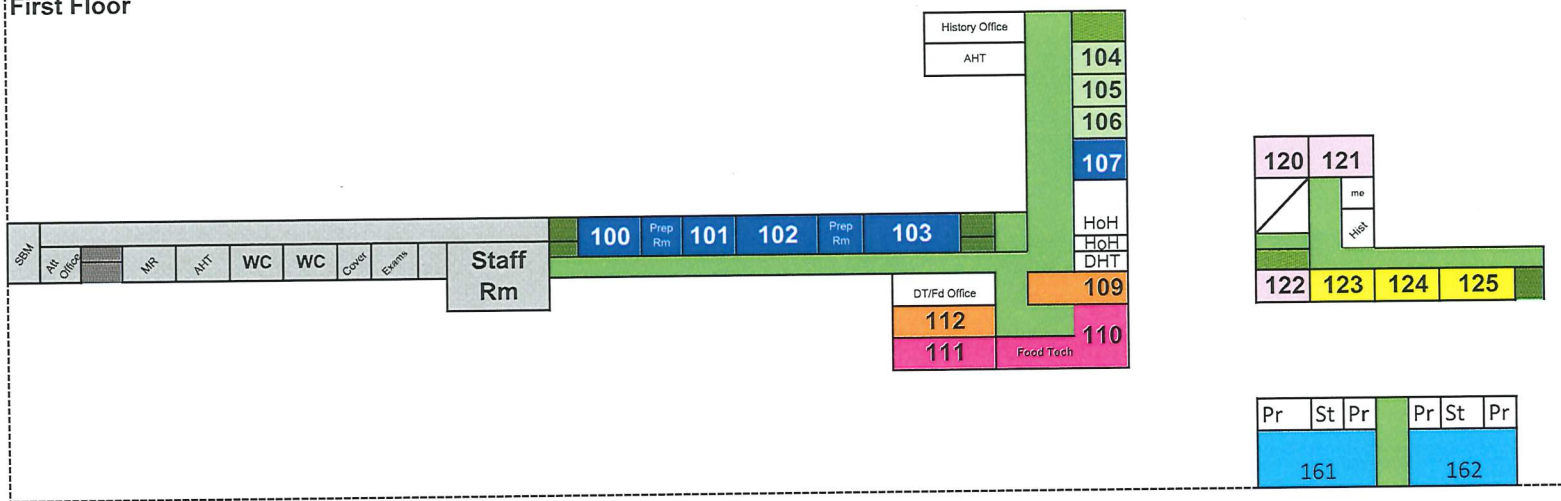
Times of the school day	
8.00am – 8.30am	Breakfast in canteen
8.35am	Pre-lesson 1 bell
8.40am-9.30am	Lesson 1
9.30am-10.20am	Lesson 2
10.20am-10.40am	Morning break
10.40am-11.30am	Lesson 3
11.30am-12.20pm	Lesson 4
12.20pm-1.00pm	Lunch
1.00pm-1.20pm	Tutor time / Assembly
1.20pm-2.10pm	Lesson 5
2.10pm-3.00pm	Lesson 6
3.00pm-4.00pm	Extended learning and extra-curricular clubs

Term dates	
Autumn term	Y7: 04/09/23 to 15/12/23 Y8-11: 05/09/23 to 15/12/23
Half term	23/10/23 to 27/10/23
Spring term	03/01/24 to 28/03/24
Half term	12/02/24 to 16/02/24
Summer term	15/04/24 to 19/07/24
Half term	27/05/24 to 31/05/24

Important IT details	
Username	
Password reminder	



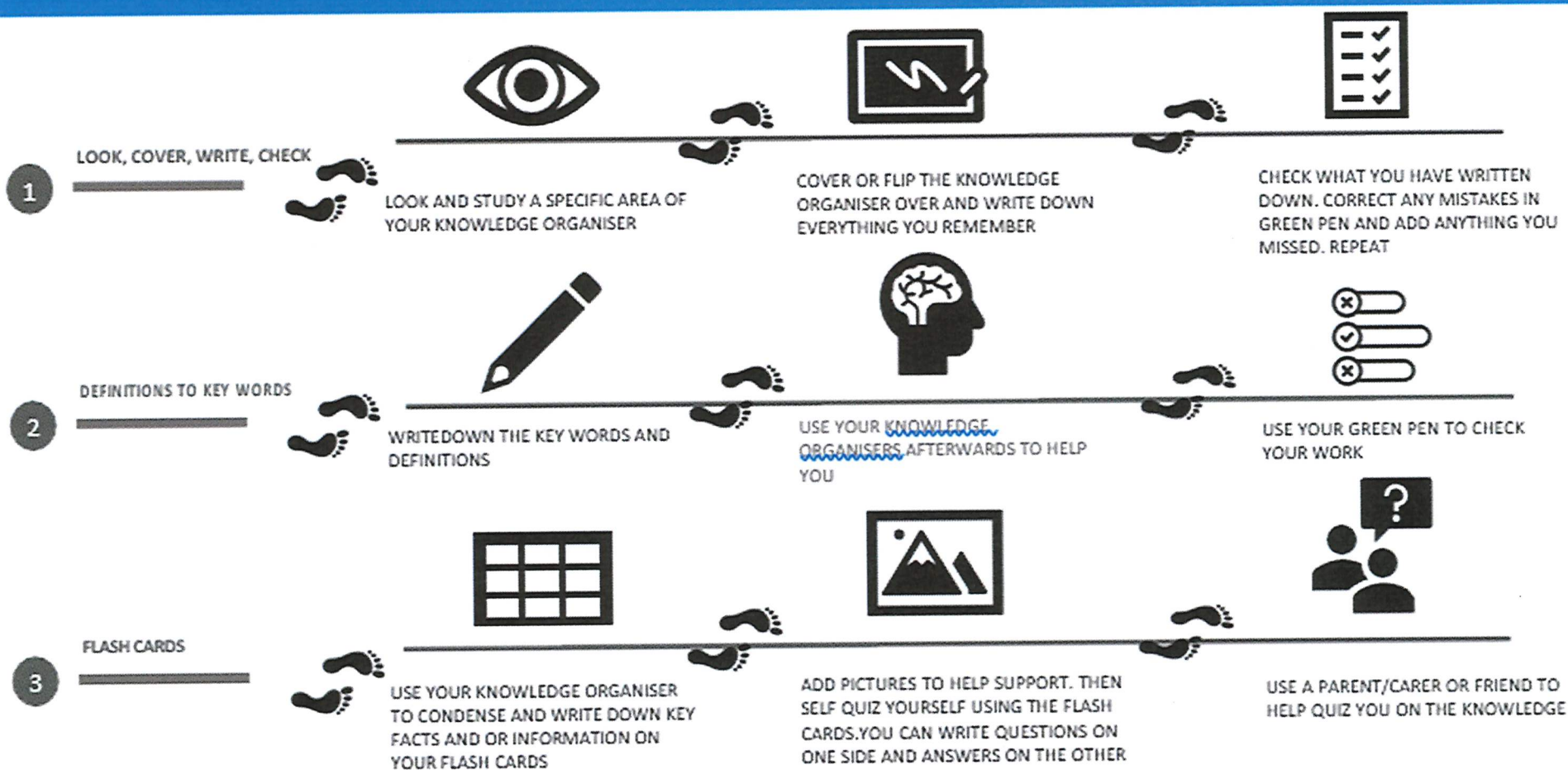
First Floor



- Science
- Maths
- English
- Art
- Computing Studies
- MFL
- History / Classics
- Geography
- Performing Arts
- PE
- SEND
- RE
- DT/Food
- Business studies
- non student areas

How to use Knowledge Organisers – a step by step guide

Knowledge organisers contain critical knowledge you must know. This will help you recap, revisit and revise what you have learnt in lessons in order to remember this knowledge for the long term. You must have this for every lesson – it is part of your equipment.



KNOWLEDGE ORGANISERS ARE ALSO AVAILABLE ON THE SCHOOL'S WEBSITE:
<https://www.ashmanorschool.com/>

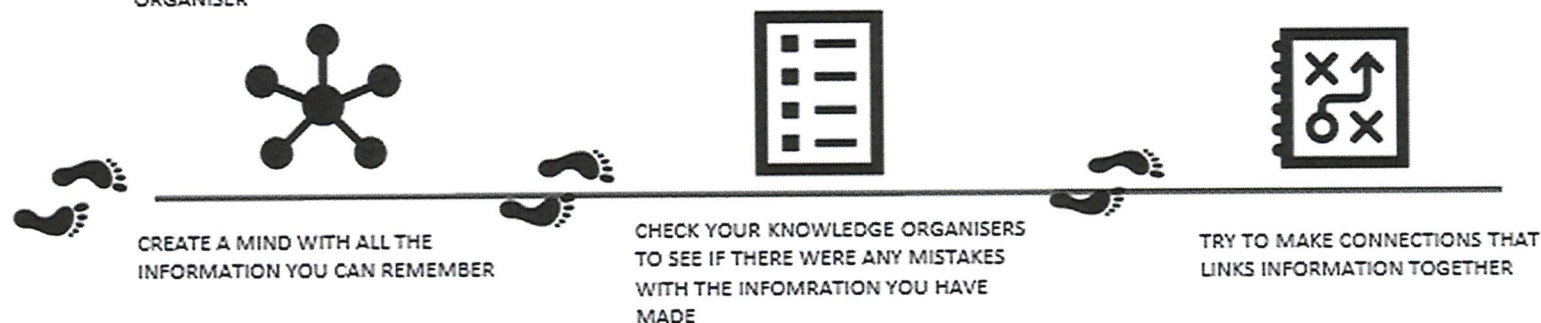
How to use Knowledge Organisers – a step by step guide

Knowledge organisers contain critical knowledge you must know. This will help you recap, revisit and revise what you have learnt in lessons in order to remember this knowledge for the long term. You must have this for every lesson – it is part of your equipment.

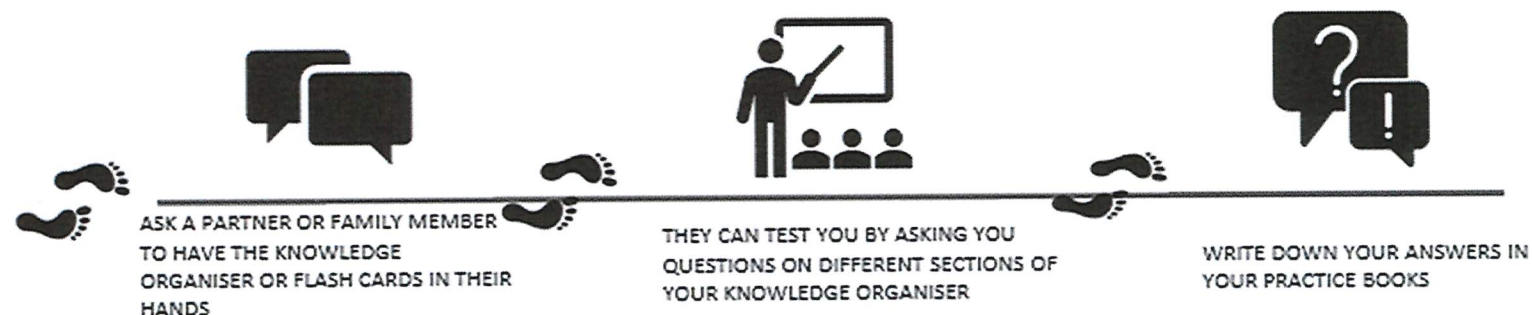
4 SELF QUIZZING



5 MIND MAPS



6 PAIRED RETRIEVAL



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Year 10 Ancient History: Term 2

Rome, 753-440 BCE

What were Romulus' (753-714) initiatives?

- Asylum (accepted asylum for those wanting to escape tyrannies).
- Safety (including building walls).
- Representation (patron-client relations).
- The Senate (one hundred patricians, which formed a representative government, and a check to the king's power).
- Rule by decree (passing laws and judgements without listening to others).
- Democracy (Romulus divided the people of Rome into three tribes, further divided into ten curiae).
- According to Livy, Romulus' religious initiatives were inspired by local religions (e.g. from Alba Longa).
- According to Dionysius, Romulus' religious initiatives were inspired by Greek religions.
- Archaeology suggests that Roman religion developed over a long period of time influenced by Greek, Etruscan, Apennine, Latial Villanovan and urnfield cultures.
- Built the Temple of Jupiter Ferentius to celebrate his victory over Caenina.
- Livy says that Romulus transformed into a god after his death.
- Stole the Sabine women.
- Victorious in war against the Fidenae (drew them out of their city by pretending to retreat, before ambushing them).
- Defeated Caenina (seizing the first *spolia opima* in Roman history and building the Temple of Jupiter Ferentius in commemoration).
- Attacked by the Sabines, and the two ended the conflict when Romulus agreed to share power with Titus Tatius (the king of the Sabines).

What were Numa's (715-673) initiatives?

- Married to the goddess Egeria.
- Created a priesthood for Mars, Romulus and Quirinus (a religious trinity).
- Created the flamen Dialis as the priest of Jupiter.
- Created the pontiff (official chosen from the Senate and looked after religious practices in Rome).
- Introduced the Vestal Virgins into Rome.
- Created a lunar calendar.
- Livy suggests that the religious initiatives were meant to help Numa control the Romans.
- Built the Temple of Janus.
- Created a lunar calendar.
- Gave homeless men some of Romulus' land to stop a potential revolt.
- Improved the status of the Forum by placing the hearth of the Vestal Virgins there.
- Divided Rome into districts and appointed officials to inspect them.
- Plutarch claims that Numa introduced blacksmiths, musicians and other crafts in the city (supported by archaeological evidence of the Roman Forum).
- When he died, Livy says that Rome had been at peace for 40 years.
- Built the Temple of Janus (doors were to be kept shut in times of peace, and open in times of war).

What were Tullus Hostilius' (673-642) initiatives?

- Introduced the right to appeal the decision of a law court.
- Enlarged the Senate and Senate House (the Curia Hostilia).
- Failing to perform his religious duties correctly, the gods punished him by killing him with a thunderbolt.
- When plague struck Rome, he refused to allow his armies to rest and take care of their families, leading to unrest and division in Rome.
- Gave land to homeless citizens and built new farms.
- Created new districts/tribes for each of the Alban groups (including the Curiatii).
- Border dispute with Alba Longa. As both sides were stealing from the other, war was declared.
- Battle of the Three Albans.
- Destroyed Alba Longa after they betrayed Rome to the Etruscans.
- Victory against the Sabines at the Battle of Malitosa Forest.
- When plague struck Rome, he refused to allow his armies to rest and take care of their families.

What were Ancus Marcius' (642-617) initiatives?

- Told his pontiff, Gaius Paprius, to publish laws and religious rites on oak boards across the city.
- Invited citizens who lived outside the city to settle on the Aventine Hill.
- Invited the Latins to become Rome citizens (the Admurciae district was built between the Aventine and Palatine hills to help them settle).
- Port of Ostia built (used for trade).
- Salt works built.
- Prison built.
- Wanted to return religion to what it had been under his grandfather, Numa.
- Told his pontiff, Gaius Paprius, to publish laws and religious rites on oak boards across the city.
- Expanded the Temple of Jupiter Ferentius.
- Sent envoys to visit the enemy and demand justice. If it was denied, the tribes would vote on whether war should be declared.
- Captured the city of Politorium and destroyed it so that it could not be used in the future to attack Rome.
- Destroyed the Latin threat in the Battle of Medullia.
- Extended Rome over the River Tiber.
- Bridge built to connect the Janiculum hill to the city and a wall built around it.

What were Tarquinius Priscus' (616-578) initiatives?

- Added 100 of his own men to the Senate (Livy describes these men as being from lesser families, with Dionysius describing them as good warriors or excellent administrators).
- Livy hinted that the Circus Maximus had a political significance as Priscus allowed patricians the right to build their own 12 feet high fori (seating areas).
- Circus Maximus (chariot arena) built using the spoils of war. It allowed Priscus to increase the number of festivals and games in Rome. Etruscan chariot racing and boxing were among the entertainments provided.
- The Forum was extended, with shops and colonnades being constructed (archaeology supports this).
- Beginning of construction of the Cloaca Maxima (an open-air sewer).
- Increased the number of Vestal Virgins to 6.
- Introduced harsher punishments for the Vestal Virgins who broke their vow of chastity.
- Successfully defeated several Latin cities.
- Victories against Etruscans, Sabines and the Veii.
- Failed to create new centuries when the Sabines attacked because an augur (Attus Navius) disagreed with him.
- Doubled the number of men in each century.
- Added 1,200 horsemen to the Roman army.

What were Servius Tullius' (578-535) initiatives?

- Introduced the census to share military burdens according to wealth.
- Development of the equites.
- Introduced new voting system (according to wealth).
- Introduction of the tribal system.
- Aimed to tackle plebeian poverty caused by warfare and debt.
- Temple of Diana built, a joint project between a number of Latin cities, so developing the Latin League.
- Introduced the census to share military burdens according to wealth.
- Development of the equites.
- Extension of the city (two new areas: Quirinal and Viminal hills) and Servian Wall built.

What were Tarquinius Superbus' (535-509) initiatives?

- Seized the throne by force, never receiving the approval of the Senate.
- Used bodyguards to protect himself from assassination attempts.
- The king presided over all capital crimes, and anyone who threatened his control would be sentenced to death for a capital crime.
- Senate's influence decreased until it was not consulted at all.
- Removed the census.
- According to Dionysius, the plebeians were badly treated.
- Turned plebeians into labourers. They were forced to modernise the Circus Maximus, Cloaca Maxima (which improved sanitation in the city) and to construct several temples.
- Livy claims the building project was good as it created jobs for Romans.
- Archaeology suggests it was a period of rapid expansion.
- Banned religious ceremonies (to stop gatherings of men who could plot against him).
- Used plebeian labour to construct several temples across Rome.
- Military expansion created colonies for some to acquire new land.
- Described by the sources as an effective diplomat and general.
- Created two new colonies (Signia and Circeii).
- His son, Sextus, conquered the Gabii by pretending to flee Rome, and quickly rose through the ranks in Gabii's political structure. Once in a position of power he murdered the leading men of Gabii and seized control of the city.
- Defeated the Volsci (although Livy claims this started a 200 year war with the Volsci).

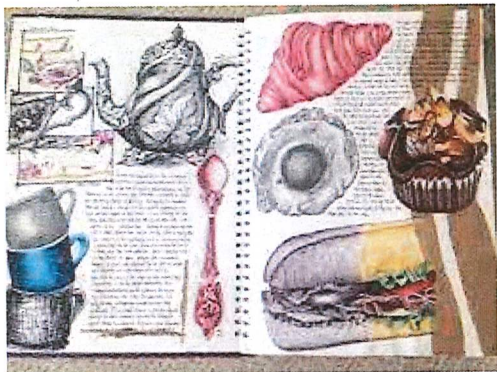
The Roman Republic

- 509 – Superbus is exiled. Rome becomes a Republic.
- c. 508 – Lars Porsena invades Rome.
- c. 496 – Battle of Lake Regillus. Superbus is defeated.
- 494 – The First Secession.
- 451 – The First Decemvirate and creation of the first 10 tables.
- 450 – The Second Decemvirate and the attempted rape of Virginia.
- 445 – With the support of Gaius Canuleius, plebeians were given the right to stand for military tribune.

ART

Media Experiment Annotation Checklist

- What media have you used?
- How have you used the technique? (describe the method)
- What/who inspired you?
- What else did you try?
- Why was it successful/why?
- Is there anything you would change/need to do now?



Final Piece Planning

I have done the following:

- ✓ Sketched and planned what my final piece will look like
- ✓ Experimented with different techniques and annotated them.
- ✓ Included colour where appropriate
- ✓ Annotated with a statement of intent to show where my idea has come from

Tick list:

- ✓ Title page Mind map
- ✓ Initial ideas
- ✓ Statement of intent
- ✓ Experiments
 - Experimental drawings
 - Potassium permanganate
 - Quink ink and bleach etc.....
- ✓ Artist research pages
- ✓ Development of ideas
- ✓ Final piece planning
- ✓ Creation of final piece.

Make sure you are up to date with the tick list as you move through the project.

Artist research page

- Facts
- Opinions
- Images
- Artist copy
- Presentation



AQA GCSE Assessment Objectives - you will be marked on each for your coursework

AO1 (24)	AO2 (24)	AO3 (24)	AO4 (24)
Develop your ideas through investigating artists, designers and other appropriate sources. Demonstrate critical understanding of sources.	Refine your work by exploring ideas, selecting and experimenting with appropriate media, materials, techniques and processes.	Record your ideas, observations and insights that are relevant to your project intentions as work progresses. Annotate work and include drawings within your sketchbook.	Present a personal and meaningful response that realises your project intentions and demonstrates understanding of visual language.

Skills to remember

Potassium Permanganate

Purple crystals dissolved in water, when dry turn brown. Bleach with lemon juice.



Quink ink and bleach

Paint Quink ink and bleach, using drawing ink to draw on top of the layers because it is permanent.

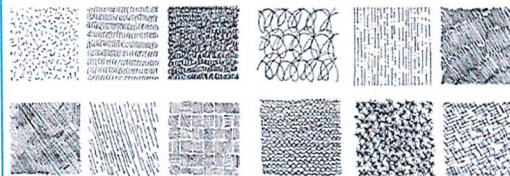


Watercolour and Mono Print

Mono print over a watercolour painting.



Mark Making



Brush Control /Techniques

- Wash
- Dry brush
- Stippling
- Blending



Year 10 – GCSE Business – Term 2

Theme 1 Building a business Paper 1

Stakeholders

A stakeholder is anyone who's affected by a business.

Different stakeholders will have different interests in the performance of a business.

Stakeholder	Key interests
Shareholders	Profit, dividends and growth
Employees	Wages, job security and good conditions
Customers	Fair price, choice and good quality
Managers/directors	Pay, growth and power
Government	Tax revenues and competition
Local community	Jobs and clean environment
Pressure groups	Socially responsible and ethical business behaviour

Conflicts are likely to occur between different stakeholders if they have different interests.

*Pressure groups focus on issues such as animal rights, workers' rights, the environment and world poverty.

Interest rates

An interest rate is the percentage reward or payment over a period of time that is given to savers on savings or paid by borrowers on loans.

- ❖ A **rise** in interest rates will increase the cost of borrowing and a business may struggle to repay loans.
- ❖ A **fall** in interest rates will lower the cost of borrowing and a business may have more money to spend and cash flow may improve.

Legislation

Consumer law

Consumer law governs all aspects of how a business interacts with its customers.

Benefits

- Compliant businesses are less likely to be fined or sued by customers
- Compliant businesses may be considered professional and caring, and may benefit from increased customer loyalty.
- Good publicity, if followed.

Drawbacks

- Businesses must know the law and keep up to date.
- Laws can restrict businesses from operating as they would wish.
- Changing products and practices to comply with laws can be costly.
- Bad publicity can result if businesses do not comply with laws.
- Consumers can use law to take legal action against the business.

Employment law

Employment law governs all aspects of how a business interacts with its employees.

Benefits

- A compliant business may be considered a good employer.
- Fewer employees will be tempted to leave the business, so reducing recruitment costs.
- Employees may be happier and more motivated, leading to high productivity and better customer service.

Drawbacks

- Meeting health and safety regulations can be costly for businesses.
- Paying the national living wage will increase businesses' costs.
- Failing to comply may lead to unhappy employees, low productivity and legal action.

Inflation

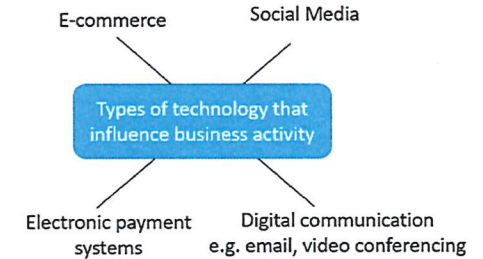
Inflation is the change in the average level of prices in the economy. It measures changes in the price of food, housing, clothing and other products.

- A sharp rise in inflation will cause a business's costs to rise unexpectedly. This can have a direct impact on profits.
- Consumers' costs rise when the rate of inflation rises. This reduces consumers' disposable income, meaning that they buy fewer goods and services from businesses.

When an increase in inflation causes a business's costs to rise, the business can either absorb the costs or pass them on to its customers by raising prices.

Technology and business

Technology drives change in many businesses and creates new opportunities for growth. Businesses use technology to gain a competitive advantage over their rivals and often invest in new technology in order to keep up with developments in their specific industries.



How technology influences business activity

Costs- technology can be a huge investment for businesses, but in the long term it can help a business improve efficiency and reduce costs.

Sales – innovating products with the latest technology can increase demand from customers and boost sales. The way in which a business sells its products can also evolve through e-commerce and digital communication.

Marketing mix – technology influences all aspects of the marketing mix: from lowering costs of products, to making promotions easier through social media, to allowing customers to purchase products anytime and anywhere through e-commerce.

Exchange rates

The exchange rate is the price of buying foreign currency.

The effect of a **fall** in the value of the pound:

- Good for UK exporters – price of exports falls
- Good for UK tourism – prices in the UK become cheaper
- Good for UK businesses – imports become more expensive – people buy more UK goods
- Bad for UK importers of materials – imports become more expensive and costs rise.

A rise in the value of the pound has the opposite effects.

Year 10 – GCSE Business – Term 2

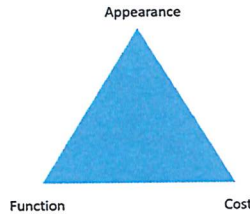
Theme 2 Growing a business Paper 2

Making marketing decisions

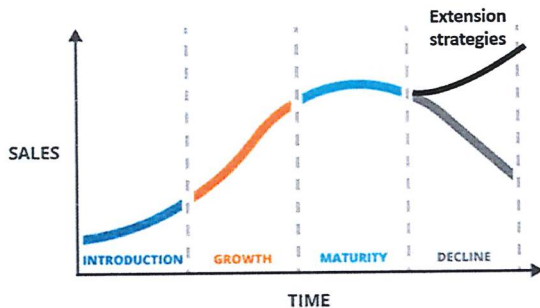
Product

The design mix

Businesses will try to keep costs low, but improved functionality and appearance will increase cost.



The product life cycle



Extension strategies could include a new marketing campaign, a modified product or a change of packaging – anything that will create new interest and boost sales.

Price

Influences on pricing strategy

Costs – a business may set a profit margin target that it adds to the cost of the product
 Technology – new technology can lower the costs of production
 Branding – products with a strong brand can demand a higher price
 Competition – a business has to consider its competitors
 Market segment – different prices may be applied to customers with different characteristics

Place

Benefits of e-tailing

- Businesses do not have to rent or own expensive retail space
- Customers can buy at any time of the day
- Businesses can access customers around the world
- Small businesses are able to compete with larger businesses without needing retail space

Promotion

Through technology, businesses are able to reach a wider variety of customers at a lower cost than most traditional forms of promotion. Some forms of technology also allow businesses to deliver a personal message specific to individual customers. {Social media, Email, Apps, Targeted advertising}

Branding

A brand is more than a logo or a slogan. A brand also represents the characteristics and personality of a business.

The value of a strong brand

A business may benefit from a strong brand in many ways:

- customers may instantly recognise the brand and what it represents
- customers may associate positive characteristics with the brand
- a well-known brand may become a first choice for customers, increasing brand loyalty.
- customers may trust a strong brand
- a strong brand may allow a business to charge a premium for their products and services.

Business growth

A business grows when it sells more output over a period of time. Business growth is often an important objective because it may:

- Help to increase market share
- Lead to lower costs
- Result in more profit

There are 2 different approaches to growth:

1. Internal (organic) growth

Internal growth occurs when a business expands by itself, by bringing out new products or by entering new markets.

2. External (inorganic) growth

A faster way for a business to grow is for it to join forces with another.

- Merger – where two or more businesses voluntarily agree to join up and work as one business.
- Takeover – where one business buys another.

Financing growth – External sources of finance

Loan capital

A long-term bank loan can be secured against the business's assets, but interest will be charged and the business will have to make fixed repayments to repay the debt.

Share capital

A PLC can raise considerable capital by selling shares. However, selling shares puts PLCs at risk of being taken over and all shareholders are also entitled to a share of the profits through dividends.

Business and globalisation

Globalisation is where businesses operate internationally and gain a lot of influence or power.

Globalisation affects businesses in three main ways.

❖ Imports

Globalisation allows businesses to import products and raw materials at lower prices than they would be able to produce them for in the UK. However, importing increases competition from foreign businesses that are able to sell directly to UK customers.

❖ Exports

Exporting opens up new international markets for businesses and gives them the potential to grow. However, operating in international markets can be very different to operating in the UK and businesses may face problems if they lack the necessary expertise or knowledge.

❖ Location

Globalisation brings with it the opportunity for businesses to relocate operations to other countries. This may be to benefit from lower labour costs, to be closer to raw materials or to be closer to the markets to which they sell their products.

Key Words

Advocacy
Representing or supporting a person or an organization by writing, speaking or taking action on behalf of that person.

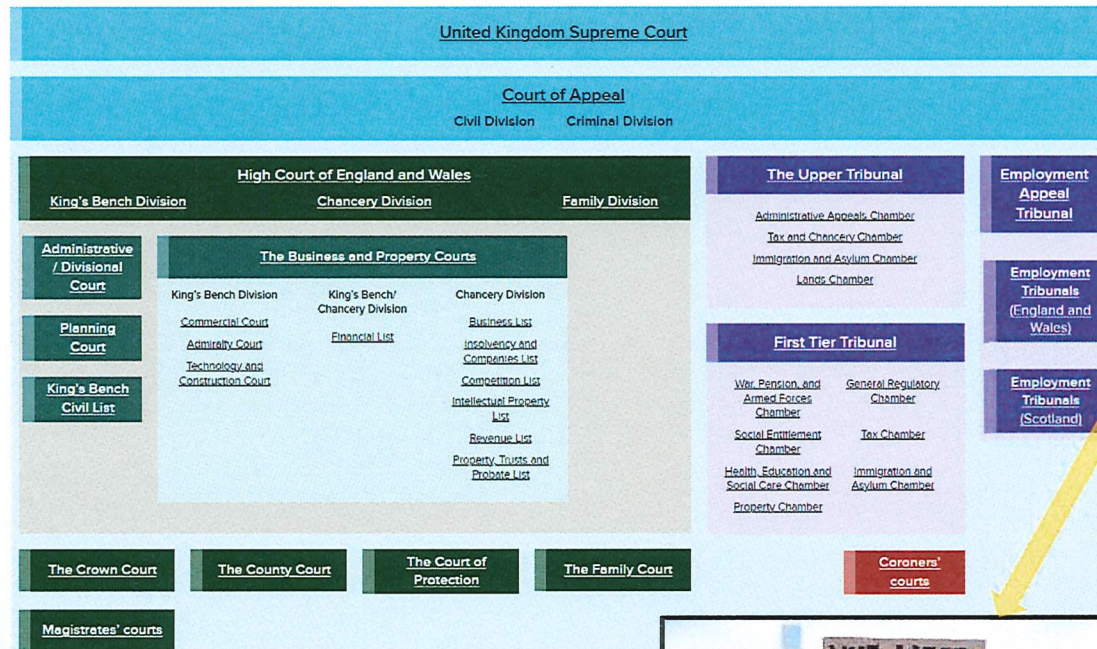
Campaigning
Actions or events organized by an individual or a group of people to achieve an aim.

Charities
Local, national or international organizations which are set up to help those in need. The term also has a legal status as charities registered with the Government receive some tax benefits.

Civil Law
Law that deals with disputes between individuals or groups. There are civil courts which award damages (a money payment)

Civil Service
Individuals who are employed by the Government.

Common Law
Law made by the decisions of judges over the years



Key Words

Criminal Law
Law which deals with individuals who break the law, and which punishes offenders because they have broken laws that Parliament has stated we must all obey.

Demonstration
A public meeting or march protesting against a specific issue.

Direct democracy
Where people decide on the policy directly, for example through a vote or referendum on each issue.

Interest Group
An organization which tries to influence the government to adopt certain policies on a particular issue.

Judiciary
Branch of the state that is responsible for enforcing the law. It comprises Judges and other legal officials.

Juries
A group of local people who are chosen randomly to make a decision in a legal case.

Key Words

Justice

The fairness as a result of the application of a Law, usually by a judge, in society.

Legislature

The law making body of the state. i.e. Parliament.

Lobbying

A person or a group of people meeting or taking action (e.g. writing letters, demonstrating, petitioning) to try to persuade a politician to take up their cause.

Local government

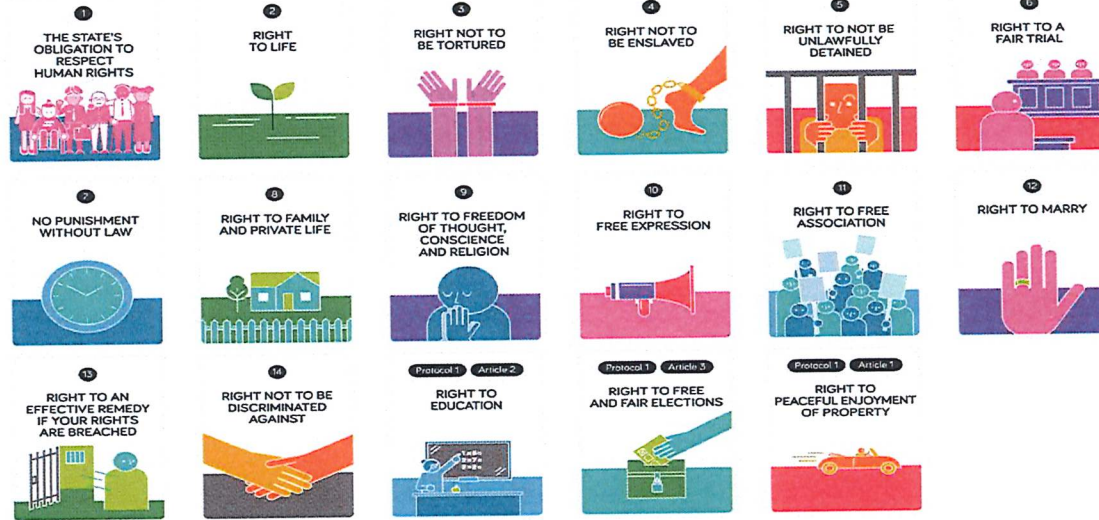
A system of government that operates at a local level providing services to its community.

Localism

When people in a particular area are able to make decisions about policies which affect their local area. (Surrey Youth Commission)

Monarchy

A form of government in which a king or queen reigns as the Head of State. The UK is a constitutional monarchy.



Key Words

Petition

A formal, written request, usually signed by many people, which appeals to the authorities to bring about change in regard to a particular issue.

Police

An official state organization which is responsible for maintaining public order by preventing and detecting crime.

Pressure group

An organized group of people which take action together to try and bring about change regarding a specific issue.

Sentencing

The process of giving a punishment to a person found guilty in a court case.

Trade Unions

A group of workers in the same trade or profession who have joined together to protect their rights.

Voter apathy

When a lot of people decide not to vote.

YEAR 10 GCSE COMPUTING

ALGORITHMS

An algorithm is a sequence of ordered instructions that are followed step-by-step to solve a problem. This does not need to be on a computer.

Decomposition is the breaking down of a complex problem into smaller more manageable problems that are easier to solve.

Abstraction allows us to remove unnecessary detail from a problem leaving us with only the relevant parts of a problem thereby making it easier to solve.

Algorithm Efficiency More than one algorithm can be used to solve the same problem. Normally we use the algorithm that solves the problem in the quickest time with the fewest operations or makes use of the least amount of memory.

Dry run testing is carried out using trace tables. The purpose of the trace tables is for the programmer to track the value of the variables and outputs at each step of the program and to track how they change throughout the running of the program

SEARCHING ALGORITHMS

LINEAR SEARCH ALGORITHM

The purpose of the linear search algorithm is to find a target item within a list.

- Compares each list item one-by-one against the target until the match has been found and returns the position of the item in the list.
- If all items have been checked and the search item is not in the list then the program will run through to the end of the list and return a suitable message indicating that the item is not in the list.
- The algorithm runs in linear time. If n is the length of the list, then at worst the algorithm will make n comparisons. At best it will make 1 comparison and on average it will make $(n+1)/2$ comparisons.
- The performance of the algorithm will be improved if the target item is near the start of the list.

Example

Find the position of letter "Z" within the following list.

Assume we do not have visibility of the list

Index position	0	1	2	3	4	5	6	7
Value	V	A	S	Z	X	R	T	G

We compare it with the value in index position 0. We find that the value is "V" so we need to move on to the next index position. At index position 1 and 2 we still have not found Z. However, we get to index position 3 and we compare the target with the value and we find that they match, so the algorithm returns the index position and stops.

BINARY SEARCH ALGORITHM

- The binary search algorithm works on a sorted list by identifying the middle value in the list and comparing it with the search item.
- If the search item is smaller the mid element becomes the new high value for the search area.
- If the search item is larger the mid element becomes the low value for the search area.
- The keeps repeating until the search item is found.
- When the search item is found the index position of the item is returned.
- At each iteration the search are halved in size consequently this is an efficient algorithm.

Example: Binary search in operation to find 81

	Low	Mid							High			
Iteration 1 L=1,H=11 mid=6	0	5	13	19	22	41	55	68	72	81	98	
								Low	Mid	High		
Iteration 2 L=6,H=11 mid=8	0	5	13	19	22	41	55	68	72	81	98	
									Low	Mid	High	
Iteration 3 L=8,H=11 mid=9	0	5	13	19	22	41	55	68	72	81	98	
										Low	Mid	High
Iteration 4 L=9,H=11 mid=10	0	5	13	19	22	41	55	68	72	81	98	

SORTING ALGORITHMS

BUBBLE SORT

The purpose of sorting algorithms is to order an unordered list.

Item can be ordered alphabetically or by number.

- Bubble sort steps through a list and compares pairs of adjacent numbers. The numbers are swapped if they are in the wrong order. For an ascending list if the left number is bigger than the right number the items are swapped otherwise the numbers are not swapped.
- The algorithm repeatedly passes through the list until no more swaps are needed.

Example

Sort the following sequence in ascending order using bubble sort: 5,3,4,1,2.

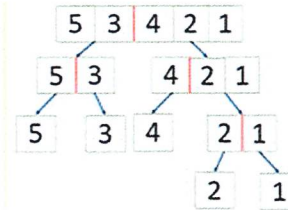
Pass 1	5	3	4	1	2	
	3	5	4	1	2	Compare 5 and 3 swap
	3	4	5	1	2	Compare 5 and 4 swap
	3	4	1	5	2	Compare 5 and 1 swap
Pass 2	3	4	1	2	5	Compare 5 and 2 swap; end of pass 1
	3	4	1	2	5	Compare 3 and 4 no swap
	3	1	4	2	5	Compare 4 and 1 swap
	3	1	2	4	5	Compare 4 and 2 swap
Pass 3	3	1	2	4	5	Compare 4 and 5 no swap; end of pass 2
	1	3	2	4	5	Compare 3 and 1 swap
	1	2	3	4	5	Compare 3 and 2 swap
	1	2	3	4	5	Compare 3 and 4 no swap
	1	2	3	4	5	Compare 4 and 5 – no swap; end of pass 3

MERGE SORT

- Merge sort is a type of divide and conquer algorithm.
- There are two steps: divide and combine
- Merge sort works by dividing the unsorted list sublists. It keeps on doing this until there is 1 item in each list.
- Pairs of sublists are combined into an ordered list containing all items in the two sublists. The algorithm keeps going until there is only 1 ordered list remaining.
- Merge sort is a recursive function, that calls itself.

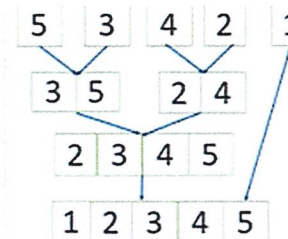
Step 1: Divide

Keep dividing until there is only 1 item in each list



Step 2: Combine

1. The first items in the two sublists are compared, and the smallest value is copied to the parent list.
2. The copied item is then removed from the sublist.
3. When there are no items left in one of the sublists the remaining items in the other sublist are then copied in order to the parent list.



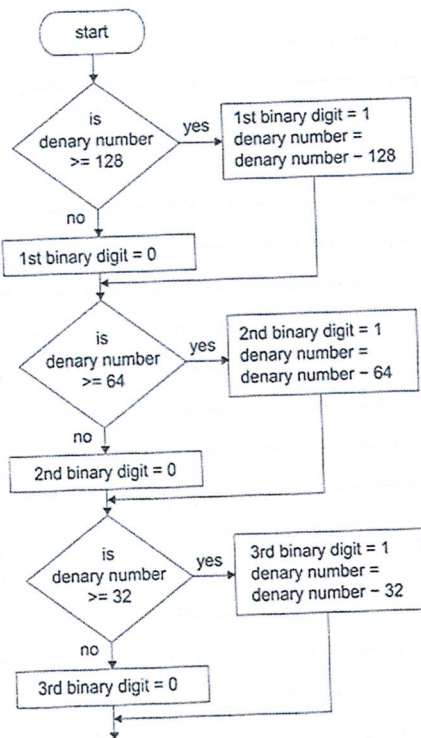
YEAR 10 GCSE COMPUTING

BINARY SYSTEM

A single bit has two states 1 and 0 by combining these bits we can get many unique patterns.
 A group of 4 bits is known as a NIBBLE and a group of 8 bits is known as a BYTE.
 All types of data are represented in a sequence of binary patterns

UNSIGNED INTEGERS

To convert from a denary number to a binary number.



Continue this processing for the 4th to 8th binary digits using the values of 2^4 , 2^3 , 2^2 , 2^1 and 2^0 .

COMBINING BITS

If two bits are used to represent each item of information for example a colour then there could be four combinations (00, 01, 10, 11). These numbers increase by powers of 2 e.g.
 2-bits = $2^2 = 4$ combinations
 3-bits = $2^3 = 8$ combinations
 4-bits = $2^4 = 16$ combinations

BINARY ADDITION

The basic rules of binary addition follow those of denary addition start on the right and move left, applying these rules:

- $0 + 0 = 0$
- $0 + 1 = 1$
- $1 + 0 = 1$
- $1 + 1 = 0$ and carry 1
- $1 + 1 + 1 = 1$ and carry 1

OVERFLOW

An overflow error occurs when an operation produces a result that requires more bits to store than are available

```

    1 0 1 1 0 1 0 1
  + 1 1 0 0 1 1 1 1
  -----
  1 1 0 0 0 0 1 0 0
  
```

Remember Binary patterns are of a fixed length. There is no space to store the overflow bit

Consequences of Overflow

Any time an operation produces an inaccurate result program errors may occur. They may crash or provide unreliable and inaccurate results.

TWO'S COMPLEMENT SIGNED INTEGERS

If the most significant bit (MSB – the leftmost bit) is 1 then the number is NEGATIVE in value, if it is 0 then the number is POSITIVE in value.

To find out how a negative number (e.g. denary -10) would be represented:

Write out the POSITIVE number (+10)	0000 1010
FLIP the bits (change 1's to 0's and 0's to 1's)	1111 0101
Add 1 (0000 0001) to the result	1111 0110
Therefore, -10 in two's complement is 1111 0110	

LOGICAL AND ARITHMETIC SHIFTS

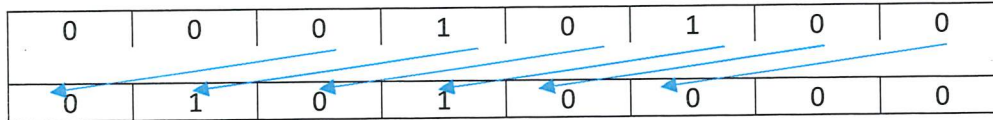
Binary bit patterns are manipulated by shifting their contents.

LOGICAL SHIFT LEFT

To perform a logical shift left of n positions

1. Move each binary digit n position left
2. Discard the leftmost n bits
3. Fill up the empty spaces on the right with 0's

Shifting 0001 0100 left by two places

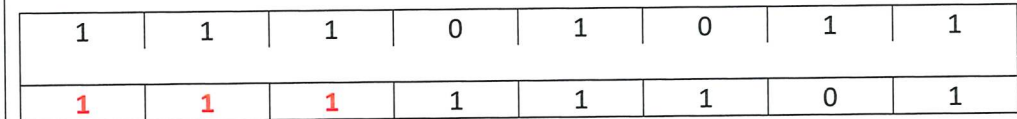


Answer = 0101 0000

ARITHMETIC SHIFT RIGHT

This shift is almost the same as the logical shift right, except that the vacant spaces on the left are filled with the value of the original MSB

Shifting 1011 1000 right by three places



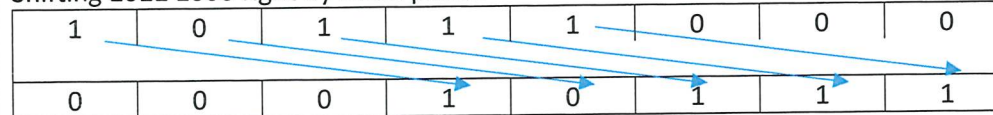
The MSB, value of 1 has been used to fill the vacant places on the left

LOGICAL SHIFT RIGHT

To perform a logical shift right of n positions

1. Shift each binary digit n position right
2. Discard the rightmost n bits
3. Fill up the empty spaces on the left with 0's

Shifting 1011 1000 right by three places



PRECISION OF NUMBERS

Shifting patterns that represent numbers can give imprecise results.

The bit pattern 0000 0100 (4) shifted left one place is 0000 1000 (8). This makes sense as 8 is 2x4. However the bit pattern 0000 0111 (7) shifted right by one place is 0000 0011(3)

ARITHMETIC SHIFT LEFT

This is the same as a logical shift left as the MSB is shifted left out of the pattern and you fill in the vacant positions on the right with 0's

BINARY	DENARY	HEX
0000	0	0
0001	1	1
0010	2	2
0011	3	3
0100	4	4
0101	5	5
0110	6	6
0111	7	7

BINARY	DENARY	HEX
1000	8	8
1001	9	9
1010	10	A
1011	11	B
1100	12	C
1101	13	D
1110	14	E
1111	15	F

Dance Component Two: Section A Knowledge Organiser

HYPOTHETICAL CHOREOGRAPHY

THE QUESTIONS WILL BE STRUCTURED LIKE THIS

Section A – Knowledge and understanding of choreographic processes and performing skills

You must answer all questions in this section.

37.5% (30 marks) – you should spend about 30 minutes on this section.

You are choreographing a group dance for two dancers using the image below as a stimulus.

All answers in questions 1-7 must relate to this stimulus.



What will the question ask?

The question will give you a stimulus. This could be an image, text, an object, and idea.

You will be asked for a dance idea/choreographic intent based on this stimulus.

You will then be asked a range of questions about how you might choreograph a dance based on the dance idea

How do I need to answer?

Short and to the point.

No extended writing in this section.

1-4 mark questions.

Don't waste time on being over creative.

Motif writing can be just two sentences.

TIP! Always link back to the dance idea

Outline a dance idea or theme that you could consider from this stimulus. [1 mark]

Describe a motif you could choreograph for this dance. Your answer should refer to actions, space and dynamics. [3 marks] **TIP!** Describe this step by step

Give three ways you could develop the motif you have described. [3 marks]

Describe the climax of your dance. Your answer should refer to action, space and dynamics. [3 marks] **TIP!** Show the build up as well as the climax itself.

Give one way in which this climax communicates your choreographic intent. [1 mark]

Identify the type of structure that could be appropriate for your dance. [1 mark]

Give two ways in which this structure links to your chosen dance idea. [1 mark]

ACTION

Travel
Turn
Elevation
Gesture
Stillness
Use of different body parts
Floor work
Transfer of weight

DYNAMICS

Fast/slow
Sudden/sustained
Acceleration/ deceleration
Strong/light
Direct/indirect
Flowing/abrupt

SPACE

Pathways
Levels
Directions
Size of movement
Patterns
Spatial design

RELATIONSHIPS

Lead and follow
Mirroring
Action & reaction
Accumulation
Complement & contrast
Counterpoint
Contact
Formations

CHOREOGRAPHIC DEVICES

Motif and development
Repetition
Contrast
Highlights
Climax
Manipulation of numbers
Unison and canon

STRUCTURE

Binary
Ternary
Rondo
Narrative
Episodic
Beginning/middle/end
Unity
Logical sequence
Transitions

AURAL SETTINGS

Song
Instrumental
Orchestral
Spoken word
Silence
Natural sound
Found sound
Body percussion

PERFORMANCE ENVIRONMENTS

Proscenium arch
End stage
Site-sensitive
In-the-round

PERFORMANCE SKILLS

THE QUESTIONS WILL BE STRUCTURED LIKE THIS

The following questions refer to your knowledge and understanding of performing skills.

What will the question ask?

A range of questions about performance skills.

These could include:

Definitions

Exercises

Rehearsal methods

Advice to dancers

Phrase description

Safe practice

How do I need to answer?

Short and to the point.

No extended writing in this section.

1-4 mark questions.

Phrase descriptions can be just two sentences.

Which of the words below is a physical skill? [1 mark]

Alignment Turn Mobility

Define the physical skill you identified [1 mark]

Describe a short movement phrase that includes the physical skill identified. Your answer should refer to action, space and dynamics. [3 mark]

What advice would you give to a dancer that needs to improve their musicality. [1 marks]

Place a tick in the box next to the correct definition of **projection** in performance [1 mark]

The overall shape and structure of the dance.

The energy the dancers uses to connect with and draw in the audience.

The use of eyes to enhance performance.

Dance that tells a story.

Outline one rehearsal method that would improve projection. [1 mark]

PHYSICAL SKILLS

Posture
Alignment
Balance
Coordination
Control
Flexibility
Mobility
Strength
Stamina
Isolation
Extension

EXPRESSIVE SKILLS

Projection
Focus
Spatial awareness
Facial expression
Phrasing
Musicality
Sensitivity to other dancers
Communication of choreographic intent

TECHNICAL SKILLS

Action
Space
Dynamics
Relationships
Timing
Rhythmic content
Moving in a stylistically accurate way

MENTAL SKILLS

DURING PERFORMANCE

Movement memory
Commitment
Concentration
Confidence

MENTAL SKILLS

PREP FOR PERFORMANCE

Systematic repetition
Mental rehearsal
Rehearsal discipline
Planning for rehearsal
Response to feedback
Capacity to improve

SAFE PRACTICE

DURING PERFORMANCE

Safe execution
Appropriate dancewear, including:
Footwear
Hairstyle
Absence of jewellery

SAFE PRACTICE

PREP FOR PERFORMANCE

Warming up
Cooling down
Nutrition
Hydration

Dance Component Two: Section B Knowledge Organiser

EXPLAINING YOUR OWN PERFORMANCE

What will the question ask?

The question could ask you to talk about: EITHER your performance in a duet or trio OR your performance of the set phrases

What will the question ask?

All performance skills.

How do I need to answer?

Extended writing worth 6 marks per question.

1. State your dance idea [or state your set phrases]
2. Give an example of where you used the skill the question asks for
3. Explain how the skill made your dance effective
4. Evaluate why it was effective
5. Repeat 2-4 times

HOW TO ANSWER

6 marks

4-6

Explain why skill 3 was effective
3rd skill and detailed example

2-3

Explain why skill 2 was effective
Skill 2 and detailed example

Explain why skill 1 was effective

1

Skill 1 and detailed example
State set phrase or dance idea

PERFORMANCE SKILLS

PHYSICAL SKILLS

Posture
Alignment
Balance
Coordination
Control
Flexibility
Mobility
Strength
Stamina
Isolation
Extension

TECHNICAL SKILLS

Action
Space
Dynamics
Relationships
Timing
Rhythmic content
Moving in a stylistically accurate way

EXPRESSIVE SKILLS

Projection
Focus
Spatial awareness
Facial expression
Phrasing
Musicality
Sensitivity to other dancers
Communication of choreographic intent

MENTAL SKILLS

DURING PERFORMANCE
Movement memory
Commitment
Concentration
Confidence

MENTAL SKILLS

PREP FOR PERFORMANCE
Systematic repetition
Mental rehearsal
Rehearsal discipline
Planning for rehearsal
Response to feedback
Capacity to improve

SAFE PRACTICE

PREP FOR PERFORMANCE
Warming up
Cooling down
Nutrition
Hydration

SAFE PRACTICE

DURING PERFORMANCE
Safe execution
Appropriate dancewear, including:
Footwear
Hairstyle
Absence of jewellery

EXAMPLE

My performance duet was about a factory, involving fast working machinery.

It was very important that we planned our rehearsals carefully. We made sure that we had two rehearsals a week to practise the dance. The regularity of rehearsals meant that our stamina and strength increase. This was vital for being able to perform the dance with high energy required.

There was a fast unison section where there was a sharp gesture on each beat and we have to work for precision. Concentration was very important here because if we were distracted we would miss several movements and the robotic effect would be lost. By ensuring I was fully concentrated I was able to execute the movements effectively.

The other difficulty in this section was that there were so many different gestures that I struggled to get it right. I knew in rehearsal I needed to increase my movement memory. I repeated the section over and over again to ensure that I had fully memorised them in order and on the count. This was important for the performance because I could then perform at speed on stage with accuracy and on time with the music.

I found I kept forgetting the dance and it looked messy. This has a detrimental effect on my confidence. I therefore started to go through the dance in my head every night to keep it fresh. My confidence improved and the performance was of a high standard.

Overview

Skill - Rehearsal

Example

Explanation

Evaluation

Example

Skill - Concentration

Explanation

Evaluation

Example

Skill - Movement

Memory

Explanation

Evaluation

Example

Skill - Confidence

Explanation

Evaluation

WRITING IN DRAMA

VOICE				
Pitch	Pace	Volume	Tone	Accent
High, Low, Squeaky, Husky, Deep, Whiny, Croaky, Brittle, Grating, Gravelly.	Fast, Slow, Halting, Abrupt, Stuttering, Stilted, Hesitant, Controlled.	Soft, Quiet, Loud, Whisper, Shout.	Harsh, Gentle, Sarcastic, Forceful, Firm, Trusting, Derogatory, Cold, Angry, Persuasive, Authoritative, Proud, Assertive, Submissive, Sly, Abrasive, Quivery, Warm, Cheeky, Anxious, Seductive, Enthusiastic, Timid, Assured, Cautious, Fierce, Fond, Nervous, Joking, Sensitive.	Liverpudlian, Northern, West country, Cockney, Upper Class British, Scottish, Irish, Australian, American.

FACIAL EXPRESSIONS			
Emotion	Eyes	Eyebrows	Mouth
Happy, Cheerful, Upset, Hurt, Eager, Anxious, Untrusting, Fearful, Rejected, Smug, Defiant, Distressed, Thoughtful, Sly, Seductive, Distraught, Spiteful, Aggressive, Friendly .	Wide, Glaring, Squinting, Teary, Hopeful, Suspicious, Tightly Shut.	Raised, Lowered, Furrowed, Inquisitive, Frown.	Opened, Jaw-dropped, Closed, Smile, Quivering, Lip-biting, Pursed Lips, Clenched.

KEYWORDS
Actor, Appropriate, Atmosphere, Audience, Believable, Character, Creativity, Dialogue, Effect, Emphasize,, Genre, Impact, Improvisation, Interaction, Interpretation, Monologue, Non-Naturalistic, Original, Performance, Piece, Physical, Rehearsal, Scene, Status, Tension, Tone.

BODY LANGUAGE			
Posture	Gesture	Gait	Mannerisms
Upright, Slouched, Relaxed, Grotesque.	Clenched Fists, Pointing, Open handed, Closed, Strong, Measured, Hesitant, Energetic.	Rapid, Sluggish, Gentle, Smooth, Direct, Rushed, Purposeful, Hasty.	Twitchy, Decisive, Indecisive, Formal, Jerky, Secretive, Wild, Controlled, Dismissive, Aggressive, Nervous, Informal.

IMPACT		
Atmosphere	Audience Response	Believability
Tense, Dangerous, Intriguing, Awe, Amazement, Anticipation, Surprising, Shocking, Awareness of Society, Comic, Pathos.	Applause, Laughter, Sympathy, Anger, Disappointment, Anti-climax, Amusement, Admiration, Distaste, Contempt, Delight, Horror, Empathy, Irritation.	Natural, Believable, Realistic, Exaggerated,

PEED — SENTENCE STARTERS

<u>Point</u>	<u>Evidence</u>	<u>Explanation</u>	<u>Development</u>
<ul style="list-style-type: none"> • I was particularly proud of the way I.... • One strength of my acting skills was.... • In rehearsals I felt very pleased with.... • The most effective aspect of my acting skills was... • One of the highlights of my performance was.... • In rehearsals I used..... 	<ul style="list-style-type: none"> • I did this by.... • I showed this by.... • This was evident when.... • It was clear when • I developed this by..... • This was clearly shown when... • This was demonstrated when.... • I presented this by.... 	<ul style="list-style-type: none"> • This impact of this was..... • This had the effect on the audience of... • This really showed... • This made my character more believable because... • This showed the audience that... • This added to the appropriate mood / atmosphere because... • This was effective because... • The effect of this on the final performance was... • This really worked because... • I feel this was effective because... 	<ul style="list-style-type: none"> • Therefore... • In addition... • Furthermore.. • Consequently • As a result from this... • However

REHEARSAL STRATEGIES

- Hot seating
- Improvisation
- Role-on-the-wall
- Emotion Memory
- Writing in Role
- Tension Graph
- Thought tunnel

STAGE POSITIONING

Upstage Right (USR)	Upstage Centre (USC)	Upstage Left (USL)
Centre Stage Right (CSR)	Centre Stage (CS)	Centre Stage Left (CSL)
Downstage Right (DSR)	Downstage Centre (DSC)	Downstage Left (DSL)



NON NATURALISTIC TECHNIQUES

- Tableau / Freeze Frame
- Thought-Tracking
- Chanting
- Split-Staging
- Soundscape
- Narration

STAGING FORMATS

- End on**
Audience on 1 side
- Traverse**
Audience on 2 opposite sides
- Thrust**
Audience on 3 sides
- In the Round**
Audience on all sides

2007

1st Staged

Noughts and Crosses

RSC

The structure of the play

- The structure of Noughts & Crosses is known as **story theatre**; characters **stand back and comment** on the action as well as take part.
 - **They share their thoughts and feelings, comment** on events, **provide** transitional information from one episode to another and help to cover the expository material handled in the novel's narrative.
- Story theatre tends to use very **little set and few props**, which are carefully selected and designed. This way, action can proceed quickly without elaborate set changes.
Story theatre is **highly episodic**.
 - The action takes place in a **variety of places** during many scenes.
- **The episodic structure** allows **different perspectives** to be viewed by the audience, e.g. Sephy and Callum's family life and their relationships within the family.
 - The structure is **also linear**. Although the play **begins with a flashback** and there are flashbacks in Act 2,, generally the play follows the story of Sephy and Callum from beginning to end.

HISTORICAL CONTEXT: Noughts and Crosses

Apartheid:

From 1948-1994, the South African government enforced apartheid. This meant that black and white people were forced to live separately, go to different schools and black people could not vote. White people got privileges and ruled the country. However, this all came to an end when black people finally got the right to vote and elected Nelson Mandela as president. He had spent 27 years in prison for fighting for black people's rights.

MALORIE BLACKMAN:

Blackman was the Children's Laureate from 2013 to 2015. Blackman's motivation for writing Noughts and Crosses: 'I wanted to turn society as we know it on its head in my story, with new names for the major divisions in society. I wanted to see this new world through the eyes of the main two characters, Callum (a nought) and Sephy (a Cross). Race and racism are emotive issues that most people are loathe to discuss, but I think they should be discussed, no matter how painful.'

The First Production:

In 2007, Dominic Cooke adapted the novel for the stage for the RSC.

Practitioner	Information
Brecht (German Playwright)	Created Epic Theatre where his main aim was to use Verfremdungseffekt. The aim is to distance the audience from the action to stop them from becoming sympathetic with the characters and storyline.

Performer

Vocal skills

pitch
tone
pace/tempo
Pause
breath and sighs
accent
volume
clarity

Physical skills

gesture
stillness
fluency
expression
posture
facial expressions
eye contact
movement

Space

proxemics
relationships
positioned
blocking
interaction (set / audience)

Conventions / Form / Strategies

Episodic Structure

Political Message

Direct Address / Breaking the Fourth Wall

Speaking Stage Directions

Multi-roling

Placards

Music / Songs

Tickle and Slap



Spring

Drama

Component 3: Written Exam

Year 11

The Design Elements: A Quick Visual Checklist

Costume

Colour / Style / Fabric / Detailing / Condition

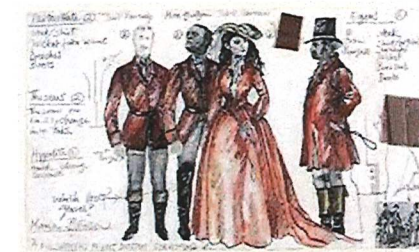
Garments / Shoes / Hair and Make-up / Accessories



Set Design

Shape / Texture / Material / Colour / Condition

Levels/Ramps/Steps/Rostra / Backdrop / Gauze / Cyclorama / Projections / Set Props



Lighting Design

Lighting / Colour / Intensity / Positioning

Digetic or Non-Digetic / Live or Pre-recorded

Sound

Music or Sound Effect / Volume / Fade Time / Duration

Digetic or Non-Digetic / Live or Pre-recorded

The PURPOSE of Design Elements: Checklist

Naturalistic

Design presents 'real life'

Minimalistic

Key set props, costume items
indicate setting, era, character

Symbolic

The design represents a
theme or message

Expressionistic

The image of reality is distorted
to represent feelings/emotions

Communicate setting: era, status, time of day, location

Create or shift mood and atmosphere / focus / perspective

Emphasise character personality, state of mind, mood or relationships

Emphasise a theme or message of the play / Support the style of the play

Spring English Language Year 10

Writing: composing a text for a purpose

Paragraphing:
Always start a new paragraph whenever you change:

- Time
- Place
- Topic
- Person

Remember TiToP

Sentence types:

Declarative - make statements (most likely to be fact or opinion statements)
Exclamative - express emotion (most likely to end with an exclamation mark)
Imperative - give commands (include imperative verbs)
Interrogative - ask questions (end with a question mark)

Punctuation

- **Full stop** – ends a sentence
- **comma** – separates ideas
- **Colon** – introduces a list
- **semi-colon** – separates clauses
- **Exclamation mark** – adds emphasis
- **Question mark** – interrogative
- **Speech marks** – indicates speech
- **Hyphen** – shows connection
- **Ellipsis** – creates mystery/intrigue

Word bank

Ways to start sentences

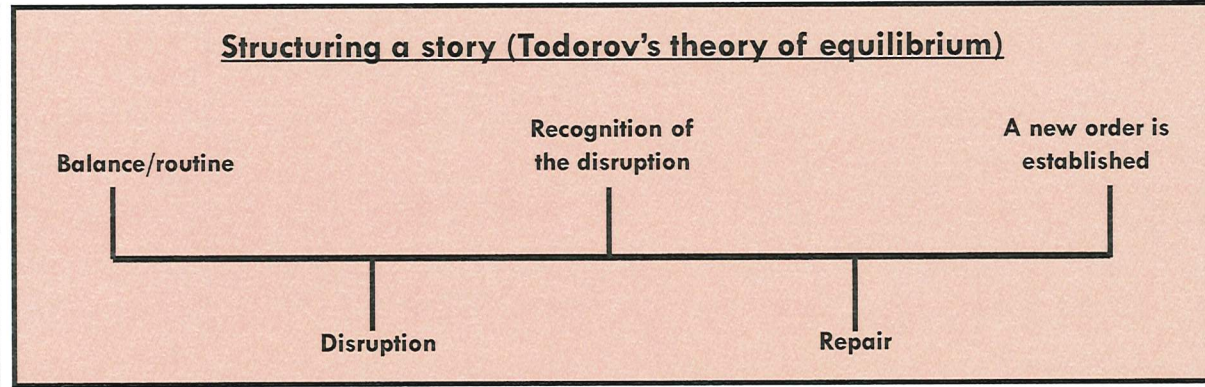
Start your sentence with an 'ed' word: Alarmed, Angered, Abandoned, Astonished, Bewildered
Start your sentence with an 'ing' word: Hiding Jumping Knowing Riding Praying Thinking Stopping
Start your sentence with an adverb: Accidentally, Bravely, Cheerfully, Defiantly, Fortunately, Menacingly
Adverbial phrase for when something happens: After running up the hill, Before charging into battle,
Adverbial phrase for how something happens: With her feet squelching in the mud, Jane trudged...
Adverbial phrase for where something happens: Around Behind Beneath Beside In On Over Past
Start with a simile. (A simile compares two things): As dark as... As busy as... As clear as...
A drop in clause adds in extra information: The dragon, who had fearsome talons, flew off into the sky.
 The brave knight, who was wearing a coat of armour, strode through the castle doors.

Word types

Noun – Person, place, thing
Pronoun – In place of a noun 'you'
Verb – an action or state
Adjective – describes a noun
Adverb – describes a verb
Preposition – shows the relationship between objects
Determiner – used in front of a noun to show the type 'the' 'a'
Conjunctions – joining words

Top tips

- Remember that all sentences and names start with a **capital letter**.
- Always write in complete sentences.
- Include descriptive detail to set the scene for the reader.
- Use a variety of sentence starters and vocabulary.
- Write with a range of punctuation.



Common Errors

- **There/their/they're** – there= place, their=belongs, they're=they are.
- **Which/witch** – which=choice, witch=supernatural
- **To/too/two** – to=the direction, too=a lot, two=2
- **accept/except** - Accept=receive, except=preposition

Characters

Macbeth—
The eponymous tragic hero. He is ruled by his hubris and comes to a fatal end.

Lady Macbeth—
Macbeth's wife. An ambition woman who uses manipulation to persuade.


The Witches—
Supernatural creatures who give out prophecies about the future.


Macduff—
Macbeth's foil. The man who fights to remove Macbeth's influence and restore the rightful King to Scotland's throne.

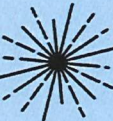
Why did Shakespeare write the play?


- To show his audience that evil exists in us all.
- To highlight the hypocrisy of society
- To warn society of the dangers science can present.
- To explore the intricacies of the human mind.

Themes

 Ambition

 Guilt

 Fate

 Supernatural

Key vocabulary:

- Superstition:** Belief in the supernatural
- Morality:** Knowing the difference between right and wrong
- Divine:** Godly power
- Flaw:** a fault or imperfection
- Supernatural:** Force beyond understanding
- Deception:** to cause someone to believe untruth
- Dilemma:** Difficult choice to be made
- Conscience:** Inner voice that acts as a guide
- Dissent:** difference of opinion/disagreement
- Manipulation:** Persuading someone to do something



Context:

<p>The Divine Right of Kings</p> <p>The idea that a monarch is chosen by God to rule his people. It argues that a king is accountable only to God</p>	<p>The Great Chain of Being</p> <p>A structure of all life, ordered by God. It begins with God and descends through angels, humans, animals and plants to minerals.</p>
<p>James I</p> <p>Styled himself "king of Great Britain." James was a strong believer of royal absolutism (believed in the Divine Right and The Great Chain of Being)</p>	<p>The Gunpowder plot</p> <p>A group of Catholics who believed James I's death would mean the end of Protestantism. They tried to overthrow the government through blowing it up.</p>
<p>James I and Witchcraft</p> <p>James was convinced that a coven of powerful witches was conspiring to murder him through magic, and that they were in league with the Devil. He published a study of witchcraft: Daemonologie.</p>	<p>Witchcraft</p> <p>Witches were blamed for causing illness, death and disaster, and were thought to punish their enemies by giving them nightmares, making their crops fail and their animals sicken.</p>

Key Quotes:

<p>The Witches (Act 1 Scene 1):</p> <p>"fair is foul and foul is fair, hover through the fog and filthy air."</p>	<p>Banquo (Act 1 scene 3):</p> <p>"What, can the devil speak true?"</p>	<p>Macbeth (Act 1 scene 7):</p> <p>"we will proceed no further in this business."</p>	<p>Macbeth (Act 3 scene 2):</p> <p>"we have scotch'd the snake not killed it."</p>
<p>Captain (Act 1 Scene 2):</p> <p>"Noble Macbeth"/ "Brave Macbeth".</p>	<p>Lady Macbeth (Act 1 scene 5):</p> <p>"unsex me here!"</p>	<p>Macbeth (Act 2 scene 1):</p> <p>"Is this a dagger which I see before me?"</p>	<p>Malcolm (Act 5 scene 8) :</p> <p>"Dead butcher and his fiend like queen."</p>

Paper 1 Section A

'Macbeth'

- a) Extract Analysis (20)
- b) Whole text response (20)

40 marks

a) Extract analysis

- ✓ Analysis of language, form and structure in the extract
- ✓ Explanation of the effect on the reader
- ✓ Relevant terminology is used to develop ideas

b) Whole text response

- ✓ Personal response, fully related to the text
- ✓ Critical style and interpretation
- ✓ Well-chosen references to support a range of points
- ✓ Relevant context used to support answer

Analysis: a detailed examination of the parts of something

Evaluation: making of a judgment about the amount, number, or value of something

Question style:

- a) 'Explore how Shakespeare presents ... in the extract'
- b) 'Explain why... is important elsewhere in the play.'

What?	What is the writer trying to tell us about the character/theme/setting?	<i>Significantly Macbeth is presented as... Shakespeare notably presents the supernatural as ... and ...</i>
How?	How do they use language/structure to do this? How do key words/phrases show this?	<i>The adjectives/noun/verb/phrase/image ... This suggests/implies/indicates/demonstrates...</i>
Why?	Why are they doing this? Why did they choose that language?	<i>Shakespeare wants to establish the significance of ... It can be seen that/it might be thought that/some readers might think</i>

The reader feels: empathy, sympathy, resentment, indignation, respect, disapproval, horrified, anticipation, admiration, relief, apprehension, critical, disappointment, anxious, disillusioned, impatient.

Terminology:

1. **Context:** Events at the time the text was written that influence the ideas.
2. **Tragedy:** A text that ends in death and destruction.
3. **Tragic hero:** a character who has virtuous traits but dies.
4. **Hamartia:** a fatal flaw leading to the downfall of a tragic hero or heroine
5. **Tragic process:** The cycle a tragic hero goes through.
6. **Iambic pentameter:** a rhythm structure of unstressed syllables and stressed syllables in groups of five.
7. **trochaic tetrameter:** a line of four trochaic feet.
8. **Soliloquy:** speaking one's thoughts aloud
9. **Blank verse:** verse without rhyme
10. **Motif:** repeated image in a narrative

Adverb

Inherently Intrinsically Innately Naturally <small>(In a way that is characteristic or natural)</small>	Significantly Crucially Notably Particularly <small>(In a way that is important/ needs to be known)</small>	Undoubtedly Undeniably Unquestionably Indubitably <small>(In a way that is true/ can't be argued)</small>	Arguably Debatably Probably Potentially Possibly <small>(In a way that could be true)</small>
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Expresses a clear evaluation of the writer's ideas

verb

exaggerates intensifies amplifies magnifies emphasises hyperbolises accentuates	creates crafts engineers constructs composes establishes portrays	represents exemplifies typifies embodies epitomises exhibits manifests
---	---	--

Shows that you are considering the text as a construct

adjective

bitter resentful disgruntled discontented spiteful exasperated displeased	subtle crafted precise skillful adept expert masterful	bleak harsh grim ominous shocking gruesome gloomy	angry outraged aggrieved incensed infuriated enraged indignant	optimistic hopeful jovial amiable affable genial exuberant
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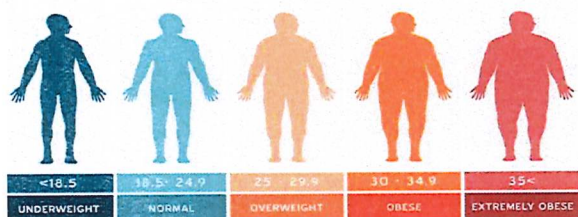
Demonstrates a deeper understanding of the ideas

Food and Nutrition

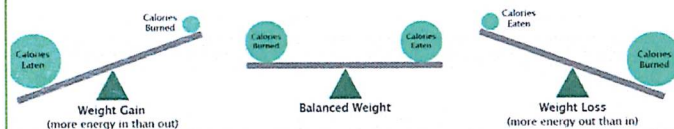
Diet Related Diseases

Obesity

Obesity is a common problem in the UK that's estimated to affect around 1 in every 4 adults and around 1 in every 5 children aged 10 to 11



Obesity is a diet related disease in which the body contains **too much stored fat**. Obesity is caused by not being in **energy balance**. A person who eats a lot of energy dense food (e.g. saturated fat) and does not exercise will gain weight quicker.



Type 2 Diabetes

In order for all our body cells to produce energy during respiration, they need a continual supply of **glucose**.

Glucose enters the bloodstream after it has been absorbed by the food we eat.

In order for the glucose to get into the bodies cells, it needs a hormone called **insulin**.

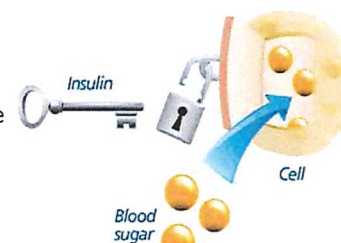
Insulin is produced by the **pancreas** which is just behind the stomach.



Imagine that each body cell has a 'door' that needs to be 'unlocked' to allow the glucose in.

If there are enough 'keys' (i.e. insulin) but the 'locks' are damaged or will not work, the glucose cannot enter the cells and stays in the bloodstream.

This is what happens in **Type 2 diabetes** which usually develops in older adults (and increasingly in young adults) and **can** be prevented.



If there are no 'keys' (i.e. no insulin), the 'doors' cannot be unlocked and glucose stays in the bloodstream.

This is what happens in **Type 1 diabetes** and can develop in young children and teenagers. It **cannot** be prevented.

Anaemia (Iron Deficiency)

Anaemia is a diet related health condition caused by a deficiency of iron in the blood.

The body needs the mineral iron to make the substance **haemoglobin** in red blood cells.

Haemoglobin picks up the oxygen we breathe in from the lungs and carries it to all parts of the cells where it is used, with glucose, to produce energy during respiration.

Vitamin C is needed to help absorb the iron from food during digestion.

Anaemia can affect all age groups, but teenage girls and women who are menstruating are at more risk of developing it.



Foods high in iron are dark leafy greens like kale and spinach. Red meat and liver are also good sources of iron.

Energy Needs

Energy is vital to life. We get our energy from the foods we eat.

Energy is either measured in **kilocalories** (kcal) or **kilojoules** (kJ).

$$1 \text{ kcal} = 4.2 \text{ kJ}$$

A Basal Metabolic Rate (BMR) is the amount of energy we need for our bodies to stay alive. (e.g. heart beating, lungs breathing, brain working etc.)

Young children (1-12 years old)

- Body growth is rapid at this stage
- They require Calcium and Vitamin D.

Teenagers

- Encourage to eat from the Eatwell Guide
- Require more Protein and Iron in diet.

Adults

- Encourage to eat from the Eatwell Guide
- Require iron, calcium and Vitamin D

Elderly

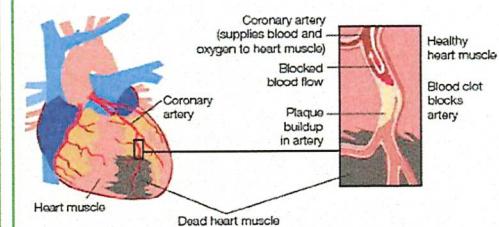
- Cutting down on saturated fats
- Require more calcium and vitamin B12
- Vitamin supplements are useful.

Coronary Heart Disease (CHD)

The cardiovascular system in the body is made up of the **heart** and **blood vessels**. It is believed that 80% of CHD and strokes could be prevented by changes to lifestyle factors, such as diet, physical activity and smoking.

Changes to the diet to reduce the risk of CHD include:

- increasing oily fish intake
- reducing salt intake
- increase fruit and vegetables
- decreasing alcohol consumption
- Increasing exercise routines



Food and Nutrition

Chemical Properties of Carbohydrates

Carbohydrates react in particular ways when we prepare and cook foods that contain them.

Caramelisation

When sugar is heated, the sugar molecules change the colour, flavour and texture.

Dextrinisation

Starch molecules break up into smaller groups of sugar molecules called **dextrin** when exposed to DRY heat.

Gelatinisation

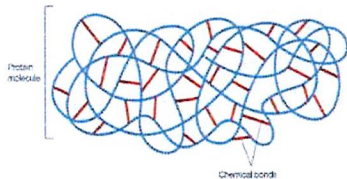
Starch granules in foods swell and burst in liquid releasing starch. This then thickens sauces and foods.

Denaturing of Proteins

Proteins are **large** molecules that are made up of individual units called '**amino acids**'.

Protein molecules are held together by '**chemical bonds**'.

As they are so large, protein molecules are often folded into compact '**bundles**' so that they take up less space.



When foods containing protein are cooked, whisked or had acids added to them, the **chemical bonds** in the molecules **break**.

When the chemical bonds break, Proteins molecules '**denature**'.

Food Allergens



These are different types of allergens that some people cannot handle within their diet.

They can affect people in different ways, and if they are not addressed properly, they can lead to **serious** consequences.

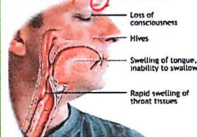
Having a food allergy means that someone has an **allergic (serious) reaction** to certain foods.

The allergic reaction involves the **immune system**.

It makes the body produce a substance called **HISTAMINE** which then leads to a variety of symptoms.



Anaphylaxis



People who have a serious reaction go into anaphylactic shock. This usually happens within seconds and is very serious.

The symptoms include;

Swelling of the mouth and throat

Not being able to swallow, breathe or speak properly.

Heat Transfers

Food is cooked using **heat energy**.

Heat energy is transferred from one place to another in order to cook foods in a variety of ways. Cooking improves the **texture** of food and makes it easier to eat, swallow and digest.

Conduction When a frying pan is placed on the hob, heat energy from the hob causes the particles in pan to **vibrate** & gain heat.

E.g. Sauteing, stir frying, searing.

Convection is the heat transfer through gases and liquids. E.g. Boiling, steaming, baking, roasting.

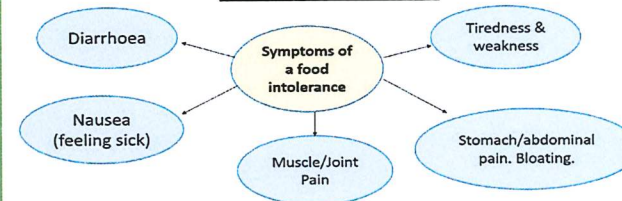


Radiation is heat transfer through heat **waves**.

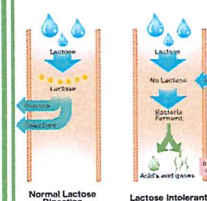
There is **no direct contact** between the heat source and the food.

E.g. Grilling, microwaving, BBQ etc.

Food Intolerance



Some people are sensitive to particular foods that develop a range of uncomfortable **symptoms** that make them feel weak and unable to carry out everyday activities effectively.

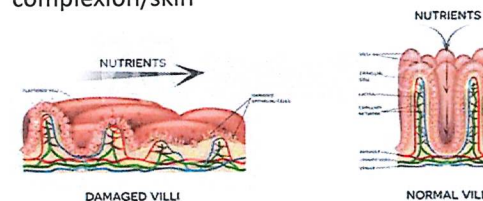


People who are **lactose intolerant** cannot digest a **milk sugar** which is naturally found in milk called **LACTOSE**.

The only way to avoid uncomfortable symptoms are to **avoid** drinking or eating milk products such as; cheese, butter, cream & yogurt.

During **digestion**, the food we eat is broken down and absorbed by the **small intestine**. The small intestine is lined with tiny finger like projections called **villi**.

In **coeliac disease**, the gluten found in wheat damages the villi. The damaged villi cannot absorb nutrients coeliacs need. The person then becomes **malnourished**. The **symptoms** of a person with coeliac disease are; **Anaemia** - Poor absorption of **IRON**, Weight loss and pale complexion/skin



Le grand large *The Open Sea*

Local area, Holiday, and Travel



Où vas-tu en vacances, d'habitude?

Where do you usually go on holiday?

D'habitude, je passe mes vacances en France au bord de la mer avec ma famille et mon chien. J'y passe tout le mois d'août et ce que j'aime le plus ce qu'il fait beau et chaud. On y va en voiture et on fait du camping. Ma famille visite toujours de nouveaux villages pendant la route. C'est toujours génial parce que les voyages forment la jeunesse.

Où loges-tu ?

Where do you stay ?

Normalement, je loge dans une caravane au camping près de la mer. J'adore cet endroit. Les paysages sont à couper le souffle. Ce n'est pas très luxueux, mais cela ne me dérange pas.

Qu'est-ce que tu aimes faire en vacances ?

What do you like to do on holiday?

Moi, en vacances, je me repose avant tout car à mon avis c'est le plus important. Je me lève tard, je me prépare, puis je vais à la plage où je me bronze et je nage dans la mer. Je n'oublie jamais emporter un livre avec moi pour lire. J'adore les vacances !

Où est-tu allé(e) en vacances l'année dernière?

Where did you go on holiday last year ?

L'année dernière, je suis allé-e en vacances avec ma famille dans les Alpes. On a fait du ski. Je peux dire qu'on n'avait pas le temps pour s'ennuyer car nous aimons beaucoup le ski. Je passais les soirées à jouer aux cartes et à parler le français avec les gens qui habitaient à l'hôtel. Quelle bonne expérience !

Comment est-ce que tu vas passer les grandes vacances ?

How are you going to spend the summer holidays?

Cette année, en août, je vais passer mes vacances dans la famille de mon père à St Ives. Nous allons en profiter pour faire des promenades sur les plages. En plus, je vais beaucoup lire et je vais pêcher avec mon grand-père ce qui sera fantastique.

Comment seraient tes vacances idéales?

What would your ideal holidays be?

Pour mes vacances idéales j'irais aux Caraïbes et je voyagerais en avion avec mes copains. On logerait dans un hôtel quatre étoiles où il y aurait une salle de jeux et il n'y aurait pas beaucoup d'adultes. Le plus important serait que je pourrais nager avec les poissons tropicaux et puis, je regarderais le coucher du soleil.

Parle-moi de la dernière fois que tu as mangé dans un restaurant

Talk to me about the last time that you ate in a restaurant

Le week-end dernier, je suis allé-e au restaurant italien avec mes parents. Les prix n'étaient pas excessifs et l'accueil était très chaleureux. Nous avons demandé une table à côté de la fenêtre pour profiter de la vue. La nourriture était vraiment délicieuse.

C'est quoi ton moyen de transport préféré?

What is your favourite mode of transport?

Si j'avais le choix, je voyagerais toujours à pied car c'est bon pour la santé, ce n'est pas cher et très écologique, on découvre des endroits surprenants et on rencontre des gens, mais l'inconvénient est qu'on se déplace lentement et parfois c'est impossible d'aller partout où l'on veut.

Tu aimes faire du shopping quand tu es en vacances?

Do you like to shop when you are on holiday?

Je déteste faire du shopping en général et l'idée de le faire pendant mes vacances me semble ridicule. Cependant, j'aime trouver de petits cadeaux spéciaux de mes voyages pour les offrir à mes meilleurs amis.

Parle-moi d'un problème que vous avez eu pendant tes vacances

Speak about a problem that you have had on holiday

J'étais allé-e à l'agence de voyages et j'avais réservé mon billet d'avion. J'avais fait ma valise et tout était prêt pour partir, mais en arrivant à l'aéroport, j'ai réalisé que j'avais oublié mon passeport ! J'ai donc raté mon avion et je ne suis pas parti-e en vacances.

Question you will ask:

Fancy Phrases:

PERFECT TENSE ("has done/did")

Start with the present tense of *avoir/être*, then add the past participle of the second verb:

-er	-ir	-re
Remove -er Add -é	Remove -r	Remove -re Add -u
jouer → (j'ai) joué	finir → (j'ai) fini	vendre → (j'ai) vendu

VERBS USING ÊTRE e.g. je suis allé(e)

*monter entrer sortir venir aller naître
partir descendre arriver tomber rester
mourir retourner (and all reflexive verbs)*

The past participle for these verbs must agree with the subject in gender and number:

*je suis allé (m) je suis tombée (f)
on est entrés (mpl) on est entrées (fpl)*

PRESENT TENSE ("does/is doing")

Remove the -er/-ir/-re and add these endings:

	jouer	finir	vendre
je	joue	finis	vends
tu	joues	finis	vends
il/elle/on	joue	finit	vend
nous	jouons	finissons	vendons
vous	jouez	finissez	vendez
ils/elles	jouent	finissent	vendent

ÊTRE

je suis / tu es / il est / nous sommes / vous êtes / ils sont

AVOIR

j'ai / tu as / il a / nous avons / vous avez / ils ont

SIMPLE FUTURE TENSE ("will/shall do")

Add these endings to the infinitive:

	jouer	finir	vendre
je	joueraï	finirai	vendrai
tu	joueras	finiras	vendras
il/elle/on	jouera	finira	vendra
nous	jouerons	finirons	vendrons
vous	jouerez	finirez	vendrez
ils/elles	joueront	finiront	vendront

IRREGULAR STEMS

*être (ser-) avoir (aur-) faire (fer-)
venir (viendr-) savoir (saur-) aller (ir-)
devoir (devr-) pouvoir (pouurr-) voir (verr-)*

IMPERFECT TENSE ("was doing/used to do")

Remove *-ons* from the *nous* form of the present tense, add these endings (*ais/ais/ait/ions/iez/aient*)

	jouer	finir	vendre
je	jouais	finissais	vendais
tu	jouais	finissais	vendais
il/elle/on	jouait	finissait	vendait
nous	jouions	finissions	vendions
vous	jouiez	finissiez	vendiez
ils/elles	jouaient	finissaient	vendaient

NEAR FUTURE TENSE ("is going to do")

Use the present tense of *aller* followed by the infinitive:

	je	vais	
	tu	vas	jouer finir vendre être aller vouloir etc.
	il/elle/on	va	
	nous	allons	
	vous	allez	
	ils/elles	vont	

CONDITIONAL TENSE ("would do")

Begin with the future stem, add imperfect endings:

	jouer	finir	vendre
je	jouerais	finirais	vendrais
tu	jouerais	finirais	vendrais
il/elle/on	jouerait	finirait	vendrait
nous	jouerions	finirions	vendrions
vous	joueriez	finiriez	vendriez
ils/elles	joueraient	finiraient	vendraient

IRREGULAR STEMS

Same as for the simple future

EXTRA MARKS: USE WITH THE IMPERFECT TENSE
Si j'avais le temps, j'irais... (If I had time, I'd go to...)

PLUPERFECT TENSE ("had done")

Very similar to the perfect tense, except you start with the *imperfect* tense of auxiliary verbs *avoir/être*:
e.g. *j'avais joué, il avait fini, nous étions allés, elles s'étaient brossées les dents*

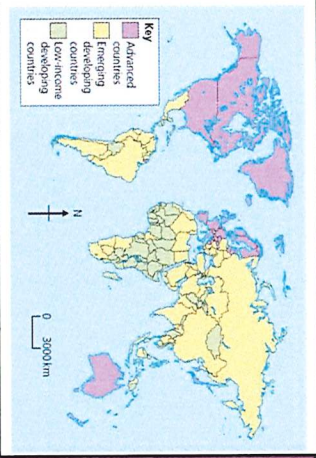
What is development?	
Development is an improvement in living standards through better use of resources. (positive change)	
Economic	This is progress in economic growth through levels of industrialisation and use of technology.
Social	This is an improvement in people's standard of living. For example, clean water and electricity.
Environmental	This involves advances in the management and protection of the environment.

Measuring development

These measures are used to compare and understand a country's level of development.

Economic indicators:	
Gross National Income per capita	An average of gross national income per person, per year in US dollars.
Social indicators:	
Infant mortality	The number of children who die before reaching 1 per 1000 babies born. Indicates quality of health care.
Literacy rate	The percentage of population over the age of 15 who can read and write. Reflects quality of education.
Life expectancy	The average lifespan of someone born in that country. Reflects quality of health care.
Mixed indicators	
Human Development Index (HDI)	A number that uses life expectancy, education level and income per person.

Variations in the level of development	
LICs	Poorest countries in the world. GNI per capita is low and most citizens have a low standard of living.
NEEs	These countries are getting richer as their economy is progressing from the primary industry to the secondary industry. Greater exports leads to better wages.
HICs	These countries are wealthy with a high GNI per capita and standards of living. These countries can spend money on services.



Pattern of uneven development

Development is globally uneven with most HICs located in Europe, North America and Oceania. Most NEEs are in Asia & South America, whilst most LICs are in Africa.

Unit 2b The Changing Economic World

Physical factors affecting uneven development (the ability to generate income and improve the quality of life (QoL))

Natural Resources	Natural Hazards
<ul style="list-style-type: none"> Amount of natural resources (e.g. water, oil, timber etc) 	<ul style="list-style-type: none"> Risk of meteorological & tectonic hazards (e.g. drought in Somalia, earthquakes in Nepal).
Location/Terrain	
<ul style="list-style-type: none"> Landlocked countries (e.g. Rwanda, Nepal) may find trade difficult in comparison to maritime countries. Mountainous terrain makes farming difficult compared to flat land. 	

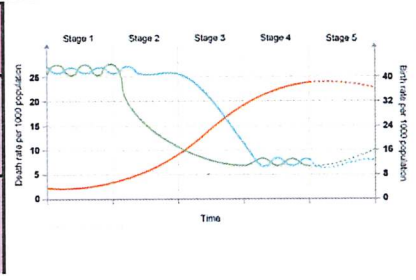
Development indicators limitations

Are an average – do not reflect variation (inequality) within a country.
Do not account for all aspects of development, e.g. political freedom, human rights, natural hazards.

The Demographic Transition Model

The demographic transition model (DTM) shows population change over time. It studies how birth rate and death rate affect the total population of a country.

STAGE?	STAGE 1 (e.g. Tribes)	STAGE 2 (e.g. Kenya)	STAGE 3 (e.g. India)	STAGE 4 (e.g. UK)	STAGE 5 (e.g. Japan)
BR, DR, Natural Increase?	High DR High BR Steady	Falling DR High BR High	Low DR Falling BR High	Low DR Low BR Low	Low DR Very low BR Negative
Link to development?	Poor health care & education	Improving health care & poor	Good health care & improving	Good health care & education	Good health care & education



Human factors affecting uneven development

Aid	Trade
<ul style="list-style-type: none"> Aid can help some countries develop key projects for infrastructure faster. Aid can improve services such as schools, hospitals and roads. Too much reliance on aid might stop other trade links becoming established. 	<ul style="list-style-type: none"> Countries that export more than they import have a trade surplus. This can improve the national economy. Having good trade relationships. Trading goods and services is more profitable than raw materials.
Education	Health
<ul style="list-style-type: none"> Education creates a skilled workforce meaning more goods and services are produced. Educated people earn more money, meaning they also pay more taxes. This money can help develop the country in the future. 	<ul style="list-style-type: none"> Lack of clean water and poor healthcare means a large number of people suffer from diseases. People who are ill cannot work so there is little contribution to the economy. More money on healthcare means less spent on other things.
Politics	History
<ul style="list-style-type: none"> Corruption in local and national governments. The stability of the government can effect the country's ability to trade. Ability of the country to invest into services and infrastructure. 	<ul style="list-style-type: none"> Colonialism has helped Europe develop, but slowed down development in many other countries. Countries that went through industrialisation a while ago, have now developed further.

Consequences of Uneven Development

Levels of development are different in different countries. This uneven development has consequences for countries, especially in wealth, health and migration.

Wealth	People in HICs have higher incomes than LICs (e.g. the USA holds 35% of the world's wealth whereas Africa holds 1% of global wealth).
Health	Better healthcare means that people in HICs live longer than those in LICs.
Migration	If nearby countries have higher levels of development or are secure, people will move to seek better opportunities and standard of living.

Reducing the Global Development Gap

Microfinance Loans

This involves people in LICs receiving small loans from traditional banks.
 + Loans enable people to start their own businesses.
 - It is not clear they can reduce poverty at a large scale.



Foreign-direct investment

This is when one country buys property or infrastructure in another country.
 + Leads to better access to finance, technology & expertise.
 - Investment can come with strings attached that country's will need to comply with.



Aid

This is given by one country to another as money or resources.
 + Improve literacy rates, building dams, improving agriculture.
 - Can be wasted by corrupt governments or they can become too reliant on aid.



Debt Relief

This is when a country's debt is cancelled or interest rates are lowered.
 + Means more money can be spent on development.
 - Locals might not always get a say. Some aid can be tied under condition from donor country.



Fair trade

This is a movement where farmers get a fair price for the goods produced.
 + Paid fairly so they can develop schools & health centres.
 - Only a tiny proportion of the extra money reaches producers.



Technology

Includes tools, machines and affordable equipment that improve quality of life.
 + Renewable energy is less expensive and polluting.
 - Requires initial investment and skills in operating technology.



CS: Reducing the Development Gap In Kenya

Location and Background

Kenya is a LIC in east Africa. Tourists come to Kenya to go on safari and enjoy a beach holiday. In 2017, 1.4m visited (0.9m visited in 1995). This was partly down to visa fees being cut by 50%.



Benefits

- Tourism contributes over 4% of Kenya's GDP.
- 1.1 million people rely on jobs in tourism directly or indirectly.
- Since 2000, Kenya's HDI score has increased from 0.45 to 0.59.

Drawbacks

- Only a small proportion of the money goes to local people, with the rest going to big TNCs.
- Some Maasai tribespeople have been forced off their land to create space for national parks.
- Safari vehicles often destroy vegetation and disturb animals.

Overall – tourism helps reduce the development gap in Kenya by increasing economic wealth which then has a knock on benefit of improving peoples' quality of life.

Case Study: Economic Development in India.

Location & Importance

India is a NEE in south Asia. It is bordered by 6 countries and is surrounded by the Indian Ocean.
 There are multiple religions (e.g. Hinduism, Islam etc) and a great variety of environments (tropical rainforests, desert etc).
 India hosts TNCs, provides workers to the UK and has huge cultural importance (eg food, music etc)



India's changing industrial structure

What?	Why?
<ul style="list-style-type: none"> India has moved from a primary-based economy (farming, fishing etc) to a secondary (manufacturing) and tertiary-led (services) one. 	<ul style="list-style-type: none"> Machines replace people in farming TNC's factories move to India (e.g. Unilever) – encouraged by Indian government, cheaper wages, hard working, English speaking staff.

Pros of Unilever to host (India)?

- Jobs – 16,000 created leads to multiplier effect
- Income and Tax – Annual sales of \$4.5 billion. Taxes paid to Indian government finance improved public services (E.g. schools, health-care etc)
- Social Projects - work with charities to help provide sanitation to 115million people.

Cons of Unilever to host (India)?

- Living wage – not received
- Profits go abroad (e.g. to UK / Netherlands).
- Economic - Unilever has been accused of closing factories in Dharwad and Mumbai once local tax breaks have ended.
- Environmental - Mercury contaminated glass from a factory ended up in a waste dump.

India's relationships with world

Political – positive, supports peace in turbulent region.
 Trading – positive, importing and exporting of numerous goods.

International aid in India

Short-term: £10m and 1,200 tents.
 Long-term: £200m/yr tackles poverty.
 Top-down: Sardar Sarovar dam.
 Bottom-up: Water Aid – 466,000 people access sanitation / clean water.

Environmental impacts of economic development

Habitat loss – Indian tigers (40,000 to 3,000).
 Air pollution – India has 13 of 20 most polluted cities in the world.

Social impacts of economic development

QoL better – life expectancy (54 to 67), infant mortality rate (114 to 46) and literacy rates (41% to 69%) all better.
 Urban people Vs Rural people.

Case Study: Economic Change in the UK

UK in the Wider World

The UK has one of the largest economies in the world. The UK has huge political, economic and cultural influences. The UK is highly regarded for its fairness and tolerance. The UK has global transport links. Consider the impacts of BREXIT.



Causes of Economic Change

Our economy today: more tertiary (services) and quaternary (R&D) (post-industrial society).
 Our economy in the past: more secondary (manufacturing).
 Less secondary because of...
 De-industrialisation: cheap labour abroad (globalisation) and raw materials run out.

Towards Post-Industrial

More tertiary and quaternary because...
 Government policy: more tertiary and quaternary boosts economy e.g. Surrey Science Park.
 IT: UK heart of IT industry
 Services and Finance: London one of world's leading financial centres.

Development of Science Parks

Science Parks are groups of scientific and technical knowledge based businesses on a single site (e.g. Surrey Science Park).
 • Access to transport (M3, Heathrow).
 • Highly educated workers.
 • Staff benefit from attractive working conditions.
 • Attracts clusters of related high-tech businesses.

Environmental impacts of industry

- GH gases into atmosphere.
 - Pollutants into rivers.
 - Use of water for manufacturing.
- Jaguar Land Rover: sustainable modern industrial development:
- Solar panels produce 30% electricity.
 - 70% less waste to landfill.
 - Natural light maximised saving 830 tonnes of CO2 per year.

Change to a Rural Landscape (Cumbria decline, N. Somerset growth)

Cumbria:
 Local services decline (e.g. Post Office, doctors etc). (Social)
 Ageing population not supported as young move away. (Social)
 Unemployment above national average in 2/7 districts. (Economic)

North Somerset:
 Lack of affordable housing for locals. (Socio-Economic)
 Increased congestion due to 80% car ownership. (Social)
 Increased air pollution from cars & loss of greenbelt land. (Social)

Improvements to Transport

A £15 billion 'Road Improvement Strategy'. This will involve 100 new roads & 1,600 extra lanes (eg M3).
 HS2 railway to improve connection between London, Birmingham and 'The North'.
 £18 billion: Heathrow's 3rd runway.

UK North/South Divide

North: ↓ wages education health
 South: ↑ wages education health
 Northern Powerhouse £6bn from government. Not specific enough to close the gap.
 Attract TNCs, e.g. Mitsubishi, Livingston. Too small to close gap.

Health and Social Care Knowledge Organiser: Component 1 Human Lifespan Development

Learning Aim A: Understand human growth and development across life stages and the factors that affect it

How do people grow and develop throughout their lives? How can factors such as lifestyle choices, relationships affect this? Understanding these processes is essential knowledge and understanding for health and social care practitioners.

A1 Growth and development across life stages

Lifestages

1. Infancy (0 - 2 years)
2. Early childhood (3 - 8 years)
3. Adolescence (9 - 18 years)
4. Early adulthood (19 - 45 years)
5. Middle adulthood (46 - 65 years)
6. Later adulthood (65+ years)



Holistic Development

1. **Physical development** - Physical growth and physiological change
2. **Intellectual development** - Developing thinking and language skill and common activities that promote learning and development
3. **Emotional development** - Developing feelings about self and other
4. **Social development** - Forming relationships

A2 Factors affecting growth and development

1. Physical factors

- a) Genetic inheritance
- b) Diet and lifestyle choices
- c) Experience of illness and disease
- d) Appearance

2. Economic factors

- a) Income/ wealth
- b) Material possessions

3. Social, Cultural and emotional factors

- a) Educational experiences
- b) Culture, e.g. community involvement, religion, gender
- c) Influence of role models
- d) Influence of social isolation
- e) Personal relationship with friends and family



Learning Aim B: Investigate how individuals deal with life events

B1 Different types of life event

1. Physical events

- a) Accident/ injury
- b) Ill health

2. Relationship changes

- a) Entering a relationship
- b) Marriage
- c) Divorce
- d) Parenthood
- e) Bereavement



3. Life circumstances

- a) Moving house, school or job
- b) Exclusion from education
- c) Redundancy
- d) Imprisonment
- e) Retirement



B2 Coping with change caused by life events

1. How individuals adapt to these changes

2. Sources of support

- a) Family, friends partners
- b) Professional carers and services
- c) Community groups, voluntary and faith based organisations

3. Types of support

- a) Emotional
- b) Information advice
- c) Practical help, e.g. financial assistance, childcare, transport

Year 10 History: Term 2

Elizabethan England

Elizabethan Exploration

The 'New World' were the Americas, and modern Caribbean. There was a lot of money to be made in the Americas from new raw materials (e.g. sugar and tobacco). Spain controlled a lot of the New World, and you needed a licence from them to trade there.

Exploration of the world increased during Elizabeth's reign for many reasons, including:

- the money to be made
- more accurate maps (e.g. the Mercator Map)
- the promise of adventure; the invention of new, faster ships, called galleons
- new equipment to help with travel

A **privateer** was someone who had the support of their own government to act like a pirate.

Sir **Francis Drake** was a privateer for Elizabeth. He often stole from the Spanish.

- In 1572, Drake captured £40,000 of Spanish silver in Panama.
- In 1577, Drake began his circumnavigation of the world. In 1580, Drake returned to England with £400,000 Spanish silver. He was knighted on the deck of his ship, the Golden Hind.

The Netherlands

Spain controlled the **Netherlands**. The Spanish Inquisition went there to kill Protestants. This resulted in the **Dutch Revolt** in 1566. Elizabeth didn't get directly involved in this, but she did:

- Allow Protestant refugees into England.
- Give shelter to the Sea Beggars (Dutch rebels) who attacked Spanish ships.
- Stole the Genoese Loan from the Spanish in 1568.

In 1576, Spain stopped paying their troops in the Netherlands. This caused the Spanish army to rebel, steal, and burn down parts of the Netherlands (called the **Spanish Fury**). This united the people of the Netherlands against Spain.

To regain control in the Netherlands, Spain agreed to **Pacification of Ghent**, which would end the religious persecution, and give the people of the Netherlands more say in the running of the country. Elizabeth supported this by:

- Promising £100,000 to help.
- Sending a group of 6,000 volunteers (led by John Casimir) to the Netherlands

Problems with Spain

Spain was a world superpower during Elizabeth's reign. It was ruled by King Philip II (who had previously been married to Elizabeth's sister, Mary I).

Philip was heavily involved in the plots to remove Elizabeth as England's monarch.

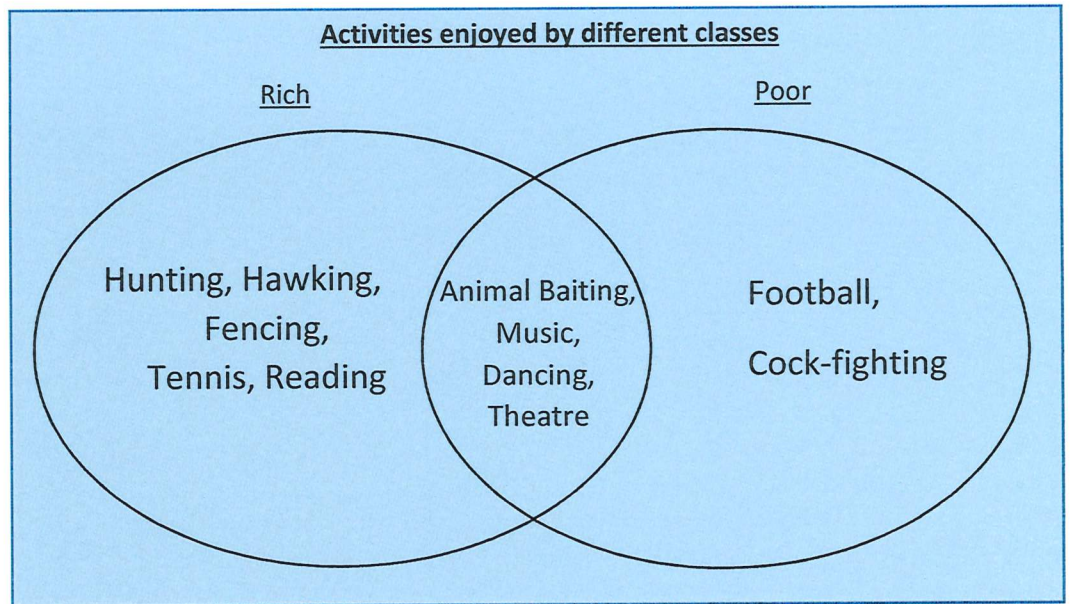
The Treaty of Nonsuch in 1585, was Elizabeth's official agreement to help the Dutch Protestants. This put England and Spain at war.

War with Spain

Philip aimed to invade England with a fleet of ships (called the **Spanish Armada**) in 1587. It failed for a number of reasons:

1. Drake 'sing'd the King of Spain's beard'. Also called the 'Raid on Cadiz', where he destroyed 30 Spanish ships and destroyed much of their supplies. This delayed the Armada setting sail for a whole year (until 1588).
2. The Spanish had poorly made barrels for their food, and they ran out of cannon balls.
3. The Armada planned to pick up Spanish troops from the Netherlands to help with the invasion, but the messages took too long to reach each other.
4. The English had better ships (galleons).
5. The English saved cannon balls and used fireships to break the formation of the enemy.
6. The remaining Spanish ships were destroyed when they tried to escape by going round Scotland.

School	Who could attend?	Subjects taught	Other
Private tutoring at home	Members of the nobility Boys and Girls (but separately from one another)	Latin, Greek, History, Philosophy, Government, Theology Boys: Horse riding, archery, fencing, swimming Girls: Music, dancing, needlework, horse riding, archery	Education would be finish by being sent to another family belonging to the nobility
Grammar School	Middle class Boys only Some scholarships available	Latin, Greek, French, Ancient History, Philosophy, Debating, Archery, Chess, Wrestling, Running	72 new grammar schools were set up by 1580. 10 hours a day. Punishments could include report, detentions, caning, and expulsion
Dame Schools	Middle class Girls only	Cooking, basic medical treatments.	Run by local, educated women



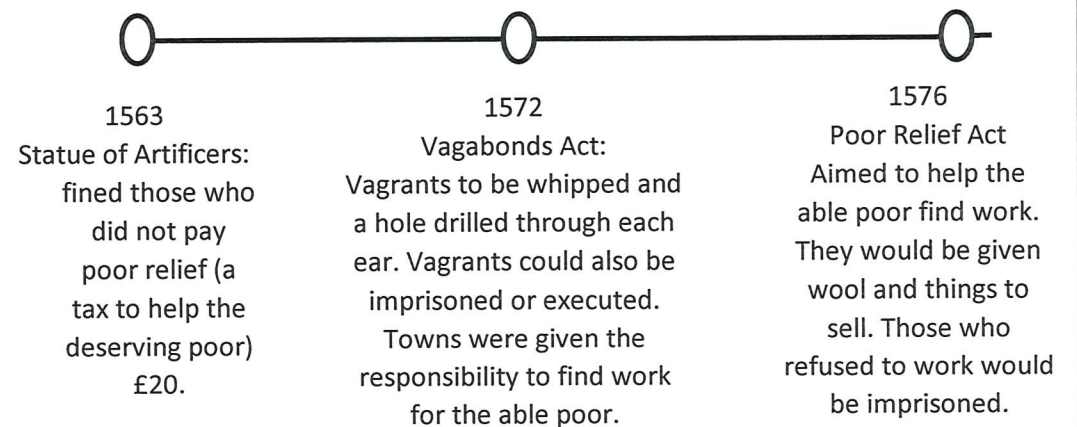
Impact on Education

- Literacy rates improved for boys in Elizabethan England, but not for girls.
- Elizabeth created several new colleges at Cambridge and Oxford University to educate more Protestant clergymen for her Religious Settlement.

Poverty in Elizabethan England

Reasons for increased poverty/vagabondage (homelessness) in Elizabeth's reign:

- Population growth (increased by 35%)
- Wages did not increase
- Sheep farming became popular – less land to grow food
- Enclosure – fencing off land so that the poor couldn't grow their own crops on it



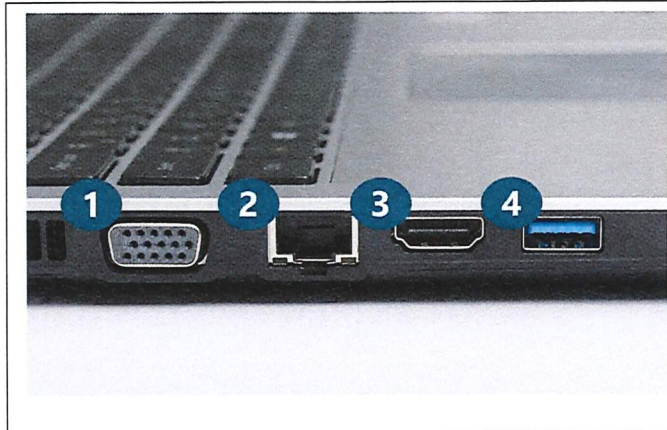
WJEC – VOCATIONAL IT YEAR 10 SPRING TERM

Specification point 1

How IT can be used to fulfil the needs of organisations and individuals

What is a computer port?

Ports are slots on the motherboard into which a cable of external device is plugged in. Examples of external devices attached via ports are the mouse, keyboard, monitor, microphone, speakers, etc.



1. **VGA:**

Used to link a computer to a display device. Less commonly used because it doesn't carry an audio and video signal.

2. **Ethernet:**

Used to provide an internet connection, connect devices to a local network. Used to connect a Wi-Fi router or modem to the internet entry port or telephone line

3. **HDMI:**

Used to link a computer to a display device. It carries an audio and video signal.

4. **USB:**

Used to attach keyboards, mice, printers, external storage and mobile devices to the computer. It is also used for charging portable products

What is systems software?

- Software that allows the user to interact with the computer. The Operating System is an example of systems software.

Examples:

- Proprietary – Windows and iOS.
- Open source – Linux and Ubuntu.

Open source v Proprietary software:

- Proprietary software is a commercial form of software where manufacturers hide the source code so it cannot be imitated.
- Open source software is a free form of software which allows users to access the source code so that they can modify it to suit their own needs.

Tools of an operating system:

- User interface – This allows the user to interact with the computer.
- User management – This will allocate the user with an account which will give them access to files based on the permissions set by an administrator.
- File management – This allows users to store files in a logical structure.
- Device drivers – Each peripheral device will contain software called a driver that will allow the device to communicate with the CPU. In the modern era of technology, this would be referred to as 'plug and play'.
- Memory management – This ensures that programs/data do not corrupt each other and is stored in correct memory locations.
- Multitasking – To ensure that all tasks appear to run simultaneously.

What is utility software?

- Software that is responsible for maintaining and optimising the performance of a computer. It's designed to perform a number of housekeeping tasks.
- It's considered part of systems software.

Utility software tools

- Compression
- Defragmentation
- Encryption.

What is applications software?

- Software that is designed to perform a specific task.
- Some applications are designed to handle information, communicate with others or perform a specific set of functions for one particular organisation.

Specialist software

- Bespoke software is software written to achieve a task for an individual or company.
- This could be something as simple as an ordering system and stock management system.
- McDonalds use something similar with their self-checkout system.

Data collection

Sources of data can either be indirect or direct.

Direct

The data collected is used to fulfil a specific purpose. For example, when a customer buys a product using their supermarket loyalty card which will be used to inform the company and what consumers have purchased.

Indirect

Data collected that is directly related to the original purpose. This might involve consumer data being sold to third parties because it has some commercial value.

Quality of data

The quality of information depends on the quality of data. For data to be valuable it must be accurate, up to date and complete.

Garbage in-Garbage out (GIGO)

This concept is common when data lacks quality. For example, a user completes a form incorrectly and the data becomes erroneous. The internet is a good example because if you put garbage in, you will get garbage out and this is why it's easy to publish content that is not always accurate and up-to-date such as fake news.

Impact of technology.

Data might be inaccurate, out of date or incomplete due to the ICT systems in place.

For example:

- Incorrectly entered by a data entry clerk.
- System may fail to detect faults in recording data (lack of validation)
- Data on the system might be out of date.

Primary storage

This refers to data that is located much closer to the CPU which means the data can be accessed faster.

An example of primary storage is RAM (Random Access Memory) which stores programs currently in use. An increase in RAM allows users to access data quicker and more data at once. This is useful when they're trying to undertake a wide range of tasks.

The disadvantage of using RAM is that it's volatile which means when the power is switched off, the data it stores at the time is lost. This is known as volatile memory.

Secondary storage

This refers to data being stored for long-term use. A non-volatile form of storage that allows users to save data even when the computer is switched off.

There are three different types of storage:

Optical – CD, DVD

Magnetic – Hard drive

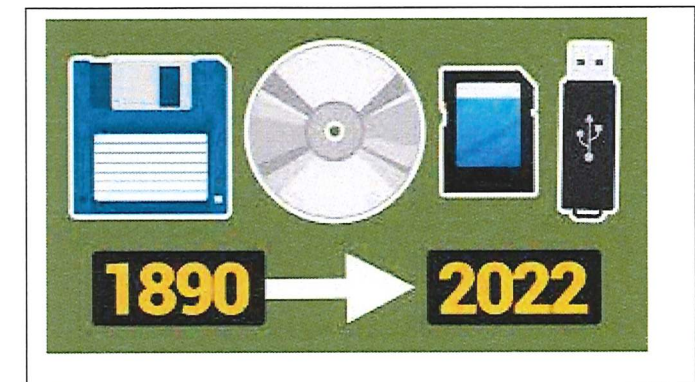
Solid-state – Solid-state drives, USB flash drives and SD cards.

Online storage

This refers to data being stored remotely on a server owned by the cloud storage provider. This means data does not have to be stored physically on the user's device. They will need to log into an account which will allow them to access their files.

The disadvantage is that you need an internet connection to access this data.

Common examples include: Consumer – iCloud, Businesses – Google mail, OneDrive, Dropbox.



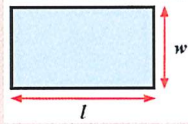
GCSE Mathematics Command Words

	<p>PLOT</p> <p>Mark a point on a graph using a cross</p>	<p>MEASURE</p> <p>Find the length or a line or size of an angle using ...</p> <p>... a ruler or protractor</p>	<p>CONSTRUCT</p> <p>Create an accurate drawing using the correct maths equipment</p> <p>Think ruler and compass</p>
<p>EXPAND</p> <p>Remove brackets from and algebraic expression</p> <p>$3(x + 4) = 3x + 12$</p>	<p>GIVE or JUSTIFY</p> <p>Use reasons to explain thinking</p> <p>Think angle facts line 'angles at a point sum to 360°'</p>	<p>REPRESENT</p> <p>Display information in a graph or chart</p>	<p>FIND</p> <p>Work out an answer to a problem</p> <p>Think averages - find the mode</p>
<p>SOLVE</p> <p>Find the solution to an equation such as</p> <p>$4x - 3 = 24$</p>	<p>SHOW</p> <p>Give all working to get the answer</p>	<p>EVALUATE or CALCULATE or WORK OUT</p> <p>Find the value (calculate)</p> <p>Evaluate 4^3: $4 \times 4 \times 4 = 64$</p>	<p>CONVERT</p> <p>Change from one form to another</p> <p>Think units and fractions, decimals & percentages</p>
<p>EXPLAIN</p> <p>Give reasons to support the decision or answer</p>	<p>SIMPLIFY</p> <p>Make an algebraic expression simpler by collecting like terms OR make a ratio or fraction simpler by cancelling common factors</p>	<p>ROUND</p> <p>Make a number simpler but keep its value close to what it was</p> <p>74.26 rounded to 1dp is 74.3</p>	<p>ORDER</p> <p>Use a rule to arrange</p> <p>Think ascending and descending</p>
<p>DRAW</p> <p>Create a neat drawing that shows key features</p>	<p>FACTORISE</p> <p>Put brackets into an algebraic expression</p> <p>$x^2 + 6x + 8 = (x + 2)(x + 4)$</p>	<p>ESTIMATE</p> <p>Give a sensible approximate answer using rounding</p>	<p>WRITE</p> <p>Give the answer</p>
<p>SKETCH</p> <p>Create a rough drawing that shows key features (no need to use a ruler or compass)</p>	<p>DESCRIBE</p> <p>Use correct maths vocabulary to explain key features</p> <p>Think transformations</p>	<p>LABEL</p> <p>Attach the correct name to the diagram</p>	<p>COMPLETE</p> <p>Fill in missing values in a table or on a diagram</p>

Foundation GCSE Mathematics Key Information

Area of a Rectangle

$$A = l \times w$$



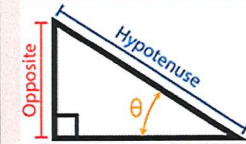
Speed



Percentage Change

$$\frac{\text{actual change}}{\text{original}} \times 100$$

Sinθ



$$\sin\theta = \frac{\text{Opp}}{\text{Hyp}}$$

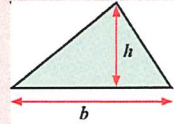
Prime Number

A number that has exactly 2 factors

2, 3, 5, 7, 11, 17, ...

Area of a Triangle

$$A = \frac{1}{2} \times b \times h$$

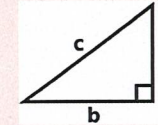


Density

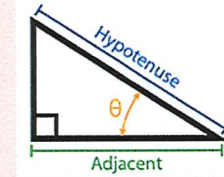


Pythagoras' Theorem

$$a^2 + b^2 = c^2$$



Cosθ



$$\cos\theta = \frac{\text{Adj}}{\text{Hyp}}$$

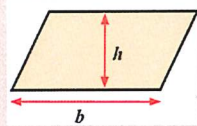
Square Number

A number multiplied by itself

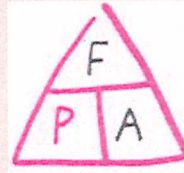
$$5^2 = 5 \times 5 = 25$$

Area of a Parallelogram

$$A = b \times h$$



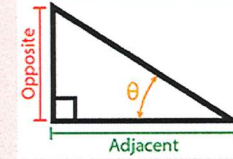
Pressure



Metric Length Conversions

$$\begin{aligned} 1\text{km} &= 1000\text{m} \\ 1\text{m} &= 100\text{cm} \\ 1\text{cm} &= 10\text{mm} \end{aligned}$$

Tanθ



$$\tan\theta = \frac{\text{Opp}}{\text{Adj}}$$

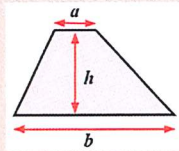
Cube Number

A number multiplied by itself and then itself again

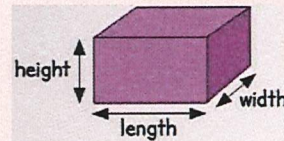
$$5^3 = 5 \times 5 \times 5 = 125$$

Area of a Trapezium

$$A = \frac{1}{2} \times (a + b) \times h$$



Volume of a Cuboid



$$V = l \times w \times h$$

Metric Mass Conversions

$$\begin{aligned} 1\text{ tonne} &= 1000\text{kg} \\ 1\text{kg} &= 1000\text{g} \\ 1\text{g} &= 1000\text{mg} \end{aligned}$$

Exact Values of Sin

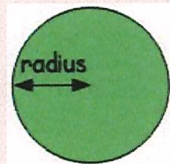
θ	0°	30°	45°	60°	90°
sinθ	0	1/2	√2/2	√3/2	1

Multiple

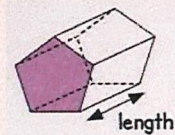
The first 5 multiples of 12 are 12, 24, 36, 48 and 60

Area of a Circle

$$A = \pi \times r^2$$



Volume of a Prism



$$V = \text{area of cross-section} \times \text{length}$$

Metric Capacity Conversions

$$\begin{aligned} 1\text{l} &= 1000\text{ml} \\ 1\text{l} &= 100\text{cl} \\ 1\text{cl} &= 10\text{ml} \end{aligned}$$

Exact Values of Cos

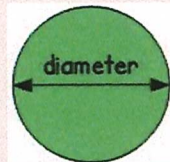
θ	0°	30°	45°	60°	90°
cosθ	1	√3/2	√2/2	1/2	0

Factor

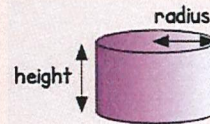
The factors of 12 are 1, 2, 3, 4, 6 and 12

Circumference of a Circle

$$C = \pi \times d$$



Volume of a Cylinder



$$V = \pi \times r^2 \times h$$

Error Interval

7.4 rounded to 1dp

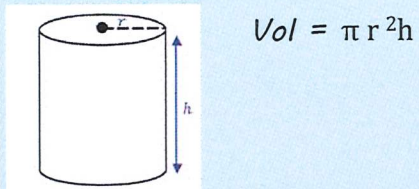
$$7.35 \leq x < 7.45$$

Exact Values of Tan

θ	0°	30°	45°	60°	90°
tanθ	0	1/√3	1	√3	

Higher GCSE Mathematics Key Information

Cylinder



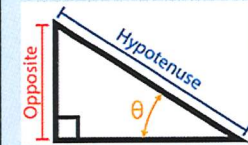
Speed



Percentage Change

$$\frac{\text{actual change}}{\text{original}} \times 100$$

Sinθ



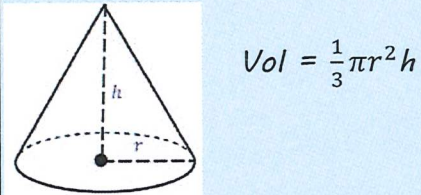
$$\sin\theta = \frac{\text{Opp}}{\text{Hyp}}$$

Quadratic Formula

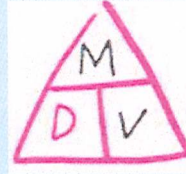
$$ax^2 + bx + c = 0$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Cone

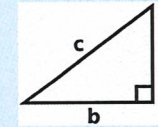


Density

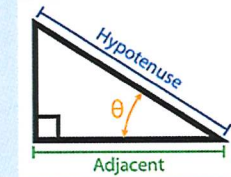


Pythagoras' Theorem

$$a^2 + b^2 = c^2$$



Cosθ



$$\cos\theta = \frac{\text{Adj}}{\text{Hyp}}$$

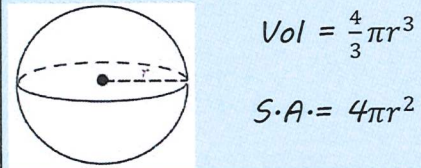
Surds

$$\sqrt{a} \times \sqrt{a} = a$$

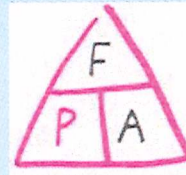
$$\sqrt{a} \times \sqrt{b} = \sqrt{a \times b}$$

$$\frac{\sqrt{a}}{\sqrt{b}} = \sqrt{\frac{a}{b}}$$

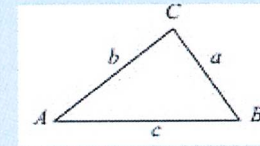
Sphere



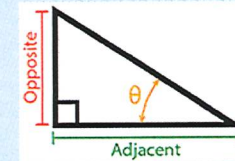
Pressure



Trigonometry Non-right angled triangles



Tanθ



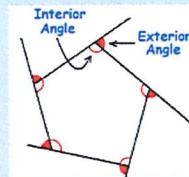
$$\tan\theta = \frac{\text{Opp}}{\text{Adj}}$$

Error Interval

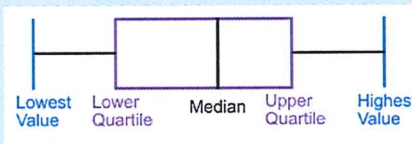
7.4 rounded to 1dp

$$7.35 \leq x < 7.45$$

Angles in Polygons



Box Plots



Sine Rule

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

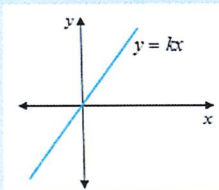
Exact Values of Sin

θ	0°	30°	45°	60°	90°
sinθ	0	1/2	√2/2	√3/2	1

Direct Proportion

$$y \propto x$$

$$y = kx$$



sum interior angles = $(n - 2) \times 180^\circ$

sum exterior angles = 360°

interior + exterior = 180°

Histogram

bar chart with unequal bar width and frequency density on vertical axis
Frequency density = frequency ÷ class width

Cosine Rule

$$a^2 = b^2 + c^2 - 2bc \cos A$$

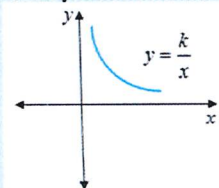
Exact Values of Cos

θ	0°	30°	45°	60°	90°
cosθ	1	√3/2	√2/2	1/2	0

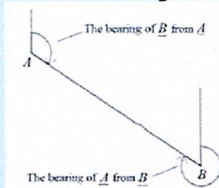
Inverse Proportion

$$y \propto \frac{1}{x}$$

$$y = \frac{k}{x}$$



Bearings



Rules of Indices

Rule 1 $a^0 = 1$	Rule 4 $(a^m)^n = a^m \times n$
Rule 2 $a^m \times a^n = a^{m+n}$	Rule 5 $a^{-m} = \frac{1}{a^m}$
Rule 3 $a^m \div a^n = a^{m-n}$	Rule 6 $a^{n/m} = \sqrt[m]{a^n}$

Area Triangle

$$\text{Area} = \frac{1}{2} ab \sin C$$

Exact Values of Tan

θ	0°	30°	45°	60°	90°
tanθ	0	1/√3	1	√3	

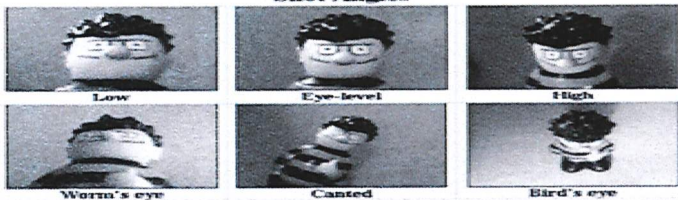


Media Studies

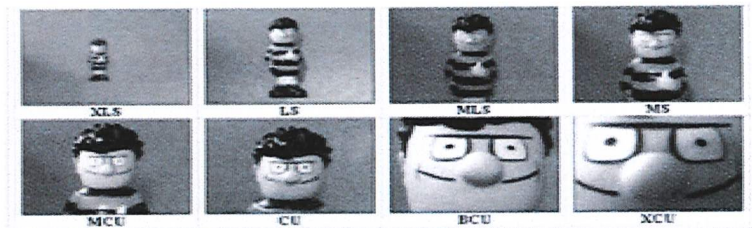
Key Words	
Blockbuster	a Hollywood movie that's made with a large budget and big stars.
Independent Film	An indie film is any feature-length or short film that is made without a major studio or big production company attached.
Marketing	the action or business of promoting and selling products or services, including market research and advertising.
Vertical Integration	Vertical integration refers to the process of acquiring business operations within the same production vertical. A company that opts for vertical integration takes complete control over one or more stages in the production or distribution of a product.
Conglomerate	a large corporation.
Subsidiaries	a company controlled by a holding company.
Horizontal Integration	Horizontal integration and vertical integration are competitive strategies that companies use to consolidate their position among competitors. Horizontal integration is the acquisition of a related business. A company that opts for horizontal integration will take over another company that operates at the same level of the value chain in an industry.
Zeitgeist	the defining spirit or mood of a particular period of history as shown by the ideas and beliefs of the time.
Globalisation	the process by which businesses or other organizations develop international influence or start operating on an international scale.
Public Service Broadcaster	Public broadcasting involves radio, television and other electronic media outlets whose primary mission is public service.
Commercial Broadcaster	Commercial broadcasting is the broadcasting of television programs and radio programming by privately owned corporate media, as opposed to state sponsorship.
Manufactured Artist	artists who don't have any input in their music, have writing camps and have a big team of people working with them to make decisions.
Authentic Artist	Artists that influence their own music and image.
Performance Video	A video that is styled to be like a performance to an audience.
Narrative Video	A video with a story.
Convergence	Technological convergence, also known as digital convergence, is the tendency for technologies that were originally unrelated to become more closely integrated and even unified as they develop and advance.
Freemium Gaming	Freemium, a portmanteau of the words "free" and "premium," is a pricing strategy by which a basic product or service is provided free of charge, but money is charged for additional features, services, or virtual or physical goods that expand the functionality of the free version of the software.
Intrinsic Narrative	Story is written for the player to play.
Extrinsic Narrative	Story can be controlled and changed by the player.
Hyperreality	an inability of consciousness to distinguish reality from a simulation of reality, especially in technologically advanced postmodern societies

Key Theories	
Connell's Theory of Gender	Subordinated Femininity: women are subservient to men and have little power. Emphasised Femininity: the idea that women must conform to the needs and desires of men, through their looks and sexual appeal. Resistant Femininity: women as resisting the stereotypes and presenting themselves as powerful. Hegemonic Masculinity: perpetuates the idea that men are dominant in society/ Stereotypical, manly man. Complicit Masculinity: men who subvert the stereotypes of men, often engaging more with 'feminine' roles such as the stay at home dad. Subordinated Masculinity: LGBTQ+. Considered to lack power in society.
Laura Mulvey's Male Gaze Theory	Laura Mulvey's Male Gaze Theory: Female images in media texts are objectified and viewed through the eyes of a heterosexual man.
Judith Butler's Theory of Gender Stereotypes	Suggests that the existence of stereotypes is due to the fact that they are repeated over and over again in the media.
Propp's Character Theory	Hero, Villain, False Hero, Donor (gives the hero something), Helper, Princess, Father, Dispatcher (sends hero on their way).
Todorov's Theory of Equilibrium	Equilibrium: state of balance. Disequilibrium: state of conflict/chaos. New Equilibrium: resolution.
Binary Opposites	opposition exists in narratives to propel a story forward.
Enigma Codes	questions/mystery exist in media texts to engage the audience.
Active Audience Theories	Suggests that audiences can respond to and interpret media texts in their own ways. Uses and Gratifications Theory: suggests audiences choose to go to media texts to gain: Personal Identity, Information, entertainment, education or social interaction. Dyer's Utopian Theory: suggests audiences go to media texts to gain a sense of escapism from their normal lives.
Passive Audience Theories	Suggests that audiences accept the messages of the media without questioning them. Hypodermic Needle Model: messages are injected into the minds of audiences, without them questioning it. Cultivation Theory: The more an audience is exposed to something, the more likely they are to believe it is true.

Shot Angles



Media Studies



Codes	Technical, written and symbolic tools used to construct or suggest meaning in media forms and products.
Genre	a style or category of art, music, or literature.
Mise-en-scene	the arrangement of the scenery, props, etc. on the stage of a theatrical production or on the set of a film. The setting or surroundings of an event.
Anchorage	Where the meaning of a media text is fixed or stabilised by a caption, shot type, costume or so on (ie: <i>it anchors the meaning</i>).
Semiotics	the study of signs and symbols and their use or interpretation.
Signifier	a sign's physical form (such as a sound, printed word, or image) as distinct from its meaning.
Signified	the idea or meaning being expressed by that signifier.
Denotation	the literal meaning of a sign.
Connotation	the associated meaning of a sign.
Polysemic	a sign with multiple connotations can be described as polysemic.
Representation	the way a person or social group is presented.
Conform	following the rules or expectations.
Subvert	going against the rules or expectations.
Under-representation	a person or social group who isn't represented often or enough in media.
Misrepresentation	a person or social group is represented inaccurately through media.
Stereotypes	an assumption made about a person or social group.
Direct Mode of Address	visually, looking towards the audience, verbally, addressing them with "you."
Indirect Mode of Address	no reference made to the audience; lack of eye contact or direct speech.
Demographic	socioeconomic factors relating to an audience.
Psychographic	specific interests or attitudes of an audience.
Geographic	the location of a specific audience.

Social Mobility	the movement between social class levels.
Cultural Capital	social assets (education, intellect, style of speech, dress, etc.) The term was coined by 1970s French sociologist Pierre Bourdieu, who developed the idea as a way to explain how power in society was transferred and social classes maintained.
Mass Audience	a large audience, made up of varying demographics, psychographics and geographics.
Niche Audience	a specific audience type with specific interests and socioeconomic factors.
Diegetic Sound	Natural, ambient sound.
Non-Diegetic Sound	Edited or added sound.
Dialogue	Speech in a narrative.
Cross Cut	Transitioning between two lines of action, indicating they are happening at the same time.
Cutting on action	Transitioning from one angle of the action, to the other, to show what has happened.
Continuity editing	Editing that creates a smooth flow to the order of events.
Dissolve	A gradual scene transition, where the end of one shot is overlapped by another.
Montage	Many scenes edited together to create a summary of events.
Jump Cut	A cut that creates a lack of continuity, by leaving out parts of the action.
Smash Cut	An abrupt cut, going from loud to quiet, or quiet to loud.
Invisible Cut	Where the cut is hidden, so the audience are unable to see it.
Shot reverse shot	Cutting between over the shoulder shots, to show a conversation taking place.
Shallow Focus	Where the subject closest to the camera is in focus.
Deep Focus	Where the subject furthest away from the camera is in focus.
Focus Pull	Pulling the focus from shallow to deep, or deep to shallow.
J-Cut	Where the audio begins before the scene in which it appears.
L-Cut	When the audio from the previous scene continues into the next scene.
CGI	Computer Generated Image.
Panning, tracking and tilting	Panning – camera stays put, but pans the scene in front. Tracking – camera moves with the subject moving in the shot, or follows the subject around. Tilting – camera stays still, but tilts up and down.

Clarinet Concerto in A Major 3rd Movement Rondo

Solo instrument plays main melody

Piece with solo instrument and orchestral accompaniment

Overall key of the piece

We're just learning the final 3rd part of a full concerto which has 2 sections before ours

Form/structure of the piece with A,B,A,C,A sections

MUSIC

36 (242)

Rondo.
Allegro.
SOLO

- Flauti.
Flutes
- Fagotti.
Bassoons
- Corni in A.
Horns
- Clarinetto
principale in A
Solo Clarinet
- Violino I.
Violin 1
- Violino II.
Violin 2
- Viola.
Viola
- Violoncello.
Cello
- Contrabasso.
Double Bass

Horns in A

The natural horns can only play limited notes so Mozart uses the horn that is already in the key of A and it doesn't need a key signature. To play more notes, the horn player inserts crooks.



Diatonic

Overall the harmony of the piece is diatonic. This means it follows the rules of key signatures, chords and cadences

Tempo

The tempo is Allegro which means fast

Mozart Set Work

Balance and Contrast

The use of elements are balanced throughout:

Piano dynamics

Forte dynamics

Rondo form is symmetrical ABACA

A Sections in A Major

B and C sections in different keys

Section A melody dance like

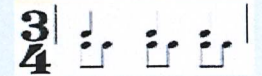
Section B and C melodies lyrical

Balanced Phrases throughout

Compound Time Signature

The piece is in 6/8 which means 6 quaver beats in a bar split into two sets of 3 quavers.

Simple time split into two quavers:



Compound time split into three quavers:



Dynamics

The piece mostly uses piano (quiet) and forte (loud) dynamics creating a sense of balance. There are some crescendos (gradual change to loud) and *sfp* sforzando piano is used for sudden loud to quiet

	Section A	Section B	Section A1	Section C			Section A3	
					Section A2	Section B2		Coda
Melody	Conjunct 2 bar phrases Dance-like feel	Conjunct and disjunct 4 bar phrases Lyrical feel	Conjunct 2 bar phrases Dance-like feel	Disjunct 4 bar phrases Lyrical feel	Variation of main theme heard with just part of it	Conjunct and disjunct 4 bar phrases Lyrical feel	Conjunct 2 bar phrases Dance-like feel	
	All themes use chromatic notes							
Tonality	Tonic key– A Major	Starts in Tonic key A Major Lots of modulations to different major and minor keys	Tonic key– A Major	Starts in relative minor key– F# Minor Lots of circle of fifths modulations	Changing key to lead back into tonic	Starts in Tonic key A Major Lots of modulations to different major and minor keys	Tonic key– A Major	
Harmony	Section A melody and whole section ends on perfect cadence to sound finished	Section B ends on dominant after lots of key changes to help lead back into tonic next section	Starts on tonic to re-establish tonic key A Major	Dominant chords used for quick circle of fifths key changes	Ends on dominant after key changes to help lead back into tonic next section	Ends on dominant after key changes to help lead back into tonic next section	Starts on tonic to re-establish tonic key A Major	Whole piece ends with perfect cadence to sound finished
Texture	Some unison and octaves used in accompaniment		Homophonic to end section with all parts moving together			Imitation used creating contrapuntal texture		Homophonic to end section with all parts moving together
	Mostly Melody and Accompaniment texture throughout to bring out the solo clarinet part							
Rhythm	Section A melody has anacrusis to drive melody forward	Section B melody does not have anacrusis to contrast and help with lyrical feel	Hemiola used created by tremolo effect making it feel like a different time signature– builds tension at end of section	Section C melody has anacrusis similar to section A	Section A melody has anacrusis to drive melody forward	Two big pauses interrupt the flow of the pulse	Section A melody has anacrusis to drive melody forward	

GCSE PE TERM 2

A Principles of training and injury prevention

Principles of training - **Guidelines** that ensure **training is effective** and results in **positive adaptations**. These principles are used in **NEA coursework**.

SPORT:

S = Specificity

Training should be specific to the needs of an individual and demands of the sport that they take part in.

PO = Progressive Overload

Working harder than normal whilst gradually and sensibly increasing the intensity of training. Can be achieved using FITT.

R = Reversibility

If an individual stops or decreases their training level, then fitness and performance are likely to drop.

T = Tedium

Tedium refers to boredom. Training should be altered and varied to prevent an individual from getting bored and unmotivated.

B

Frequency	How often training takes place.	<i>Increase training from once a week to two</i>
Intensity	How hard the exercise is.	<i>Increase resistance from 10kg to 15kg or increase incline on the treadmill.</i>
Time	The length of the session.	<i>Increase training session from 45 minutes to 55 minutes.</i>
Type	The method of training used.	<i>Change to from interval training to Fartlek training.</i>

The Three Training Seasons

Pre-season (Preparation)

The aim is to improve general and aerobic fitness. It should also focus on specific fitness needs of the performer so they are ready for the competition / season.

Competition season (Peak / Playing season)

The aim is to maintain fitness levels. The performer should be at peak fitness and will aim to maintain this. They will focus on specific skills that are needed in their activity.

Post-season (Transition)

The aim is to rest and recover from the season / competition. Performers should continue to do some light aerobic training so that fitness levels do not drop too far.

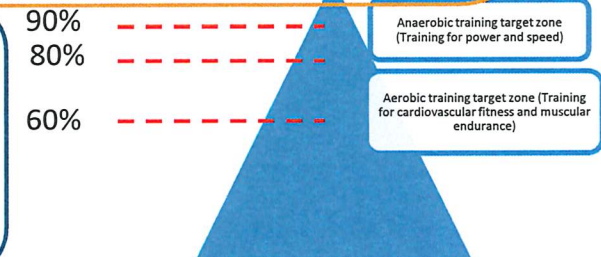
C

D

Calculating Training Zones/Thresholds of Training

Karvonen formula used to calculate aerobic and anaerobic target training zones.

Maximum Heart Rate (MHR) = 220 - age	Aerobic target zone: 60-80% of MHR (60% = $x \times 0.6$ / 80% = $x \times 0.8$)	Anaerobic target zone: 80-90% of MHR (80% = $x \times 0.8$ / 90% = $x \times 0.9$)
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Components of Fitness and Fitness Testing

	Component	Definition	Fitness Test
1	Strength	The ability to overcome a resistance. There are 4 types: Maximal strength, Static Strength, Dynamic Strength and Explosive Strength	One rep max test Hand grip dynamometer
2	Coordination	The ability to use 2 or more body parts together smoothly and efficiently.	Alternate hand wall toss test
3	Reaction time	The time taken to initiate a response to a stimulus.	Ruler drop test
4	Flexibility	The range of movement possible at a joint.	Sit & reach test
5	Speed	The maximum rate at which an individual is able to perform a movement or cover a distance in a period of time.	30m sprint test
6	Agility	The ability to change direction quickly whilst maintaining control.	Illinois agility test
7	Muscular endurance	The ability of a muscle group to undergo repeated contractions avoiding fatigue.	Sit-up bleep test
8	Cardiovascular endurance	The ability of the heart and lungs to supply oxygen to the working muscles.	Multi-stage fitness test
9	Balance	Maintaining the centre of mass over the base of support.	Stork balance test
10	Power	The product of strength and speed.	Vertical jump test

There are tests for each type of fitness. Fitness testing measures a performer's ability and is beneficial to both the performer and the coach in highlighting areas for improvement.

Fitness testing will:

- Highlight strengths and weaknesses
- Allow progress to be monitored carefully, through re-testing and comparison to norms
- Help in talent identification

A

Validity, reliability & practicality

Validity relates to whether the test actually measures what it sets out to measure.

Reliability is a question of whether the test is accurate. It is important to ensure that the procedure is correctly maintained for ALL individuals.

This can be improved by:

- Being undertaken by experienced testers
- Equipment being calibrated
- Ensuring performers have the same level of motivation to complete the test to the best of their ability.
- Testing repeatedly to avoid human error.

B

Every sport requires different components of fitness depending on the demands of that event. Remember components of fitness can be used separately or in combination with each other.

Sporting examples:

Cardiovascular endurance - Running a marathon or any endurance event

Muscular endurance - Rowing or road cycling events

Speed - 100m sprint or a sprint/run during a games sport (netball, football, rugby)

Strength - Using your body to protect the ball in football or in a scrum

Power - performing a high jump or long jump

Agility - Dribbling around a player in football/basketball

Coordination - running and returning a shot in tennis

Balance - performing on the beam in gymnastics or a defensive reach in netball

Flexibility - Performing a split jump in gymnastics

Reaction time - reacting to the gun at the start of a sprint race.

C

Limitations of fitness testing

Fitness testing can also have its limitations and some of the drawbacks are listed below:

- Tests are often too general.
- They do not replicate movements of the activity.
- They do not replicate competitive conditions required in sports.
- Unless the subjects are fully motivated reliability can be questionable.
- They must be carried out with the correct procedures to increase validity.

D

Training Methods

Types of Training:

- 1) **Interval** = Training that involves set periods of work followed by set periods of rest. It usually involves periods of intense exercise followed by periods of rest so that the performer can recover. The intensity of interval training can be altered to suit the individual by altering the time working and / or the time resting.
- 1) **Interval Training/High Intensity Interval Training(HIIT)** = Short bursts of extreme effort with even shorter rest periods. A 2 : 1 work ratio is often used e.g. 30 seconds work, 15 seconds rest. During training the performer will be working anaerobically so it will develop their ability to withstand the build up of lactic acid.
- 1) **Continuous** = Exercising for a sustained period of time without rest. It improves cardiovascular fitness. Sometimes referred to as 'steady state' training. The performer normally trains at a low to moderate intensity but for an extended period of time 20 minutes +. During continuous training the performer will be working aerobically so it will develop their ability to get oxygen into the body and create energy.
- 1) **Fartlek** = Also known as 'speed play', this type of training involves performers varying their speed / intensity. It can involve different speeds (walk, jog, sprint) or running at different terrains (uphill, down hill, on sand). Altering the intensity allows the performer to use both their aerobic and anaerobic energy systems.
- 1) **Circuit** = A series of exercises performed one after the other with a rest in between. Each circuit involves different activities called 'stations'. Stations are often set out to work all of a performer's body (arms, core, legs). In circuit training performers often work for a set amount of time and then have a set rest period e.g. work 30 seconds, rest 30 seconds. Progressing these sessions is easy as the performer can increase the work time or decrease the rest time.
- 1) **Weight** = Involves the lifting of weights / resistance to develop muscular strength or endurance. The beauty of weight training is that it can focus on specific muscles / muscles groups so that sessions can be designed to suit an individual's needs. This type of training involves REPS (completing one lift of a weight) and SETS (the completion of a number of reps). To develop strength / power performers must lift heavy weights but for a low number of reps. To develop strength / power performers should lift above 70% of their one rep max for 4 – 8 reps. To develop muscular endurance performers must lift lighter weights but for a higher number of reps. To develop muscular endurance performers should lift below 70% of their one rep max for 12 – 15 reps.
- 1) **Plyometric** = Is a type of training that is used to increase power (strength x speed). It typically takes the form of bounding, hopping or jumping. The aim of plyometrics is to use your body weight and gravity to stress the muscles involved. This type of training involves the muscles working eccentrically (lengthening) when landing (often quadriceps) which helps them store elastic energy. This energy is released when the performer pushes up , working their muscles concentrically (shortening) e.g. jumping (hamstrings).
- 1) **Static Stretching** = Stretching to the limit and holding the stretch isometrically.

E**Warming Up**

A good warm-up should include:

- Pulse raiser – gradually raising heart rate in preparation for exercise.
- Stretching – stretch all relevant muscles involved in the activity.
- Skill Based Practices – Perform skills that allows the performer to familiarise themselves to the activity they are taking part in e.g. passing a football / netball.
- Mental Preparation – Starting to get focused, using techniques to control arousal e.g. mental imagery.

The benefits of a good warm-up are as follows:

1. Body temperature will increase ready for exercise.
2. Stretching will increase the range of movement possible.
3. There will be a gradual (not over demanding) increase in effort towards 'competition pace', i.e. you gradually work up to the intensity required for the game/event.
4. You will be focused and psychologically prepared.
5. Movement skills that will be used have been practised before starting the game/match/event.
6. There will be less chance of suffering injury.
7. There will be an increase in the amount of oxygen being carried to the working muscles – helping with the production of energy.

G**Safety Principles When Training**

1. The training type and intensity used should match the training purpose.
2. A warm-up and cool down should be completed prior to and after training.
3. Over training should be avoided e.g. use of appropriate weights.
4. Appropriate clothing and footwear should be worn which protect / support and allow movement.
5. Taping / bracing should be used as necessary to protect and support areas of weakness.
6. Hydration should be maintained with fluid intake.
7. Stretches should not be overstretched or bounce.
8. Technique used should be correct e.g. weight lifting technique.
9. Appropriate rest should be given in between sessions to allow for recovery.
10. Spotters should be used when weight training if heavy weights are being attempted.

F**Cool Down**

An effective cool down should include:

- An activity to maintain an elevated breathing and heart rate, e.g. walk, jog.
- A gradual reduction in intensity, e.g. jog to light-jog to walk.
- Stretching of all main muscles used in the activity.

The benefits of a good cool down are as follows:

- 1) It allows the body to start to recover after exercising.
- 2) It helps with the removal of lactic acid, carbon dioxide and waste products.
- 3) It can help to prevent the delayed onset of muscle soreness, sometimes referred to as DOMS.

Advantages and Disadvantages of Continuous Training

A

Advantages:

- 1) It can be done with little or no equipment e.g. simply go for a run.
- 2) It improves aerobic fitness
- 3) Running can be done virtually anywhere
- 4) It is simple to do – keep doing the same movement over and over.

Disadvantages:

- 1) It can be boring / tedious.
- 2) It can cause injury due to repetitive contractions.
- 3) It can be time consuming.
- 4) It does not always match the demands of the sport e.g. in basketball the players do not run at one speed continuously

Advantages and Disadvantages of Circuit Training

B

Advantages:

- 1) Exercises chosen can be simple to complex.
- 2) The circuit can be manipulated to train different things e.g. repeated contraction of a muscle / muscle group to train muscular endurance
- 3) It can be varied to suit fitness level / age etc.
- 4) It is easy to monitor and alter – progressive overload can be applied by altering the work / rest ratio.

Disadvantages:

- 1) An appropriate amount of space is required.
- 2) It may require specialist equipment e.g. a medicine ball, benches, agility ladders.
- 3) It is difficult to gauge an appropriate work / rest ratio at the start.

Advantages and Disadvantages of Interval and Fartlek training

C

Advantages:

- 1) It burns body fat and calories quickly.
- 2) It can be altered easily to suit the individual.
- 3) It can be completed relatively quickly.
- 4) It can improve the anaerobic and aerobic energy systems.

Disadvantages:

- 1) Extreme work can lead to injury.
- 2) High levels of motivation are needed to complete the work.
- 3) It can lead to dizziness and feelings of nausea.

Advantages and Disadvantages of Weight Training

D

Advantages:

- 1) It can be easily adapted for different fitness aims.
- 2) It is relevant to all sports.
- 3) It is relatively straightforward to carry out.
- 4) Strength gains can occur.

Disadvantages:

- 1) Heavy weights can increase blood pressure.
- 2) Injury can occur if weights are too heavy or lifted incorrect technique is used.
- 3) Calculating one rep max requires high levels of motivation.

Specific Training Techniques (High Altitude Training)

E

- High altitude training is carried out by elite performers.
- Involves carrying out training at a high altitude, 2000m or more above sea level.
- The idea behind this training method is that there is less oxygen in the air at high altitude. This makes training very difficult as the body finds it harder to carry oxygen to the working muscles.
- As a result, the body compensates by making more red blood cells to carry what oxygen there is in the air.
- Therefore by the end of training the body has more red blood cells. This means when the athlete returns to sea level they will have more red blood cells to carry more oxygen to the working muscles.

Benefits

- Endurance athletes can sustain exercise at a higher intensity for a longer period of time.

Issues

- It can be very difficult to complete.
- Some athletes suffer from altitude sickness – a feeling of nausea.
- The benefits are lost quite quickly once the athlete returns to sea level.

Advantages and Disadvantages of Static Stretching

F

Advantages:

- 1) It increases flexibility.
- 2) It can be done by virtually everyone.
- 3) It can be done anywhere (does not need a lot of space).
- 4) It is relatively safe.

Disadvantages:

- 1) It can be time consuming to stretch the whole body.
- 2) It can get boring and repetitive.
- 3) Some muscles are easier to stretch than others.
- 4) Over-stretching can cause injury

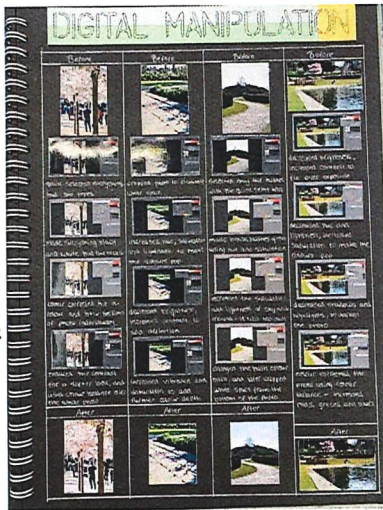
Photography

- **Distort** - pull or twist out of shape.
- **Distortion** - the action of distorting.
- **Manual manipulation** - physically editing and altering your photographs by hand.
- **Still life photography** - is a genre of photography used for the depiction of inanimate subject matter, typically a small group of objects

Sketchbook Presentation Success Criteria

I have:

- ✓ Used appropriate colours in the background, title and writing.
- ✓ Used appropriate font for the title.
- ✓ Considered the layout of my page.
- ✓ Presentation is neat - nothing should be stuck in wonkily.
- ✓ Used a guillotine to trim photographs.



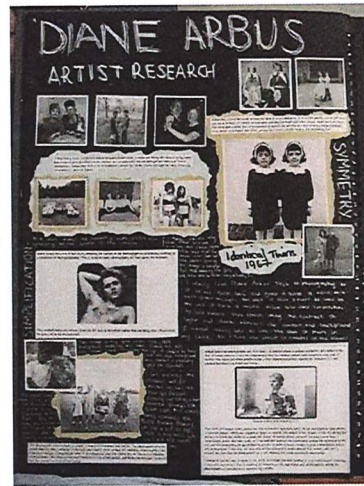
Assessment objective definitions:

AO 1	
AO 2	
AO 3	
AO 4	

Artist Research Success Criteria

I have:

- ✓ Written facts about the artist - minimum of 5.
- ✓ Included a bold title with appropriate font.
- ✓ Included images of the artist's work - minimum 2.
- ✓ Used appropriate colours in the presentation.
- ✓ Considered the layout of my page before sticking it down.



Annotation checklist

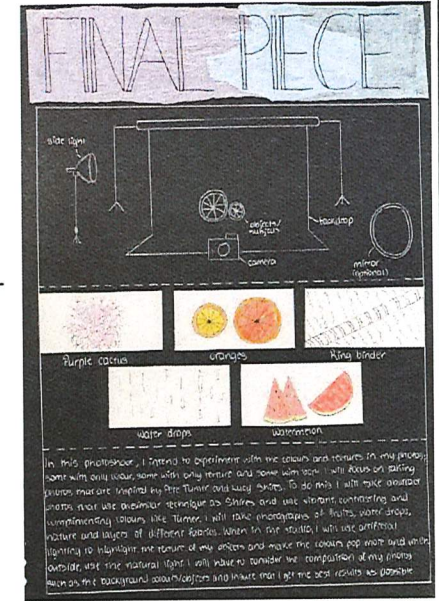
- **What** have you done?
- **How** have you done it?
- **What** inspired you?
- **What** else did you try?
- **Why** was it successful?
- **Is** there anything you would change/need to do now?

Sentence starters:

- I have explored... in response to...
- I think that... is successful because...
- I could develop this technique by...
- This technique wasn't successful because...
- I could improve this technique by...

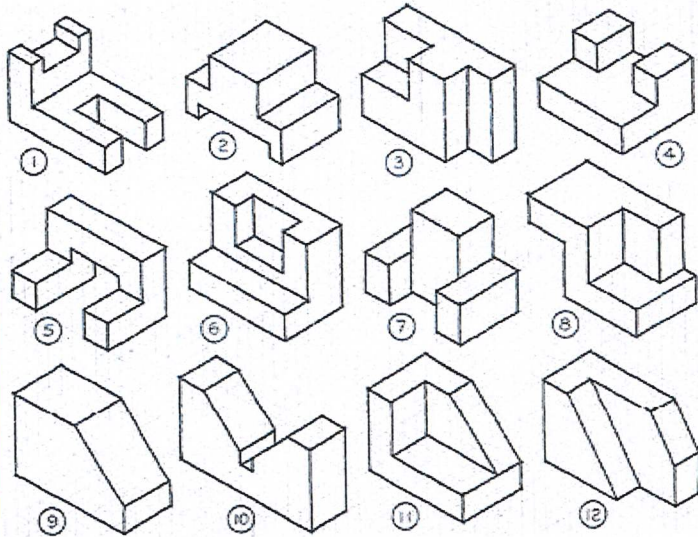
Planning a final piece:

- ✓ Hand drawn my photoshoot plan,
- ✓ Added labels to show props, lighting, camera angles, location etc.
- ✓ Included colour where appropriate.
- ✓ Annotated with a statement of intent to show where my idea has come from - link to research/project.
- ✓ Drawn thumbnails to show compositions you intend to photograph.

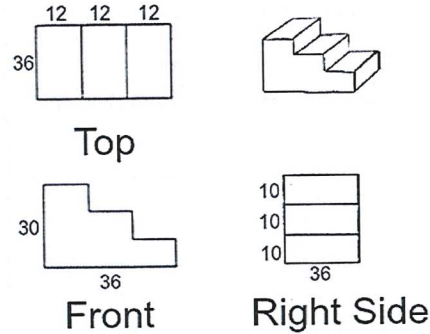


Product Design

Isometric Drawing

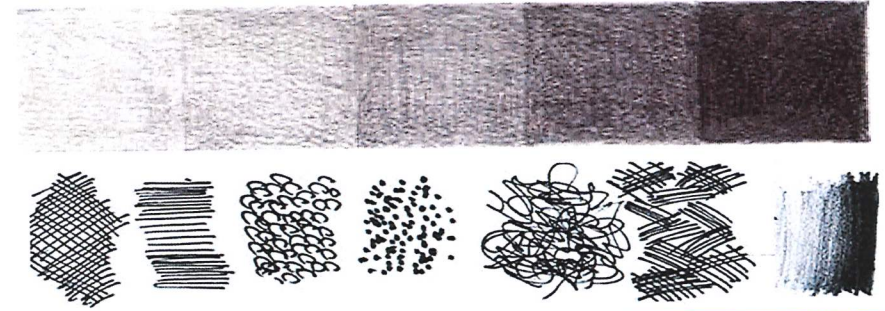


Orthographic Drawing



Tone and Texture

Different marks/tones can be used to render a design idea to make it look 3D.



Annotating

All of your work must be accompanied by a brief annotation.

WHAT

What have you done?
What was your inspiration?

HOW

How did you come up with your ideas?
How did you create the piece?
How does the piece link to your artist/designer?

WHY

Why did you make the piece, how does it link to the project?
Why did you make the piece that way?

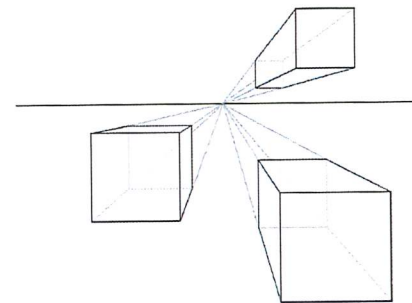
WWW/EBI

What has gone well?
What can be improved?
Which is the best one and why?

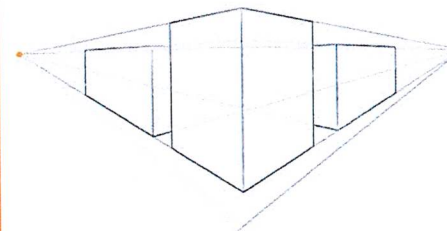
NEXT –

Your next steps are...?

One Point Perspective



Two Point Perspective



Research Types:

Location Analysis
Product Analysis
Designer
Design Movements
Museum

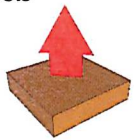
Final Idea Modelling:

- Remember to take pictures along the way.
- What materials could you use to model your idea?
- Did it work? Explain your answer.
- Describe the quality of your work.
- What could you do to improve and refine your idea?
- What finishes will you apply to the final product?

Google Sketch Up Tools



Rectangle Tool



Push/Pull Tool



Shape Tool



Eraser Tool



Pan Tool



Line Tool



Orbit Tool



Select Tool



Move Tool

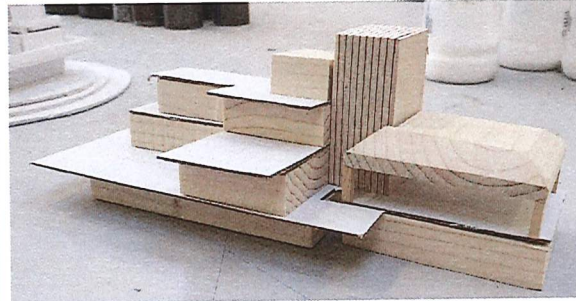
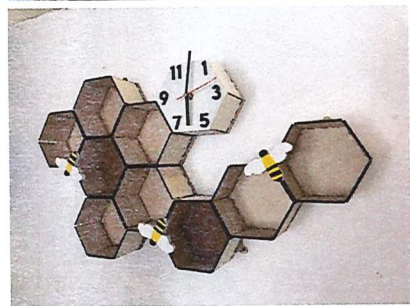


Paint Bucket Tool

Product Design

Final Idea Modelling:

- Remember to take pictures along the way.
- What materials could you use to model your idea?
- Did it work? Explain your answer.
- Describe the quality of your work.
- What could you do to improve and refine your idea?
- What finishes will you apply to the final product?



Annotating

All of your work must be accompanied by a brief annotation.

WHAT

What have you done?
What was your inspiration?

HOW

How did you come up with your ideas?
How did you create the piece?
How does the piece link to your artist/designer?

WHY

Why did you make the piece, how does it link to the project?
Why did you make the piece that way?

WWW/EBI

What has gone well?
What can be improved?
Which is the best one and why?

NEXT –

Your next steps are...?

When analysing or researching use **ACCESS FM**:

- **Aesthetics** – Shape, appearance, features, colours, design.
- **Cost** – How expensive is it/does it look/would it cost to make?
- **Customer** -How it is an effective product in relation to the user
- **Environment** – How environmentally friendly is it?
- **Safety** – Is it safe to use, was it dangerous to make?
- **Size** – Dimensions, proportions
- **Function** – What will it be used for? Is it suitable for it's intended use?
- **Materials** – What materials are used & are they suitable?

Writing about the work of other artists/designers:

Paragraph 1 - Introduction

This should be brief. Look at their work and research key information about them to provide a contextual context.

- Nationality
- Dates - Are they contemporary or from a key historical movement
- Notable pieces of work and or style Avoid referring them by their first name, use a full name or surname.

Avoid irrelevant or uninteresting information.

Paragraph 2 - Form

1. Select one particular pieces to explore in detail.
2. Describe what you see as if explaining it to someone over the telephone.
3. Consider the formal element of line, shape, tone/value, colour, space, etc.

Paragraph 3 - Context

- What is the piece inspired by?
- How can you tell?
- How does the artist/designer link to your project?

Paragraph 4 - Opinion







Give your thoughts and feelings about their work.

What is effective about the artwork and would you change anything? Explain why.

Paragraph 5 - Inspiration







What will you take away as inspiration for your own work? How might you respond?

Key Words			
Community Service	Working in the community to pay back for a criminal act	Hate Crime	A crime motivated by hatred e.g. racism, homophobia
Corporal Punishment	Using physical pain as a punishment	Poverty	Not having enough money to be able to live a comfortable life
Crime	An action which is against the law and incurs a punishment	Prison	A place where criminals are sent to withdraw their freedom as punishment
Death Penalty	A form of punishment where the offender is killed for their crime	Punishment	Something negative done to criminals by the state
Deterrence	An aim of punishment – preventing future criminals by harsh treatment of offenders	Reformation	An aim of punishment – to try and reform criminals
Forgiveness	To show mercy and pardon someone for what they've done wrong	Retribution	An aim of punishment – seeking a form of revenge on criminals

Key Ideas			
<p>Christian Attitudes to Crime</p> 	<p>Good and Evil Intentions</p> <p>The Bible warns Christians against having evil thoughts which lead to evil actions. Avoiding sin and temptation steers Christians away from crime. Christians would be more willing to treat an offender who had good intentions with more mercy than one who acted out of evil intentions. Reformation is the main aim of punishment for Christians.</p>	<p>Attitudes to Lawbreakers</p> <p>Christians do not believe that people are evil but that people can be tempted to do wrong and break the law. Christians are taught to “love the sinner, hate the sin” which means they should forgive and show mercy to people who have done wrong but admitted their mistakes and sought atonement.</p>	
<p>Reasons for Crime</p> 	<p>People are tempted to commit crime for a wide range of reasons including poverty (not having enough money or food), upbringing (where people are not taught right from wrong), addiction (some people commit crimes to feed an addiction), greed (committing crimes out of a desire for things they cannot afford), hatred or out of opposition to unjust law (breaking the law to oppose hateful or unjust laws)</p>		
<p>Three Aims of Punishment</p> 	<p>Deterrence</p> <p>This aim of punishment seeks to use punishment as a message to others considering committing crime. By giving one criminal a harsh punishment others may be put off committing a similar crime.</p>	<p>Reformation</p> <p>This aim of punishment seeks to help criminals change their behaviour for the better. It may involve therapy, education or training. Many Christians support this as a form of ‘love your neighbour’ mercy.</p>	<p>Retribution</p> <p>This aim of punishment is society getting its own back on the offender. The Old Testament says ‘an eye for an eye’ so some Christians would argue that this form of punishment is just according to the Bible.</p>
<p>Forgiveness</p> 	<p>Forgiveness is at the heart of Jesus’ teaching. It means to show mercy and pardon someone for what they have done wrong but showing someone forgiveness does not mean they should be justly punished for their crimes. “Forgive your brother 70 x 7 Times”</p> <p>When Jesus was crucified, he forgave those who sentenced him to death and crucified him saying: ‘Father forgive them, for they know not what they do’.</p> <p>Forgiveness leads Christians to support reformation as an aim of punishment as it allows the criminal to be forgiven and to ask for forgiveness. They also use forgiveness as an argument against the death penalty.</p>		
<p>Christian Attitudes to Punishment</p> 	<p>Prisons</p> <p>Many Christians believe prisoners should be treated well when in prison as even though they have done wrong they do not believe in evil people as much as evil actions. Some Christians campaign for better prison conditions out of mercy.</p>	<p>Corporal Punishment</p> <p>Most Christians do not support using physical pain as a form of punishment as it is harmful and negative. It is currently illegal in the UK and many Christians would rather seek to reform a criminal than punish them in this way.</p>	<p>Community Service</p> <p>Many Christians argue in favour of community service where criminals work to repay their community as a punishment. It allows criminals to make up for what they have done and does not harm the offender in the process.</p>
<p>Death Penalty</p> 	<p>The death penalty means the state killing criminals who have committed the worst crimes. It has not been used in the UK since 1969 but is still a common punishment elsewhere in the world.</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Some Christians argue that the death penalty is a just punishment for murder as the Bible says both ‘you shall not kill’ and ‘an eye for an eye’. <input checked="" type="checkbox"/> They may also argue that it deters criminals from committing the worst crimes and keeps people safe. <input checked="" type="checkbox"/> Other Christians argue that the death penalty goes against sanctity of life. Life is sacred and holy and only God can give and take life. 10 Commandment “Thou shalt not kill” <input checked="" type="checkbox"/> They might also argue that the death penalty goes against the aim of reformation as a dead criminal cannot be reformed, forgiven or shown mercy to. 		

AQA Religious Studies A – Theme D: Religion, Peace and Conflict

Key Words			
Forgiveness	Pardoning someone for wrongdoing	Peace-making	Working toward bringing about an end to war and a state of peace
Greed	Going to war to gain land or natural resources such as oil	Protest	A public expression of disapproval, often in a big group, can be peaceful or violent
Holy War	A war that is fought for religious reasons, usually backed by a religious leader	Quakers	A Christians denomination who worship in silence and are well known pacifists
Just War	A Christian theory that asks whether a war is fought justly	Reconciliation	Restoring friendly relationships after a war or conflict
Justice	Bringing about what is right and fair, according to the law or God's will	Retaliation	Deliberately harming someone as a response to them harming you
Nuclear Weapon	A weapon using a nuclear reaction to cause massive damage	Self-Defence	Protecting yourself or others from harm
Pacifism	A belief that all forms of violence are wrong, commonly held by Quakers	Terrorism	Using violence in order to further a political or religious message
Peace	A state of happiness and harmony, an absence of war	WMD	Weapons of mass destruction: chemical, nuclear or biological weapons

Key Ideas			
Protests and Terrorism 	<p style="text-align: center;"><u>Protests</u></p> <p>The right to gather together and protest is a fundamental democratic freedom. UK law allows for peaceful public protest but sometimes protests can turn violent and become a riot. Christians often protest unjust laws or for other forms of justice but would rarely advocate the use of violence in protest.</p>		<p style="text-align: center;"><u>Terrorism</u></p> <p>Examples of terrorism include suicide bombing, mass shootings or using vehicles to injure pedestrians. The aim of terrorism is to make society aware of a cause or issue and to make people frightened to go about their business. Christians don't promote political violence + believe terrorism is wrong as it targets innocent people</p>
Reasons for War 	<p><u>Greed</u> To gain more land or to control important resources such as oil or gas. e.g. The UK and US invading Iraq in order to control oil resources</p>	<p><u>Self-Defence</u> To defend one's country against invasion or attack or to protect allies who are under attack e.g. UK threatened by Nazi invasion in WWII</p>	<p><u>Retaliation</u> To fight against a country that has done something very wrong or to fight against a country that has attacked you e.g. US invading Afghanistan in retaliation for 9/11</p>
Nuclear War and WMD 	<p>Nuclear weapons work by a nuclear reaction and devastate huge areas and kill large numbers of people. They are a type of WMD (weapons of mass destruction) which also includes chemical and biological weapons. All these weapons are not allowed under the Christian Just War Theory and would therefore be rejected by most Christians. Nuclear weapons were used at the end of WWII in Japan to force the Japanese to surrender. Some people say their use was justified as it prevented more suffering even though 140,000 people died. Although some Christians justify war with 'an eye for an eye', this cannot be used to justify the use of weapons of mass destruction as they are not a proportionate response.</p>		
Holy War 	<p>A Holy War is a war which is fought for religious reasons, often with the backing of religious leaders. An example of this was the Crusades fought from the 11th-14th Century by Christians, backed by the Pope. Religion can still be a cause for war today such as in Northern Ireland where Protestant and Catholic Christians fought a civil war between 1968-98.</p>		
Just War Theory 	<p>Just War Theory is a Christian moral theory for working out if a war meets internationally accepted criteria for fairness. These are some of the conditions that must be met in order for a war to be just:</p> <ul style="list-style-type: none"> • Just Cause – fought in self-defence or to protect others • Just Intention – fought to promote good and defeat wrongdoing • Last Resort – only going to war if all other methods have been tried first • Proportional – excessive force should not be used and innocent civilians must not be killed 		
Pacifism and Christian Responses to War 	<p>Pacifism is the idea that all forms of violence are wrong. Pacifists such as Quakers refuse to take part in war and often choose to be a conscientious objector (someone who doesn't go to war for moral reasons) or to assist in medical tasks like ambulance driving. Christians try to follow Jesus' teaching "blessed are the peacemakers"</p>		<p>Christians try to show mercy and agape to victims of war and provide them with assistance. This can be through charity or through welcoming them into their churches. It can be victims in their own country or refugees such as people fleeing from Syria or Yemen. This is an example of 'love your neighbour' in action. Jesus said "if you don't have a sword, sell your cloak and buy one"</p>

Relative formula mass (M_r): This is the mass in grams of 1 mole of the substance. To calculate it you need to add up the atomic mass (bigger number) of all of the atoms in the molecule.

e.g 1. $\text{NaCl} = \text{Na} + \text{Cl} = 23 + 35.5 = 58.5$

e.g 2. $\text{MgF}_2 = \text{Mg} + (2 \times \text{F}) = 24 + (2 \times 19) = 62$

The Mole

A mole of an element is simply 6.02×10^{23} atoms (this number is known as Avogadro's number).

Obviously, if the atoms are larger, then 1 mole of that atom will be heavier.

For example, one mole of hydrogen atoms weighs 1 gram but 1 mole of carbon weighs 12 grams.



To calculate the number of moles in an element you need to divide the mass by the relative atomic mass:

For example, how many moles are there in 6 grams of carbon? $6/12 = 0.5$

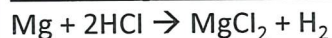
To work out the number of moles in a compound you divide the mass of the compound by the relative formula mass, for example how many moles in 30 grams of magnesium oxide (MgO)? M_r of $\text{MgO} = 24 + 16 = 40$ Moles = $30/40 = 0.75$ Moles

Conservation of mass

The law of conservation of mass states that no atoms are lost or during a chemical reaction so the mass of the products equals the mass of the reactants.

YEAR 10 CHEMISTRY CALCULATIONS INVOLVING MASSES

Calculating Masses in Reaction



This equation shows that one mole of magnesium reacts with two moles of hydrochloric acid to produce one mole of magnesium chloride and one mole of hydrogen gas.

Suppose you started with 5 grams of magnesium, how much magnesium chloride would you make?

Step 1: Calculate the moles of the element or compound you were given in the equation:
 $5/24 = 0.21$ moles of magnesium

Step 2: Look at the balanced equation, you must therefore have 0.21 moles of magnesium chloride, as the ratio between magnesium and magnesium chloride is 1 to 1.

Step 3: Calculate the M_r of the relevant product: what you want to find is the M_r of magnesium chloride: M_r of $\text{MgCl}_2 = 24 + 35.5 + 35.5 = 94$

Step 4: Now find the mass of that number of moles of the product $\text{Mass} = \text{moles} \times M_r$, so $0.21 \times 94 = 19.7$ grams

KEY TERMS	DEFINITIONS
Mole	6.02×10^{23} atoms of an element or molecules in a compound
Avogadro's number	6.02×10^{23}
Relative Formula Mass	The total atomic mass of elements in compound
Empirical Formula	Is the simplest whole number ratio of atoms or ions of each elements in a substance.

EQUATION	MEANING OF TERMS IN EQUATION
$\text{moles} = \frac{\text{mass}}{M_r}$	Mass is the mass of the substance in grams M_r is the relative formula mass of the compound (or use the relative atomic mass if it is an element)

A simple experiment to demonstrate the **LAW OF CONSERVATION OF MASS**

The diagram illustrates the experiment. On the left, a flask on a scale (67.25g) contains sodium hydroxide solution and copper sulfate solution. A small test tube containing sodium sulfate solution is suspended in the flask. On the right, after mixing, the flask on the same scale (67.25g) contains sodium sulfate solution and a blue copper hydroxide precipitate. Labels include: small test tube, string, sodium hydroxide solution, copper sulfate solution, sodium sulfate solution, and copper hydroxide precipitate. The word 'MIX THOROUGHLY' is written in a pink arrow between the two flasks.

Bond breaking takes in energy -
endothermic

Bond making releases energy -
exothermic

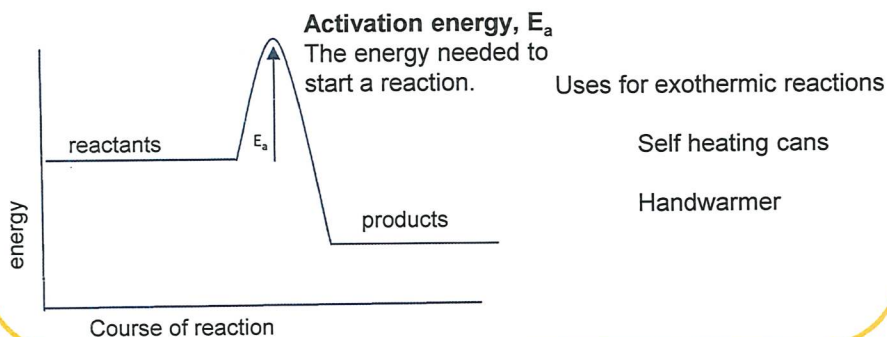
YEAR 10 CHEMISTRY HEAT CHEMICAL CHANGES IN CHEMICAL REACTIONS

Keywords

Exothermic	Transfers chemical energy to the surroundings - usually as heat.
Endothermic	A reaction that takes in energy from the surroundings and transfers it to a chemical store.
Activation Energy - E_a	The energy needed to start a reaction.
Bond energy	1. The energy needed to break the bond between two atoms - measured in KJ/mol 2. The energy released when a bond is formed between two atoms - measured in KJ/mol

Exothermic reactions

Transfers chemical energy to the surroundings - usually as heat.
The temperature will increase.



Bond Energy

Add up the amount of energy required to break all of the bonds in the reactants.

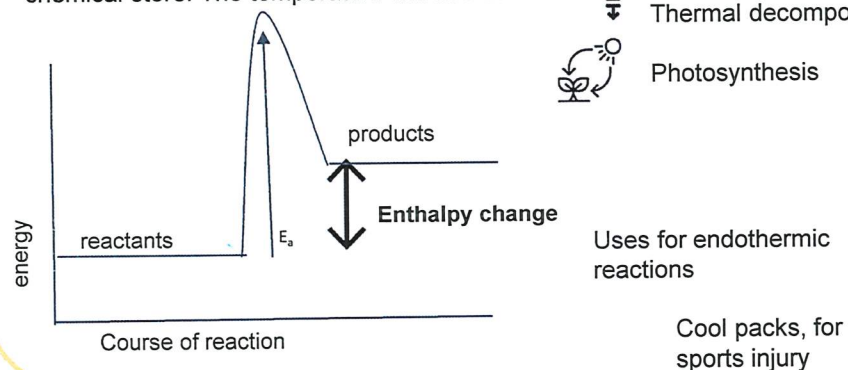
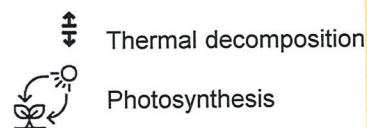
Add up the energy released when the products are formed.

Total energy required - total energy released

-ve = exothermic reaction
+ve = endothermic reaction

Endothermic reactions

A reaction that takes in energy from the surroundings and transfers it to a chemical store. The temperature will decrease.



The **overall heat energy change** for a reaction is:

- Exothermic** if more heat is released in forming bonds in the products than is required to break bonds in the reactants.
- Endothermic** if less heat is released in forming the bonds in the products than is required in breaking bonds in the reactants.

Bond Energy

The overall energy change in a reaction

Step 1: Draw the structural formula of the reactants and products.

Step 2: Look up the energy associated with each bond.

Step 3: Add up the amount of energy required to break all of the bonds in the reactants.

Step 4: Add up the energy released when the products are formed.

Step 5: Subtract the energy released from the energy required.

-ve = exothermic reaction
+ve = endothermic reaction

YEAR 10 CHEMISTRY (TRIPLE) Qualitative analysis

A **theoretical yield** is the maximum possible **mass** of a **product** that can be made in a chemical reaction.

It can be calculated from:

- the **balanced equation**,
- the mass and **relative formula mass** of the **limiting reactant**, and
- the relative formula mass of the product.

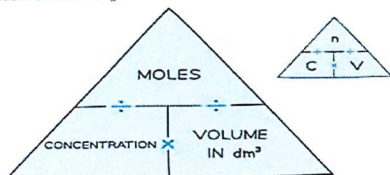
An **actual yield** is the mass of a product actually obtained from the reaction. It is usually less than the theoretical yield. The reasons for this include:

- incomplete reactions, in which some of the reactants do not react to form the product.
- practical losses during the experiment, such as during pouring or **filtering**.
- side reactions (unwanted reactions that compete with the desired reaction).

Calculating percentage yield

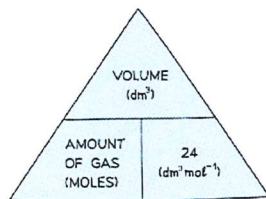
$$\text{Percentage yield} = \frac{\text{actual yield}}{\text{theoretical yield}} \times 100$$

The Concentration Formula Triangle



The concentration-makes formula triangle can help you solve these problems

The Molar Volume Formula Triangle



Avogadro's Law

Volumes of gases

In 1811 the Italian scientist Amedeo **Avogadro** developed a theory about the volume of gases

Avogadro's law (also called **Avogadro's hypothesis**) enables the mole ratio of reacting gases to be determined from volumes of the gases

Avogadro deduced that equal volumes of gases must contain the same number of molecules

At room temperature and pressure (**RTP**) **one mole** of any gas has a volume of **24 dm³**

The units are normally written as **dm³ mol⁻¹** (since it is 'per mole')

The conditions of **RTP** are

a temperature of **20 °C**

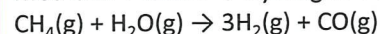
pressure of **1 atmosphere**

Atom economy

No **atoms** are created or destroyed in a chemical reaction. However, the atoms in the **reactants** may not become the desired **product**. They instead end up forming by-products.

For example, hydrogen can be manufactured by reacting methane with steam:

Methane + steam → hydrogen + carbon monoxide



In this reaction, carbon and oxygen atoms in the reactants do not form the useful product. Carbon monoxide is a waste gas.

The **atom economy** of a reaction is a measure of how many reactant atoms form a desired product.

Calculating percentage atom economy

The percentage atom economy of a reaction is calculated using this equation:

$$\text{Atom economy} = \frac{\text{total } M_r \text{ of the desired product}}{\text{total } M_r \text{ of all reactants}} \times 100$$

Titrations are a method of analysing the **concentration** of solutions

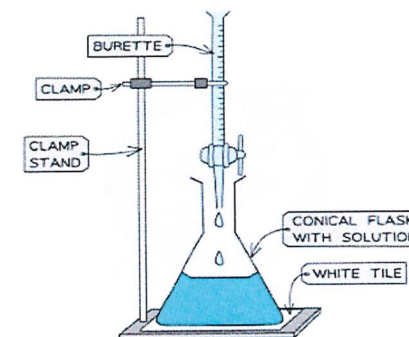
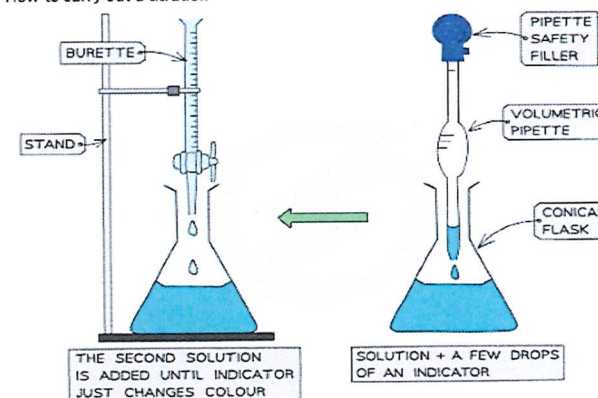
Acid-base titrations are one of the most important kinds of titrations

They can determine exactly how much alkali is needed to neutralise a quantity of acid – and vice versa

You may be asked to calculate the **moles** present in a given amount, the **concentration** or **volume** required to **neutralise** an acid or a base

Titration can also be used to prepare **salts**

How to carry out a titration



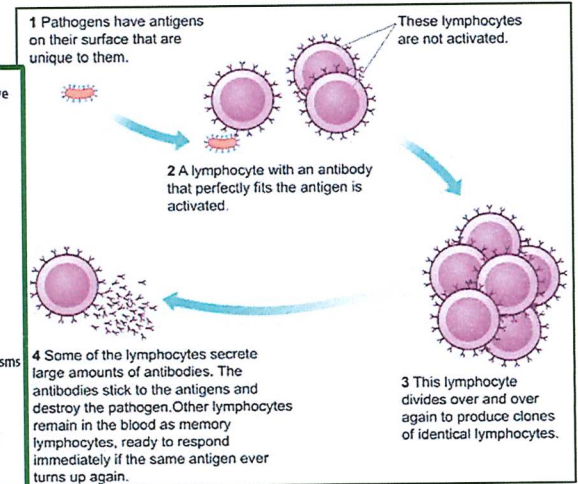
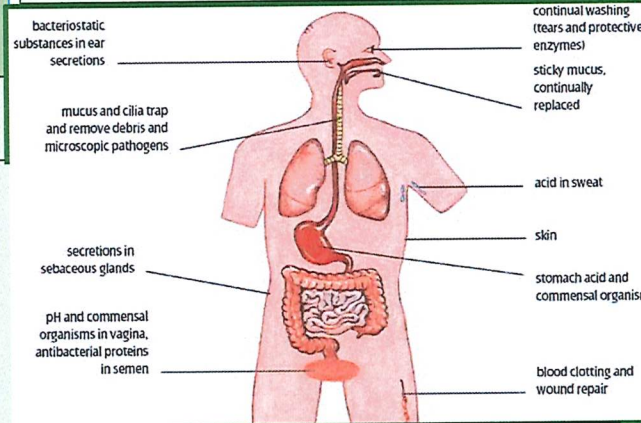
Performing a titration

**SCIENCE
BIOLOGY:
HEALTH AND DISEASE**

**Pathogens, spreading pathogens
& physical and chemical barriers**

A pathogen is a microorganism that causes disease

The immune system and antibiotics

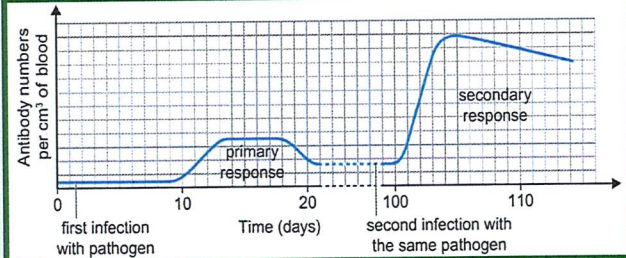


The body's first line of defence

Developing new drugs

A new treatment goes through several phases. Each phase has a different purpose:

- Phase I trials test if a new treatment is safe and look for the best way to give the treatment. Doctors also look for signs that the condition responds to the new treatment.
- Phase II trials test if one type of cancer responds to the new treatment.
- Phase III trials test if a new treatment is better than a standard treatment.
- Phase IV trials find more information about long-term benefits and side effects.



STIs

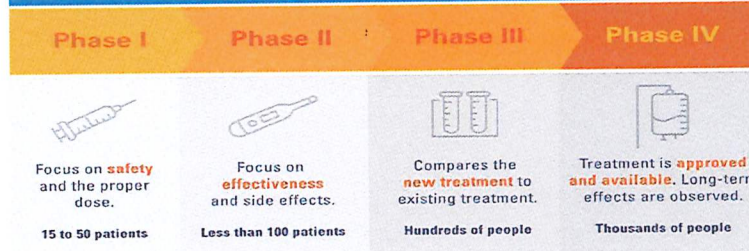
HIV/AIDS – Virus
Chlamydia – bacteria

Prevented though avoiding contact with sexual fluids, such as using a condom as an artificial barrier during sexual intercourse

Physical barrier	Chemical barrier
Barrier that pathogen needs to penetrate	Substances which defend from pathogens
skin	E.g. lysozyme (an enzyme that breaks down cell walls of some bacteria)
Eye lashes	Stomach acid

How does a clinical trial work?

Clinical trials occur in four phases, and each phase has a different purpose.



Immunisation

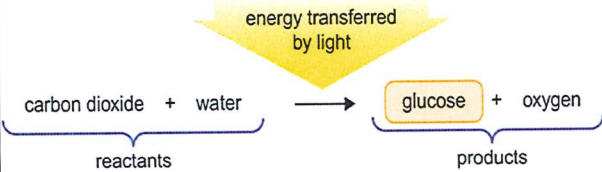
Immunity can be triggered artificially by using a vaccine. The vaccine contains weakened or inactive pathogens that include the antigens. These stimulate the primary immune response. When exposed to the pathogen, **memory lymphocytes** trigger a faster and stronger immune response.

Antibiotics

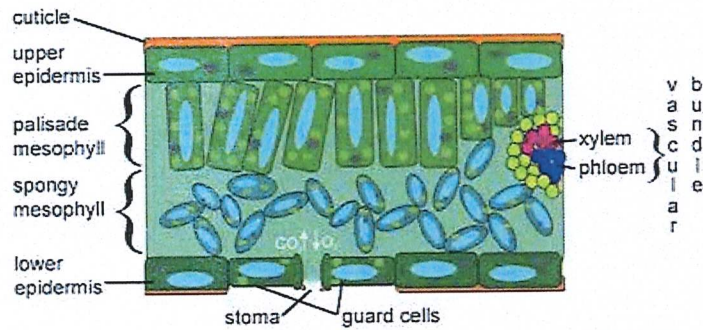
Antibiotics are substances that either kill bacteria or inhibit their cell processes. Antibiotics do not affect human cells. Antibiotics do not work on viruses.

BIOLOGY PLANTS

Photosynthesis



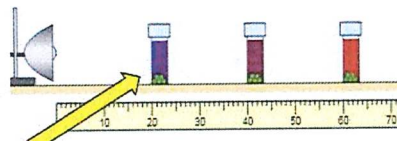
B a summary of photosynthesis



Measuring the effect of light intensity on the rate of photosynthesis core practical

Distance of bottle from lamp (cm)	Initial pH	Final pH	Change in pH
20	7.8	9.2	
40	7.8	8.8	
60	7.8	8.6	
80	7.8	8.3	
100	7.8	8.2	

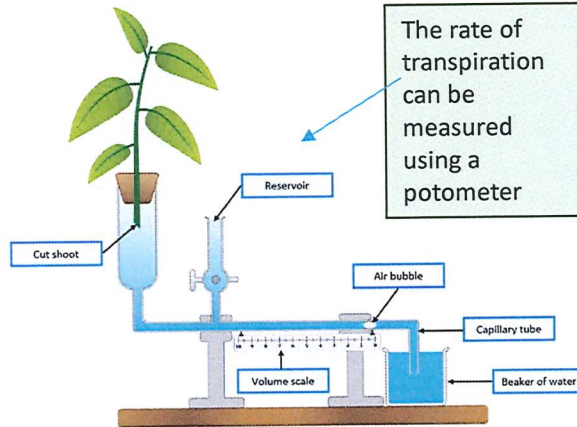
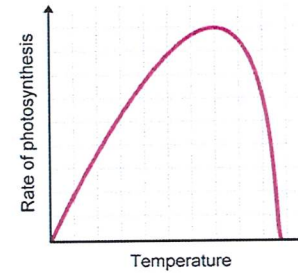
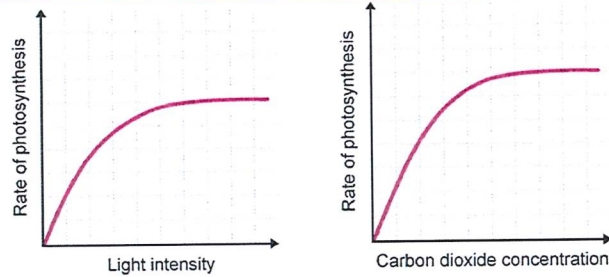
SUPPORT: The hydrogen carbonate indicator in the bottles changes colour as carbon dioxide levels change. The indicator goes purple when carbon dioxide levels are low and yellow when carbon dioxide levels are high. The closer the lamp, the more photosynthesis occurs, therefore the more carbon dioxide being used.



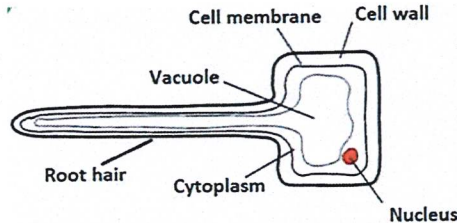
More carbon dioxide (acidic) being used as more light = colour change to purple (more alkaline)

Chloroplast

Factors affecting the rate of photosynthesis

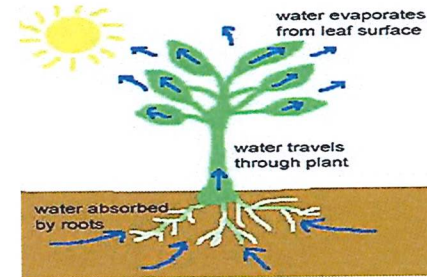


Absorbing water and mineral ions



- ### Root hair cell
- Increased surface area to absorb more water and mineral ions.
 - Many mitochondria provide energy needed for the *active transport* of mineral ions from the soil into cell
 - Water transported by osmosis through the roots to the xylem.

Transpiration stream



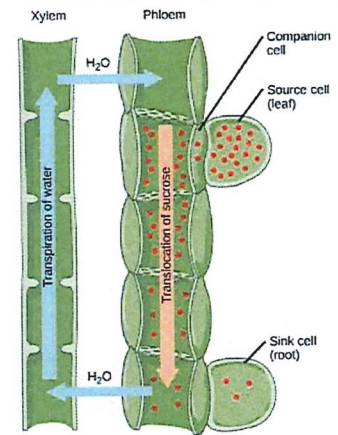
- ### Factors that affect transpiration:
- Temperature
 - Wind
 - Humidity
 - Light

Transpiration

Water travels from the roots through the xylem in one direction and evaporates from the leaves through the stomata. Xylem tissue is made up of dead cells reinforced with lignin.

Translocation

Sugar travels from the leaves through the phloem up and down the plant. Phloem tissue is made up of living sieve cells and companion cells that use active transport to move sucrose.

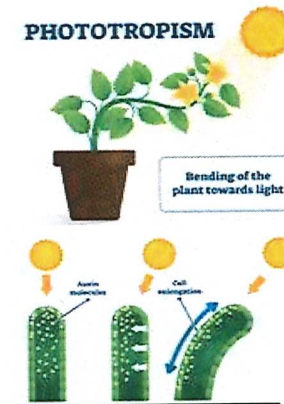
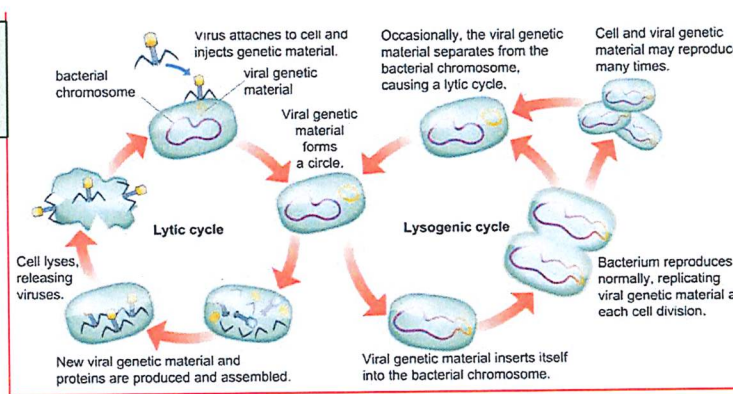


Y10 Biology
B5 and B6 Triple content

The life cycle of a virus

Plant Defences

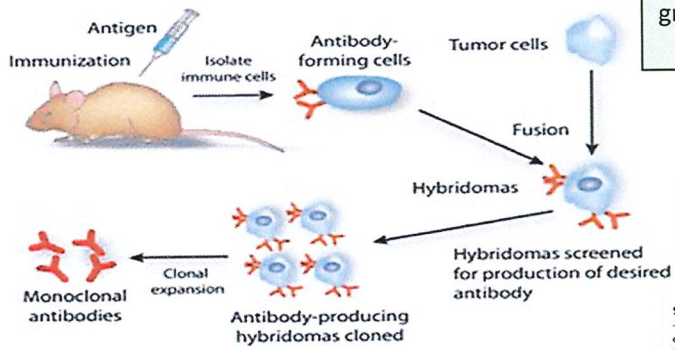
Cellulose cell walls	Cellulose cell walls strengthen the plant cell to help resist invasion by microorganisms.
Waxy cuticle	This covers the surface of the leaf of the plant and act as a barrier for the entry of microorganisms. It is the underside of the leaf where the stomata are where pathogens can gain entry.
Bark on the trees	A layer of dead cells on the outside of the stems form a protective layer that is hard for pathogens to penetrate.
Antibiotics	Many plants produce antibacterial chemicals that protect them against invading pathogens. These are very effective at preventing bacterial disease in plants.
Poisons	These can be produced by some plants to deter herbivores from eating them. Animals will quickly learnt to avoid eating plants that make them feel unwell.
Thorns	These make it unpleasant or painful for large herbivores to eat them.
Hairy Stems	Hairy stems or leaves deter insects and larger animals from feeding on them or laying eggs on the stem or leaves.
Drooping or curling when touched	This is a rare but effective mechanism, when touched the leaves will automatically curl which can dislodge insects and frighten off larger species.
Mimicry	Some plants can droop to look as though they are diseased and trick animals into not eating them. They can also resemble larger insects to scare away any potential threats.



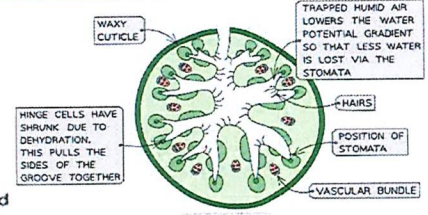
Tropisms refer to the direction of growth. Phototropism towards or away from the light. Gravitropism towards or away from gravity.

The direction of growth is controlled by a hormone called auxin. Auxin causes cells to elongate in the shoot and inhibits elongation in the roots

Producing monoclonal antibodies



Plants have specific adaptations to their environment e.g. marram grass.



Uses of plant hormones

Synchronized fruiting – spraying hormone onto fruits can make them develop at the same rate. This allows efficient picking of the crop by machine.

This happens naturally! One ripe fruit in a bowl releases a hormone gas which makes the other fruit ripen.

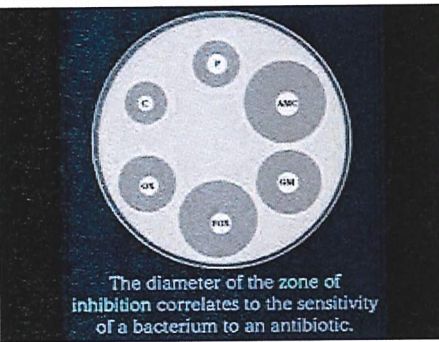
Weeds can be killed – spraying with high concentrations of hormone upsets normal growth patterns. Different plant species are sensitive to different extents, so this weed killing can be selective, e.g. grasses may be killed when shrubs survive.

Agent Orange worked like this! During the Vietnam war, hormone sprays were used to clear areas of vegetation and make bombing of bridges and roads easier. These sprays can also be used to clear vegetation from overhead power lines, where removal by hand could be expensive and dangerous.

Seedless fruits can be produced – a hormone spray can make fruits such as apples and grapes develop without fertilisation. Since no fertilisation has taken place, no seeds are formed. This also reduces the grower's dependence on pollinating insects.

Cuttings can be stimulated to grow roots in this way a valuable plant can be cloned (see page 186) to provide many identical copies.

Cutting dipped into hormone rooting powder
Cutting inserted into potting compost
Roots form and begin to absorb mineral ions and water



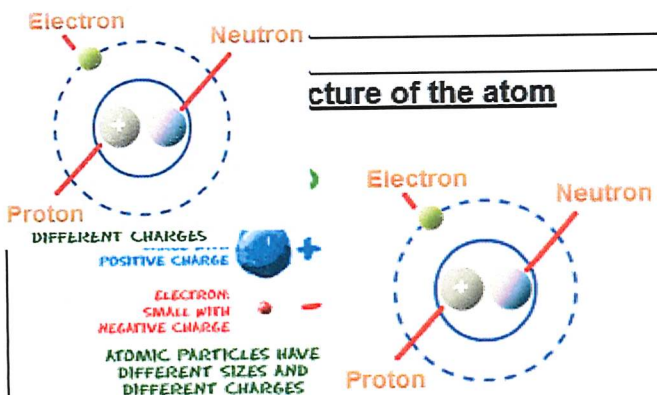
The effectiveness of the chosen antibiotic or antiseptic can be measured numerically by using the formula πr^2 , where r is the radius of the zone of inhibition.

Core practical: investigating the effectiveness of antibiotics using aseptic technique

Monoclonal antibodies can be designed to bind specifically with these antigens. When injected into a person's body, the monoclonal antibodies will bind with these cancer cells and clump them together. This makes it easier to identify a cancerous tumour, which can then be treated or removed.

Knowledge organiser – Atomic Structure

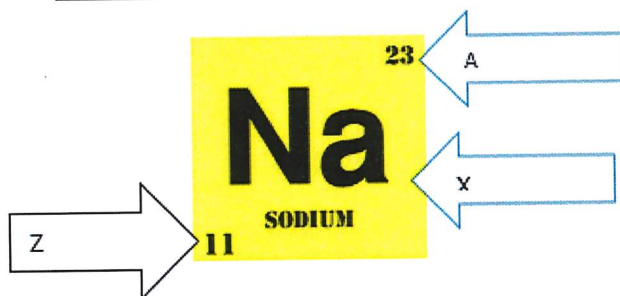
Structure of the atom



Protons and neutrons are also called **nucleons**.

The number of protons determines what element it is. Atoms can exist with different numbers of neutrons called **isotopes**.

Using symbols to represent atoms



In physics, the symbol is represented as:

Where:

A = mass number (nucleon number)

Z = atomic number (proton number)

X = chemical symbol for the atom

To find the number of **neutrons** use $A - Z$

When an atom gains or loses electrons, it becomes **ionised** – it has a charge.

Loss of electrons – positive ion

Gain of electron – negative ion.

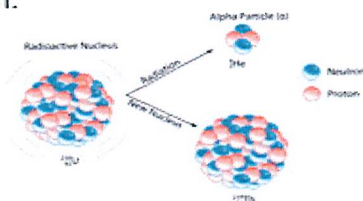
Radioactive decay

An unstable nucleus that **emits** radiation is called a **radioisotope**.

The **activity** of a radioisotope is calculated by the number of nuclear decays each second – **Becquerel's (Bq)**. Radioactive decay is **random**.

Alpha decay

An **alpha particle** is emitted from the **nucleus** it has 2 protons and 2 neutrons – often called a helium atom.



When alpha radiation is emitted:

The nucleus has fewer protons so the atomic number (Z) decreases by 2.

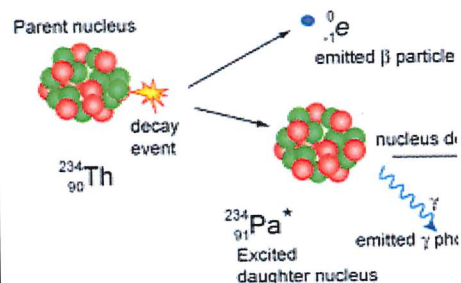
The nucleus has less neutrons – so the mass number (A) decreases by 4.

A **new** element is formed.

Beta decay

During beta decay one neutron decays into a proton and an electron. The electron is emitted from the nucleus called a **beta particle**.

Beta Decay of a Thorium-234 nucleus



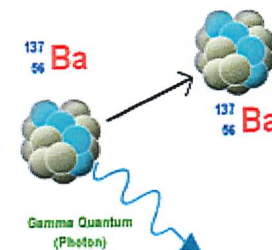
When beta radiation is emitted:

The nucleus has one more proton so the atomic number (Z) increases by 1.

The nucleus has one less neutron so the mass number (A) is unchanged. A **new** element is formed.

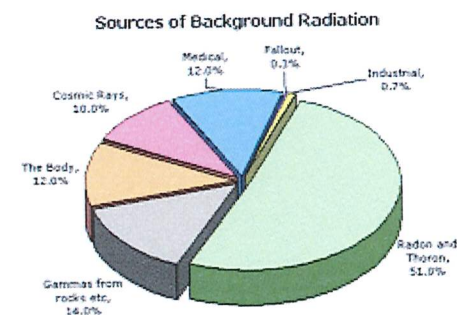
Gamma decay

Gamma rays are emitted from the nucleus. They are a high energy electromagnetic wave. They have no charge and no mass.



Background radiation

Background radiation is ionising radiation around us all the time.



Background radiation comes from:

- Natural sources like rocks and cosmic rays from space;
- Human sources like medical equipment, small amounts from nuclear weapons and accidents.
- Waste products from hospitals;
- Waste from nuclear power stations
- Manufactured radioisotopes.

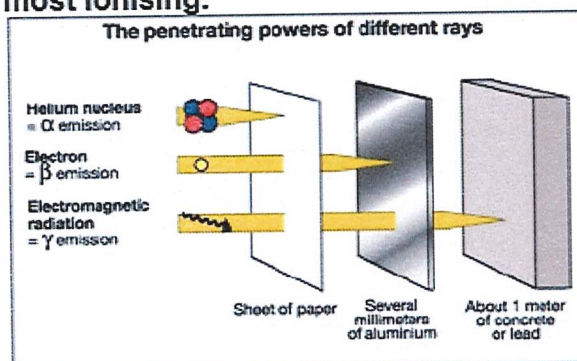
The levels of background radiation **varies** from place to place. Radiation **dose** is measured in **Sieverts (Sv)**.

Penetration of different types of radiation

Gamma rays are the most penetrating but are the **least ionising**. Passing through several metres of concrete and a few cm of lead.

Beta particles can travel a few metres in the air and are stopped by a few mm of aluminium.

Alpha particles are the least penetrating and are stopped by a few sheets of paper. They are the **most ionising**.



Alpha emitters are **used** in smoke detectors and are safe outside the body. However if swallowed or inhaled they do the most damage as they are absorbed by the body.

Nuclear equations

Nuclear equations show changes in the nucleus. They show the number of nucleons and charge. They must be balanced.

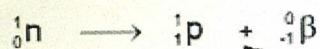
Nuclear equations for alpha decay



Both the mass numbers and atomic numbers add up to the same number – this shows both the mass and charge have been conserved.

Nuclear equations for beta decay

In beta decay the following occurs:



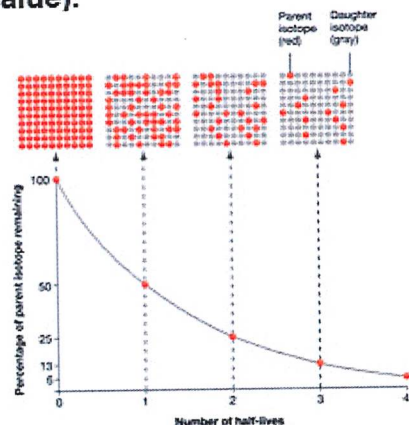
The neutron has changed into a proton and an electron.



The electron has an atomic number of -1 – so the charge is conserved. The mass is also conserved as the neutron mass becomes the proton mass.

Radioactive half-life

Half-life is the time it takes for half the nuclei present to decay. (ALTERNATIVELY, the time it takes for the count rate to fall to half its original value).



Hazards and uses of radiation



Radioactive contamination is the unwanted presence of materials containing radioactive atoms. These expose people to risks.

Contamination occurs when the radioactive materials are inhaled or swallowed. They can enter the body through wounds and the skin. They can be absorbed by specific organs causing cancer or gene mutations.

Unstable nuclei often have short half-life but can emit a large amount of radiation in a short time.

Ionising and **penetrating power** affect the level of contamination.

For medical applications or environmental tracers isotopes with **short** half-life is best. For a smoke alarm, an isotope with a longer half-life is ok to use.

Irradiation

Irradiation is where an object is exposed to nuclear radiation. The exposure comes from a variety of natural sources and background radiation.

AS humans we are irradiated every day by:

- Food – ${}_{19}^{40}\text{K}$ atoms disintegrate each hour;
- Sky – 400,000 cosmic rays pass through every hour;
- Soil and buildings – 200 million gamma rays every hour;
- Air – 30,000 atoms of radioactive atoms inhaled every hour.

Gamma radiation is used to sterilise food to kill bacteria.

The cells in our bodies can be changed by radiation. DNA can be damaged and cause a **mutation**. This can lead to uncontrolled cell division and **cancer** formation.

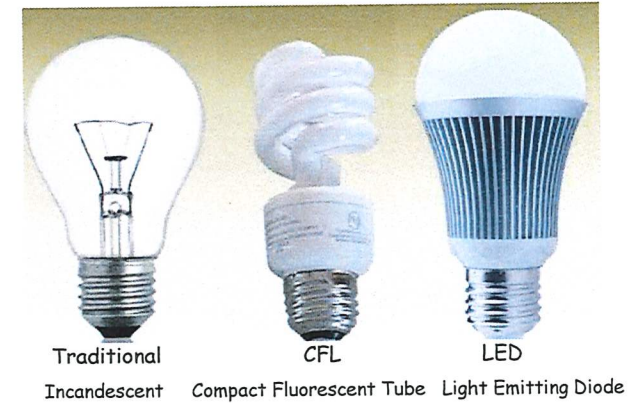
Energy - Forces doing work

Energy **cannot** be created nor destroyed, it is **always conserved**.

Energy can be transformed from one form into another.

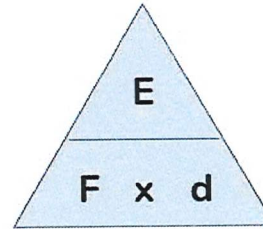
Energy can be **transformed** by a **force**, for example applying the brakes in a car transforms **kinetic energy into heat**.

Most energy transformations are **not** 100% efficient. This means that some energy is transformed into a type that we don't want. We call this **wasted energy**.

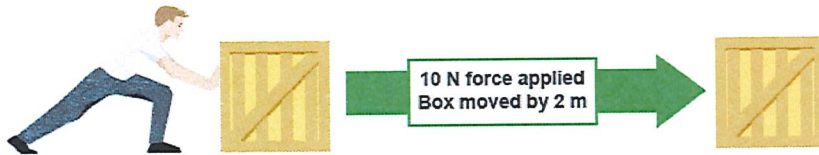


Energy is usually wasted as **heat**. Most energy transformations create some heat.

The heat spreads evenly around the surroundings and becomes very **difficult** to capture for use. This energy can no longer be used, so we say it has been **lost**.



Example



In this example, a force of 10 N causes the box to move a horizontal distance of 2 m, so:

$$E = F \times d$$

$$E = 10 \times 2$$

$$E = 20J$$

Energy is measured in **Joules**. When a force transforms one type of energy into another we say that **work is done**.

Work done is another way of saying **amount of energy transformed**. Work done is therefore also measured in Joules.

Work done (J) = force (N) x distance moved in the direction of the force (m)

This can be written as:

$$E = F \times d$$

Where:

- work done (E) is measured in joules (J)
- force (F) is measured in newtons (N)
- distance (d) is in the same direction as the force and is measured in metres (m)

Energy can also be transformed in **electrical circuits**.

Examples include kettles transforming **electrical energy into heat**, motors transforming electrical energy into **kinetic energy** and bulbs transforming electrical energy into **light**.

When work is done on an object, energy is transferred. The **rate** at which this energy is transferred is called **power**. So the more powerful a device is, the more energy it will transfer each second.

Power tells us how quickly energy is transformed by a device. A 100W lightbulb transforms 100J of electrical energy **per second** into heat and light. A 3kW hairdryer transforms 3000J of electrical energy per second, mostly into heat.



Calculating power

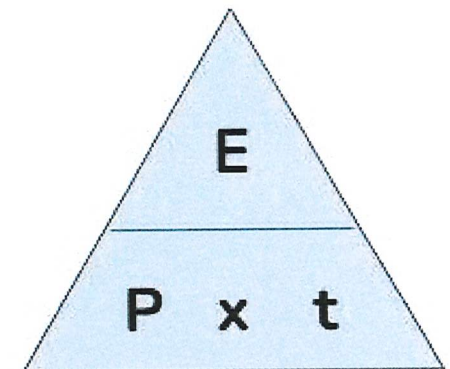
The equation used to calculate power is:

$$power = \frac{work\ done}{time}$$

$$power = \frac{W}{t}$$

This is when:

- power (P) is measured in watts (W)
- work done (W) is measured in joules (J)
- time (t) is measured in seconds (s)



Forces and their effects

Forces are **vectors**, because they have both a **magnitude** and a **direction**.



There are 2 categories of forces. **Contact forces** (including the **normal contact force**, thrust, upthrust, and **friction**, drag and air resistance) and **non-contact forces** caused by fields (**electrostatic**, **gravitational** (weight), and **magnetic**)



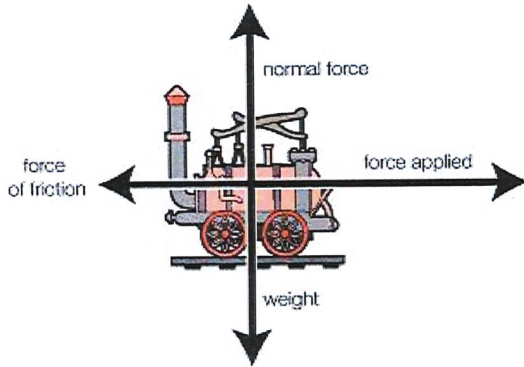
A **resultant force** can be calculated by **adding** all the forces in the **same direction**, and **subtracting** all the forces in the **opposite direction**.



The tug of war has a resultant force of **100N left**.

We use **free body force diagrams** to show the forces acting on an object. The train has 4 forces acting on it.

Friction is acting to the left, so the train must be travelling to the right because friction acts against the direction of travel.



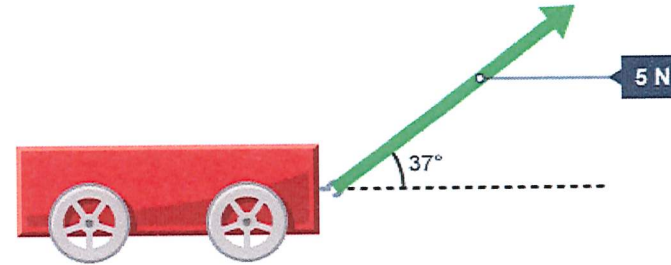
Forces can transform energy (see topic 8). Friction usually transforms kinetic energy into thermal energy (heat). This is often unwanted, for example friction in the axles of the trains wheels causing it to slow down.

We can **reduce friction** by using **lubrication**. Oil is often used as a lubricant.



Two forces can be added together to find a resultant force. A single force can be resolved (broken down) into two **component forces** at right angles to each other.

In the diagram of a toy trailer below, when a child pulls on the handle, some of the 5 newton (N) force pulls the trailer upwards away from the ground and some of the force pulls it to the right.



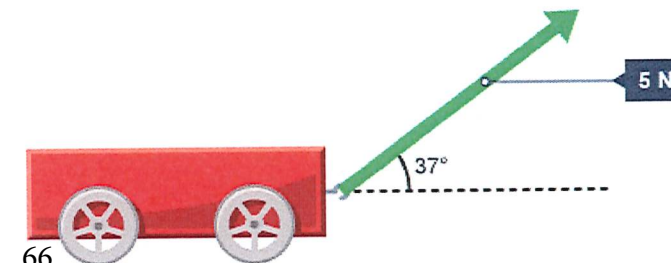
Vector diagrams can be used to resolve the pulling force into a horizontal component acting to the right, and a vertical component acting upwards.

Vector diagrams

Draw a right-angled triangle to scale, in which each side represents a force. Try to choose a simple scale, for example 1 cm = 1 N. For the toy trailer example above, draw:

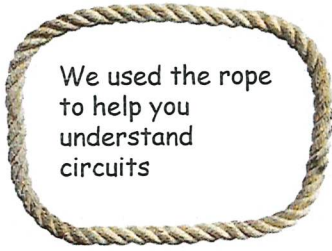
- a line representing the 5 N force at 37°
- a horizontal line ending directly below the end of the first line
- a vertical line between the ends of the two lines
- arrow heads to show the direction in which each force acts

Measure the lengths of the horizontal and vertical lines. Use the scale for the first line to convert these lengths to the corresponding forces.



Vector diagrams

Electricity and circuits



We used the rope to help you understand circuits

When the rope moves the people holding it get hot hands. They are like bulbs / motors / etc. They provide **resistance** which slows the whole rope down. They **transform energy**.

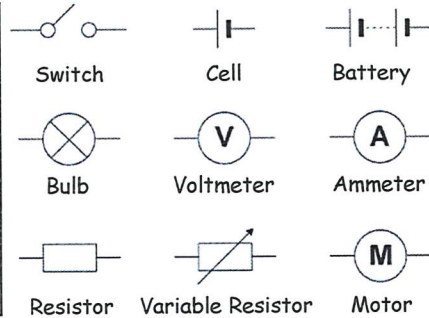
The person pulling the rope is like the **battery**. They **transform energy** from their muscles.

The speed of the rope is the **current**. The greater the current the hotter the hands get / the brighter a bulb gets.

The **voltage** is the amount of energy needed to move the rope a fixed distance (e.g. 1 metre). It is also the amount of energy transformed by a hand / bulb as an amount of rope / current passes through.

We use standard symbols for representing circuits. You need to know these symbols.

There are 4 other symbols you also need to know which are described below.

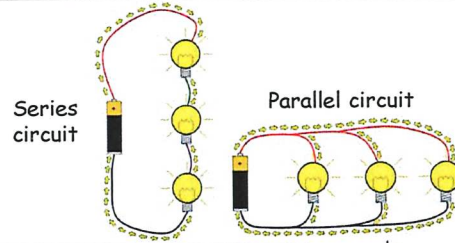


Components in a circuit can be arranged in **series** or in **parallel**.

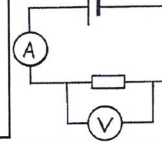
Components in series come one after the other, The current has to pass through **all** of them - there are no branches.

Components in parallel are parallel to each other. The current splits - part goes through one branch and the rest goes through the other branch.

Circuits often have a mixture of both series and parallel

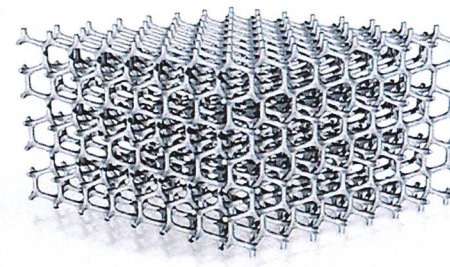


Ammeters measure **current** (in **amps**) and must be connected in **series**.



Voltmeters measure **voltage** (in **volts**) and must be connected in **parallel**.

Voltage is also sometimes called **potential difference**.



Metal wires and components have a **lattice structure** that free electrons pass through.

The electrons bump into the ions of the lattice, heating it up. These **collisions** with the lattice cause **resistance**

Some materials have a lower resistance than others. Thicker wires also have lower resistance than thin wires

The conducting material in a **heater** has **resistance**. This transforms **electrical energy** into **heat** as the current passes through.

A **motor** uses magnets to transform **electrical energy** into **kinetic energy** (movement). The current creates an electromagnet which **opposes** the fixed magnets.



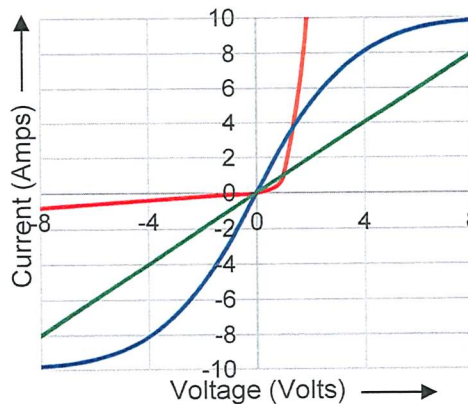
Batteries produce **Direct Current** (D.C.) which travels in **1 direction**. **Mains** electricity from sockets is **Alternating Current** (A.C.) which goes backwards and forwards **50 times per second**.

Mains voltage in the U.K. is 230V.

Diodes are used to turn A.C. into D.C.



Component	Symbol	What it does
diode		Only lets current flow through in 1 direction (to the right, in the arrow direction).
thermistor		A resistor that depends on temperature. The higher the temperature the lower the resistance.
LDR (Light Dependent Resistor)		A resistor that changes with light. The brighter the light the lower the resistance.
LED (Light Emitting Diode)		Produces light, but uses less energy than a normal lightbulb.

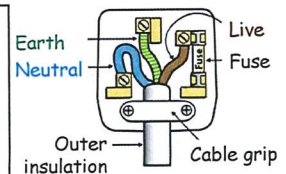


— Diode — Bulb — Resistor

The resistance of a **bulb** changes with voltage. As the bulb gets hotter its resistance increases. This produces a curved line (blue) A **fixed resistor** does not change its resistance and so a graph of current against voltage for it is a straight line (green line) A **diode** only resists in 1 direction (red line)

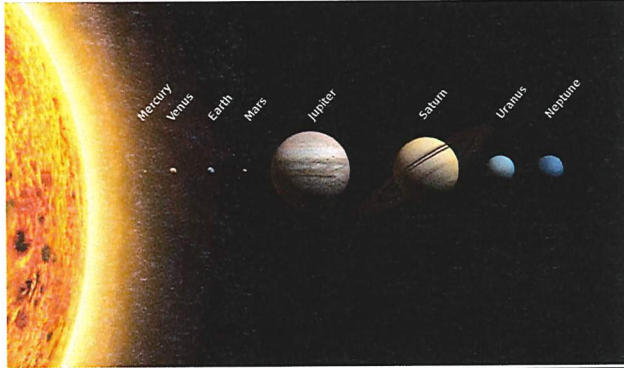
Switches and fuses are connected to the **live** (brown) wire in UK circuits because this means all of the circuit **after** the fuse or switch should be safe if the fuse/switch is off.

In the UK our circuits have an earth wire for safety. This allows current to escape to the earth if there is a fault. This high flow of current to earth will then trip circuit breakers / fuses which make the circuit safe.



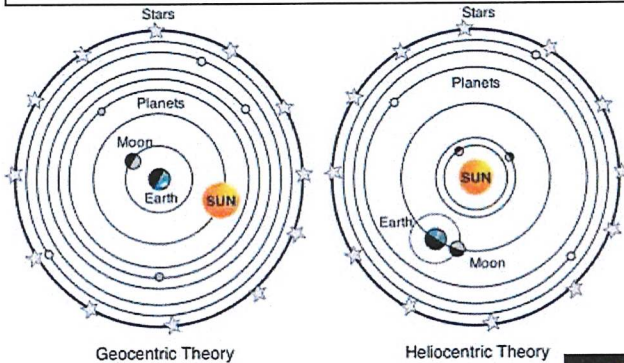
Topic 7: Astronomy (Triple Only)

The planets are (in order) Mercury, Venus, Earth, Mars, Jupiter, Saturn, Neptune, Uranus. Pluto is now classed as a dwarf planet. My Very Easy Method Just Speeds Up Naming Planets.



The diagram above shows the sun and the planets. The sizes are shown to scale, but the space between them is not.

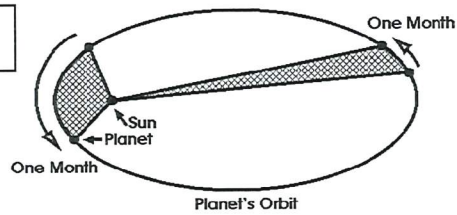
Our solar system is the sun and everything that orbits the sun. As well as planets there are natural satellites (moons), asteroids and comets.



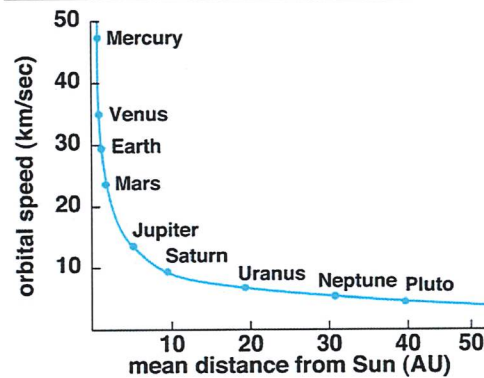
Until around the year 1500 people thought that the Earth was the centre of the solar system because they thought if the Earth was moving it would leave the moon behind. This was called the **Geocentric model**. **Galileo disproved** the geocentric model and we now know that the sun is the centre of the solar system, which is called the **heliocentric model**.



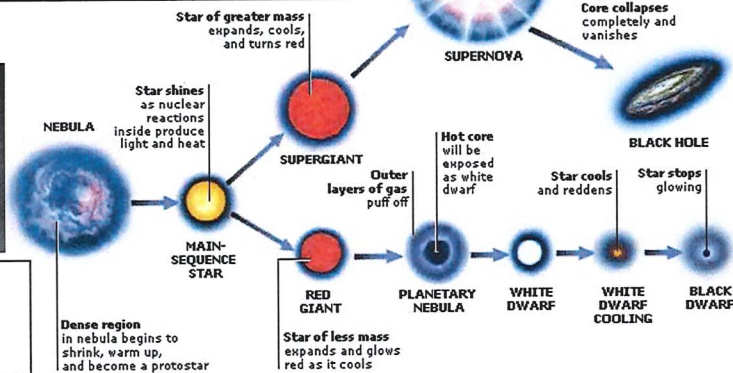
Large stars 'burn' (fuse) their fuel faster and have shorter lives.



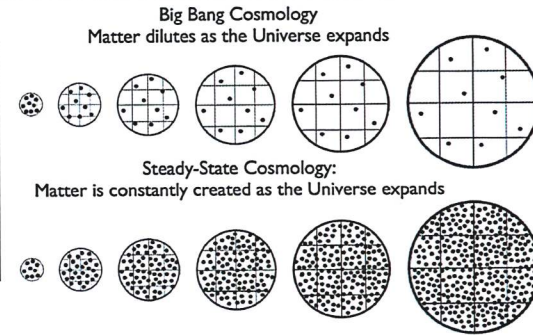
Orbits are rarely perfect circles, they are usually elliptical (stretched out on one side). Most moons and planets have orbits that are nearly circular. Many smaller objects (e.g. comets) have very elliptical orbits.



The closer a planet is to the sun the faster it will be orbiting. Imagine a horn-shaped well with a coin rolling in it (see below). The closer the coin is to the centre the faster it will travel. In the 'wishing well' below the coin eventually falls in because friction slows it down. In space there is **no friction** to slow objects and they keep orbiting.



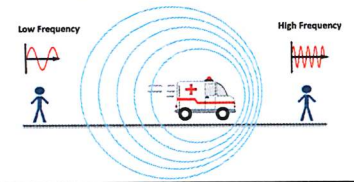
Orbiting objects have a constantly **changing velocity**, even though their speed is often unchanged. Remember that velocity is a **vector**, so a change of **direction** (curving) means a constantly changing velocity, even though the magnitude (the number part) may not change. This also means that orbiting objects are always **accelerating**.



There are 2 theories of the universe. The **Steady state** theory says the universe has **always existed**, is expanding, and that more **matter is created** all the time. The **big bang theory** says the universe **began** around 14 billion years ago, is expanding, and that all the matter was **created at the start**.

Both theories predict **red shift** (see below) due to the universe expanding. However, **Cosmic Microwave Background (CMB) Radiation** supports the **big bang** theory as it is an echo of the bang. The big bang theory is accepted because it is the only theory that can explain the CMB

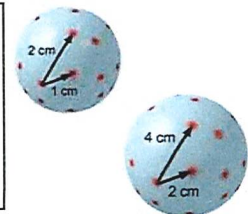
Red shift is a lot like the **Doppler effect**, which we hear when a vehicle goes past us. The pitch of the sound changes because the **wavelength** has been **squashed or stretched**. When light is stretched its wavelength is stretched.



Red light has a **longer wavelength** than blue. Objects moving away from us very fast have the colour of their light changed as the wavelength is stretched. Objects moving rapidly towards us experience **blue-shift**.

More distant objects are more **red-shifted** than nearer objects. This means more distant objects are **travelling away faster**. Imagine a series of dots on a balloon. As the balloon inflates the dots get further away from each other. The most distant dots at the start move away fastest. This tells us the **universe is expanding**

CMB radiation is gamma waves that have been **red-shifted** (stretched) so much they have become **microwaves**.



¡Desconéctate! *Disconnect yourself!*



Local area, Holiday, and Travel

¿Qué haces en verano?

What do you do in summer?

Durante el verano voy de vacaciones con mi familia a Italia. Viajamos en avión y luego en tren para alojarnos en un hotel en la costa. Lo pasamos muy bien.

¿Dónde prefieres pasar las vacaciones?

Where do you prefer to spend your holidays?

Prefiero pasar mis vacaciones en el extranjero porque me gusta descubrir nuevos lugares. Sin embargo, hay muchas cosas que hacer en mi zona también.

¿Adónde fuiste de vacaciones el año pasado?

Where did you go on holiday last year?

En año pasado mis amigos y yo fuimos a Benidorm para el festival de Carnaval. Las procesiones eran maravillosas y los trajes de colores con plumas eran tan hermosos.

¿Dónde te alojaste?

Where did you stay?

Me alojé en un albergue juvenil. Era barato, pero había tantos problemas. Ósea, había ratas en el comedor y cucarachas en el baño. ¡Nunca jamás volveré!

¿Cómo era el pueblo/la ciudad?

What was the town/city like?

Benidorm es una ciudad muy grande con muchos barrios. El barrio donde me quedé era muy sucio y anticuado. La próxima vez me quedaré en un barrio más moderno.

¿Qué fue lo mejor de tus vacaciones?

What was the best part of your holidays?

Lo mejor fue cuando saqué fotos de la isla de Benidorm y las montañas altísimas con mi nueva cámara.

¿Qué planes tienes para el próximo año?

What plans do you have for next year?

El mes próximo viajaré en tren a Barcelona dado que quiero ver a la Basílica de la Sagrada Familia. Me mola la arquitectura gótica.

¿Por qué son importantes las vacaciones?

Why are holidays important?

Es vital encontrar el tiempo para descansar. Ir de vacaciones es la manera en que se recarga el alma.

¿Por qué veranea tanta gente en el extranjero?

Why do so many people holiday abroad?

Creo que tanta gente veranea en el extranjero ya que quieren encontrar nuevos lugares y descubrir nuevas culturas. Además, hace mejor tiempo en el extranjero que en Inglaterra.

¿Adónde irías si tuvieras mucho dinero? ¿Por qué?

Where would you go if you had lots of money? Why?

Si tuviera mucho dinero, iría a la playa de una isla exótica para planear lo que haría con mi dinero ya que no tengo ninguna idea de lo que haría.

Question you will ask:

Fancy Phrases:

PRESENTE			FUTURO SIMPLE			PRETERITO			
hablar to speak	comer to eat	vivir to live	nadar to swim	beber to drink	abrir to open	preguntar to ask	comer to eat	escribir to write	
habl-o	com-o	viv-o	nadar-é	beber-é	abrir-é	pregunt-é	com-í	escrib-í	
habl-as	com-es	viv-es	nadar-ás	beber-ás	abrir-ás	pregunt-aste	com-iste	escrib-iste	
habl-a	com-e	viv-e	nadar-á	beber-á	abrir-á	pregunt-ó	com-ió	escrib-ió	
habl-amos	com-emos	viv-imos	nadar-emos	beber-emos	abrir-emos	pregunt-amos	com-imos	escrib-imos	
habl-áis	com-éis	viv-ís	nadar-éis	beber-éis	abrir-éis	pregunt-ásteis	com-ísteis	escrib-ísteis	
habl-an	com-en	viv-en	nadar-án	beber-án	abrir-án	pregunt-aron	com-ieron	escrib-ieron	
The present tense is used to describe what you're doing at the present moment in time, e.g: "I am eating breakfast" or what you do routinely, e.g: "I eat breakfast every day".			The future tense is used to say what you will do in the future.			The preterite is sometimes known as the simple past. It's used to talk about events in the past, e.g. I asked, I ate, I wrote.			
PRESENTE CONTINUO			CONDICIONAL			IMPERFECTO			
hablar to speak	comer to eat	vivir to live	nadar to swim	beber to drink	abrir to open	trabajar to work	comer to eat	escribir to write	
estoy hablando	estoy comiendo	estoy viviendo	nadar-ía	beber-ía	abrir-ía	trabaj-aba	com-ía	escrib-ía	
estás hablando	estás comiendo	estás viviendo	nadar-ías	beber-ías	abrir-ías	trabaj-abas	com-ías	escrib-ías	
está hablando	está comiendo	está viviendo	nadar-ía	beber-ía	abrir-ía	trabaj-aba	com-ía	escrib-ía	
estamos hablando	estamos comiendo	estamos viviendo	nadar-íamos	beber-íamos	abrir-íamos	trabaj-ábamos	com-íamos	escrib-íamos	
estáis hablando	estáis comiendo	estáis viviendo	nadar-íais	beber-íais	abrir-íais	trabaj-ábais	com-íais	escrib-íais	
están hablando	están comiendo	están viviendo	nadar-ían	beber-ían	abrir-ían	trabaj-aban	com-ían	escrib-ían	
The present continuous tense is used to indicate what is happening at the time of speaking, or when one action is happening at the same time as another. Estar+past participle			The conditional is recognised in English by the use of the word "would" or sometimes "should", e.g. "I would swim"			The imperfect tense is used for things that 'used to happen' or 'were happening' e.g. I worked, I used to work, I was working			
PARTICIPIO PRESENTE		PARTICIPIO PASADO		FUTURO INMEDIATO (I am going to +Verb)			PRESENTE PERFECTO		
-AR	-ando hablando	-AR	-ado hablado	voy a trabajar	I am going to work		hablar to speak	comer to eat	vivir to live
-ER	-iendo comiendo	-ER	-ido comido	vas a estudiar			he hablado	he comido	he vivido
-IR	-iendo viviendo	-IR	-ido vivido	va a beber			has hablado	has comido	has vivido
The present participle or gerund is recognised in English by the ending -ing .e.g. talking, eating, living.				vamos a comer			ha hablado	ha comido	ha vivido
To find the past participle of a verb in English, just imagine that the words 'I have' are in front of it. E.g. 'to eat' put 'I have' in front of it you would say 'I have eaten' so 'eaten'.				vais a abrir			hemos hablado	hemos comido	hemos vivido
There is/are= hay				van a vivir			habéis hablado	habéis comido	habéis vivido
There was/were= había				The immediate future tense can be used to express what is going to happen in the future. E.g. I am going to work, I am going to study, I am going to drink, I am going to eat....			han hablado	han comido	han vivido
In Spanish the infinitive form of a verb always ends with the letter r and falls into three categories:				Most verbs in Spanish have six forms which correspond to their respective pronouns and which will be listed in the following order:			The present perfect in English always contains 'has' or 'have' in it. E.g. I have spoken, I have eaten, I have lived.		
1) those which end with -ar (ar verbs) e.g. hablar = to speak				1) yo (I)			PASADO PERFECTO		
2) those which end with -er (er verbs) e.g. comer = to eat				2) tú (you-familiar a person you know well, a familiar relationship)			hablar to speak	comer to eat	vivir to live
3) those which end with -ir (ir verbs) e.g. vivir = to live				3) él/ella/usted (he/she/you-formal a person you don't know, a formal relationship)			había hablado	había comido	había vivido
For regular verbs in the present, preterite and imperfect tenses, you must first remove the -ar, -er or -ir endings from the infinitive form of the verb, and then add the correspondent endings.				4) nosotros/nosotras (we)			habías hablado	habías comido	habías vivido
				5) vosotros/vosotras (you-plural-familiar [only used in Spain])			había hablado	había comido	había vivido
				6) ellos/ellas/ustedes (they/you-plural-formal [Spain]/you-plural [L. America])			habíamos hablado	habíamos comido	habíamos vivido
				It's essential that you get the correct ending for the person you're talking about in Spanish because pronouns don't tend to be used in Spanish.			habíais hablado	habíais comido	habíais vivido
							habían hablado	habían comido	habían vivido
							The past perfect is used to indicate an action that happened and was completed before another action took place in the past. E.g. I had spoken/lived/eaten		

TEXTILES

Artist Research Success Criteria (AO1):

I have done the following:

- ✓ Written an opinion - minimum 4 sentences.
- ✓ Written facts about the artist - minimum of 3 sentences.
- ✓ Included images of the artist's work - minimum 2.
- ✓ Have created a practical copy from the artist's work.
- ✓ Have create your own personal response from the artist's work.



GCSE Assessment Objectives			
AO1	AO2	AO3	AO4
Develop your ideas through investigating artists, designers and other appropriate sources. Demonstrate critical understanding of sources.	Refine your work by exploring ideas, selecting and experimenting with appropriate media, materials, techniques and processes.	Record your ideas, observations and insights that are relevant to your project intentions as work progresses. Annotate work and include drawings within your sketchbook.	Present a personal and meaningful response that realises your project intentions and demonstrates understanding of visual language.

AO2 and AO3 success criteria

- ✓ Project shows strong development and **refinement** of ideas.
- ✓ Project shows a wide range of media experiments and different techniques. Minimum of 8.
- ✓ Techniques respond to/are inspired by artist research.
- ✓ Sketchbook work shows clear inspiration from artists/research.
- ✓ Annotations are clear - **stating the successes and weaknesses of techniques.**
- ✓ Annotations are discriminative/critical against work.
- ✓ You always develop from critiques - make changes, use a technique differently, adapt your skills.



Annotations are key to describing your development of ideas - what have you learnt? How will you adapt your work?

Annotation checklist

- What have you done?
- How have you done it?
- What inspired you?
- What else did you try?
- Why was it successful?
- Is there anything you would change/need to do now?

Sentence starters:

- I have explored... in response to...
- I think that... is successful because...
- I could develop this technique by...
- This technique wasn't successful because...
- I could improve this technique by...

Project brief (in the style of a GCSE Exam question)

Water in all its forms is a theme often used by textile designers. Helen Melvin captures the chaos of water in her felted and machined work. Carolyn Saxby is influenced by the movement and textures of water within her mixed media textiles. The Spring 2016 collection of Alena Akhmadullina was inspired by *The Great Wave* by Hokusai. Sayuri Sasaki Hemann creates textile installations of underwater worlds.

Investigate appropriate sources and produce your own response to **Water**.

Artists:

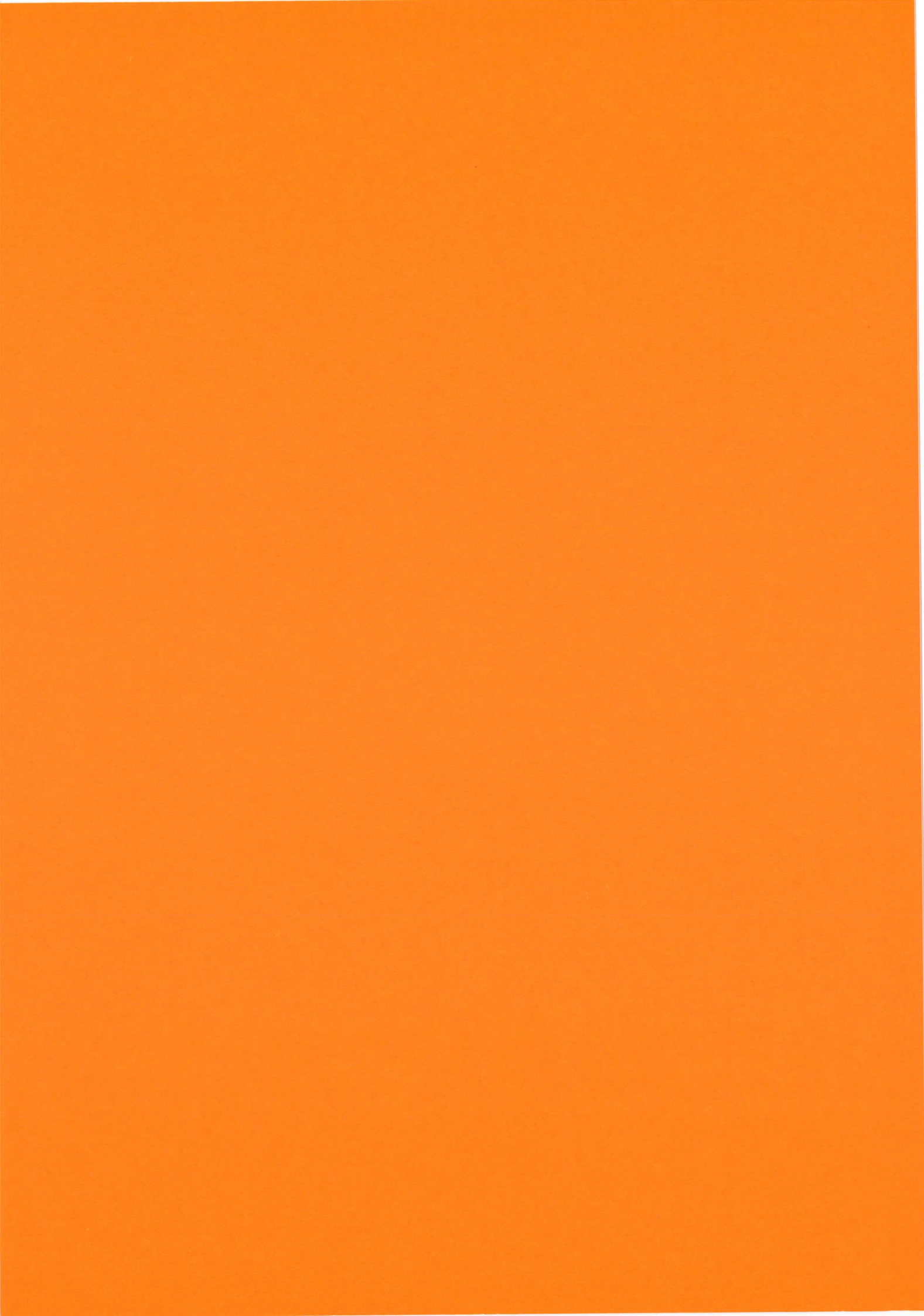
- Alena Akhmadullina
- Sayuri Sasaki Hemann
- Carolyn Saxby
- Helen Melvin
- Jan Kilpatrick
- Diane Rogers
- Hokusai
- Yuliya Kucherenko
- Iris Van Herpen
- Lauren Kussro
- Eleanor Pigman

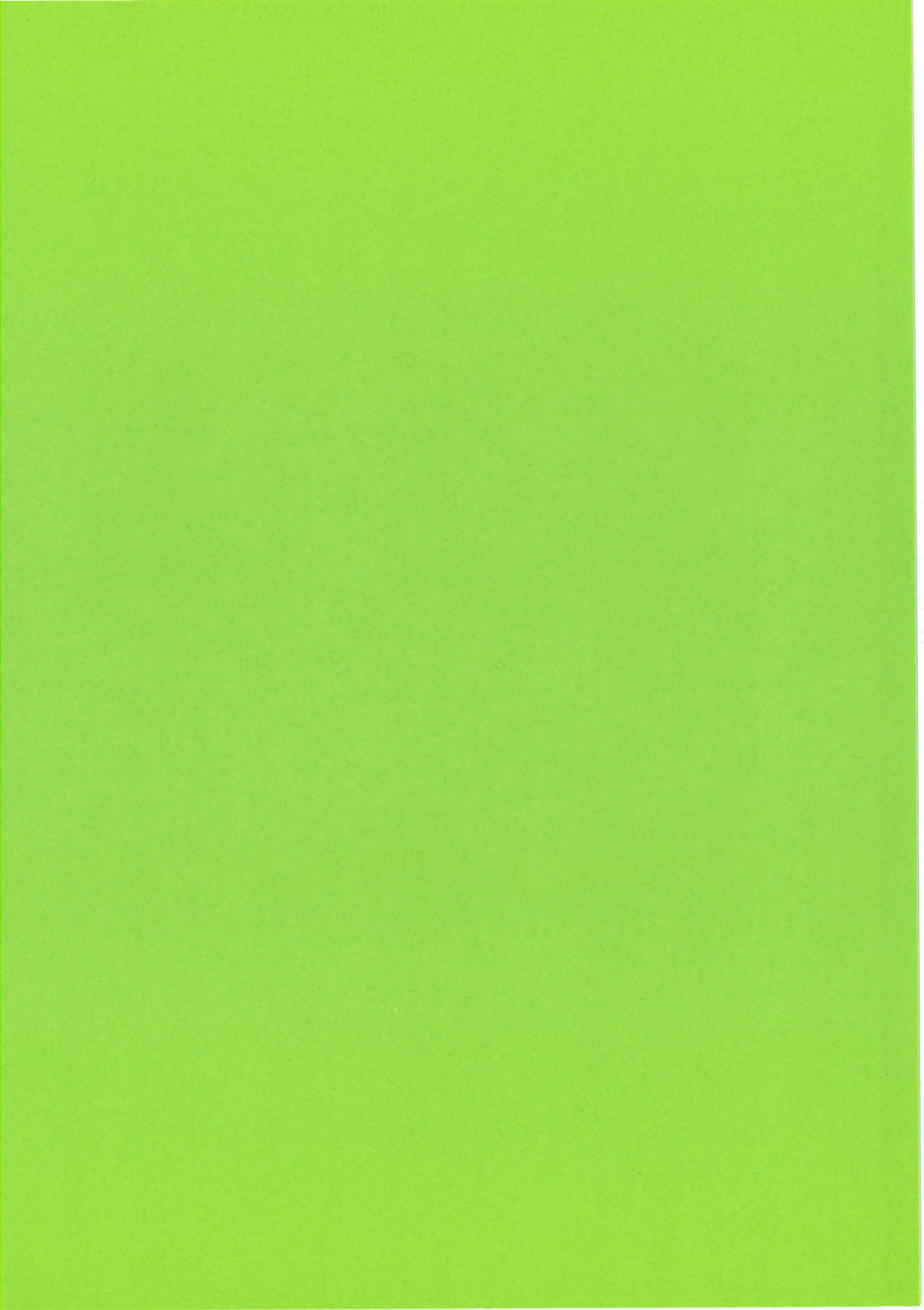
The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry, no matter how small, should be recorded to ensure the integrity of the financial data. This includes not only sales and purchases but also expenses and income. The text suggests that a systematic approach to record-keeping can help in identifying trends and making informed decisions.

In the second section, the author addresses the common challenge of reconciling bank statements with the company's internal records. It provides a step-by-step guide to identify discrepancies and determine their causes. The importance of regular reconciliation is highlighted to prevent errors from accumulating over time.

The third part of the document focuses on budgeting and financial forecasting. It explains how to create a realistic budget based on historical data and market conditions. The text also discusses the role of forecasting in planning for future growth and managing risks.

Finally, the document concludes with a summary of key points and offers some practical advice for small business owners. It encourages a proactive approach to financial management and suggests seeking professional help when needed.





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