



Knowledge Organiser

Year 11

Term 1

Name _____

Tutor Group _____

This document is part of your compulsory equipment and must be taken to every lesson (with the exception of practical PE).

Table of contents

1. Knowledge Organisers (what/how)	page 3
2. The King Solomon Standard	page 4
3. The PEEL paragraph	page 5
4. Art	page 6
5. Design and Technology	page 7 - 8
6. English	page 9 - 10
7. Food	page 11
8. Geography	page 12 - 20
9. History	page 21 - 25
10. Jewish Studies	page 26 - 27
11. Maths Foundation	page 28 - 35
12. Maths Higher	page 36 - 42
13. Media BTCE	page 43
14. Media GCSE	page 44 - 46
15. Performing Arts: Drama	page 47 - 52
16. Performing Arts: Music	page 53 - 56
17. Physical Education GCSE	page 57 - 59
18. Physical Education Cambridge Nationals	page 60
19. Science	page 61 - 74
20. Sociology	page 75 - 76
21. Spanish	page 77 - 80

What is a Knowledge Organiser?

Your knowledge organiser summarises all the key facts and knowledge that you will need to have learned on a particular subject onto one side of A4. This information might include,

- key vocabulary
- key places and people
- useful diagrams
- key dates for a subject like history
- key themes
- important quotes
- stem sentences for a subject like Maths



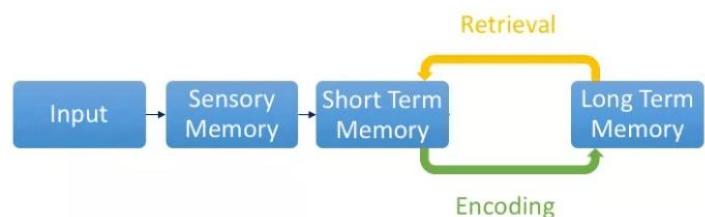
How can you use your Knowledge Organiser most effectively?



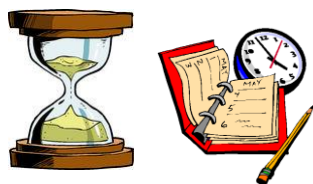
1. Use it as a **checklist** to make sure you have notes and resources in your books or folders on each area. If you have a gap, talk to your teacher.



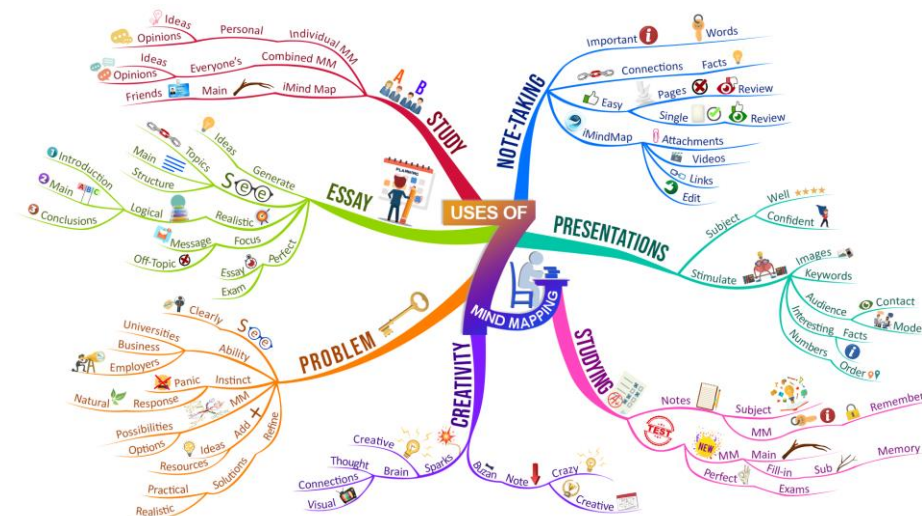
4. Use your knowledge organiser **to get ahead on a topic**. Reading about what you are going to study and looking up any new or difficult words means that you are better prepared for your learning in the next lesson.



2. Use it to help get the information and knowledge into your **long-term memory**. Just reading over the pages does not help. You will need to put your knowledge organiser away and see how much you can remember. You could get a family member or carer to help test you on what you have remembered.



5. It is best to use your knowledge organiser for **short periods of time but regularly**. Choose a small part of a topic and practice writing it out with your organiser closed every day for 10 minutes.



3. Knowledge organisers have already broken the knowledge down into chunks for you so they can be used to create **flashcards, revision posters or mind maps**.

THE KING SOLOMON STANDARD

Come to class fully prepared with correct equipment (Black / Blue Pen, pencil, glue stick, scissors, ruler, calculator, protractor and compass, exercise / text books).
Form Tutors will check your equipment on a regular basis.

Presentation

- Students write in black or blue ink only unless allowed by teachers to use another colour.
- Students ensure that all work has a Title and Hebrew and English dates, which are all underlined.
- Students take care of their exercise books and folders. There is no graffiti in, or on, books. All books must be covered and labelled clearly.
- Worksheets and Pit Stops slips must be stuck in or stapled.
- Pages must not be torn out of books.
- Work will be returned if it represents a significant lack of effort and students will be expected to resubmit the work.
- **PEEL** paragraphs must be labelled clearly and easy to spot.

Literacy marking symbols

Your teachers will be using the symbols below to mark your work.

S	Spelling mistake.
P	Punctuation mistake – either punctuation has been omitted, or has been used incorrectly.
??	Does not make sense/is not clear.
//	Start a new paragraph.
^	A word or sentence is missing.
C	Capital letter is needed.
DW	Choose a different word.

- *Correct all your class work and homework errors using a different coloured pen.*
- **C3B4ME** (See three before me; i.e. first try independently, check your class notes/resources or ask one of your peers before you ask your teacher 😊).

How to complete my Pit Stop slips

What went well....

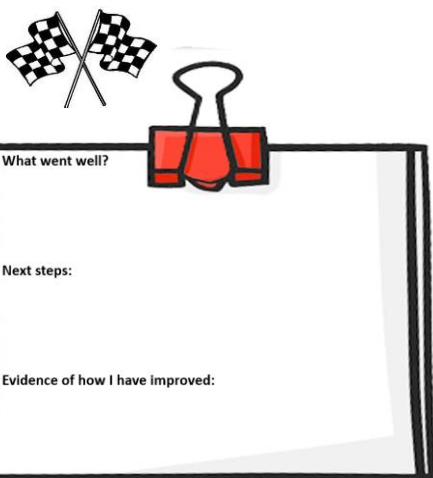
Completed by your teacher or by you after receiving some guidance from your teacher.

Next steps....

Completed by your teacher or by you after receiving some guidance from your teacher.

Evidence of how I have improved:

Completed by student stating clearly where the work can be found. This is not a promise of what you will do but a clear indication of where to find the work of what you have done already in order to improve and following the advice from next steps.



THE PEEL PARAGRAPH

PEEL

Point: Your argument in one line.

I think that It is clear that..... In my opinion The point is that....

Evidence: Reasons or evidence that back your argument up.

This is because This is evidenced by For instance We can see that...

Explanation: Explain how your reasons or evidence prove your point.

Therefore, this proves that..... because This shows that This demonstrates.....

Link: Mini conclusion answering the question.

In conclusion Overall To conclude Finally..... To summarise...

How can I improve my writing?

Point

- I have included a point in my paragraph.
- The reader will be able to understand my entire argument just by reading the point.

Evidence

- My paragraph has at least two pieces of evidence.
- My evidence is in full sentences, carefully chosen and clearly helps prove my argument.
- My evidence is specific and detailed (includes quotes/facts/names/events/key words).

Explanation

- I explain how my evidence proves that my argument is right.
- My explanation is at least two or three sentences long.
- I have added some balance to my argument and shown how there may be other reasons or arguments to the question.
- I have explained why my answer is the right one rather than any of the other reasons, ideas or arguments.

Link

- I have included a link sentence in my paragraph.
- My link sums up my argument.
- My link uses the information I have used in my paragraph.

Design & Technology – Term 1 - Smart & Modern Materials

What you need to know:

- To be able to identify a range of smart & modern materials
- Understand what they do, their properties and the functions they provide.

What is a SMART material?

- A smart material' can be defined as a material whose physical properties change in response to an input e.g. making them simpler or safer to use.
- A smart material reacts to external stimulus/ changes in the environment without human intervention.

Designers and manufacturers are utilising SMART materials in a whole range of mass consumer products which often makes them simpler or safer to use.

SMART Material	Property
Hydrochromic Ink	Changes colour with water
Thermochromic Pigment/ Paint	Changes colour with heat
Photochromic Material/ Dye	Changes colour with light
SMA - Shape Memory Alloy	Changes shape with heat
Phosphorescent Material	Glows in the dark
QTC - Quantum Tunnelling Composite	Soft Electrical Switch
Polymorph	A thermoplastic use for prototyping which can reheated and reused



Polymorph is a clever thermoplastic which we can use for prototyping and is especially useful when it comes to modelling ergonomic grips. As it is thermoplastic you can reheat and reuse this material as many times as you wish.



Thermochromic paints can be added to any surface like these mugs or a textiles or card based product to react to heat.

What is a MODERN material?

- Modern materials are technical materials which have been manufactured for function.

A good designer will utilise and exploit these materials where appropriate and keep up-to-date with the latest technological developments.

Modern Material	Property
Graphene	Is stronger than steel, flexible, conducts heat and electricity
Titanium	Is strong compared to its weight and is anti-corrosive
Metal foams	Are strong, lightweight, electrically & thermally conductive
Nanomaterials	Nanomaterials are between 1 and 100 nanometres.
Fibre Optics	A hair like strands of pure glass designed to transmit signals
Corn Starch Polymers	Compostable plastics which are biodegradable



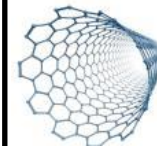
If it was not for the innovative technology of the fibre optical cabling the internet would not be possible. If your parents subscribe to Virgin this is what connects your broadband router or TiVo box to virgin. Without this cable we would not be able to download our music from iTunes or have a Skype conversation with family in Australia.



Shape Memory Alloys change shape easily but always return to their original shape when they are heated. There are many applications such as dental braces and unbreakable spectacles



Titanium is a very versatile metal. It is usually alloyed with other metals to enhance the properties. Pure titanium does not react to the human body and is used extensively in medical procedures such as artificial joints and dental implants. It is strong compared to its weight and is anticorrosive.



Nanomaterials are between 1 and 100 nanometres (A nanometre one thousand-millionth of a metre). Nanomaterials include carbon nanotubes, fullerene and quantum dots. Nanomaterials are used in car manufacturing to create cars that are faster, safer and more fuel efficient. They can also be used to produce more efficient insulation and lighting systems. They are also used as thin films or surface coatings, on computer chips

Graphene is a 2D material a honeycomb lattice carbon structure only one atom thick (a million times finer than a human hair) It is 200 times stronger than steel, very flexible, conducts heat and electricity, and is almost transparent. It is impermeable to all known substances. Electronics and energy storage could be revolutionised




What you need to know:

- To be able to identify a range of composite materials and technical textiles..
- Understand what they do, their properties and the functions they provide.

What is a Composite material?

- Composite materials are formed when two or more distinctly different materials are combined together to create a new material with improved properties.


Composite Material	Property
Carbon Fibre	Aa very high strength-to-weight ratio, and is extremely rigid, waterproof but very expensive.
Glass reinforced plastic	A very high strength-to-weight ratio, resists corrosion, water resistant and is light weight.




Carbon fibre components are manufactured by laying up sheets of carbon fibre (fabric) and joining them together with a thermosetting resin (which makes them solid). We use them extensively in the automotive and aviation industries. It has a very high strength-to-weight ratio, and is extremely rigid, waterproof but very expensive



Glass reinforced (plastic fibre glass) is made from fine glass fibres which are combined with a thermoset plastic resin and is moulded. It has a very high strength-to-weight ratio, resists corrosion, water resistant and is light weight. The fibre glass fibres are soaked in liquid plastic, and then pressed or heated until the material fuses together.



Kevlar® can be a woven or knitted structure and has many applications, ranging from bicycle tyres, racing sails to body armour because of its lightweight, has high tensile strength-to-weight ratio; by this measure it is 5 times stronger than steel. It is also used to make components that need to withstand high impact.



Nomex® was developed to withstand high temperatures and reduce combustion when exposed to a naked flame. Nomex has many applications, ranging from protective clothing (fire service & military), racing suits and aerospace applications this is because of its strength, thermal stability, flexibility and resilience.



Conductive textiles are also known as **e-textiles** these are highly conductive threads and fabrics which allow an electrical signal to pass through them to power LED's headphones and microphones.

Composite Materials & Technical Textiles

What are Technical Textiles?

- Technical textiles are manufactured for a specific use e.g. the function. As this is more important than the aesthetic quality.

Modern material	Property
Kevlar®	Is five times stronger than steel, flexible and lightweight.
Nomex®	Can withstand high temperatures (thermal stability) strong & flexible.
Gore-tex®	Waterproof & breathable as it prevents sweating.
Microencapsulation	Substances are trapped into fibres and are released through friction.
Conductive fabrics	Electrical signals can to pass through them to power devices.

English Paper 1 Language Exploration in Reading and Creative Writing (1 hour 45 minutes)

The Steps to Success and the methods you need to complete 50% of your Language Paper 1 Exam.

Q1- 5 minutes (4 marks)

List four things question

- Read the question carefully and look at the specific lines it is asking you to look at
- Write one idea per line
- Copy directly from the text (do not paraphrase)



Q2- 8-10 minutes (8 marks)

How does the writer use language to describe

- Read the question and highlight the key words to ensure you understand what the focus of your answer will be.
- Re-read the section of text the question asks you to focus on.
- Highlight key quotations which will help you answer the focus of the question. Consider the use of different language devices. Basic things to look out for: 5 senses, colour, adjectives and verbs. Grade 7+: extended metaphors, semantic fields, assonance.

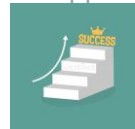
STRUCTURING YOUR RESPONSE (PEEL):

P – The point/ tone/ mood that the writer is trying to create (**what**)

E – Evidence and terminology (**how**)

E – Explanation and effect of how the writer's method is used to portray their attitude or perspective (**how** the writer does this)

L – Link to the reader and back to the question. (**why**)



Q3 8-10 minutes (8 marks)

How does the writer use structure to interest the reader

- Read the question and highlight the key words. This question is about how the text is put together and organised, rather than the language devices used
- Devices you might want to consider are STOPSEC Setting Time Opening Perspective Shift in focus Ending Character
- Skim through the whole source again. Highlight and label where you see different STOPSEC features, particularly focus on how the opening and ending are effective.
- Top tip: for a really clear response, think about what the writer focuses your attention on at the beginning, what they focus you on at the end-and whether this is similar or different (a cyclical structure). Then ask WHY?
- Aim for 3 PEEL paragraphs: **beginning** and a general overview of the text first of all, then consider how your focus shifts in the **middle** of the extract and why –your analysis isn't focusing on the use of words and phrases, but on the atmosphere/ tone created by the different structural (STOPSEC) features used at different points. A final PEA could be written about another interesting structural feature, the ending and consider which devices are used to close. Is there a resolution, cliffhanger or cyclical response?

Q4 20-25 minutes (20 marks)

To what extent do you agree with the statement

- Read the question and highlight the key words, including the section of the text if specified. Think carefully about how far you agree with the statement. Top Tip: Usually it is best to AGREE with the statement. But consider how far you agree. Is there evidence to argue against this opinion? Create a debate in your answer.
- Draw a box around the section of the text if specified.
- Read through and highlight words/phrases/language devices you will use to argue FOR, and maybe against the statement.
- Aim for 3 PEELs. Pick out key words in each and explore their effect. Useful sentence starters (see previous questions too – you can reuse these if appropriate!): To some extent I agree with... I certainly agree that... However, it could also be argued that... Overall I agree that...
- You must use your ideas from Q2 and Q3 to help you with this and state the writers' methods and how they achieve this effect by using language and structural features to support.



Q5 45 minutes (40 marks: 24 for content and 16 for SPAG)

Writing question based on an image stimulus

Planning:

Step 1: Underline key words in questions. Decide which task to complete.

Step 2: Take your image and box it up into five-six smaller boxes.

Step 3: Annotate around your image all of the ambitious vocabulary and language devices to describe each box.

Step 4: Label your boxes in the order that you are going to write about them (1-6). This will inform you on how many paragraphs you should be writing. Consider logically which makes the most sense to begin with. It is always best to start off with something on the outside such as setting and weather (the dark night in this example) and then zoom in to the interior (the café in this example), then the young lady and then the chair opposite or the way she cradles her cup of coffee.

Tips:

- Vary your sentence openers with verbs, adverbs, prepositions, adjectives.
- Vary the length of your sentences (inc. at least 1 holophrastic phrase) and your paragraphs.
- Variety of language devices
- Be ambitious with your vocabulary



English Paper 2 Language Writers; Viewpoints and Perspectives 1hour 45 minutes

The Steps to Success and the methods you need to complete 50% of your Language Paper 2 Exam.

Q1- 5 minutes (4 marks)

True or False question

- Read the question carefully.
- Read the focus paragraph underlining points for question focus.
- Consider all statements before shading – write T and F by them.
- Shade when you are certain you have the correct four



Q2- 8-10 minutes (8 marks)

Summary comparison of both texts

Planning Steps

Step 1 - underline and annotate the question.

Step 2 - identify three similarities or differences between the texts in relation to the question.

Step 3 – Underline evidence you are going to use and number quotes i.e., link quotes between texts by numbering them the same for each one– quotes numbered 1-3 in both texts.

Structuring your Response:

Statement of similarity / difference between the two texts

Evidence from Source 1

Inference linked to evidence and question

Comparison connective

Evidence from Source 2

Inference linked to evidence and question

REPEAT TWICE (3 PARAGRAPHS IN TOTAL)



Q3 12-15 minutes (12 marks)

How does the writer use language

How does the writer use language for effect? This question requires the same skills as your Paper 1 Language Q2 and uses the same mark scheme to award marks, however this time it is worth more. Look out for key words or language devices with a specific effect. Concentrate on what the explicit words/ devices do and the impact they try to have on the reader. Consider what you associate with that word, and further, what it makes you think, feel, and imagine.

Write a PEEL response x3 paragraphs
Useful sentence starters:

In Source... the writer uses language to cleverly build a tone of...

Point: Firstly, the writer uses [insert language device] in order to...

Evidence: For instance, /for example this is seen when...

Analysis: This evokes a sense of... The word/subject term has connotation of ... and therefore creates an atmosphere of... We might feel compelled to... The writer helps us to imagine/ realise...



Q4 20-25 minutes (16 marks)

Comparing Writers' perspectives

Planning Steps

Step 1 – Underline and annotate the question. Which attitudes and/or perspectives do you know are already present in both texts in relation to the question? Notes these down (draw out your battery, if this helps, with key words to describe the writer's attitude).

Step 2 – Skim-read the two texts and underline key quotations linking to any previous or new attitudes and/or perspectives that you have identified.

Step 3 – Annotate quotes for method or technique used and their effect (FRESH GRAPES, headings/titles, listing, sentence structures, punctuation, tone i.e., humorous, sarcastic).

Step 4 – Write your response. (16 marks- 20-25 minutes)

STRUCTURING YOUR RESPONSE (DETER/ SETER):

D/S – Difference or similarity of the perspective of both sources

E – Evidence

T – Technique

E – Effect and explain (how the writer's method is used to portray their attitude/perspective)

R – Reader (How you are made to think/feel or imagine and why)



Q5 45 minutes (40 marks: 24 for content and 16 for SPAG)

Writing a non- Fiction Text

Planning:

Identify the FLAP of the task (format, language, audience and purpose).

Dump down all your ideas.

Do any of your ideas link together or have a common theme?

Choose a counter argument and how you will challenge this.

Reread your work at the end.

Techniques for question 5:

FRESH GRAPES

Paragraphs – A range of lengths

Discourse markers and connectives

Visual sentence structures – short sentences, single

sentence paragraphs, commas for listing

Punctuation for effect ! ? - : ;



<u>Text type</u>	<u>To include</u>
Letter	Dear Sir/ Madam/ Yours sincerely
Speech	Engaging hook, lots of direct address, rhetorical indicators and a clear sign off
Article	Original title, subheadings, introductory paragraph
Leaflet	Original title, subheadings, introductory paragraph, bullet points
Essay	Introductions and conclusion
Clear paragraphs in all text types needed!	



Year 11 Food Preparation & Nutrition: NEA1 (Food Science/Food Spoilage)

Food Preservation	
Freezing	Between -18 and -20 degrees celcius. Bacteria becomes inactive
Refrigeration	Below 5c, bacterial growth is slowed down.
Pickling	Vinegar prevents the growth of microorganisms
Bottling	Heating to high temperatures and storing in a salt solution
Vacuum packing	Increase shelf life by removing oxygen- meat
MAP	Modified atmospheric packaging. Increase shelf life of salads.
Salted	Fish, removes moisture and increases shelf life
Smoked	Fish, removes moisture and increases shelf life
Cured	Cold meats like salami, chorizo, hung and dried
Canning	Subjected to high temperatures to destroy all bacteria

FOOD SPOILAGE	
Salmonella	Poultry, raw eggs, transferred by people too
Campylobacter	Raw and undercooked meat, untreated water
E. Coli	Raw meat, dirty water, animal waste contamination
Cross contamination	Raw meat comes into contact with cooked food
Food spoilage	Caused by deterioration and decay of food
Enzymes	Protein molecules which contain chemical reactions, only active after slaughter or harvesting
Mould	Grow on food, some are harmless- used to make blue cheese
Bacterial contamination	Most common form of food poisoning, growth requires - Food, warmth, moisture, time
yeast	anaerobic cells.Cause high sugar content food to spoil
Toxins	Produced by food poisoning bacteria cause illness

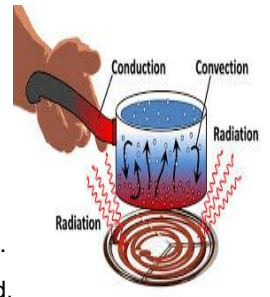


3 common raising agents are:
Air, Steam, CO2

Chemical
Mechanical
Biological

How do raising agents work?

The action of moisture, heat or acidity (or all 3) triggers a reaction with a specific raising agent to produce gas. Gas expands when heated. Gas bubbles become trapped.



TECHNICAL VOCABULARY	
Radiation	Infra- red waves pass through Surface of food- microwave
Conduction	Heat is in direct contact with food- fried egg
Convection	Heat moves in air or liquid to heat up food- pasta
Denaturation	Unravelling of bonds- whisking egg white
Oxidation	Reaction of cut surface fruit or veg with the air
Gelatinisation	Swelling of starch molecule until bursting, releasing amylose
Shortening	Flour is coated to prevent gluten formation- pastry
Dextrinisation	The browning of starch with heat- toast
Caramelisation	The browning of sugar with heat- caramel
Emulsification	The ability of water and oil to mix =egg yolk/mayo

Function of ingredients-Proteins/ eggs	
Thickening	Protein coagulates, thickens a liquid - quiche
Emulsification	Yolk stops water and oil separating- mayonnaise
Trap air	Denatures (unravels) when whisked increasing in volume. Such as meringue
coating	Dipped in egg and breadcrumbs- fish
Binding	Protein coagulates when heated and sets- cakes
Glaze	Brush surface to give a shiny finish- pies
When Protein is denatured	When it's heated
	When it is whisked
	When it's put in acid
	When unravelled it forms new structures

NEA 1 THE SCIENCE EXPERIMENT

Explain your decisions and thinking. Use scientific and technical language.

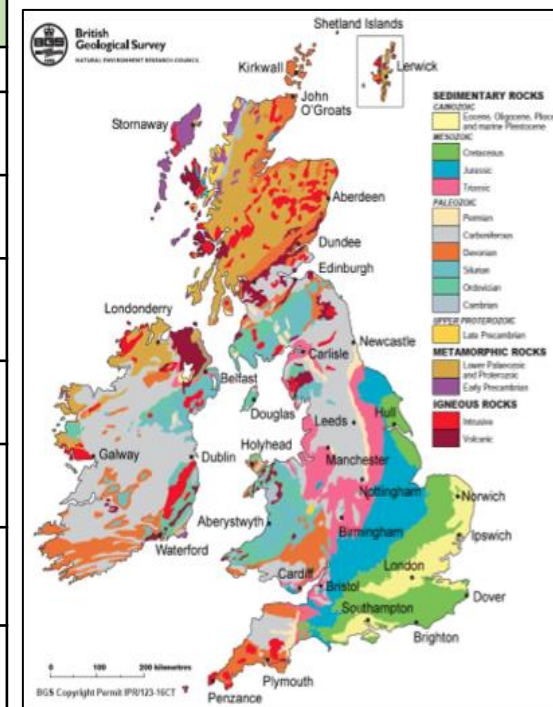
SECTION A-RESEARCH AND PLAN	SECTION B EXPERIMENT, TEST AND RECORD	SECTION C- ANALYSE AND EVALUATE
<p>Analyse the task</p>	<p>Research the task</p>	<p>Investigate the science</p>
<p>HYPOTHESIS</p>	<p>Action Plan</p>	<p>HYPOTHESIS</p>
<p>Organise the experiments</p>	<p>Carry out the experiments</p>	<p>Test and record objective data</p>
<p>Test and record subjective data</p>	<p>Present information</p>	<p>Present information</p>
<p>Observe, analyse and explain</p>	<p>Explain EVERYTHING</p>	<p>Relate results to the research and science</p>
<p>Review hypothesis Refer back to task</p>	<p>Suggest improvements Justify conclusions</p>	<p>Suggest improvements Justify conclusions</p>

Methods of cooking	
Water	Boiling-potatoes
	Braising- steak
	Steaming- beans
Dry	BBQing-chops
	Grilling-bacon
	Dry frying- sausages
Fat	Deep frying – battered fish
	Roasting- meat
Method dependant on	Skill and equipment
	Type of food eg. cut of meat - tough needs longer and more moisture
	Time

Reasons for cooking food	
uses a combination of heat transfer methods	
It achieves specific characteristics - eg. crunchy	
Makes food taste better	
safe to eat, kills bacteria	
Easier to digest	
Looks more appealing- consider raw meat	
Makes high risk food last longer	
Allows food to rise, thicken and set	
Produce a wider variety of foods	
Browning-- Maillard reaction- when foods contain proteins 11	

Geography Paper 2 : Topic 4 – UK Evolving Physical landscape

Key Term	Definition
Igneous rocks	are formed by magma from the molten interior of the Earth.
Sedimentary rocks	are formed from sediments that have settled at the bottom of a lake, sea or ocean, and have been compressed over millions of years.
Metamorphic rocks	These are formed when either igneous or sedimentary rocks are changed. Heat and/or pressure will cause the elements in the original rock to react and re-form.
Scree	a slope of loose, large angular rocks broken away from the mountainside by freeze-thaw weathering.
Freeze-thaw weathering	Freeze-thaw weathering occurs when rocks are porous (contain holes) or permeable (allow water to pass through).
Biological weathering	Plants and animals can also have an effect on rocks. Roots burrow down, weakening the structure of the rock until it breaks away.
Chemical weathering	Rainwater and seawater can be a weak acid. If a coastline is made up of rocks such as limestone or chalk, over time they can become dissolved by the acid in the water.
Glaciation	Ice covered 30 per cent of the world's land 18,000 years ago. The formation of glaciers and the process by which they shape the landscape around them is called glaciation.
Mass movement	Material can be moved on a slope through mass movement . Mass movement is the downhill movement of sediment that moves because of gravity. Eg rockfall, mudflow, landslide, rotational slip
Soil creep	is a very slow movement, occurring on very gentle slopes because of the way soil particles repeatedly expand and contract in wet and dry periods.
Till	As the glacier melts, the water carries fine material which is eventually deposited. All of the material moved by the glacial melt water is called glacial drift or glacial till.
Alluvium	Rock particles (clay, silt, sand and gravel) deposited by a river.
Misfit river	After the ice has melted and the river returns to the valley, it often looks tiny and out-of-place in its huge U-shaped trough.
Glacier	An sheet of ice that moves slowly down a river valley under the influence of gravity. This is often described as a river of ice.
Interglacial	a warmer spell between ice ages, lasting about 10,000 years.
Glaciated Valley	or U-Shaped valley-a river valley widened and deepened by the action of glaciers (ice sheets



Igneous rocks can be found mainly in upland areas in Scotland, in the Lake District in North West England and Snowdonia in North Wales and Northern Ireland. **Metamorphic rocks** are found in Northern Ireland and Scotland. **Sedimentary rocks** can be found across lowland areas of southern and central parts of England.



The **Tees-Exe line** is an imaginary northeast-southwest line that can be drawn on a map of Great Britain which roughly divides the island into lowland and upland regions.

Rock type	How is it formed?	characteristics
Igneous	<u>Granite</u> Formed when magma cools deep underground	• Very resistant , Contains crystals
	<u>Basalt</u> - formed from lavas rich in metals	• Almost black, heavy, v. resistant
Sedimentary	Chalk, clay, sandstone	some are porous, resistance varies
Metamorphic	Slate, schist, marble	Very resistant

Geography Paper 2: Topic 4 – The UK'S evolving physical Landscape

The UK's landscape can broadly be separated into upland landscapes and lowland landscapes depending on the rock type and relief of the area. They are distinctly different from each other. Upland areas of the UK consist of older and more resistant igneous, metamorphic and some sedimentary rocks. Lowland regions consist of younger and less resistant sedimentary rocks.

Upland regions
Located north and the west of England, Wales and Scotland



Lowland regions
Located in the south and east of England



You can find the majority of the UK's igneous and metamorphic rocks, for example, granite in the Scottish Highlands. Upland landscapes are usually older and are more resistant to weathering and erosion. However, past tectonic processes have created faults and uplifts here.

Sedimentary rocks such as clays and sands are usually found in the lowlands. These landscapes are much younger than the uplands, and sedimentary rocks erode very easily, creating landscapes formed through erosion and weathering processes.

The Lake District - an upland landscape

The Lake District's landscape is full of high mountains and low valleys due to the glacial and tectonic processes that have affected the area. However, other physical processes have also left their mark on the landscape:

Post-glacial river processes The Lake District was once covered in glaciers, which carved the landscape into deep U-shaped valleys. Over time, the valleys filled up with water to form lakes, and now many small rivers flow through the valleys (known as misfit rivers as they look out of place in these large, wide valleys).

Weathering and slope processes Many of the slopes surrounding the Lake District are covered in angular rocks called scree. These landscapes have been created by **freeze-thaw weathering**. When temperatures fall below freezing in the Lake District, water in the cracks of rocks freezes and expands, and this repeated process causes the rocks to break off from the rock face. As the area has a **steep relief**, rocks fall to the bases of mountains and in depressions, making some of the terrain very rocky.

- The Lake District is one of the wettest areas of the country, which leads to frequent landslides on the high relief slopes. **Gullying** (erosion from water flowing into small channels on slopes) is also common.
- Metamorphic rock and igneous rock are very resistant to erosion since the rocks are very compact from the extreme pressures when formed. This means metamorphic and igneous rock formations are usually very old, like in upland landscapes.

The Weald- a low- lying region

The Weald consists of gentle rolling hills that are located at much lower elevations than the hills and mountains of the Lake District, but still create distinctive landscapes.

Weathering and slope processes The Weald used to be a large mound of layered rocks called an anticline, caused by tectonic uplift. However, over time this mound has eroded away to create the hilly landscape seen today. This type of topography is known as scarp and vale topography.

- Chalk is resistant to weathering and erosion, it is only really affected by slow chemical weathering, when rainwater dissolves the calcium carbonate. The chalk forms steep escarpments, seen on the left of the image above.
- Softer, highly erodible clays lay below the chalk, forming low, flat vales

Post-glacial river processes When the climate was much colder, the ground over the Weald was frozen. Rivers flowed and created valleys and other river landforms over the landscape. However, when the climate warmed, the frozen land began to melt and water from the rivers seeped through the very permeable chalk and disappeared. This has left dry valleys in the Weald.

3 processes shaped the UK's upland regions:

- Geology** – more resistant rocks in the uplands and less resistant in lowlands
- Tectonic processes**- Rocks which form the upland areas were made when the UK had tectonic activity. Igneous rocks were formed from the cooling of molten rock (magma). Metamorphic rocks, when sedimentary rocks were heated and compressed during tectonic activity.
- Glaciation**-Much of Britain was covered by ice during several "Ice Ages" over the last 500,000 years. The most recent one ended only 10,000 years ago. Glaciers and ice sheets scoured the landscape, wearing away the rocks to form glacial landscapes in the Scottish Highlands, Lake District and N. Wales.

Geography Paper 2: Topic 4 – The UK's evolving physical Landscape

Discordant coastline

Coastlines where the geology alternates between strata (or bands) of hard rock and soft rock are called **discordant coastlines**. Bays and headlands are found.

Mechanical weathering— freeze-thaw is most common in colder climates.

Chemical weathering—this happens when the rocks mineral composition is changed.

Biological weathering—Caused by plants and animals, this helps speed up erosion.

Coastal erosion is the wearing away and breaking up of rock along the coast.

Destructive waves erode the coastline in a number of ways:

Hydraulic action: Air may become trapped in joints and cracks on a **cliff face**. When a wave breaks, the trapped air is compressed which weakens the cliff and causes erosion.

Abrasion: Bits of rock and sand in waves grind down cliff surfaces like sandpaper.

Attrition: Waves smash rocks and pebbles on the shore into each other, and they break and become smoother.

Solution: Acids contained in sea water will dissolve some types of rock such as chalk or limestone.



Transportation

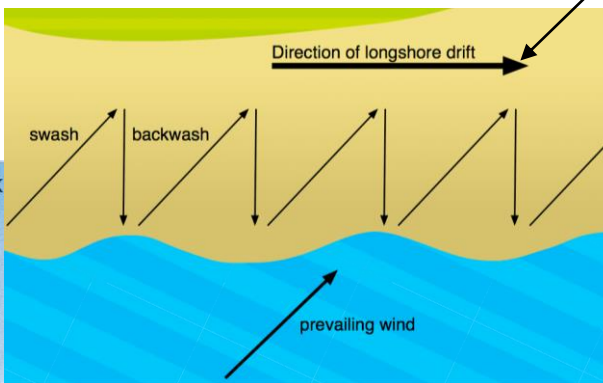
- Suspension
- Traction
- Solution
- Saltation

When the sea loses energy, it drops the sand, rock particles and pebbles it has been carrying.

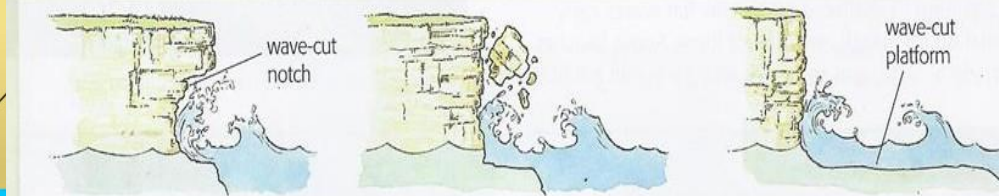
This is called **coastal deposition**. Features of coastal deposition include , a spit, a bar, a lagoon and tombolo.

Sediment is carried by the waves along the coastline. The movement of the material is known as **longshore drift**:

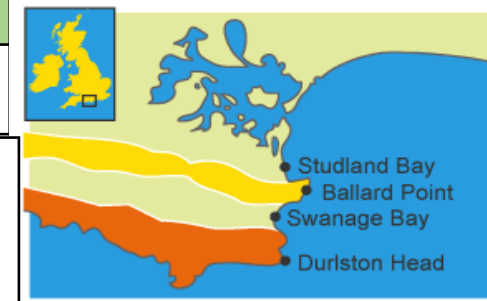
Waves approach the coast at an angle because of the direction of prevailing wind. The **swash** will carry the material towards the beach at an angle. The **backwash** then flows back to the sea, down the slope of the beach. The process repeats itself along the coast in the zigzag movement.



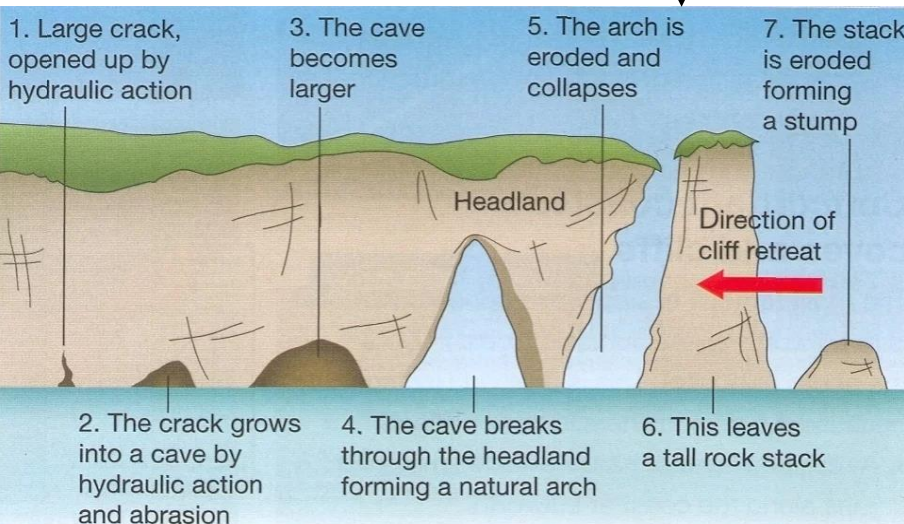
How a wave-cut platform forms



- 1 The waves carve **wave-cut notches** into cliffs at a headland. These get deeper and deeper ...
- 2 ... until, one day, the rock above them collapses. The sea carries the debris away.
- 3 The process continues non-stop. Slowly the cliffs retreat, leaving a **wave-cut platform** behind.



- Key**
- Clay and sands (soft)
 - Chalk (hard)
 - Limestone (hard)



Constructive waves	Destructive waves
<ul style="list-style-type: none"> - Strong swash - Weak Backwash - Deposit material - Calm weather - Summer months - Low energy 	<ul style="list-style-type: none"> - Strong backwash - Weak swash - Erode sediment - Winter weather - Storms - High energy

Rock falls	Sudden movement of rock from the cliff that has either weathered or undercut causing the collapse
Sliding	loosened rocks and soil suddenly tumble down the slope usually a bedding plane.
Slumping	When permeable rock/ soil becomes saturated. Where permeable rock meets impermeable rock the saturated rock slumps and slips.

Geography Paper 2: Topic 4 – The UK'S evolving physical Landscape

Housing	Industry	Agriculture
<p>Many people who work in London can no longer afford housing there, so some commute in from coastal towns and cities (Brighton) Also a great place to retire – examples include Bournemouth and Blackpool.</p> <p><u>Impacts</u>- House prices rise and this makes it expensive for local people to buy</p>	<p>Various locations across the UK have tourist areas next to industries. The Solant, Southampton, The Thames estuary, London Offices development-The high cost of London properties has led to businesses moving towards the coast</p> <p>Many UK coastal resorts have universities and young populations that allow companies to expand there</p> <p><u>Impacts</u>- increased pollution, Traffic congestion</p>	<p>Marshland and wetland is used to by farmers for grazing pasture for cattle:</p> <p><u>Impacts</u>- The price of good farmland has risen sharply. Farmers have to maximise their income by using whatever land they can. The need for extra grazing is putting pressure on wildlife. Climate change and rising sea levels are likely to lead to flooding by salt water during winter high tides, which could threaten the pastures.</p>

Local councils can spend their money on one of the following choices:

- **Managing the coast**
- **Hold the line**
- **Advance the line**
- **Strategic Retreat**
- **Do nothing**



Challenges on the coast:

Climate change— As temperatures rise, it is likely the intensity and frequency of storms will increase.

Rising sea levels-A warmer climate means that sea water will expand, ice will melt, and sea levels will rise.

Storms and Storm surges— large scale increases in seal level (3m) due to storms.

Case study: coastal management in Holderness

The Holderness coast is in the north east of England. This is one of the most vulnerable coastlines in the world and it **retreats** at a rate of one to two metres every year.

What causes the Holderness coastline to retreat?

- Strong prevailing winds creating **longshore drift** that moves material south along the coastline
- The cliffs which are made of a soft boulder clay, and will therefore **erode** quickly, especially when saturated.
- The village of Mableton, has approximately 50 properties. Due to erosion of the cliffs, the village is under threat.

Steps taken to protect the village of Mableton:

In 1991, the decision was taken to **protect** Mableton. A coastal management scheme costing £2 million was introduced involving two types of hard engineering - placing rock armour along the base of the cliff and building two rock groynes.

- Mableton and the cliffs are no longer at great risk from erosion.
- The rock groynes have **stopped** beach material being moved south from Mableton along the coast. However, this has **increased** erosion **south** of Mableton (Terminal Groyne Syndrome). The increased threat of **sea level rise** due to **climate change** means that other places will need to consider the sustainability of coastal defence strategies for the future.

Defence	Advantages	Disadvantages
Sea wall	Protects the base of cliffs, land and buildings Can prevent coastal flooding.	Expensive. may begin to erode. The cost of maintenance is high.
Groynes	Traps material along the coast carried by longshore drift allowing the build up of a beach a natural defence against erosion and an attraction for tourists.	Can be seen as unattractive. Costly to build and maintain.
Beach replenishment	Natural defence against erosion and coastal flooding. Beaches attract tourists. Inexpensive	Material is easily transported away, needs replacing
Planting vegetation	Keeps the beach stable and prevents erosion – Marram Grass is used.	Not reliable during storms

Coastal management strategies

Hard engineering e. g sea wall, building groynes, rock armour - tend to be expensive, short-term options. They may also have a high impact on the landscape or environment are seen as less sustainable.

Soft engineering, Soft engineering options e.g beach nourishment, managed retreat are often less expensive than hard engineering options. They are usually more long-term and **sustainable**, with less impact on the environment.

Holistic management

Takes into account all social, economic and environmental costs and benefits. In coastal management this means looking at the coastline as a whole instead of an individual bay or beach.

Geography Paper 2: Topic 4 – UK Evolving Physical Landscape

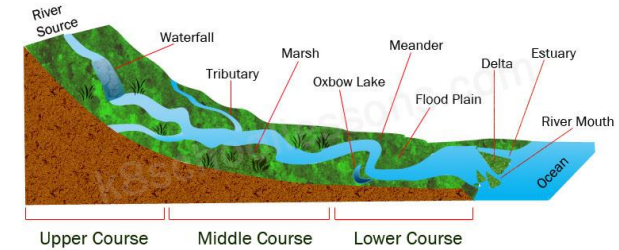
Key Term	Definition
Alluvium	All deposits laid down by rivers, especially in times of flood.
Antecedent rainfall	The amount of moisture already in the ground before a rainstorm.
Bankfull	The discharge or contents of the river which is just contained within its banks. This is when the speed (or velocity) of the river is at its greatest.
Delta	A low-lying area at the mouth of a river where a river deposits so much sediment it extends beyond the coastline.
Deposition	When a river loses energy and drops some or all of the material it is carrying.
Discharge	The volume of water in the river at any given point (measured in cumecs).
Drainage Basin	The area of land drained by a river and its tributaries.
Erosion	Means the wearing away of the landscape.
Estuary	Part of a river that is tidal.
Flood plain	Flat land around a river that gets flooded when the river overflows.
Geology	The nature and structure of rocks- type of rock.
Groundwater flow	Movement of water underground through rocks.
Impermeable	A surface that does not allow water to pass through it.
Infiltration	When surface water soaks down into the soil.
Interception	When water droplets collect on trees and plants.
Interlocking spurs	Hills that stick out on alternate sides of a V-shaped valley, like the teeth of a zip.
Percolation	Water moving downwards through the soil into the rocks below.
Permeable	A surface that allows water to pass through it.
Precipitation	Moisture that falls from the atmosphere e.g. rain, hail, sleet or snow.
Saturated	Soil is saturated when the water table has come to the surface. The water then flows overland.
Storm hydrograph	A graph which shows the change in both rainfall and discharge from a river following a storm.
Surface runoff	All water flowing on the Earth's surface.
Transpiration	Water vapour released by trees and plants.
Velocity	The speed of a river, measured in metres per second.

What are the different stages of a river?

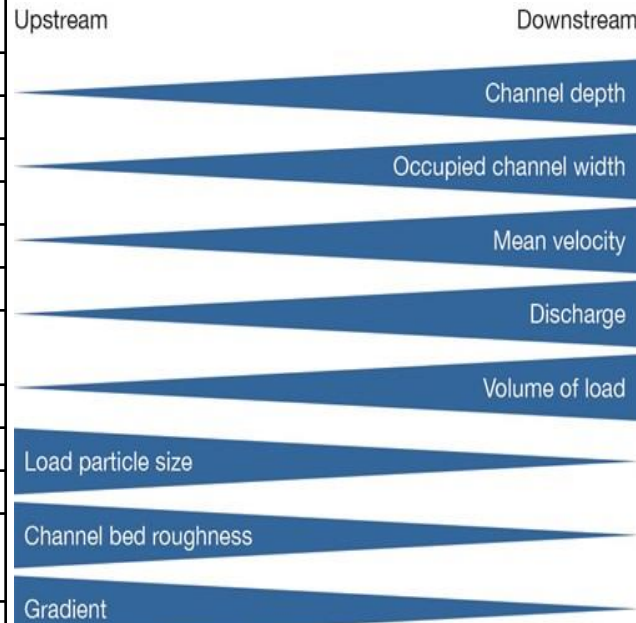
Upper course: Shallow and narrow channel - Waterfall — Interlocking Spur — V-shaped Valley.

Middle course: Meandering River— Ox-bow Lake

Lower course: Wide & deep channel— Estuary — Delta



The Bradshaw Model shows the changes that occur as a river flows from its source to its mouth.



Drainage basins:

A drainage basin is the area of land around the river that is drained by the river and its **tributaries**.

- **Watershed** - the area of high land forming the edge of a river basin.
- **Source** - where a river begins.
- **Mouth** - where a river meets the sea.
- **Confluence** - the point at which two rivers meet.
- **Tributary** - a small river or stream that joins a larger river.
- **Channel** - this is where the river flows.



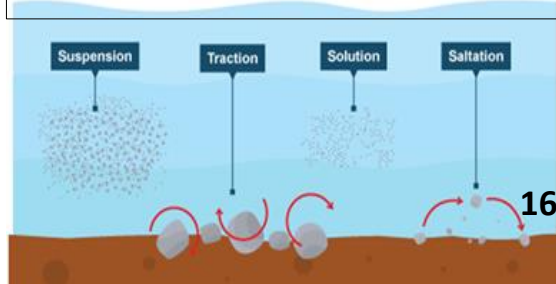
Transportation types:

Traction: large boulders and rocks are rolled along the river bed.

Saltation: small pebbles and stones are bounced along the river bed.

Suspension: fine light material is carried along in the water.

Solution: minerals are dissolved in the water.



Erosion types:

Abrasion: The force of rocks carried in the river currents hitting against the river bed or banks.

Attrition: Sediments knocked about as they are transported, and they gradually become more rounded and reduced in size.

Hydraulic Action: Water is forced into cracks which forces the material apart.

Solution: Chemicals in the water cause materials in rocks or riverbed to dissolve and erode away.

Why do rivers flood?

Physical causes	Human causes
<p>Geology-Hard impermeable rocks will not allow water to be absorbed. Therefore there will be more surface run-off and a greater risk of flooding.</p> <p>Climate- if there has been a prolonged period of heavy rainfall, the ground will get saturated and the risk of flooding will increase.</p> <p>Relief- Surface run-off increases with steep slopes therefore river levels will rise leading to the river flooding.</p>	<p>Urbanisation- Water cannot pass through many of the materials houses are built from so it stays on the surface and floods.</p> <p>Deforestation-Permanent removal for trees. This leads to less infiltration and more surface run-off.</p> <p>Dredging- the theory is that deeper channels hold more water. This is true but deepening river channels only works for a while and the river will eventually flood.</p> <p>Global warming- The increase in global temperatures caused by the burning of fossil fuels.</p>

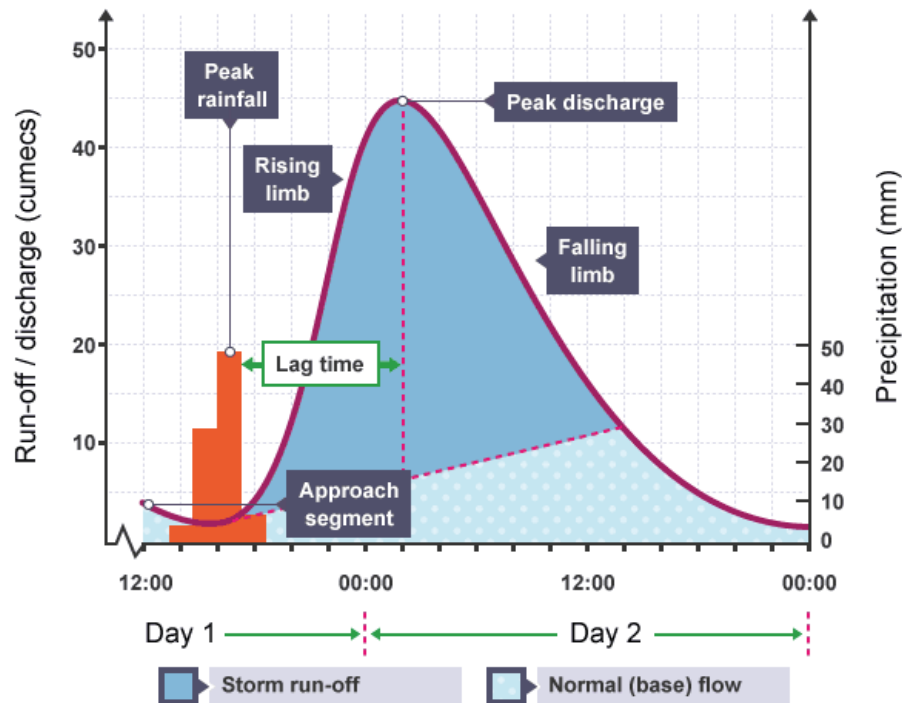
Flooding case study - Cumbria, 2021

Cumbria is in North West England. Severe flooding took place in 2009 and 2015. The 2015 floods affected around 50,000 homes, causing damage estimated to cost £500 million. After the events of 2015, the council spent £2.6 billion on flood defence schemes to protect the region from future flooding.

Causes of the flooding: In October 2021, a slow-moving weather system caused unusually heavy rainfall across many parts of the UK. More than a month's worth of rain (12in or 30cm) fell within Cumbria over a 24-hour period.

Effects of the flooding:

- 43 properties were flooded. Over 1400 properties were protected by the flood defences put in place in response to the 2015 flooding.
- Travel disruption took place. Many roads were closed, and some rail services were delayed or cancelled.
- Tourism was affected as hillwalkers were advised to stay off the hills and mountains. Sporting events were affected. Keswick Rugby Club was under water, so the weekend fixtures couldn't take place. The Original Mountain Marathon event was also cancelled.



A hydrograph shows how a river is affected by a storm. This helps to understand discharge patterns of a particular drainage basin and helps to predict flooding and plan flood prevention measures.

As you can see in the graph, the peak rainfall is the time of highest rainfall. The peak discharge is the time when the river reaches its highest flow. There is a delay because it takes time for the water to find its way to the river. This is called lag time.

Various human and physical factors will cause the lag time to be shorter or longer.

Hard Engineering	Advantages	Disadvantages
Embankments —high banks (levees)	Stop overflowing, covered in grass can blend with the environment.	Can burst under pressure, water can flow over the top.
Flood walls	Prevent water spreading in high impact areas e.g. housing	Expensive, cause flooding downstream, look unnatural
Flood barriers or storm surge barriers	Protect large areas, can be used at high tide or storm surge is forecast	High construction costs and regular maintenance needed

Soft Engineering	Advantages	Disadvantages
River restoration —rivers original course including meanders	More attractive for recreation, creates natural habitats	Some flood banks often still needed.
Floodplain retention -land use according to flood risk	Low risk areas are used for building, high risk land is used for parks/recreation.	Poor public accessibility to some areas

Geography Paper 2: Topic 5 – UK Evolving Human landscape

Key Term	Definition
Affluence	Great wealth or abundance.
Brownfield sites	Former industrial areas that have been developed before.
Central Business District (CBD)	The heart of an urban area, often containing a high percentage of shops and offices.
Connectivity	How easy it is to travel or connect with other places.
Conurbation	A continuous urban or built-up area, formed by merging towns or cities.
Decentralisation	Shift of shopping activity and employment away from the CBD.
Deindustrialisation	Decreased activity in manufacturing and closure of industries, leading to unemployment.
Depopulation	Decline in the total population of an area.
Deprivation	Lack of wealth and services. It usually means low standards of living caused by low income, poor health and low educational qualifications.
Diversification	When a business (e.g. a farm) decides to sell other products or services in order to survive or grow.
Economic core	The centre of a country or region economically, where businesses thrive, people have opportunities and are relatively wealthy.
Economic periphery	The edge of a country or more remote, difficult area where people tend to be poorer and have fewer opportunities.
Free trade	The free flow of goods and services without the restriction of tariffs.
Foreign Direct Investment (FDI)	Overseas investment in physical capital by transnational corporations.
Gentrification	High-income earners move to run-down areas often resulting in the regeneration of the area to conform with middle class lifestyles.
Globalisation	Increased connections between countries.
Goods	Physical materials or products that are of value to us.
Green belt	Undeveloped areas of land around the edge of cities with strict planning controls.
GDP	Gross Domestic Product - The total value of goods and services produced by a country in one year.

How do the urban core and rural periphery compare?

	Urban core e.g. London	Rural periphery e.g. Cornwall
Pop density	High & staying high, over 200 people per km ²	Low, 1 – 100 people per km ²
Age structure	Many young adults Many single people	Many older people Some single people
Economic Activities	Retailing, large shops, Offices & co-porate headquarters, shops, offices & factories, Cultural centre – library, museum, theatre	Farming, fishing, forestry, mining Working from home – IT, Tourism Renewable energies
Settlement	Metropolis, conurbation, city, large town, Mix of high & low rise buildings, property more expensive	Market towns, villages & farms Low-rise buildings Property generally cheaper

Reducing regional disparities:

Enterprise zones – places where the UK gov offers companies help with start-up costs, reduced taxes and access to superfast internet.

Regional Development Grants – include grants & advice to help businesses start up.

EU grants – help the poorest regions of the EU where the GDP is below 75% of the EU average.

Improvements to transport – Funds given to help connect the more isolated areas of the UK.

Decline in the North East

- Economy of the NE **used to be dominated by heavy industry**
- e.g. coal mining. In the last 50 years **this has declined** due to foreign competition, high land & labour costs & end of coal deposits.
- **In 1971, manufacturing was 40% of employment but in 2011, this was only 10%. Between 2007 – 2013, unemployment rose quickly to 8%. The contribution of the area to national GDP is only 2%.**
- In rural areas, economy still relies heavily on agriculture.
- Manufacturing is based in urban areas but employs fewer people due to increase in machines.
- Tertiary activities have increased which has reduced unemployment.



How does migration shape the UK economy and society?

Retirement migration - The SW attracts many retirement migrants because of beautiful scenery, slower pace of life, lower crime rates and a sense of community.



International migration - The UK government encouraged immigration from former British colonies during the 1950's The enlargement of the EU saw young immigrants, 80% aged 18-34, from Eastern Europe especially Poland to cities such as London and Birmingham. In 2014 560,000 immigrants arrived in the UK and during the period 2012-15 people fled from Syria arrived in cities like Birmingham.

Rise in the South East

- Most prosperous farms are found in the SE
- e.g. fruit, wheat & barley farming.
- Manufacturing industry is growing rapidly in urban areas e.g. oil refineries in Southampton
- SE region is also important for tertiary & quaternary industries where there is a range of financial & business service firm located in the region. Unemployment is at a low (6%) and prosperity is high. New tertiary & quaternary firms are locating in town which are surrounded by green spaces
- Transport – range of motorways, 4 major airports, ports for import/export
- Political – national government & corporate headquarters of many firms

Advantages	Disadvantages
Source of cheap unskilled (construction) and skilled labour (doctors/nurses). Benefits of a youthful population. Introduced to new cultures and cuisines	Puts pressure on services e.g. housing, healthcare, education. More social unrest

Geography Paper 2: Topic 5 – UK Evolving Human landscape



Key term	Definition
IMD	Index of Multiple Deprivation - Means of showing how deprived some areas are.
Migration	Movement of people from one place to another.
Multicultural	A variety of cultures of ethnic groups within a society.
Population density	The average number of people in a given area, expressed as people per km ² .
Population structure	The number of each sex in each age group (e.g. 10-14), usually displayed in a population pyramid.
Privatisation	The sale of state owned assets to the private sector.
Quality of life	A measure of how 'wealthy' people are, but measured using criteria such as housing, employment and environmental factors, rather than income.
Rebranded	A change of image.
Regeneration	Means re-developing former industrial areas or housing to improve them.
Rural-urban fringe	The area where a town or city meets the countryside.
Services	Functions that satisfy our needs.
Studentification	Communities benefit from local universities which provide employment opportunities and a large student population which can regenerate pubs, shops.
Terms of trade	Means the value of a country's exports relative to that of its imports.
Transnational companies (TNCs)	Those which operate across more than one country e.g. Apple, Nike, Microsoft etc.

London has local, regional and even world importance:

- **Internal and international accessibility** - London has great importance due to its high connectivity.
- M25 orbital motorway connected to other major cities
- Rail network with terminus for Eurostar
- 5 international airports

World network of financial centres - London has become the international financial centre for Europe and is one of three world financial cities alongside New York and Tokyo. Many global banks have headquarters here.

• **Transnational corporations (TNCs)** - 500 TNC's in the UK with 271 HQs in London and further 28% along M4 corridor.

• **Market** - London is the largest and most affluent market in the UK and therefore top international retailers have locations in London to take advantage of this market.

Central Business District (CBD) - the oldest area, where most of the offices are found. It's very accessible = higher land values which make it high density, therefore buildings are built high to maximise value.

Inner city/Inner suburbs - In the Industrial Revolution, factories and densely packed terraced housing were built close to central London. A few high-income suburbs also developed whose population (rich upper-class) wanted to be close to the city.

London's urban-rural fringe - Where the city meets the countryside. Almost every house has a garden = building density is lower. Most houses were built in the late 20th century and there is some industry, but the area is mainly residential. Environmental quality is much higher.

	Newham	Richmond
Infant mortality	5.5	2.75
People with long-term illness	12.3	7.6
Premature deaths (before 65)	210	121
% 5-16yr old on FSM	20	8.4
% adults with degree	26	64

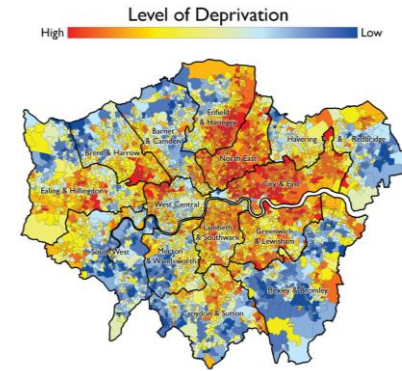
Deprivation (using the IMD) highlights areas where there is a lack of **quality of life**. This would include: increased **crime** rates, poor access to **health, housing** and **education** services, **lower income** through low-paid, low-skilled jobs and a poorer environmental quality and **lack of green spaces**.



Rebranding Stratford – Olympics 2012



Positive impacts of rebranding	Negative impacts of rebranding
Transport links were improved – the new DLR and Jubilee Line. Eurostar, city airport, cycle lanes.	Local people were forced out. 36% of the local people were unskilled workers – they weren't qualified for the jobs.
The environment was improved and quality green space created e.g. Olympic village - Biggest urban park in Europe	Traditional businesses closed and were replaced with services for the wealthier population,
Businesses have been attracted back, creating jobs and investment	Existing communities were destroyed.



Urban sustainability

Urban areas can be made more **sustainable** by encouraging:


- **water conservation**
- **energy conservation**
- **waste recycling**
- **creating green spaces**
- **London Underground**
- **Congestion Charging zone**
- **Bike sharing scheme**



Changes through FDI and TNC investment has encouraged **international migration in London**. This has created one of the most **diverse** and **densely populated** cities in the world. Increased **urbanisation** of London has also led to **counter-urbanisation** as people move out of the city for a 'quieter life' which, in turn, has led to **urban growth** and the increase in house prices and the number of services provided on the **periphery** of the city.

Geography Paper 2: Topic 6 – Geographical investigations (Fieldwork)

Key Term	Definition	Urban fieldwork				
		Investigation question	Location	Before the fieldwork	Types of data	Data presentation
Accurate	Results are as near as possible to the true answer - they have few errors.	‘Investigate how and why quality of life varies within urban areas.’ <u>Key questions to consider:</u> How does quality of life vary? Why does quality of life vary? Comparing the East Village and Carpenters Estate.	Carpenters Estate: council owned properties East Village: 2009- Triathlon Homes bought 1.379 homes for £268 million. 2011- rest of homes bought by Qatari properties for £557 million.	Background research of the area: Index of Multiple Deprivation (IMD)- 62% of students aged 16 without 5 GCSEs A*-C in 2012. (Stratford) 12.3% of people with limiting long-term illnesses. (Stratford) www.police.uk – in November 2017 72 reports of anti-social behaviour and 78 reports of shop-lifting (Stratford) Crime rates LOWER in the New Town (East Village) Risk assessment of both areas.	Qualitative data: sketches, open question questionnaire, housing survey, environmental quality assessment Quantitative data: Bi-polar analysis, of quality of each area. Crime risk assessment of each area.	Comparison of environmental data between East Village and Carpenter’s Estate- radar graph/spider chart Crime data- bar chart/ pie chart Bi-polar survey of quality of life questionnaire- divided bar chart Resident perception survey- word clouds Quality of housing/ environment- annotated photographs.
Enquiry	The process of investigation to find an answer to a question.					
Fieldwork	Means work carried out in the outdoors.					
Mean	The sum of the data values divided by their number, often called the average.					
Median	The middle value when a set of values in a data set is written in order.					
Mode	The most frequent value in a data set.					
Qualitative	Data without numbers based on people’s opinions or ideas, for example an interview or field sketch.					
Quantitative	Data which contains numbers and figures, for example a pedestrian count.					
Random sampling	Where samples are chosen at random e.g. picking pebbles on a beach.					

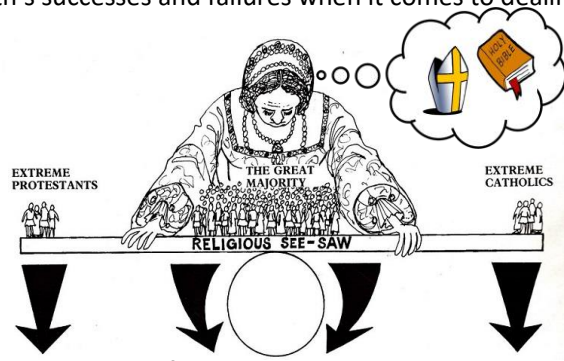
		Rivers fieldwork				
		Investigation question	Location	Before the fieldwork	Types of data	Data presentation
Range	The difference between the smallest and biggest values.	‘Investigate how and why drainage basin characteristics and channel characteristics influence flood risk for people and property along a river in the UK?’ <u>Key questions to consider:</u> Does the width and depth of the river channel increase as the river travels downstream? What places are most at risk from flooding along the River Tawe? What impact does the channel shape have on flood risk?	The River Wye – Brecon Beacons, Wales 	Theories to use: - Bradshaw Model - Long profile of a River Secondary data to collect: Geology map of Brecon Beacons Environment Agency Flood risk map Climate graph of local area Risk assessment of all sites completed	Collecting data using stratified sampling - deliberately selecting 3 sites on the River Tawe : Upper, Middle and Lower course Collecting data using random sampling for sediment size (power shape index) Systematic sampling: 3 areas selected for width and depth readings to get 3 clear differences recorded – take an average. Qualitative data: field sketches, drawings, written descriptions and photographs. Quantitative data: width, depth, velocity, gradient readings.	Sediment size and gradient – line graph Sediment shape classification – bar chart Google maps and GIS (geographical information system) – used to display data on a map/aerial photograph. Flow-line map – velocity changes. Use of statistical techniques e.g. mode, median, range etc.
Ratio	Shows the number of times one value occurs compared with another.					
Reliable	Means that data can be reproduced.					
Stratified sampling	Choosing samples from different groups to get a good overall representation. Useful when you need to collect people’s perceptions, e.g. of pollution in their area, and need to ask people of different ages.					
Systematic sampling	Where samples are chosen at regular intervals – this is useful in places where what you want to investigate changes frequently e.g. the number of pedestrians in an area.					
Valid	Means that the data answer the original question and is reliable.					

History : Paper 2 Early Elizabethan England

Key Topic 1: Queen Government and Religion 1558-69

In the years before Elizabeth I became queen there was **religious turmoil** in England, monarchs changed between Catholic to Protestant and people on both sides were persecuted. Elizabeth inherited many **problems** including not just religion but also questions around her legitimacy, **financial problems** and threats from abroad. In order to solve some of these issues Elizabeth devised the Religious Settlement which aimed to please as many of her subjects as possible. She no longer wanted religious conflict or **persecution**, this was successful in some ways but not others, it was challenged by both Catholics and Puritans. Elizabeth also faced **significant threats** from abroad, her wealthy European neighbours, France and Spain were both Catholic and desired England to be so too. She also faced threats from within England, her cousin, **Mary Queen of Scots** was Catholic and desired to make herself the Queen of England. This unit looks at Elizabeth's successes and failures when it comes to dealing with this multitude of problems.

Elizabeth I never married and was known as the 'Virgin Queen'.



Elizabeth tried to find a balance between Protestantism and Catholicism in her Religious Settlement.

1558: Elizabeth I becomes Queen of England	1564: Elizabeth signs the Treaty of Troyes, confirming Calais belonged to France
1559: The Religious Settlement – This included The Act of Supremacy, The Act of Uniformity and the Royal Injunctions	1566: Archbishop of Canterbury, Matthew Parker, publishes 'Book of Advertisements'
1563: Labourers Act – Outlined wages: Labourers 3p per day, skilled craftsmen 4p per day, servants 8-9p per week.	1566: The Dutch Revolt against the Spanish Inquisition
1559: Visitations resulted in 400 clergy being dismissed	1568: The Genoese Loan
1560: The Treaty of Edinburgh agreed MQoS would give up her claim to the Scottish throne.	1568: Mary Queen of Scots arrives in England

Key Terms:	
Divine Right	Belief that the monarch's right to rule came from God.
Crown	With a 'capital' C, the Crown refers to the monarch and their government.
Courtiers	Were usually members of the nobility, they spent much of their life with Elizabeth.
Extraordinary Taxation	Occasional, additional taxation to pay for unexpected expenses, especially war.
Militia	A military force of ordinary people, rather than soldiers, usually raised in an emergency.
Succession	The issue of who was going to succeed the throne after the existing monarch died.
Roman Catholic	The form of Christianity followed throughout the whole of Western Europe until the 16 th century. Catholic saw the Pope as the head of the Church.
Queen Regnant	'Regnant' is a Latin word meaning 'reigning' Elizabeth was Queen Regnant because she ruled in her own right.
Mass	Catholic service in which they are given bread and wine. Catholics believed that this involved a miracle: the bread and wine is turned into the body and blood of Christ.
The Reformation	A challenge to the teachings and power of the Roman Catholic Church. This movement is said to have begun in Europe in 1517.
Sacraments	Special Church ceremonies, e.g. Baptism, Communion, Marriage.
Clergy	Religious leaders such as bishops and priests.
Ecclesiastical	An adjective used to describe things to do with the Church.
Royal Supremacy	This is when the monarch is head of the Church
Pilgrimage	A journey to an important religious monument, shrine or place.
Saints	A saint is someone who lived an exceptional, holy life. To be made a saint by the Catholic Church several conditions have to be met, including having lived a good life.
Recusants	Catholics who were unwilling to attend Church services laid down by the Elizabethan religious settlement.
Papacy	The system of Church government ruled by the Pope
Heretics	People who have controversial opinions and beliefs at odds with those held by the rest of society, but especially those who deny the teachings of the Catholic Church.
Martyr	Someone who is killed for his or her beliefs, especially religious beliefs.
Holy Roman Empire	A large group of different states and kingdoms covering a large area of central Europe, including parts of modern Germany, Poland and Austria. Each state had its own ruler and the leaders of the 7 largest countries elected a Holy Roman Emperor.
Excommunicated	A very severe punishment, imposed by the Pope, expelling people from the Catholic Church

History : Paper 2 Early Elizabethan England

Key Topic 2: Challenges to Elizabeth at home and abroad 1569-88

Elizabeth faced many **serious threats** both from within England and abroad. In the north of England members of the Catholic nobility wanted to overthrow her and put Mary Queen of Scots on the throne. Her **failing relationship** with Spain also led Philip II to support these plots against her and attempt to restore Catholicism. The **rivalry** between England and Spain was not just religious, but also trade and political power. This led to further conflict in the **New World** as English privateers clashed with Spanish over new territories and plunder. Sir Francis Drake was one of Spain's main adversaries in the New World, he brought large amounts of wealth back to England and was favoured by Elizabeth, causing further tension. By the mid-1580s England and Spain were at war, despite Elizabeth's best efforts to avoid a conflict. Philip planned an invasion of England and in 1588 he launched his **Armada**.

This is a famous portrait of Elizabeth representing her defeat of the Spanish Armada and the 'age of exploration'.

The Spanish Armada attacked in 1588.



1569: The Revolt of the Northern Earls
1570: Papal Bull excommunicates Elizabeth I
1571: Ridolfi plot has Philip II's backing
1574: Catholic priests are first smuggled into England
1576: Pacification of Ghent signed
1577: Drakes circumnavigation begins
1581: Elizabeth knights Drake on the Golden Hind

1583: The Throckmorton Plot
1584: The Treaty of Joinville allied France and Spain against Protestantism
1585: The Treaty of Nonsuch Elizabeth promised to help the Dutch
1586: The Babington Plot The Treaty of Berwick making England's northern borders more secure
1587: Mary Queen of Scots executed The Singeing of the Kings Beard
1588: The Spanish Armada is spotted in the English Channel

Key Terms:	
Conspiracy	A secret plan with the aim of doing something against the law.
Papal Bull	A written order issued by the pope.
Council of the North	Implements Elizabeth's laws and authority in the north of England as it was far from London. The North was often unstable and susceptible to raids from the Scottish. The council could act in times of emergency.
Hanged, drawn and quartered	Punishment used for treason, the accused would be hanged until near dead, cut open, have their intestines removed and then chopped into four pieces.
Cipher	A secret way of writing code
Agents Provocateurs	French term referring to agents who become part of a group suspected of wrongdoing, and encourage other members to break the law so that potential threats can be identified and arrested.
Foreign Policy	The aims and objectives that guide a nation's relations with other states. The general aim is to benefit the nation. Objectives can include trade, expanding into more territory, gaining more economic resources etc. Foreign policy can be defensive (defending what you have) or aggressive (conquering other lands)
New World	North and South America. Europeans were only aware of their existence from 1492.
Privateer	Individuals (usually merchants or explorers) with their own armed ships that capture other ships for their cargoes, often with the support or authorisation of their government.
Circumnavigate	To travel all the way around the world
Autonomy	The right to self-government, so people of one country can manage its own affairs.
Expeditionary Force	An armed force sent to a foreign country to achieve a specific function or objective.
Mercenary	A soldier who fights for money rather than a nation or cause.
Fireships	Empty ships set on fire and sent in the direction of the enemy to cause damage and confusion.
Propaganda	Biased information used to promote a point of view.
New Albion	A region in north California which Drake claimed in Elizabeth's name.
The Dutch Revolt	Philip II of Spain persecuted the Dutch Protestants, leading to a revolt in 1566 that lasted decades
The Revolt of the Northern Earls	The Catholic northern Earls devised a plan to overthrow Elizabeth and restore Catholicism in England. It failed when Spanish support failed to arrive, in the aftermath treason laws became much harsher,
The Ridolfi Plot	Ridolfi was an Italian banker living in England, who was a spy for the pope. He planned to murder Elizabeth and had the support of the pope. He planned to put MQoS on the throne, but Elizabeth's spies uncovered the plot.
The Throckmorton Plot	Throckmorton planned for the French to invade England and put MQoS on the throne, again the plot was uncovered by Elizabeth's spies and life became harder for Catholics again.
The Babington Plot	This plot again focused on murdering Elizabeth and putting MQoS on the throne, this plot led to her execution. 22

History : Paper 2 Early Elizabethan England

Key Topic 3: Elizabethan society in the Age of Exploration

Elizabeth I's reign was a time of **expansion**, with growth in many different areas of society and daily life. There were **new territories** to be conquered in the New World, where it was believed there were great fortunes to be made. This opened up more opportunities in commerce. There was also expansion in ideas and **different ways of thinking**, including poetry, drama, philosophy and science. This affected what was taught in **schools and universities**. Plays, sports, games and other pastimes gave people a break from their worries. For Elizabeth, her courtiers and the nobility, these worries meant concerns over England's religious problems or the threat of war with Spain. For business owners, merchants and skilled craftsmen there were **economic problems**: trade could be badly affected by poor foreign relations. When there were problems, businesses failed and unemployment rose. For the landless poor, and those unemployed, people faced poverty and even starvation.

Many consider Elizabethan England as an 'age of exploration'.



Elizabethans had many different forms of pastimes, including an early form of tennis and football.




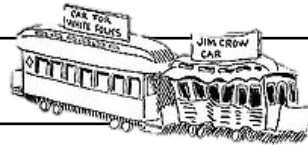


Quando pila et sphaera flautibus operari solent. Sic est sic tunc den Ballen schiessen / Corpus est latus pectus est brevis. / Erfrisch ich mir durch Krug und Maas / Erfrisch ich mich durch Krug und Maas

1563: Statute of Artificers ensured that poor relief was collected	1585: Colonists set sail for North America and being the colonisation of Virginia
1569: Mercator map was developed	1586: Surviving colonists abandon Virginia and return to England
1572: Vagabonds Act aimed to deter vagrancy	1587: The Rose theatre was built on London's Southbank
1576: Poor Relief Act to distinguish between the able and impotent poor and to help the able find work.	1587: New group of colonists arrive in Virginia and establish a colony at Roanoke
1580: Drake returns from circumnavigating the globe with spices, treasure and tales of Nova Albion.	1590: English sailors arrive at Roanoke only to find it abandoned. All the colonists had disappeared.
1583: Elizabeth established The Queen's Men a theatre company.	

Key Terms:

Social Mobility	Being able to change your position in society
Humanists	Believed that education was important and wanted people to stop being superstitious.
Apprentice	Someone learning a trade or a new skill. In Elizabethan times, apprentices were not paid. Once qualified, skilled craftsmen usually enjoyed a very good standard of living.
Petty Schools	Boys whose parents could afford to send them started their education here, they would learn reading, writing and basic Arithmetic (maths).
Dame Schools	Provided a basic education for girls, for most girls education was focused on the home e.g. bake, brew and sew.
Rhetoric	The art of public speaking
Rural depopulation	When the population of the countryside falls as people move away in search of a better life.
Arable Farming	Growing crops on farm land.
Subsistence Farming	Growing just enough to feed the family but not to sell.
Enclosure	Replacing large open fields with individual fields belonging to one person.
Vagabonds	Vagabonds or vagrants, were homeless people without jobs, who roamed the countryside begging for money, perhaps stealing or committing other crimes in order to survive.
Economic recession	When a fall in demand leads to falling prices and businesses losing money. This can lead to businesses failing and unemployment going up.
Impotent/Deserving Poor	Those who were unable to work because of age or illness.
Able bodied/Idle Poor	Those who were fit to work and therefore were treated more harshly.
Poor Relief	Financial help for the very poor, this was paid by a special local tax, the poor rate.
Astrolabe	An instrument used by sailors to help with navigation at sea, it was circular.
Quadrant	Similar to an astrolabe, it was used by sailors to help with navigation at sea, it was the shape of a quarter circle.
Mercator Map	It used parallel and evenly spaced lines of longitude and latitude to place lands more accurately on a map.
Colonies	Lands under the control or influence of another country, occupied by settlers from that country
Monopoly	When one person, or company, controls the supply of something. This means that they can charge whatever price they like for it.
Barter	Exchanging goods for other goods, instead of paying for something outright.
Virginia	An area in North America, there were several failed attempts to colonise this area during Elizabeths reign.
Golden Hind	Drake's ship used to circumnavigate the globe.

Key Terms:	
CORE	Congress of Racial Equality – led by James Farmer. 
NAACP	National Association for the Advancement of Coloured People – Created in the early 1900s. 
SCLC	Southern Christian Leadership Conference – A group led by Martin Luther King.
Ku Klux Klan	A white supremacist group based in the south who used violence against African Americans.
Boycott	A planned group refusal to do something. E.g. Boycott the bus would mean people would refuse to use the bus.
Constitutional	The written law followed in the USA. 
Supreme Court	The highest court in USA.
Senate	The upper house of the US government.
Deep South	The Deep South is a region in Southern USA, referring to states most dependent on slaves during the pre-Civil War period and became a major site of racial tension.
Ghettos	Name given to black neighbourhoods in USA with segregated conditions and widespread poverty.
Inequality	The state of being unequal in status, rights, or opportunities.
Discrimination	The unjust or prejudicial treatment of different categories of people.
Segregation	The action of making someone or something apart from others. For example, separating toilet facilities for different racial groups.
Integration	The bringing together of people from the different groups. 
Jim Crow Laws	State and local laws that enforced racial segregation in Southern USA between 1876-1965.
Southern Manifesto	Was a document written in February and March 1956 in government that was opposition to racial integration of public places.

History Paper 3 USA: Conflict at home and abroad

Key Topic 1: The development of the civil rights movement, 1954-60

By the early 1950s, slavery had long been abolished and, by law, black Americans were equal to white Americans and had the **same rights**. However, black Americans were **not actually treated as equal**. All over the USA, most black Americans lived in the worst parts of towns and cities, with the worst hospitals, schools and other facilities. They did the least desirable jobs and were often the 'last hired, first fired'. Many jobs were beyond their reach because training for these jobs was not given to black people.

The situation was **worse in the South**. In most southern states, **local laws** meant that black Americans could not use the same toilets as white people, swim in the same swimming pool, ride in the same part of the train or eat in the same restaurant. This system of **segregation** kept black and white communities **separate**. Black Americans had the right to vote but were stopped from doing so by a system that deliberately discriminated against them. They were also stopped by threats and violence.

The reaction of black Americans depended on where they lived and what their circumstances were. Some black Americans, especially in the South, tried to improve their lives inside the system enforced by white people. Others joined **civil rights organisations** to campaign for **equality**. Whilst this was successful to some degree, they faced a lot of **opposition**.

Key events:

- 1896** - Supreme Court decision of Plessy vs. Ferguson – 'separate but equal'
- 1940** - NAACP set up the Legal Defence Fund
- 1954** - Brown V Topeka case makes segregation in education illegal
- 1955** - Murder of Emmet Tills
- 1955-1956** - Montgomery Bus Boycott
- Nov 1956** - Supreme Court decides segregation on buses is illegal
- Jan 1957** - Founding of SCLC
- Sept 1957** - Little Rock High School
- Sept 1957** - Civil Rights Act

Rosa Parks







Jo Ann Robinson



MLK



Key Terms:	
Sit-in	A method of peaceful protest where black Americans sat in white only cafes and restaurants and refused to leave.
SNCC	Student Nonviolent Coordinating Committee. 
Freedom Riders	Civil rights activists who rode interstate buses into segregated southern United States from 1961 onwards. 
Propaganda	A way of controlling public attitudes. Propaganda uses things like newspapers, posters, radio and film, to put ideas into people's minds and therefore shape attitudes.
Attorney General	The head of the US Department of Justice. 
Nation of Islam	An African American and Religious movement. This was the group Malcolm X belonged to.
Separatism	Keeping people completely separate based on race/religion/gender etc. 
Black Power	A movement that aimed for self-determination of black Americans in the 1960s and 1970s.
Kerner Report	A report by the National Advisory Commission on Civil Disorders. It was named after Otto Kerner, the Chair of the Commission.
The Anti-Vietnam War Movement	A small anti-war movement that grew into an unstoppable force, pressuring American leaders to reconsider its commitment.

History Paper 3 USA: Conflict at home and abroad

Key Topic 2: Protest, progress and radicalism, 1960-75

Key events:

- 1960 – Greensboro sit-in
- 1960 – SNCC set up
- 1961 – Freedom Riders
- 1962 – James Meredith case
- 1963 - Campaign 'C'
- 1963 – MLK 'I have a dream' speech
- 1963 – Kennedy assassinated
- 1964 – Freedom Summer
- 1964 – Civil Rights Act
- 1965 – Assassination of Malcom X
- 1965 – Selma
- 1965 – Voting Rights Act
- 1966 – March against fear
- 1966 – Black Panthers set up
- 1968 – Assassination of MLK
- 1968 – Kerner reports
- 1969 – Nixon becomes president

From 1960, **support** for the civil rights movement grew. The different civil rights groups worked together to plan and carry out larger and larger **non-violent** direct action protests in the **South**. However, while methods of protest changed, the reaction of white people in the South did not. The resulting **violence** from white people inspired disgust around the country and the world. Images such as police setting dogs on black children showed America in a shocking light. The USSR was able to score points in the **Cold War** by pointing out that while the US claimed it supported democracy and freedom, it could not even protect its black citizens from violence.

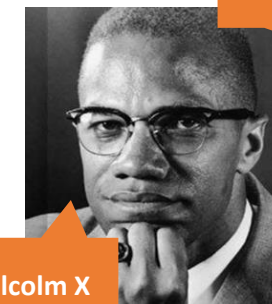
This **criticism**, from both inside and outside the US, forced the **federal government** to act decisively. By 1966 there was both a **Civil Rights Act** and a **Voting Rights Act** in place to protect the rights of black Americans. However, at this point, many white supporters of civil rights felt that their work was done; that the struggle was over. In reality, equality was still a long way off.

In the late 1960s there were very different images of black Americans on TV screens. Black Americans were **rioting** in the streets of cities across the country, especially in the **North**. In the minds of many Americans in 1975, the image of the civil rights movement was not of a defenceless black person being attacked by a white policeman, but of a young black man throwing bricks or even petrol bombs in one of the nation's many **ghettos**.

MLK



Stokely Carmichael










Malcolm X



The Greensboro sit-in, where 4 black students from a local college demanded to be served at a whites only lunch counter in Woolworths, Greensboro.



Topic						
Types of Crime	Crime against Person – A criminal action involving a victim’s body, mind, or identity – kidnapping, murder, rape, identity theft. Crime against Property – A criminal action involving private or public property – theft, vandalism, destruction. Crime against State – A criminal action involving the sovereignty, property, or authority of the state – treason, spying, sabotage.					
Reasons for Crime 	<u>Upbringing</u> The conditions, experience, and values learnt by a person during childhood.	<u>Mental Illness</u> Psychological issues may affect a person’s ability to control themselves, or understand right/wrong.	<u>Poverty</u> Living in a constant state of need and desperation.	<u>Addiction</u> Will affect self-control. Committing crime to maintain the habit.	<u>Emotional</u> Crimes of passion, hate, anger, greed.	<u>Political</u> Crimes committed in protest or opposition to authority and society. i.e. protesting.
Aims of Punishment 	<u>Protection</u> – A criminal is removed from society to protect citizens from them; prison term. <u>Deterrence</u> – A criminal is punished as an example to stop others from committing the same crime; public flogging/execution. <u>Reformation</u> – A criminal is (re)educated so they do not repeat the crime; educational programme. <u>Retribution</u> – Punishment meant to give victims sense of closure; execution. <u>Vindication</u> – Punishment ensures the Law is respected; driving penalties, community service. <u>Reparation</u> – Society/victim compensated for the damage/loss done by criminal activity; fine.					Some punishments are automatic, like fines or detention. Others require a Judge who decides from a range of available punishments based on the crime that has been committed. Most punishments will fulfil several aims at the same time.
Forgiveness 	<u>Benefits The Victim</u> Being the victim of a crime will impact your life. You may fear for your safety, become mistrusting and withdraw from society and friends. Forgiving the criminal, even for major crimes such as murder, can help the victim come to terms with what happened and help recovery.	<u>Benefits The Criminal</u> A criminal may believe they are a bad person and cannot change. Receiving forgiveness from their victim might help the criminal reform and stop.	<u>Forgiven Not Forgotten</u> Forgiveness does not mean the criminal should not be punished. A judge may give a less harsh punishment if the criminal has tried to repent and the victim has forgiven them.			
Types of Punishment 	<u>Fine/Community Service</u> Minor crimes only require a fine or community service. The intention is for the criminal to help repair and maintain the community. It would be too expensive to lock up all criminals.	<u>Prison Sentence</u>  Prisons provide a place to put criminals for a period of time. They provide protection by removing the criminal from society, and can also be used for reformation.	<u>Corporal Punishment</u>  Was widely used on children and adults as a means of deterring and reforming bad behaviour. Includes anything that causes harm/pain, <i>but not death</i> . Still used throughout the world, but not in most developed countries.	<u>Capital Punishment</u>  Major crimes should be given the harshest punishment; the death penalty. This will deter others from committing the crime and protects society by killing the very bad criminal. Still used throughout the world, but not in most developed countries.		

Bye Laws	Created and apply to local council areas. Could result in fines, but not a criminal record	Justice	Making things fair. A balance when bad things have happened
Capital Punishment	Death Penalty; A form of punishment where the offender is killed for their crime	Law	The rules which govern a country/society. Meant to keep the general population safe and orderly
Community Service	Working in the community to pay back for a criminal act	Parole	When a criminal is released from prison, but is still monitored by police for a period of time
Conscience	An internal sense of right/wrong. A 'voice' in our head when we feel guilty	Poverty	Not having enough money to be able to live a comfortable life
Corporal Punishment	Using physical pain as a punishment	Prison	A place where criminals are sent to withdraw their freedom as punishment
Crime	An action which is against the law and incurs a punishment	Probation order	Punishment; behaviour is monitored with the threat of greater punishment if a further crime is committed
Deterrence	An aim of punishment – preventing future criminals by harsh treatment of offenders	Punishment	Something negative done to criminals by the state
Evil	A thing that is morally wrong/wicked	Reformation	An aim of punishment – to try and reform criminals
Forgiveness	To show mercy and pardon someone for what they've done wrong	Repentance	Acknowledging that you have done wrong and wish to be forgiven
Hate Crime	A crime motivated by hatred e.g. racism, homophobia	Retribution	An aim of punishment – seeking a form of revenge on criminals

EVIDENCE



There is good and evil in the world. Evil exists and we can be tempted. HaSatan is a force tempting people to do evil. We can choose to act correctly and be rewarded.

Deterrence is an important aim of crime in Judaism. The Torah lists 36 offences which earn Capital punishment. Courts were discouraged from using it; it is a deterrence.

'an eye for an eye, a tooth for a tooth'- not taken literally in Judaism; it refers to compensation. Prison can take away someone's free choice. But for serious offences it offers reflection and teshuvah.

'Love your neighbour as yourself'. Judaism believes that we should not cause suffering.' Do not take revenge or bear a grudge'. Jews should forgive genuine repentance. Yom Kippur is an example of this.

'The law of the land is the law'. There should be a fair justice system. Community service may be seen as a fair punishment for minor offences as it keeps families together and offers rehabilitation.



Forgiveness is conditional according to **Islam**. It can only be granted when someone is genuinely sorry and committed to not repeating the offence.

Forgiveness is a central feature of **Christianity**; You should forgive 'seventy times seven'. Humans should follow the example of Jesus and forgive.

"We prescribed for them life for life, eye for eye, nose for a nose, ear for an ear, tooth for tooth, it will serve as atonement for his bad deeds". **Islamic** law includes the use of capital punishment for serious crimes.

Christianity in general does not support Capital punishment. It is against the sanctity of life and does not allow for reformation. 'Do not kill'.

"Cut off the hands of thieves whether they are man or woman, as punishment for what they have done – a deterrent from Allah". **Shariah** law includes the use of corporal punishment when given publicly, proportionately and where necessary.



More than 50% of young offenders were excluded from schools

Nearly half of all prisoners have no formal qualifications

Corporal Punishment banned in UK state-schools in 1986

There is one suicide per week in UK prisons

Victim Support is an organisation providing emotional and practical support for victims of crime

Community Payback offers offenders a chance to work in their local area and give back to the community. Punishment time is between 40-300 hours depending on the crime; this give a person 3-4 days' work per week

140 countries have abolished Capital punishment

Abolition of Death Penalty Act in UK 1965

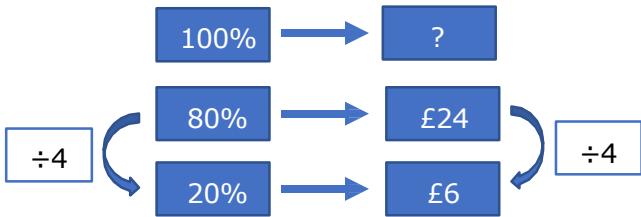
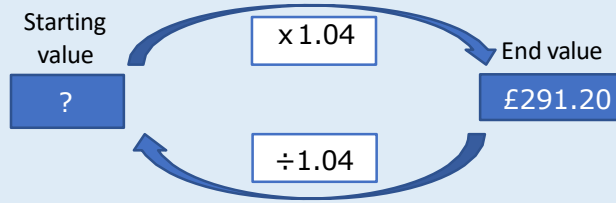
Interest, Growth and Decay

<p>Simple Interest (Growth)</p>	<p>A £200 loan earns 15% simple interest over 5 years. How much will be owed at the end of the 5 years?</p> <p>Work out 15% of £200 = £30</p> <p>£30 x 5 years = £150</p> <p>£200 + £150 = £350</p>
<p>Compound Interest (Growth)</p>	<p>A £200 loan earns 15% compound interest over 5 years. How much will be owed at the end of the 5 years?</p> <p>Here you need to use percentage multipliers.</p> <p>To increase by 15% five times (for each of the 5 years) you would multiply by 1.15 five times. A quick way of writing this is by using indices.</p> <p>£200 x 1.15⁵ = £402.27</p>
<p>Compound Depreciation (Decay)</p>	<p>A car was brought for £12,000. It depreciates in value by 20% per year. How much will the car be worth after 3 years?</p> <p>Here you need to use percentage multipliers.</p> <p>To decrease by 20% three times (for each of the 3 years) you would multiply by 0.8 three times. A quick way of writing this is by using indices.</p> <p>£12,000 x 0.8³ = £6,144</p>

Reverse Percentages

Reverse percentages help us to calculate the **original** price or value of something, when we only know the price or value after the increase or decrease has taken place.

Before we do this, it is important we know that 100% represents the whole amount or the full price of something. So, if something is increased by 20%, the amount we have now is worth 120%. If something is reduced by 5%, the amount we have is now worth 95%.

<p>Non – Calculator</p> <p>This could come up on a non-calculator paper, but they will usually give you nice numbers that will divide easily like the example here.</p>	<p>A shop has a 20% off sale. A shirt is now worth £24. What was the original price?</p> <p>So, £24 represents 80% of the value of the shirt</p>  <p>80% + 20% = 100%</p> <p>£24 + £6 = £30</p>
<p>Calculator</p> <p>On a calculator paper, the numbers are likely to be more difficult, so you will need to use percentage multipliers.</p>	<p>Some money has been put into a bank account with an interest rate of 4%. After a year, the total amount of money in the account was £291.20. How much money was invested?</p>  <p>£291.20 ÷ 1.04 = £280</p>

Sometimes, the phrase 'per annum' is used. This means the same as 'per year'. Annum is the Latin word for year.

Exams!

- A lot of these questions will involve money. Remember money should always be rounded to 2d.p.

Other Topics/Units this could appear in:

- Direct and inverse proportion
- Ratio
- A-level Units

MATHS Foundation Unit 14 - Multiplicative Reasoning

Speed

Speed is a compound measurement combining **distance** and **time**

Example

A car travels **120 miles** in **2 hours and 30 minutes**. Calculate the average **speed** of the car in **mph**.

The units of **speed** are **miles per hour** so the **distance** must be in **miles** and the **time** must be in **hours**.

Distance = 120 miles
Time = 2.5 hours

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

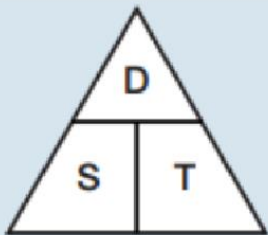
$$\text{Speed} = \frac{120}{2.5}$$

$$\text{Speed} = 48\text{mph}$$

The formula triangles can be used to help rearrange this equation to calculate distance or time.

Speed

$$\text{speed} = \frac{\text{distance}}{\text{time}}$$



Density

Density is a compound measurement combining **mass** and **volume**

Example

The **mass** of a metal block is **1.2kg** its **volume** is **40cm³**. Calculate the **density** of the metal in **g/cm³**.

The units of **density** are **g/cm³** so the **mass** must be in **grams** and the **volume** must be in **cm³**.

Mass = 1200 grams
Volume = 40cm³

$$\text{Density} = \frac{\text{Mass}}{\text{Volume}}$$

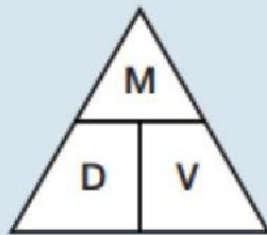
$$\text{Density} = \frac{1200}{40}$$

$$\text{Density} = 30 \text{ g/cm}^3$$

The formula triangles can be used to help rearrange this equation to calculate mass or volume.

Density

$$\text{density} = \frac{\text{mass}}{\text{volume}}$$



Pressure

Pressure is a compound measurement combining **force** and **area**

Example

Find the **pressure** exerted by a **force** of **240 Newtons** on an area of **3000cm²**. Give your answer in **N/m²**.

The units of **pressure** are **N/m²** so the **force** must be in **Newtons** and the **area** must be in **m²**.

Force = 240 Newtons
Area = 0.3m²

$$\text{Pressure} = \frac{\text{Force}}{\text{Area}}$$

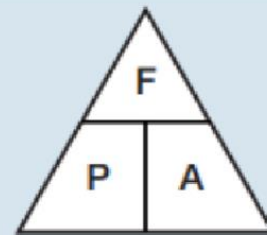
$$\text{Pressure} = \frac{240}{0.3}$$

$$\text{Density} = 800 \text{ N/m}^2$$

The formula triangles can be used to help rearrange this equation to calculate force or area.

Pressure

$$\text{pressure} = \frac{\text{force}}{\text{area}}$$



Keyword/Skill	Definition/Tips
Speed	How fast something is moving.
Distance	A measurement of how far something travels.
Time	Time is the ongoing sequence of events taking place. The past, present and future.
Density	A measure of how much matter is in a certain volume.
Mass	A measure of how much matter is in an object.
Volume	The amount of 3-dimensional space something takes up.
Pressure	Pressure is the force per unit area. The pressure exerted by a solid object onto another solid surface is the weight of the object divided by the area of the object's surface.
Force	A push or pull that acts upon an object .
Area	the amount of space taken up by a 2D shape or surface
Compound Measure	Compound measures are ones that involve two other measures of different types; examples include measuring speed in meters per second or defining density as mass divided by volume.

Exams!

- You need to know these formulae off by heart.
- You will get marks for substituting the values given in the question into the correct formula.

Other Topics/Units this could appear in:

- Coordinate Geometry
- Real-Life Graphs
- Mechanics

MATHS Foundation Unit 15 - Constructions, Loci and Bearings

Constructing Triangles – given 3 side lengths

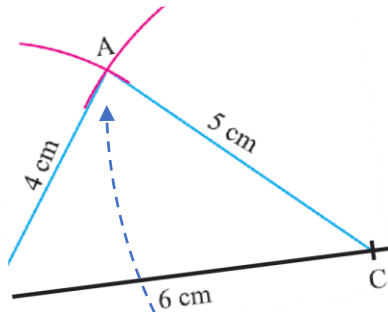
Using **ruler** and **compasses**, you can **construct** any triangle, given its three side lengths.

This triangle has side lengths 6cm, 5cm and 4 cm.

The 6cm line was drawn with a ruler.

Then arcs with radii 5cm and 4cm were constructed at either end of the 6cm line, using compasses.

The intersection point shows where the other vertex should be.



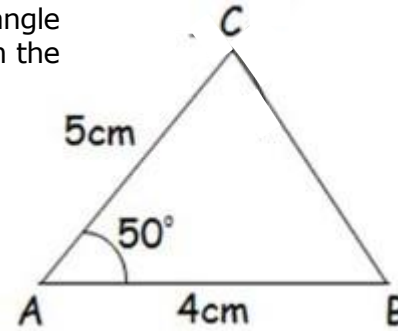
Constructing Triangles – given 2 sides and 1 angle

Using **ruler** and **protractor**, you can **construct** any triangle, given two of its side lengths and the angle between them.

This triangle has two side lengths 5cm and 4cm with a 50° angle between them.

The 4cm line is drawn first, then an angle of 50° is measured and marked from the end of the line.

A 5cm line is drawn at this angle.



don't rub these construction lines out – the examiner will want to see them!

Using **ruler** and **protractor**, you can **construct** any triangle, given two of its angles.

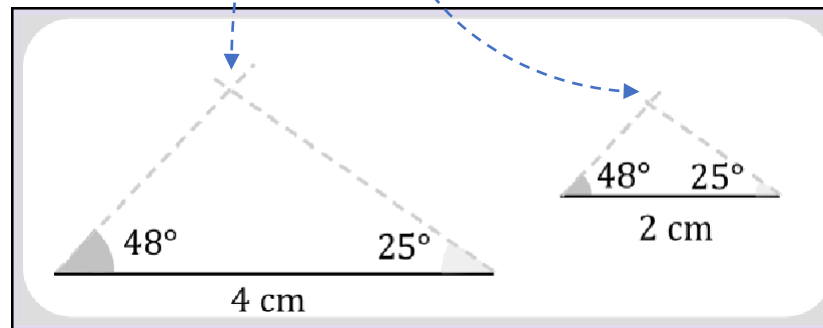
These triangles both have interior angles of 48° and 25° , but the side lengths are different.

Draw the side in between the two angles first; sometimes this is given to you in the question.

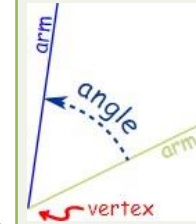
Then measure the angles from each end of the line – make sure the protractor is lined up correctly! Extend your construction lines until they intersect.

The intersection points show where the other vertex (corner) should be.

Constructing Triangles – given 2 angles



Keyword/Skill	Definition/Tips
Arc	Part of the circumference of a circle.
Vertex	A corner where two edges meet at a point.
Line segment	A section of a line, usually between two letters, such as AB.
Construct	Use ruler, pencil, protractor and/or compasses to accurately draw a given shape.
Angle	The corner point of an angle is called the vertex. And the two straight sides are called arms. The angle is the amount of turn between each arm.
Degree	The unit of measurement for turn, shown by the symbol $^\circ$ $90^\circ = \frac{1}{4}$ turn, $180^\circ = \frac{1}{2}$ turn, $270^\circ = \frac{3}{4}$ turn.
Adjacent	Next to one another.
Intersect (intersection)	Where two or more line segments cross or meet at a point.

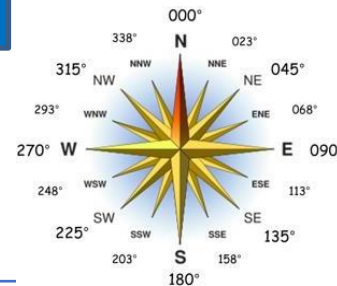
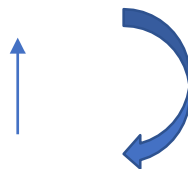


MATHS Foundation Unit 15 - Constructions, Loci and Bearings

Bearings are used to specify direction and are used to navigate ships and aeroplanes.

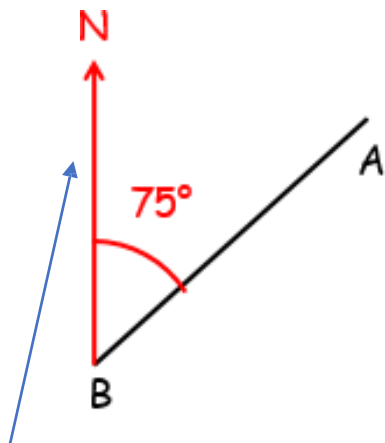
The key points to remember are:

1. Bearings are measured starting from North.
2. Bearings are always measured in a clockwise direction.
3. Bearings are always written in 3 figures (45° becomes 045°).



Measuring Bearings

Find the bearing of A from B.



Mark the North line at B. (You can draw this in if there isn't one).

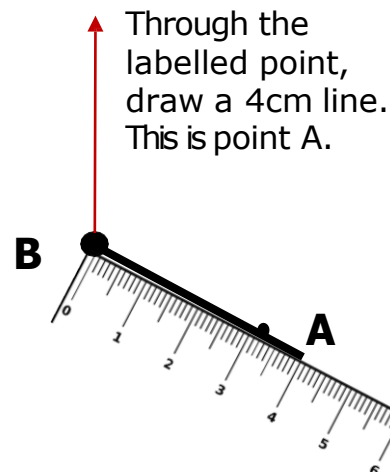
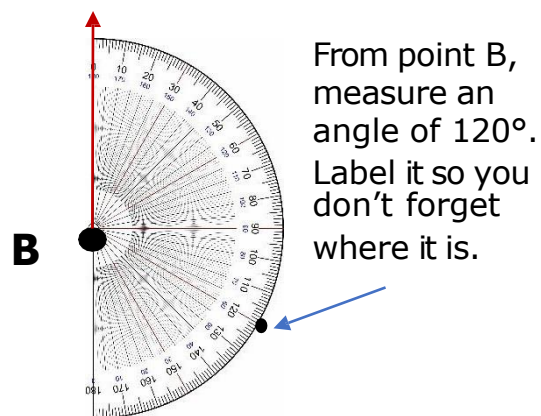
Measure the angle, clockwise from the North line to A.

Give the answer as a three figure bearing.

075°

Drawing Bearings

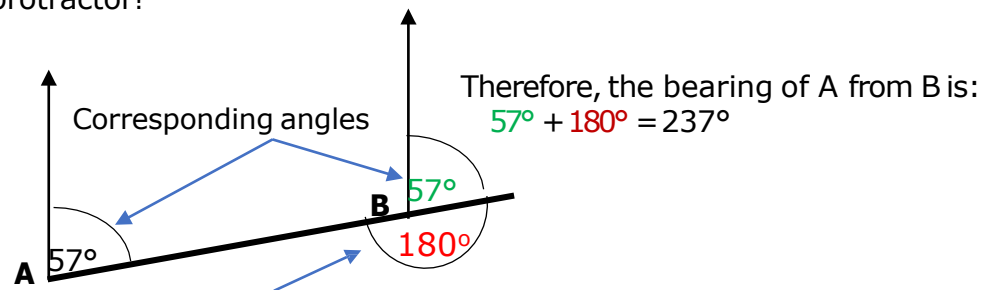
B is on a bearing of 120° from A and a distance of 4cm.



Calculating Bearings

Find the bearing of A from B.

You need to remember some angle facts to calculate these without a protractor!



Keyword/Skill	Definition/Tips
Bearing	The angle measured in degrees clockwise from North.
Degree	A measure for angles. There are 360 in a full turn.
Perpendicular	A line that is at a right angle, 90°, from another line
North line	A line facing North that all bearings are measured from.
Clockwise	Moving in the direction of the hands of a clock.
Angle	The amount of turn between two lines about their common point.
Bisect	To divide something into two equal parts.
Protractor	An instrument used to draw or measure angles.

Other Topics/Units this could appear in:

- Properties of Shapes
- Angle Facts
- Mensuration

MATHS Foundation Unit 16 - Quadratic Equations and Cubic Graphs

$$ax^2 + bx + c$$

c = **y-intercept** (where the graph CUTS the Y axis)

A quadratic graph is called a parabola.

They are symmetrical.

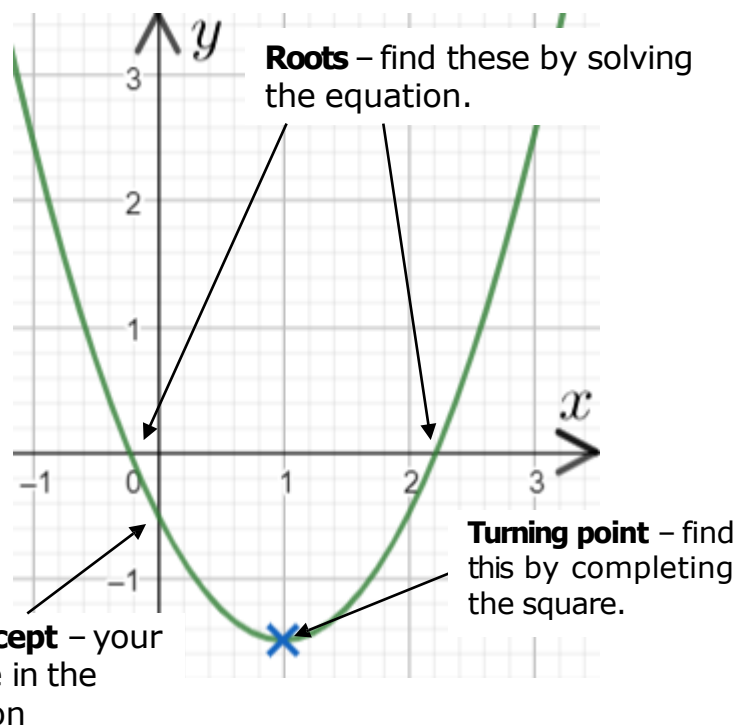
When **a** is positive



When **a** is negative



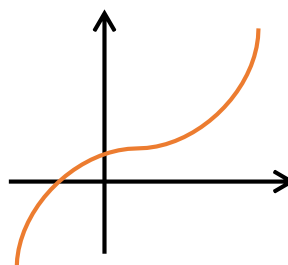
Features of a Quadratic Graph



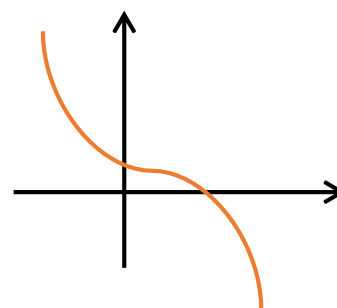
Other Graphs you Need to Know:

Cubic: $ax^3 + bx^2 + cx + d$

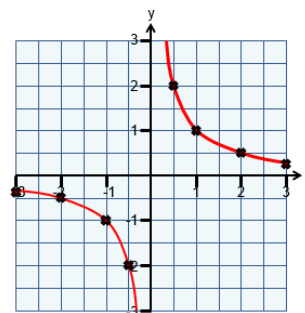
When **a** is positive



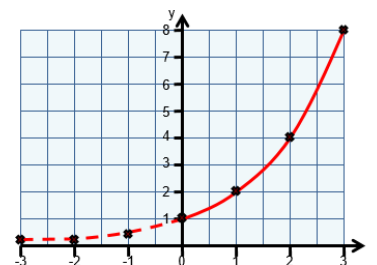
When **a** is negative



Reciprocal: $y = \frac{1}{x}$



Exponential: $y = 2^x$



Keyword/Skill	Definition/Tips
Quadratic	An equation that has an x^2 as the highest power.
Function	A mathematical relationship between two values.
Solve	To find a value that makes an equation true.
Expand	To multiply out one or more sets of brackets.
Factorise	To put the expression back into brackets.
Simplify	To make an expression easier by expanding or factorizing.
Graph	A drawing or diagram used to show information.
Curve	A line that is not straight
Coefficient	A number which multiplies a variable.....2 is the coefficient of x in $2x$.
Cubic	An equation that has an x^3 as the highest power.

Other Topics/Units this could appear in:

- Graphs of Trig Functions
 - Using Graphs of Circles, Cubes and Quadratics
 - Gradient and Area Under Graphs
- A-Level – Core:
- Algebra & Functions

MATHS Foundation Unit 16 Quadratic - Equations and Cubic Graphs

Solving Quadratic Equations by Factorisation

You must be able to factorise quadratics in order to solve quadratic equations using this method.

Example 1

Solve $x^2 + 6x + 5 = 0$

This factorises into $(x + 5)(x + 1) = 0$

Each bracket needs to equal 0

$$\begin{array}{l} x + 5 = 0 \quad \text{or} \quad x + 1 = 0 \\ \mathbf{x = -5} \quad \text{or} \quad \mathbf{x = -1} \end{array}$$

Example 2

Solve $x^2 + 3x - 10 = 0$

This factorises into $(x + 5)(x - 2) = 0$

$x + 5 = 0$ or $x - 2 = 0$

$$\mathbf{x = -5} \quad \text{or} \quad \mathbf{x = 2}$$

Example 3

Solve $x^2 - 6x + 9 = 0$

This factorises into $(x - 3)(x - 3) = 0$

This equation has repeated roots

$(x - 3)^2 = 0$

This means there is only one solution, $\mathbf{x = 3}$

In order to solve quadratic equations, you need to be able to recognise when you can solve by factorising or when you need to use the quadratic formula or complete the square. Sometimes it will tell you which method to use in the question.

You will also need to be able to solve problems which involve solving quadratic equations too.

Solving Quadratic Equations Using the Quadratic Formula

Example

Solve $3x^2 + 8x + 2 = 0$

Give your solutions correct to 3 significant figures.

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

You need to learn this!

This is a hint for you to use the formula as you will not be able to solve by factorising. You will need to use a calculator.

Figure out a, b and c

a = 3 b = 8 c = 2

$$x = \frac{-(8) \pm \sqrt{(8)^2 - 4(3)(2)}}{2(3)}$$

Using brackets here for a, b and see will help to avoid calculation errors.

You will gain 1 mark for substituting in a, b and c

$$\begin{aligned} &= \frac{-8 \pm \sqrt{64 - 24}}{6} && \text{1 mark for simplifying} \\ &\swarrow \quad \searrow \\ &= \frac{-8 + \sqrt{40}}{6} && = \frac{-8 - \sqrt{40}}{6} \\ &\swarrow \quad \searrow \\ \mathbf{x = -0.279} &&& \mathbf{x = -2.39} \end{aligned}$$

1 mark for both

Exam Tips

Quadratic formula questions will appear on one of the calculator papers (2 or) often worth 3 marks.

Keyword/Skill	Definition/tip
Quadratic (expression/equation)	An expression/equation involving x^2
Factorise	An expression written as a product of its factors.
Quadratic formula	A formula for solving quadratic equations. The solution of the equation $ax^2 + bx + c = 0$ is given by $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
Completing the square	A method of solving quadratic equations which involves rewriting the equation $x^2 + px + q$ in the form $(x+a)^2 + b$
Solution	A value or values that we can put in place of a variable (such as x) that makes the equation true.
Coefficient	A number used to multiply a variable. Eg. $3x$ (3 is the coefficient)

Other topics/Units this could appear in:

- A-level
- Pure 1
- Quadratics
- Equations and Inequalities

MATHS Foundation Unit 17 - Circles

Diameter and Radius of a Circle

The diameter is double the size of the radius.

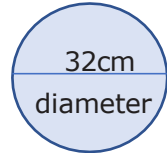
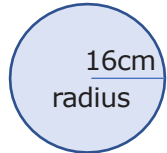
Example:

A circle has a radius of 16 cm. What is the diameter?

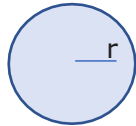
Radius = 16cm

$6\text{cm} \times 2 = 32\text{cm}$

Diameter = 32cm



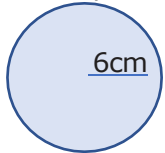
Area of a Circle



$$\text{Area} = \pi r^2$$

$$= \pi \times \text{radius}^2$$

Example: Find the area of the circle.



Radius = 6cm

$$\text{Area} = \pi r^2$$

$$= \pi \times 6^2$$

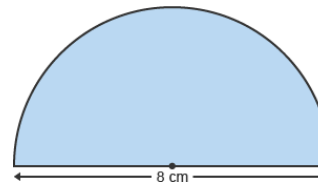
$$= 36\pi\text{cm}^2 = 113.1\text{cm}^2$$

Semicircles

The perimeter of a Semicircle:

Remember that the **perimeter** is the distance round the outside.

A semicircle has two edges. One is half of a circumference and the other is a diameter.



$$C = \pi d$$

$$= 3.14 \times 8$$

$$= 25.12\text{cm}$$

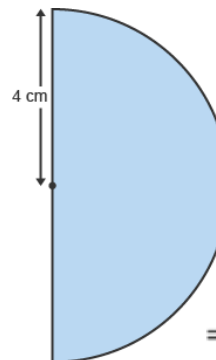
Remember this is the circumference of the whole circle, so now we need to half this answer and remember to add on the other edge.

$$25.12 \div 2 = 12.56\text{cm}$$

$$\text{Total Perimeter} = 12.56 + 8 = 20.56\text{cm}$$

The Area of a Semicircle:

A semicircle is just half of a circle. To find the **area** of a semicircle we calculate the area of the whole circle and then half the answer.



$$A = \pi r^2$$

$$= 3.14 \times 4 \times 4$$

$$= 50.24\text{cm}^2$$

$$= 50.24 \div 2 = 25.12\text{cm}^2$$

Circumference of a Circle

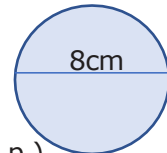
The circumference of a circle is the distance around the circle. It is the correct name for the perimeter of a circle.

Circumference = $\pi \times$ diameter

Example: Find the circumference of this circle

Circumference = $\pi \times d$

$$= 25.13\text{cm (2d.p.)}$$



You may be given the radius instead of the diameter, so you need to know the relationship between them (this information is stated above).

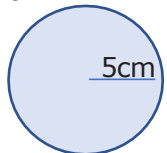
Example:

Radius = 5cm.

Diameter = $5\text{cm} \times 2 = 10\text{cm}$

Circumference = $\pi \times 10$

$$= 31.41\text{cm (2d.p.)}$$



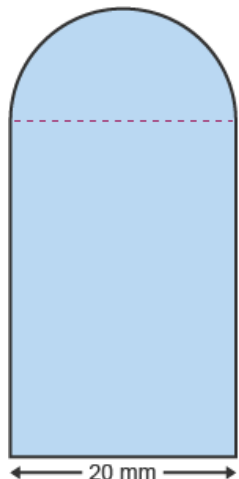
Exam!

In an exam it may ask you for your answer in terms of π . This means instead of doing the final calculation you just leave it with π in the answer e.g. $10\pi\text{cm}$

The Area of a Compound Shape

This shape is made up of a rectangle and a semicircle.

To find the total area we just find the area of each part and add them together.



Area of rectangle = $l \times w$

$$= 20 \times 30$$

$$= 600\text{mm}^2$$

Area of circle = πr^2

$$= 3.14 \times 10 \times 10$$

$$= 314\text{mm}^2$$

Area of semicircle

$$= 314 \div 2 = 157\text{mm}^2$$

$$\text{Total area} = 600 + 157$$

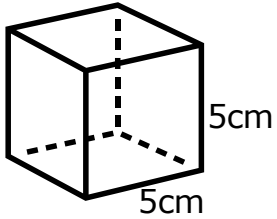
$$= 757\text{mm}^2$$

Keyword/Skill	Definition/Tips
Area	The size of a surface. The space inside a 2D surface.
Perimeter	The distance around a two-dimensional shape.
Formula	A rule or fact written with mathematic symbols.
Semi-Circle	It's half of a circle
Accuracy	How close a measured value is to the actual (true) value.
Surface Area	The total area of the surface of a three-dimensional object.
Segment	The smallest part of a circle made when it is cut by a line.
Arc	Part of the circumference of a circle or any curve.
Sector	A "pie-slice" part of a circle.
Circumference	The distance around the edge of a circle (or any curvy shape). It is a type of perimeter.
Radius	The distance from the centre to the circumference of a circle. It is half of the circle's diameter.
Diameter	The distance from one point on a circle through the centre to another point on the circle.
Pi	The ratio of a circle's circumference to its diameter. The symbol is $\pi = 3.14159265358979323846\dots$ (the digits go on forever without repeating)

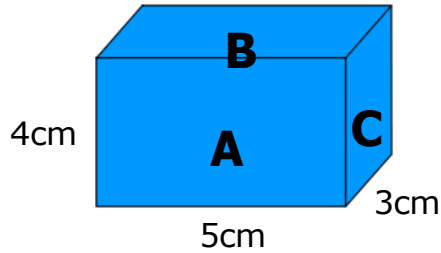
Other Topics/Units this could appear in:

- Properties of shape and simple angle facts
- Perimeter and Area
- Mensuration
- Similarity in 2D & 3D
- Circle Geometry – Gradients & Tangents
- Circle Theorems
- Coordinate Geometry and Circles


Cubes and cuboids



Each face has the same area.
 Area of one face:
 $5 \times 5 = 25\text{cm}^2$
 Total surface area:
 $25 \times 6 = 150\text{cm}^2$

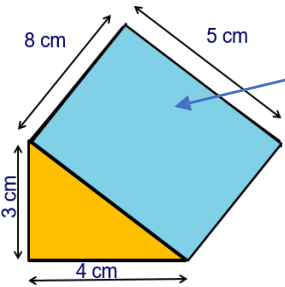


A cuboid will have 3 pairs of equal faces:
 $2 \times A = 2 \times (5 \times 4) = 40\text{cm}^2$
 $2 \times B = 2 \times (5 \times 3) = 30\text{cm}^2$
 $2 \times C = 2 \times (3 \times 4) = 24\text{cm}^2$
 Surface Area = $40 + 30 + 24 = 94\text{cm}^2$

Keyword /Skill	Definition/Tips
Prism 	A 3D shape that has two identical ends and flat sides.
Cross Section	A view into the inside of something by cutting through it.
Diameter	The distance from one point of a circle to another passing through the centre. It is twice the radius.
Radius	The distance from the centre of the circle to the circumference. It is half the diameter.
Formula/Formulae	A rule or fact written with mathematical symbols. ($V = l \times w \times h$).
Compound Shape	A compound shape is made up of two or more basic shapes.
Face	A flat surface of any object.
Perimeter	The distance around the outside of a shape.
Area	The space inside a 2D shape.
Surface Area	The total area of the outside of a 3D shape.
Volume	The amount of 3-dimensional space something takes up.

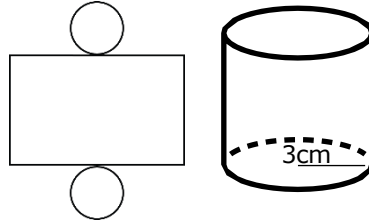
Triangular Prisms & Cylinders

Make sure you find the area of each face on a prism. They may not be all the same shape!



$5 \times 8 = 40\text{cm}^2$
 $3 \times 8 = 24\text{cm}^2$
 $4 \times 8 = 32\text{cm}^2$
 $(3 \times 4) \div 2 = 6\text{cm}^2$
 $(3 \times 4) \div 2 = 6\text{cm}^2$
 $40 + 24 + 32 + 6 + 6 = 108\text{cm}^2$

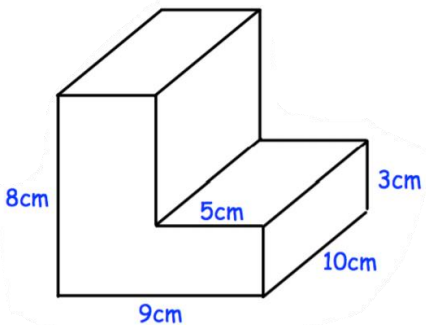
A cylinder's surface is made from two circles and a rectangle, you can see this from the net of a cylinder. The dimensions of the rectangle are the height of the cylinder and the circumference of one of the circles.



Area of the two circles:
 $2 \times (\pi \times 3^2) = 56.6\text{cm}^2$ (1d.p.)

Area of the curved surface:
 Circumference \times Height
 $(2 \times \pi \times 3) \times 10 = 188.5\text{cm}$ (1d.p.)
 Total: $56.6 + 188.5 = 245.1\text{cm}^2$

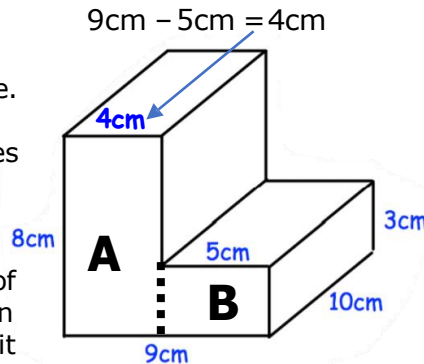
Compound Shape Prisms



The area of the bottom and the top of the shape will be the same.

The area of the left and right sides of the shape will also be the same.

You then need to split the face of the shape up into shape you can find the area of, in this example it will be two rectangles.



Area of the top and bottom:
 $2 \times (9 \times 10) = 180\text{cm}^2$
 Area of the left and right:
 $2 \times (8 \times 10) = 160\text{cm}^2$
 Area of rectangle A (front & back):
 $2 \times (8 \times 4) = 64\text{cm}^2$
 Area of rectangle B (front & back):
 $2 \times (5 \times 3) = 30\text{cm}^2$

Total Surface Area:
 $180\text{cm}^2 + 160\text{cm}^2 + 64\text{cm}^2 + 30\text{cm}^2 = 434\text{cm}^2$

Other topics/units this may appear in:

- Perimeter and Area
- 3D forms
- Mensuration

Maths GCSE Higher Unit 14 - Further statistics

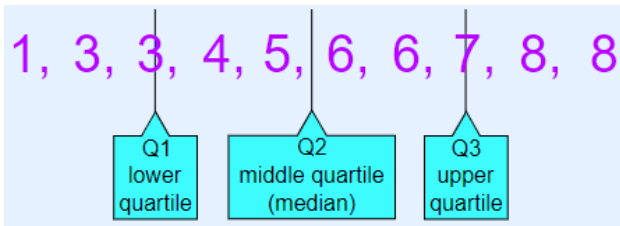
Quartiles

Quartiles are the values that divide a list of numbers into quarters:

- Put the list of numbers **in order**
- Then cut the list into **four equal parts**
- The Quartiles are at the "cuts"

Example: 1, 3, 3, 4, 5, 6, 6, 7, 8, 8

The numbers are already in order, cut the list into quarters:



In this case Quartile 2 is half way between 5 and 6:

$$Q2 = (5+6)/2 = 5.5$$

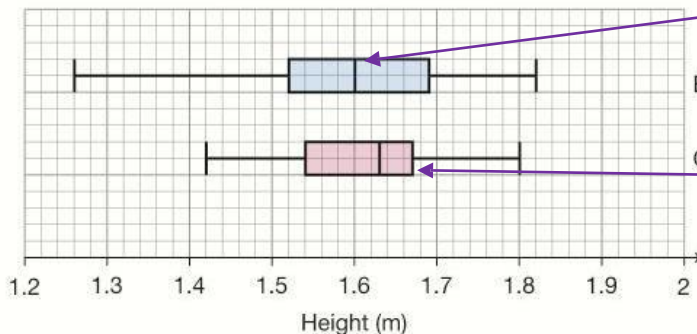
And the result is:

- Quartile 1 (Q1) = **3 (Lower Quartile)**
- Quartile 2 (Q2) = **5.5 (Median)**
- Quartile 3 (Q3) = **7 (Upper Quartile)**

Making Comparisons

The box plot summarise the heights of samples of 14 and 14 year old boys and girls

Heights of boys and girls



The median is labelled as Q2, use a ruler to read the value

Median height of girls = 1.63m
Median height of boys = 1.60m

On average, the girls are taller than boys.

The IQR is the UQ subtract the LQ, read Q3 & Q1 then do $Q3 - Q1$

IQR for girls = $1.67 - 1.54 = 0.13m$
IQR for boys = $1.69 - 1.52 = 0.17m$

The IQR for the boys is greater than the girls, the girls heights are more **consistent** than the boys

IQR

The IQR "Interquartile Range" is the spread of the middle 50% of data.

As it is only the middle 50% the IQR is **less likely to be affected by outliers**. Whereas the range (which is the spread of all the data) would be affected by outliers.

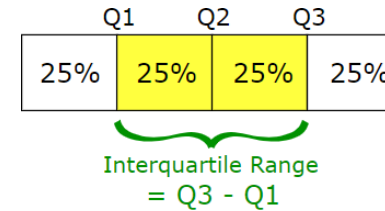
To calculate it just **subtract Quartile 1 from Quartile 3**.

Using the example from the quartiles:

$$Q3 = 7$$

$$Q1 = 3$$

So the interquartile range is 4

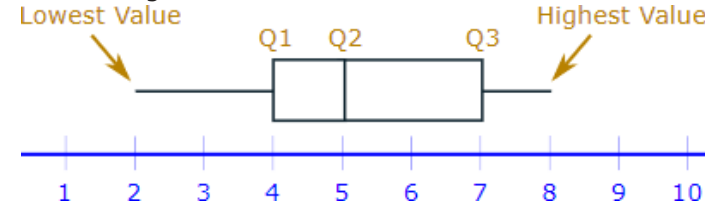


Box Plot

A **box plot** shows a visual representation of the **median** and **quartiles** of a set of **data**.

To draw a box plot, the following information is needed:

- minimum value
- **lower quartile**
- median
- **upper quartile**
- maximum value



Keyword/Skill	Definition/Tips
Sample	A group from the population that we are testing .
Population	The whole group from where the sample is taken, i.e. a whole year group.
Discrete	Discrete data can only have a finite or limited number of possible values. (Whole numbers)
Continuous	Continuous data can have an infinite number of possible values within a selected range. (Can include decimal numbers).
Quantitative	Quantitative data that can be counted (discrete), quantitative data that can be measured (continuous)
Mode	The number which appears most often in a set of numbers
Median	Place the numbers in value order and then find the middle number. When there are two numbers in the middle, we find the average them.
Range	The difference between the highest and lowest values.
Outlier	A point that "lies outside" (is much smaller or larger than) most of the other values in the dataset.
IQR (interquartile range)	The spread of the middle 50% of data. A smaller IQR shows that the data is consistent.

Other Topics/Units this could appear in:

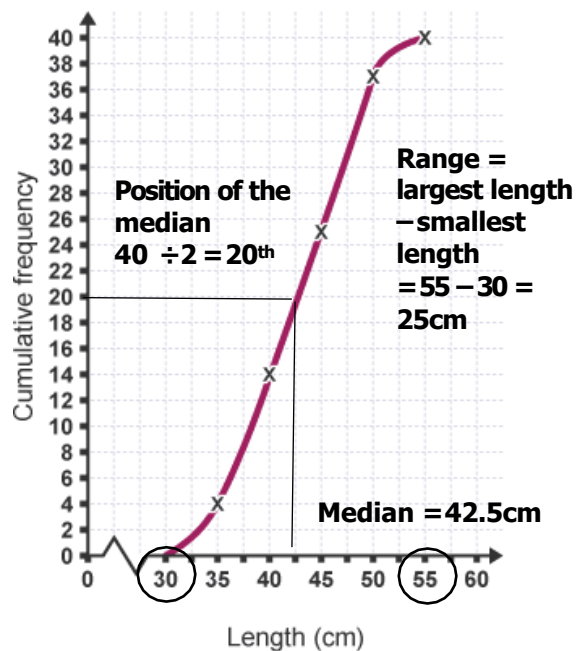
- A Level Statistics- Data Collection

Maths GCSE Higher Unit 14 - Further statistics

Cumulative Frequency Graphs

A **cumulative frequency diagram** creates a running total of the amounts within a table.

A cumulative frequency diagram is drawn by plotting the **upper class boundary** with the cumulative frequency.

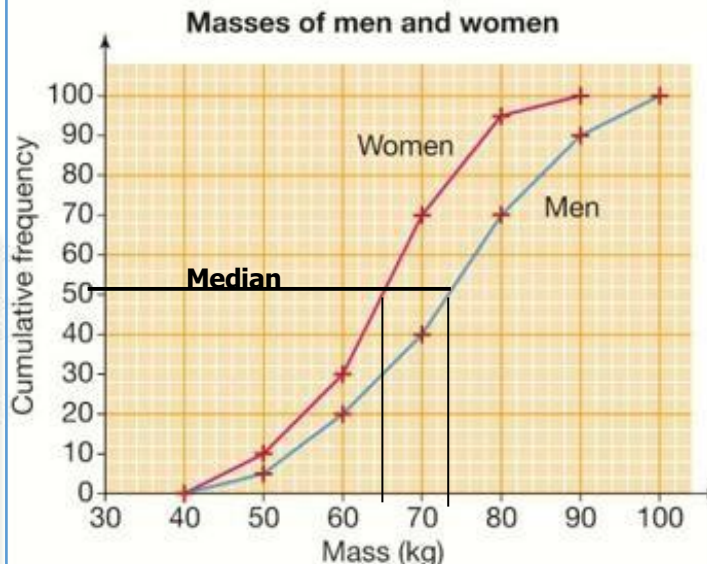


The upper class boundaries for this table are 35, 40, 45, 50 and 55.

Length (cm)	Frequency	Cumulative frequency
$30 \leq l < 35$	4	4
$35 \leq l < 40$	10	14 (4 + 10 = 14)
$40 \leq l < 45$	11	25 (4 + 11 = 25)
$45 \leq l < 50$	12	37 (25 + 12 = 37)
$50 \leq l < 55$	3	40 (37 + 3 = 40)

Making Comparisons

*When making comparisons use an **average** or **spread** to back up your statement!*



2) Range of women's masses = $90 - 40 = 50\text{kg}$
 Range of men's masses = $100 - 40 = 60\text{kg}$

*The men's masses **vary** more than the women's masses*

These cumulative frequency graphs summarise the masses of samples of 100 men and 100 women.

Finding the median mass for 100 women. Position of the median is $100 \div 2 = 50$ so find the mass of the 50th person. Read from 50 on the cumulative frequency axis to the value on the mass axis.

1) Median mass of women = 65kg
 Median mass of men = 73kg

*On **average**, the women are lighter than men*

Range of masses = largest mass (read from the final point) subtract the mass from where the line starts

Exam Tips!

- Be sure to label the axis "cumulative frequency" not just "frequency"
- Note how the graphs don't have to start at origin
- Smooth curve going through all the points - use a pencil!
- When making a comparison, write a statement and back it up with evidence from the graph (comparing the medians or IQR in context of the question!)

Keyword /Skill	Definition/Tips
Sample	A group from the population that we are testing.
Population	The whole group from where the sample is taken, i.e. a whole year group.
Discrete	Discrete data can only have a finite or limited number of possible values. (Whole numbers)
Continuous	Continuous data can have an infinite number of possible values within a selected range. (Can include decimal numbers).
Quantitative	Quantitative data that can be counted (discrete), quantitative data that can be measured (continuous)
Mode	The number which appears most often in a set of numbers
Median	Place the numbers in value order and then find the middle number. When there are two numbers in the middle, we find the average them.
Range	The difference between the highest and lowest values.
Outlier	A point that "lies outside" (is much smaller or larger than) most of the other values in the dataset.
IQR (interquartile range)	The spread of the middle 50% of data. A smaller IQR shows that the data is consistent.

Other Topics/Units this could appear in:
 • A Level Statistics- Data Collection

Maths GCSE Higher Unit 15 – Equations and graphs

Substitution method.

Example 1

Solve the equations: $y = 2x + 3$, $3x + 4y = 1$

It is useful to label the equations to help with method.

$$y = 2x + 3 \quad (1)$$

$$3x + 4y = 1 \quad (2)$$

You will notice that the first equation is in the form 'y =' therefore we can use substitution method.

Equation (1) is in the form $y =$, so we don't need to rearrange.

Substitute the right side of equation (1) into equation (2) for

variable y . This gives; $3x + 4(2x + 3) = 1$

Now expand and solve;

$$3x + 8x + 12 =$$

1

$$11x + 12 = 1$$

$$11x = -11$$

$$x = -1$$

Substitute $x = -1$ into $y = 2x$

+ 3

$$y = -2 + 3$$

$$y = 1$$

TEST the value both equations;

$y = 2x + 3$ which gives;

$$1 = -2 + 3$$

$3x + 4y = 1$ which gives;

$$-3 + 4 = 1$$

Solutions are correct, so $x = -1, y = 1$

To solve a pair of simultaneous equations when one is linear and the other is non linear (quadratic)
You must always substitute the linear equation into the non-linear equation.

Example 2

Solve these simultaneous equations

$$x^2 + y^2 = 5 \quad (1)$$

$$x + y = 3 \quad (2)$$

Rearrange equation (2) to $x =$

$$3 - y$$

Now you **substitute** this into equation (1) which gives;

$$(3-y)^2 + y^2 = 5$$

Expand the double brackets and rearrange into a quadratic equation.

$$9 - 6y + y^2 + y^2 = 5$$

$$2y^2 - 6y + 4 = 0 \quad (\text{We can cancel by 2 here})$$

$$y^2 - 3y + 2 = 0$$

Factorise

$$(y - 1)(y - 2) = 0$$

$$y = 1 \text{ or } y = 2$$

Substitute for y in equation (2);

$$\text{When } y = 1, x + 1 = 3$$

$$x = 2$$

$$\text{When } y = 2, x + 2 = 3$$

$$x = 1$$

You should always give answers as a pair of values in x and y .

$$x = 2, y = 1 \text{ OR } x = 1, y = 2$$

Keyword/ Skill	Definition/ tip
Simultaneous Equation	A pair of equations with two unknown variables. Both equations need to be solved at the same time (simultaneously)
Substitution (In linear/non-linear simultaneous equations)	When a letter or expression in an equation, expression or formula is replaced by a number or an expression.
Rearrange	To change the subject of a formula, so that a different variable is the subject of the formula.
Variable	A symbol for a number that we don't know yet. Often this is a letter such as x or y .
Coefficient	The number in front of an unknown quantity (the letter) in an algebraic term.

Other topics/Units this could appear in:

A-level

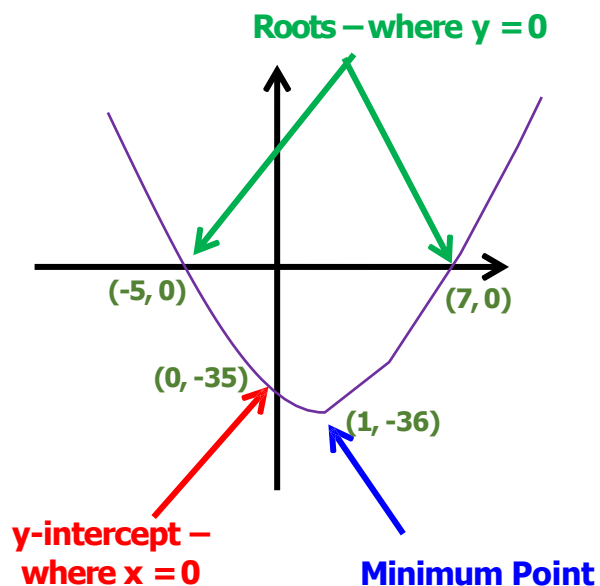
Pure 1- equations and inequalities

Exam Tips

- A non-linear simultaneous question will be worth 4 marks in your exam.
- To get started substitute the linear into the non-linear equation.

Maths GCSE Higher Unit 15 - Equations and graphs

Sketching Quadratic Curves



E.g. Sketch the graph of $y = x^2 - 2x - 35$ clearly stating the roots, the y Intercept and the minimum point of the curve.

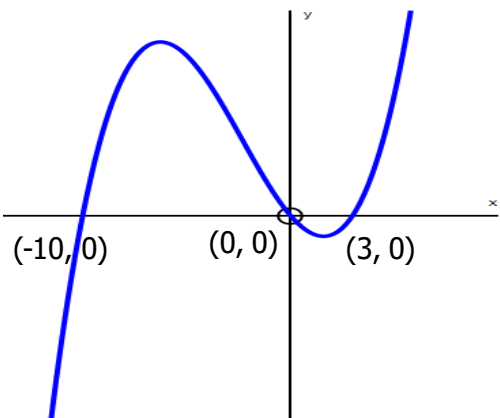
Step 1: Find the roots by factorising and solve the Quadratic Equation $x^2 - 2x - 35 = 0$
 $(x - 7)(x + 5) = 0$
 $x = 7$ and $x = -5$ are the two roots

Step 2: Find the y coordinate of the y intercept by putting $x = 0$ into $x^2 - 2x - 35$ which gives a y intercept of $(0, -35)$

Step 3: We can find the minimum coordinate of the curve by 'completing the square'
 $x^2 - 2x - 35$
 $(x - 1)^2 - 35 - 1$
 $(x - 1)^2 - 36$
 Minimum point at $(1, -36)$

Exam Tip: These questions can be worth up to 5/6 marks
 Make sure you are familiar with the different techniques and hey presto, 5/6 marks in the bag.

Sketching Cubic Curves - For GCSE, only the roots (x intercepts) and the y intercept are required for cubic graphs.



Eg. Sketch the graph of $y = x^3 + 7x^2 - 30x$

Step 1: Factorise and solve the equation $x^3 + 7x^2 - 30x = 0$
 $x(x^2 + 7x - 30) = 0$ so immediately we know one root is 0
 Now solve the equation $x^2 + 7x - 30 = 0$ for the other(s)
 $(x + 10)(x - 3) = 0$
 $x = -10$ and $x = 3$
 There are 3 roots which are -10, 0 and 3

Step 2: Find the y coordinate of the y intercept by putting $x = 0$ into $x^3 + 7x^2 - 30x$ which gives a y intercept of $(0, 0)$

Note: In this example, the y intercept is also a root. This will not always be the case.

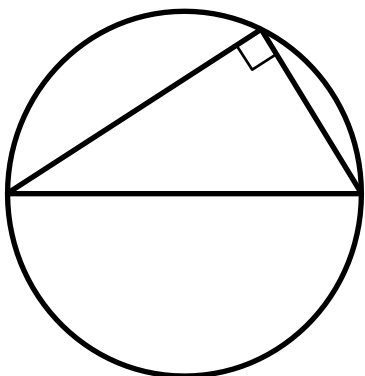
Keyword/Skill	Definition/tip
Quadratic	Where the highest power of the variable (usually x) is squared . e.g. x^2 , $x^2 + 5x$, $x^2 - 2x - 8$ etc.
Cubic	Where the highest power of the variable (usually x) is cubed. e.g. x^3 , $x^3 + 5x$, $x^3 + 2x^2 - 5x + 2$ etc.
Factorise	Write an expression as a product of its factors.
Root	Where a function equals zero.
Y Intercept	The point where a line or a curve crosses the y-axis of a graph.
Function	A mathematical relationship between two variables.

Other topics/Units this could appear in:

- Quadratic and Cubic Graphs
- 'A' Level:
- Core - Differentiation
- Integration
- Mechanics - Kinematics

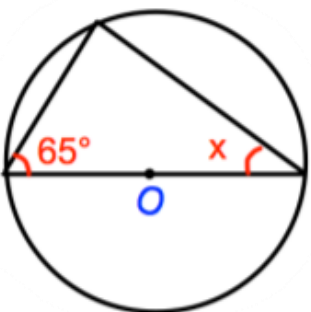
Maths GCSE Higher Unit 16 - Circle Theorems

Angles in a Semi-Circle



The angle at the circumference standing on a diameter is equal to 90°

Example:

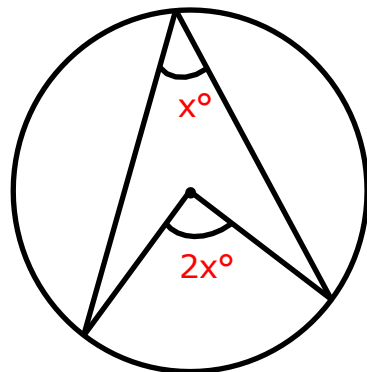


As angles in a semi-circle equal 90° , the angle at the circumference is 90° .

Angles in a triangle sum to 180° ,
So therefore: $180^\circ - (90^\circ + 65^\circ) = 25^\circ$

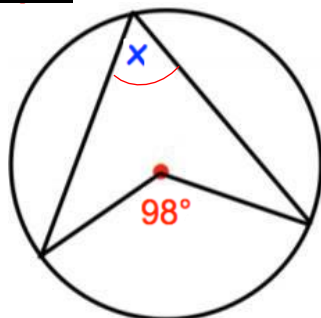
$$x = 25^\circ$$

Angles at the Centre



The angle at the centre is double the angle at the circumference

Example:

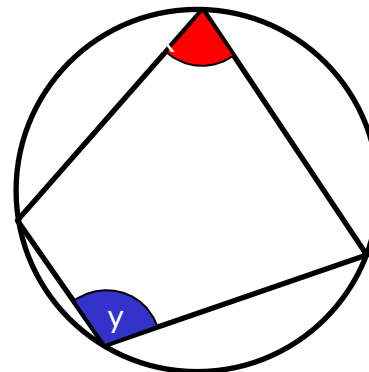


Here we have the angle at the centre. The angle at the centre is double the angle at the circumference.

$$\text{Therefore: } x = 98^\circ \div 2$$

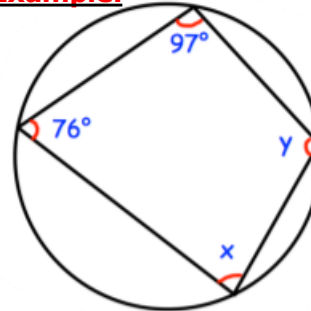
$$x = 49^\circ$$

Opposite Angles in a Cyclic Quadrilateral



Opposite angles in a cyclic quadrilateral add up to 180°

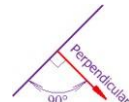
Example:



In a cyclic quadrilateral, opposite angles sum to 180°
So that means:

$$\begin{aligned} 97^\circ + x &= 180^\circ \\ -97^\circ \quad -97^\circ \\ x &= 83^\circ \end{aligned}$$

$$\begin{aligned} 76^\circ + y &= 180^\circ \\ -76^\circ \quad -76^\circ \\ y &= 104^\circ \end{aligned}$$

Keyword/Skill	Definition/Tips
Radius	A straight line from the centre of the circle to the circumference of a circle
Diameter	A straight-line passing side to side through the centre of a circle
Circumference	The perimeter of a circle
Tangent	A line that hits the circle at only one point
Perpendicular	At right angles (90°) to 
Chord	A straight line joining two points on a circle
Segment	The section of a circle made from a chord
Cyclic Quadrilateral	A quadrilateral with every vertex on a circle's circumference
Arc	A part of a curve, or a part of the circumference of a circle

Exams!

You must write a reason for each stage of your working out when it comes to circle theorems, even basic facts (such as angles in a triangle sum to 180°).

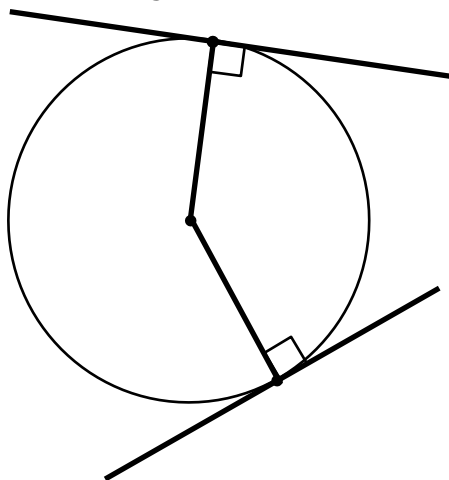
You will miss out on marks if you do not put a reason.

Other Topics/Units this could appear in:

- Core - Trigonometry
- Core - Coordinate Geometry

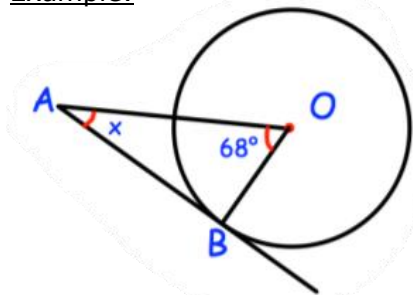
Maths GCSE Higher Unit 16 - Circle Theorems

Tangents & Radii



The angle between the tangent and a radius is equal to 90° as they form a set of perpendicular lines

Example:

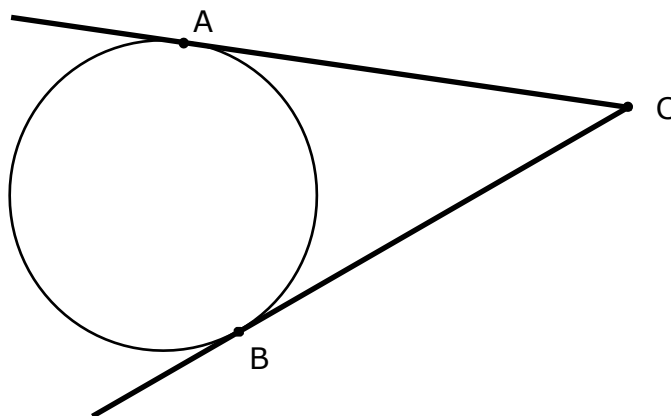


Here, the angle ABO will equal 90° as the tangent and the radius form perpendicular lines.

As angles in a triangle sum to 180° , $x = 180^\circ - 90^\circ - 68^\circ$

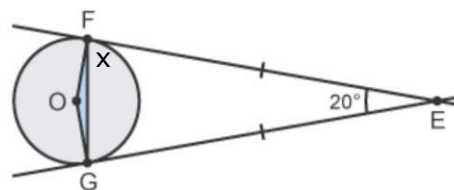
$$x = 22^\circ$$

Lengths of Tangents



Tangents to a circle which meet at a point are equal in length ($AC = AB$)

Example:

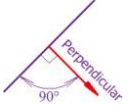


You need to calculate x , which is angle EFG.

Triangle EFG is an isosceles triangle as the lines FE and GE are equal because when two tangents to a circle meet at a point, they are equal.

Angle EFG = FGE as base angles are equal in isosceles triangles.

$$\text{Angle EFG} = \text{FGE} = \frac{180^\circ - 20^\circ}{2} = 80^\circ \quad x = 80^\circ$$

Keyword/Skill	Definition/Tips
Radius	A straight line from the centre of the circle to the circumference of a circle
Diameter	A straight-line passing side to side through the centre of a circle
Circumference	The perimeter of a circle
Tangent	A line that hits the circle at only one point
Perpendicular	At right angles (90°) to 
Chord	A straight line joining two points on a circle
Segment	The section of a circle made from a chord
Cyclic Quadrilateral	A quadrilateral with every vertex on a circle's circumference
Arc	A part of a curve, or a part of the circumference of a circle

Exams!

For some circle theorem questions they will combine different theorems. You will need to identify each theorem and state it in your working out.

You do not get these theorems in the exam so you need to learn them!

Other Topics/Units this could appear in:

- Core - Trigonometry
- Core - Coordinate Geometry

Maths GCSE Higher Unit 17 - More Algebra

When calculating with algebraic fractions, you use the same rules for fractions with numbers!

Multiplying & Dividing Algebraic Fractions

To multiply fractions together, we simply multiply the numerators and then multiply the denominators. This is the same for algebraic fractions:

Example: $\frac{a}{b} \times \frac{c}{d} = \frac{ac}{bd}$

To divide fractions we can use a very simple method: Keep Change Flip (KCF – Not quite KFC)

Example: $\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \times \frac{d}{c} = \frac{ad}{bc}$

Keep Keep this one the same

Change Change the divide to a multiply

Flip Flip the second one upside down (this is called the reciprocal)

Adding and Subtracting Fractions

To add or subtract fractions we must first make the denominators the same. Once the denominators are the same, we simply add or subtract the numerators (keeping the denominators the same) and simplify (if possible).

Example: $\frac{a}{b} + \frac{c}{d}$ Here the common denominator would be bd .
(as you can multiply the denominators together)

$$\frac{a}{b} + \frac{c}{d} = \frac{ad}{bd} + \frac{bc}{bd} = \frac{ad + bc}{bd}$$

Simplifying Algebraic Fractions

To simplify a fraction you need to find a common factor of the **numerator** and the **denominator**. This isn't always just a number, with algebraic fractions it can be letters too.

Example: Simplify: $\frac{45abc}{60a}$ Here 15a is a common factor so I can divide the top and bottom by 15a

$$= \frac{3bc}{4}$$

Example: Simplify: $\frac{(x+3)(x+6)}{x+3}$ Here (x + 3) is a common factor

$$\frac{x+6}{1} = x+6$$

Exam!

If there is no obvious common factor, then you should factorise both the numerator and the denominator and then cancel any common factors.

Example: Simplify: $\frac{x^2+5x+4}{x^2+4x+3}$

Factorise: $x^2 + 5x + 4 \rightarrow (x+4)(x+1)$ $\div(x+1)$ Now (x + 1) is a common factor
Factorise: $x^2 + 4x + 3 \rightarrow (x+3)(x+1)$ $\div(x+1)$

$$\frac{x+4}{x+3}$$

Keyword/Skill	Definition/Tips
Expression	One or a group of symbols representing a number or a value. Can contain numbers, variables & operations
Identity	An equation that is true no matter what values are chosen
Variable	A symbol for a number we do not know yet
Numerator	How many parts of a whole. The top number/variable in a fraction.
Denominator	How many parts the whole is split into. The bottom number/variable in a fraction.
Common Denominator	When two or more fractions have the same denominator
Simplify Expression	To remove unnecessary terms and numbers
Simplify Fraction	To reduce a fraction to make it as simple as possible
Expand	To multiply out terms to remove the brackets () (Opposite of factorise)
Coefficient	A number used to multiply a variable
Factor	An integer that divides the number exactly leaving no remainder
Factorise	Write an expression as a product of its factors. (Opposite of expanding)
Term	A single number or a variable
Highest Common Factor (HCF)	The highest number or variable that divides exactly into two or more numbers or variables
Reciprocal	One of two numbers that multiply to make 1. e.g. the reciprocal of 2 is $\frac{1}{2}$ because $2 \times \frac{1}{2} = 1$

Other Topics/Units this could appear in:

- Core – Algebra & Functions

BTEC LEVEL 2 MEDIA – COMPONENT 2

LEARNING OUTCOMES

A. Develop and apply media pre-production processes, skills and techniques.

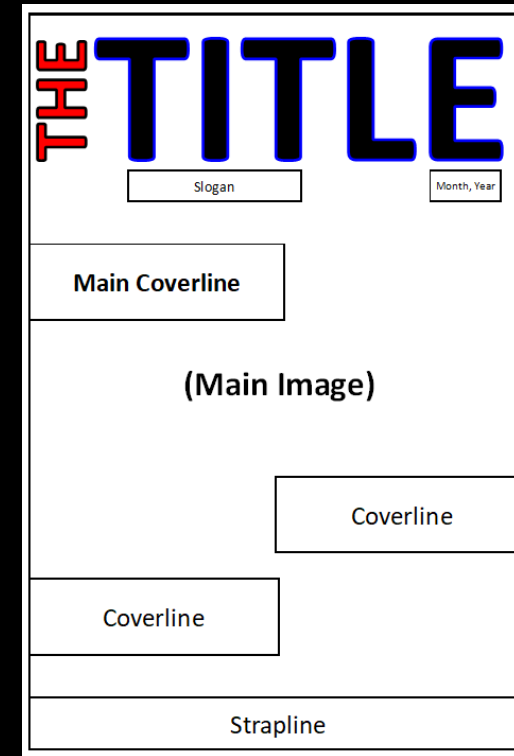
B. Develop and apply media production and post-production processes, skills and techniques to create a media product.

STEPS:

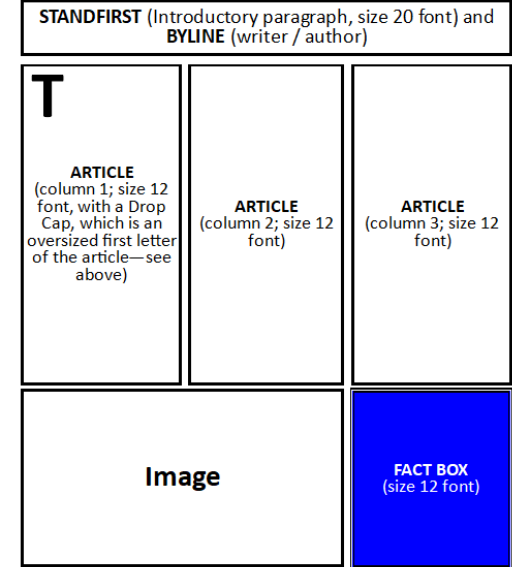
**PLAN > PRODUCE >
EDIT > EVALUATE**

GLOSSARY OF KEY TERMS

-  **AUDIENCE**
-  **CODE**
-  **CONVENTION**
-  **GENRE**
-  **HARDWARE**
-  **JUXTAPOSITION**
-  **MISE-EN-SCENE**
-  **MODE OF ADDRESS**
-  **NARRATIVE**
-  **REPRESENTATION**
-  **SOFTWARE**
-  **STEREOTYPE**



HEADING



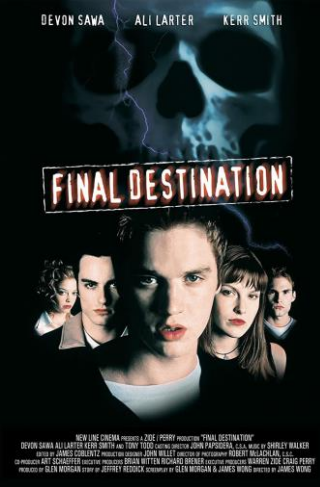
Magazine Cover Design with Photoshop

EXAMPLES OF PRINT-BASED MEDIA

**Advert
Brochure
Leaflet
Magazine
Newsletter
Newspaper
Poster**



Magazine Terms and Definitions



MEDIA

FINAL DESTINATION (2000)

Directed by James Wong | Distributed by New Line Cinema



IMDb RATING
★ **6.7/10**
249K



FACEBOOK
@finaldestinationmovie



INSTAGRAM
@deathiscoming180



IMDb
imdb.com/title/tto195714



TWITTER
#FinalDestination



YOUTUBE
@WBPictures



WIKIPEDIA
wikipedia.org/wiki/Final_Destination_(film)

Alex, an awkward teenager, cheats death after having a premonition of a catastrophic plane explosion. He and several of his classmates leave the plane before the explosion occurs. But, Death later takes the lives of those who were meant to die on the plane...



★ REVIEWS ★

1. [Empire](#)
2. [Rotten Tomatoes](#)
3. [The Guardian](#)
4. [Roger Ebert](#)

KEY CONCEPTS

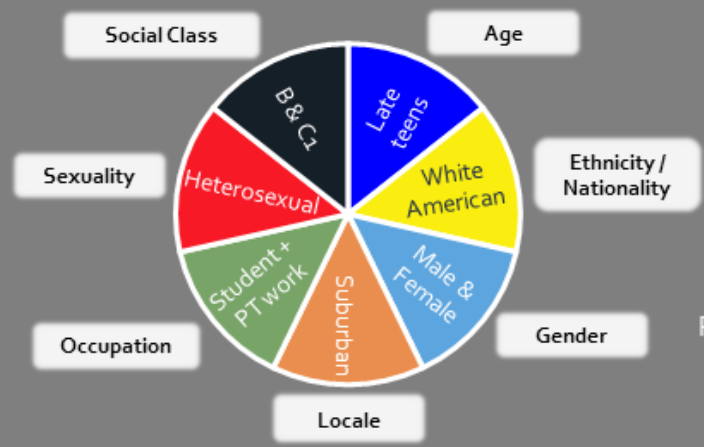
GENRE: The category of the text, based on conventions.
NARRATIVE: The structure of the storyline or plot.
REPRESENTATION: How a particular reality is recreated (people / place / time).
AUDIENCE INTERPRETATION: How the audience interprets, and reacts to, the text.

TECHNICAL ELEMENTS

CAMERAWORK: Angles; Framing; Movements.
EDITING: Combination of shots; Pace; Parallel editing; Shot-reverse-shots; Transition.
MISE-EN-SCENE: Characters; Costumes; Décor; Hair & Make-up; Lighting; Props; Setting.
SOUND: Diegetic; Non-Diegetic; Synchronous; Asynchronous.

DEMOGRAPHICS

Demographic analysis is the collection and breakdown of specific personal characteristics about groups of people.



PSYCHOGRAPHICS

Psychographics is the analysis of specific psychological criteria that influences an individual's, or group's, mindset and behaviour.



Again, **red** walls are also seen in the cut scene with Alex and the police officers, even though they are two different locations, it shows Alex knows about the **danger** and the **death** is happening is real time, the same time as Alex is sitting there in the room.



Lighting is crucial to the scene; it informs the audience on what type of mood is happening. In the **establishing shot** (of Ms Lewton's house) it is **low key** but is **juxtaposed** with the spotlights and flowers on her front porch. This is **symbolic** to show even though death will occur, there is life there, and loads of happy memories were created there, that is evident due to Ms Lewton say this on the phone to her friend.



We also see some signs about the policemen when they were interrogating Alex. One of them is wearing **open colours** which could show there's **no danger** around him. He also wears **glasses** which normally connote with **wisdom**. However, the other policeman is seen as the **opposite**. He wears **dark colours** and is seen as a **darker** character. The lighting is also very dark when Alex is with them to give a **mysterious** feeling, also, the **red lights** in the interrogation room show **danger**.



Also, the **dagger** behind Miss Lewton was used to **foreshadow** what will cause the end of her life. This was done **purposefully** as we know she dies after getting stabbed so the audience will look back and see this clue. A dagger is a weapon which was **designed** for up close attacks and combat throughout history, it also has associations with **assassinations** and **murders**, so this doesn't give the audience a good feeling.



Vogue is a fashion magazine owned and distributed by Condé Nast. A British Vogue editor once claimed that: "Vogue's power is universally acknowledged. It's the place everybody wants to be if they want to be in the world of fashion". Around 85% of its readers agree that "Vogue is the Fashion Bible". The magazine is considered to be one that links fashion to high society and class, teaching its readers how to "assume a distinctively chic and modern appearance".



- REVIEWS**
- [The BBC](#)
 - [The NYT](#)
 - [The Guardian](#)
 - [The Telegraph](#)

MEDIA

- FACEBOOK**
@BritishVogue
- INSTAGRAM**
@britishvogue
- TWITTER**
@BritishVogue
- YOUTUBE**
@BritishVogue
- APP STORE**
British Vogue
- WIKIPEDIA**
wikipedia.org/wiki/Vogue_(magazine)

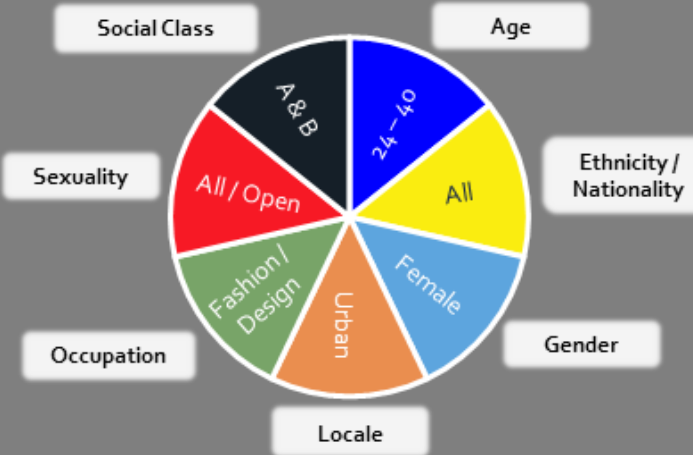
- KEY CONCEPTS**
- GENRE:** The category of the text, based on conventions.
 - NARRATIVE:** The structure of the storyline or plot.
 - REPRESENTATION:** How a particular reality is recreated (people / place / time).
 - AUDIENCE INTERPRETATION:** How the audience interprets, and reacts to, the text.

- TECHNICAL ELEMENTS**
- LAYOUT & DESIGN:** Positioning; Spacing; Design choices; Colour; Graphics.
 - TYPOGRAPHY:** Font styles; Font sizes; Lexis; Mode of address.
 - PHOTOGRAPHY:** Models; Camerawork; Lighting; Editing.

VOGUE MAGAZINE

Edited by Edward Enninful | Published by Condé Nast

DEMOGRAPHICS
Demographic analysis is the collection and breakdown of specific personal characteristics about groups of people.



PSYCHOGRAPHICS
Psychographics is the analysis of specific psychological criteria that influences an individual's, or group's, mindset and behaviour.



- Cover lines are used to give an insight into articles within the magazine which may interest the reader. They are also used to tell the audience if any celebrities feature within the magazine.
- The main image of Lana is photographed in the conventional way of making eye contact with the reader, which will therefore boost engagement.
- This specific use of media language would entice an individual to read on as they would like to know more about it.
- Maths-head in large font and capitals. The G is being covered by Lana Del Rey's head, however! due to the very famous and popular nature of Vogue we are able to identify it straight away.
- This specific use of media language would entice a reader in and would encourage the reader to buy the products being advertised inside.
- This issue of the magazine uses the traditional and conventional colour palette of pink and white. This would appeal to the magazines target audience of young females.

- The main image of this contents page is very central so the reader's eye is drawn to it immediately. It shows a long shot of a model wearing a red dress. The body position of the model is quite sexual and very confident, showing off the clothing worn which is what this image is designed to do, as this is the main selling point of the magazine. "Vogue" is a women's fashion magazine, therefore it will want to make the clothes featured look attractive to the target audience.
- The main headline covers almost half of the model's face, again making the dress the main focus point of the image.
- The "Cover Stories" section of the contents page is featured over the main image as these are the main articles in the magazine and placing them here makes them more eye-catching. It says a bit about each article, and the page number so the audience can find it quickly and easily. The text used is made so that some article names are in bold, and some are in italics. This requires the headlines more, and the use of italics makes it look classier, which fits in with the target audience of 18-25 year old females. The language used here strongly appeals to females as words like "Full safe accessories" and "Why we all love make up" are more related to females.
- The date of the magazine issue is featured at the top right hand side of the contents page. The date, "February 2022" is reasonably small as it is not the main priority of the page. It is in a bold font though so you can easily spot it, and it is in red and black, which fits with the colour scheme of the page.
- Around the main image there is different sections of things included in the magazine, divided in to categories which is typical of a contents page. Like with the "Cover stories" section a small amount of information about articles featured in the magazine, and the page number are shown here. Gutters are used to separate the text, making it easier to read, and separate the different sections.
- The titles of the columns used are in the same red colour as the dress in the main image which makes each section stand out.
- As the contents page shows a lot of information about what is featured within the Vogue magazine, the subscription information is included as many articles listed could be generally attractive to individuals and with this information in the contents page it is easy to see what to do. The title "Subscribe to Vogue" is in a different font to other headlines on the page, again making it more eye-catching, and clear to see. There is also an image of some anti-aging cream, which is given as a free gift for subscribing to the magazine. This would appeal to women who are maybe a bit older.



IMDb RATING
 ★ 9.7/10
 66K

MEDIA



FACEBOOK
 @naughtydog



INSTAGRAM
 @naughty_dog_inc



TWITCH
 @naughtydog



TWITTER
 @Naughty_Dog



YOUTUBE
 @naughtydog



WIKIPEDIA
wikipedia.org/wiki/The_Last_of_Us



More than
60
 Awards

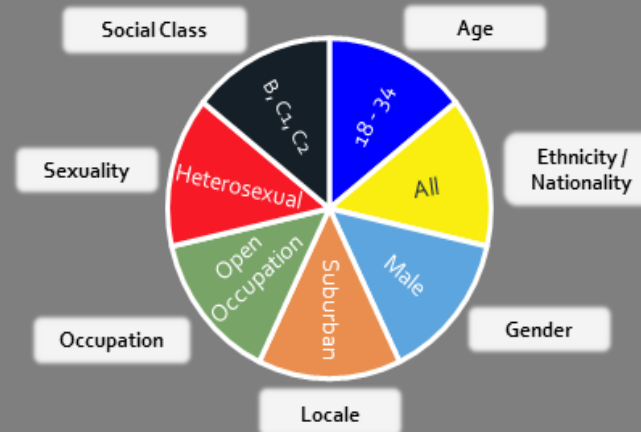
THE LAST OF US (2013)

Developed by Naughty Dog | Published by Sony Computer Entertainment



DEMOGRAPHICS

Demographic analysis is the collection and breakdown of specific personal characteristics about groups of people.



PSYCHOGRAPHICS

Psychographics is the analysis of specific psychological criteria that influences an individual's, or group's, mindset and behaviour.



Set in the [post-apocalyptic] United States, the game tells the story of **Joel** and **Ellie**, who are working together to survive a journey across (what remains of) the country. Their mission... to find a cure for the fungal plague that has devastated the human race.



REVIEWS

- [Eurogamer](#)
- [Forbes](#)
- [The Guardian](#)
- [The NYT](#)

KEY CONCEPTS

GENRE: The category of the text, based on conventions.

NARRATIVE: The structure of the storyline or plot.

REPRESENTATION: How a particular reality is recreated (people / place / time).

AUDIENCE INTERPRETATION: How the audience interprets, and reacts to, the text.

TECHNICAL ELEMENTS

INTERACTIVE FEATURES: Galleries; Menus; Options; Navigation Screens.

USER INTERFACE: Buttons; Graphics; HUD.

PLAYABILITY: Challenges; Game Controls; Navigation; Rules.

MISE-EN-SCENE: Characters; Costumes; Lighting; Props; Setting.

SOUND: Diegetic; Non-Diegetic.



GAME STRUCTURE

THE GAME STRUCTURE NAUGHTY DOG MADE FOR THE LAST OF US CAN BE SUMMED UP AS:
 WORLD <-> OBJECTIVE <-> CHARACTER

1. WORLD
 The world of The Last of Us is quite linear but offer multiple paths to the player.

 Although you need to complete a level to unlock the next one, the game drives you nicely through them.

 As in any book or movie your journey is already settled however you feel like your the one writing the story.

2. OBJECTIVE
 The player's main objective is to bring Ellie, who is immune to a devastating virus, to the Fireflies. In hope to find a cure. This objective is set at the very beginning of the game and will be the only one through the game. To succeed, the player must travel town to town and get through cities and countryside dangers.

3. CHARACTER
 Playing as Joel, you are depending on the world around you. Finding a clever way to escape when you got no ammo left, exploring to find one expensive shotgun shell are your main concerns to get Ellie to safety.

Live Theatre Analysis

Live Theatre Analysis requires you to analyse and evaluate how and why performers and designers have created theatre and how they have shared their audience intent.

You must consider the role of the:

- **Actor** - interpretation of character / character interaction / vocal skills /physical skills.
- **Designer** - creation of mood and atmosphere / use of performance space / lighting / sound / set and props / costume and make-up.
- **Director** - interpretation and style / performance conventions / spatial relationships on stage / relationship between performer and audience.
- **Audience** – individual / audience reaction and response.

How to Structure the Live Theatre Analysis section of the exam

Step One: Identify what play you saw, when you saw it and an overall description of the play, its main themes and the audience intent.

Step Two:

POINT	<p>Make a clear point about an actor's use of:</p> <ul style="list-style-type: none"> •Vocal & Physical skills. •Use of space to show relationship 	<p>The actor who played Margaret Thatcher (Use their name if you can – e.g., Meryl Streep) used levels and body language to help show her authority in the scene.</p>	<p><i>The actor used... to...</i></p>
EVIDENCE	<p>Provide a detailed example describing how the actor used the skill in your piece of work.</p>	<p>For example, when Meryl Streep's character was told that she could not go to war she stood up towering above the other actors who were seated, rolled her shoulders back and pushed out her chest before speaking her next line.</p>	<p><i>For example, the actor ...</i></p>
EXPLAIN	<p>Explain the effect on the audience.</p>	<p>This was effective because it showed the audience that Meryl Streep's character was dominant and in charge. Furthermore, it created a tense atmosphere because we were not sure how the other actors were going to respond.</p>	<p><i>This was effective because..</i></p>

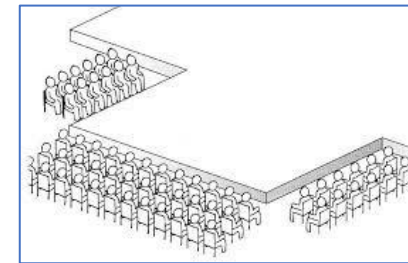
Step Three: Link – Summarise your overall point.

Step Four: Complete step two and step three again for another scene within the play.

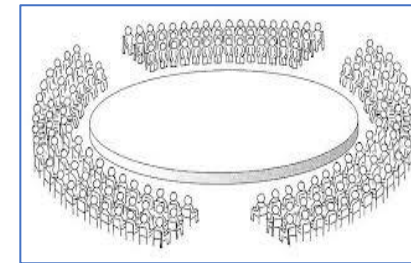
Step Five: Complete step two and step three again for one final moment within the play

The more skills you can add in the point section that you discuss in the evidence and explain sections the more marks you are able to gain.

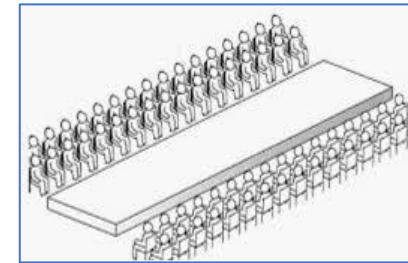
STAGE TYPES



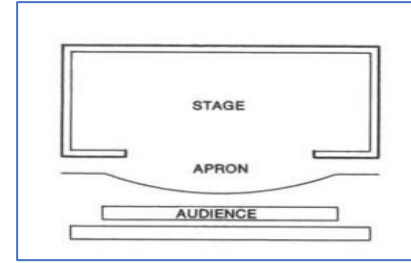
THRUST STAGE



THEATRE IN THE ROUND



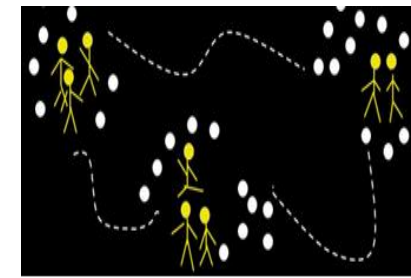
TRAVERSE STAGE



PROSCENIUM ARCH STAGE



END ON STAGE



PROMENADE

Can you recall what make these stage types unique?

Design Principles

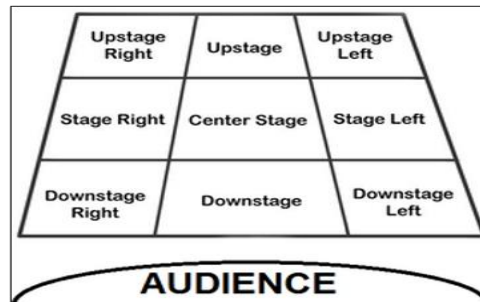
Costume Design – Colour, Material, Fit, Time Period, Social Status, Cleanliness, Dilapidation.

Set Design – Colour, Pattern(s), Scale and Balance, Location, Angeles, Dilapidation, Cleanliness.

Lighting Design – Direction, Intensity, Colour, Movement, Quality, SFX.

Sound Design – Source, Direction, Volume, Diegetic, Non-Diegetic, Editing, Cues.

STAGE POSITIONS



REMEMBER

Use your Theatre booklet to recall what happened in the show we watched!

Key Command Words:

Describe: Tell me what you see.














Explain: Tell me why they did it.

Analyse: Tell me how/why they did it with specific examples from the play.

Evaluate: Tell me how it could be improved or what was good about it.

REMEMBER: The stage positions are always from the actor’s point of view.

Dramatic Elements

	Vocal Skills	Definition	Example	Physical Skills	Definition	Example
Role 	P - Pitch	How high or low you voice sounds.	High squeaky voice or low deep voice.	P - Posture	The way you hold yourself.	Hunched back, straight back
Character 	I – Intonation	How clearly you speak.	Mumbling or saying every word clearly.	E – Eye Contact	Where you are looking	Staring, looking at the floor, quickly looking
Relationship 	P - Pace	The speed in which you speak.	Fast or slow.	T - Tension	How tight or relaxed your body is	Clenched fists, locked knees
Tension 	E – Emphasis	The importance you put on certain words.	Using volume or pause to highlight a word. I (pause) AM right.	F – Facial Expression	How you are modifying your face	Closed Eyes, Wide open mouth
Focus 	D - Dynamics	The volume that you are speaking at.	Loudly or quietly.	L - Levels	The heights used within the performance.	Standing on toes, crawled up in a ball
Situation 	B – Breath Control	How many breaths you take in a sentence.	Do you take lots of breaths or none at all.	A - Action	Movements that have specific meanings	Thumbs up, waving, peace sign
Time 	A - Accent	The way you pronounce words.	America, Australian, Jamaican, British.	G - Gait	The way you are walking	Skipping, stomping, floating
Place 	P - Pause	How many breaks you take.	I am (pause) NOT going to see you again.	S - Space	The area that you are using	Are you standing close or far away
Language 						
Movement 						
Mood 						
Atmosphere 						
Symbols 						

Scripted Performance

A scripted performance requires a performer and designer to use text that has been written by a playwright as the basis of their performance or design. Usually, the character or role is already established for them and sometimes they may also be given specific stage directions. They will also be given specific lines that need to be said.

Within this project you will perform or design for two extracts of your own chosen script. You will work in groups and will be required to perform and design for a live audience, external moderator & for a specific amount of time.

Rehearsal Techniques

Are strategies which actors and directors use to develop the performance or their character/role in rehearsal.



- Role On the Wall
- Essence Machine
- Hot seating
- Character Profiling
- Facts and Questions
- Zoomorphism
- Thought tracking
- Elements
- Emotional Memory
- Improvisation
- Archetypes/Stock characters

If you want to learn more about these, check out this quizlet: [tinyurl.com/578jhf29](https://www.tinyurl.com/578jhf29)

Ann: What is it? — surprised expression.

Eliza: Prayer book it looks like.

Barbara: Sure it's hers? — confused expression — hand movement.

Frances: Look for the name.

Irma: Yeah, it's hers all right — there's her name in it.
... Hey — look see — it's her full name.
Lizzie Andrew Borden. — slowly say the name

Ann: Andrew?

Christy: But that's a boy's name.

Ann: Don't I know it. — sarcasm

Barbara: What's she doing with a boy's name?

Irma: Andrew!

Jo: Could have been worse — could have been Albert.

Irma: Andrew Borden! What a name for a girl. (say while giggling)

Ann: She's as strong as a boy.

Barbara: She's as strong as a horse. } all 3 characters laugh.

Dorothy: She looks like one too! (Laughs)

Kathy: You see her fight last week — she sure is tough.

May: Almost kill you she could ... if she felt like it.
(Lizzie re-enters from left. There is a pause; Lizzie is aware of something wrong.) ^{blouse} stand for a few seconds (Observe)

Irma: Hey Lizzie — we know your middle name.

All (Chant, taunting her):
We know your name.
We know your name.
We know your name. } say while laughing

Lizzie: You stop it! — angry expression.

When working with a script it is important to annotate it with the performance skills and stage directions you will use. This should include where you will use physical skills, vocal skills, areas of the stage and your proxemics. If you need to, also add in why you are using these to ascertain what impact these will have on the audience.

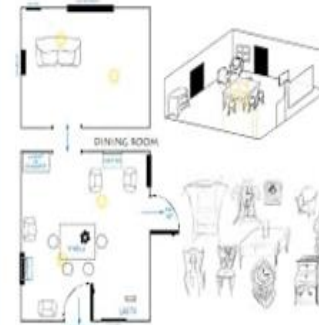
PRINCIPLES OF SET DESIGN

COLOUR



When you create a design, you must look at the colour wheel. Colours can be used to both highlight/illuminate and hide/mask. Some colours are complementary to each other — for example, blue and orange which represent the blue sky and the colour of your skin. These are often used together in TV commercials.

TIP! Think about the colour of costumes. Do not put puppeteers in black, this will not make them disappear. Put them in a colour that contrasts their puppet!



MULTIPLE/PATTERN



Set Designers often use the 'overload techniques' using lots of multiple shapes and patterns on stage. When there are too many repeated items (e.g. hanging lightbulbs, hanging umbrellas), the brain stops trying to count them, and instead leaves the observer feeling overwhelmed and in awe.

DID YOU KNOW? This technique has been used in several productions including *Matilda* and *Frankenstein*.



SCALE + BALANCE



Consider the size and scale of your set design and the objects you use. Depending on the genre and style of your piece, scale can communicate different meanings to your audience.

DID YOU KNOW? Big objects are associated with fun. They remind us of our childhood, wanting to climb everything around, a sense of adventure. Small objects are cute. They often make the audience feel care towards the object. Scale can show power between characters in a scene/narrative.

DILAPIDATION/ CLEANLINESS



Each set belongs to its own time period, which sometimes relies on items looking dilapidated. For example, the school desks in Willy Russell's *Blood Brothers* need to look worn and graffitied to show the poor educational conditions at the time. However, some sets like *The Curious Incident of the Dog in the Night-time*, need to feel extremely clean and somewhat clinical. This set design represents Christopher's autistic psychological processes.

ANGLES



When creating a set design, experiment with the angles of objects. Can you alter the angle so the audience can see more? Or could you add more abstract angles to the production, to suit its style and genre.

EXAMPLE! If your set includes a door frame, why not angle the door frame to add a surreal effect?

LOCATION(S)



One play can often include several locations which can provide challenges for set designers. If you need to show several locations, think about using the following ideas in your designs:

- Lighting.
- Levels.
- Segregate the stage — have several small sets.

Elements of Lighting Design



Direction

The angle of light as it hits the performer or object.



Intensity

How bright or dimly lit the stage is.



Colour

The use of colour to convey a particular mood or atmosphere

Movement

A transition from one lighting state to another.



Quality

Whether the beam of a lantern is hard or soft.

Key Elements of Sound Design

Source & Direction

Where is the sound coming from? If it's coming from a speaker, where is the speaker in the performance space? For example, behind the audience or underneath the stage? Are they wall mounted?



Volume

Is the sound being played at a quiet, medium or loud volume?



Types of sound

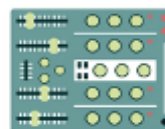
Are the sounds recorded or live (Foley)? Diegetic or non-diegetic?

Cues

What is the 'trigger' for the sound to be played or performed (e.g. a line of dialogue or visual 'cue')?

Editing

How has the sound been manipulated or edited? (e.g. echo/ fades/ loops)



Key Elements of Costume Design

What are the key elements or considerations for a costume designer?

Colour Palette

The colour of a costume can tell you so much about a character. Colour can be used to emotionally manipulate the audience.



Shape & Silhouette

Consideration of the shape of the costume on the performer's body and the silhouette it creates on stage. Silhouettes can indicate specific time periods.

Character/ Personality/ Style

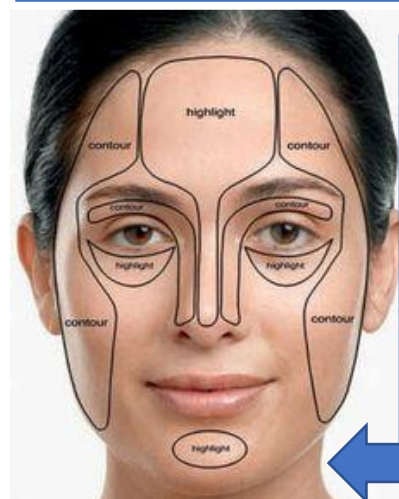
Just as we have our own personal style, so does every character. What are the details in the costume which communicate their unique personality?



Texture & Fabric

Every fabric has a different texture. This refers to how the fabric feels and moves on the actor. For example, is it rough, smooth or soft?





For an audience to see the actors facial expressions, stage make up is used to enhance the performance. Take a look at the following diagram to see how this is done.

Sound

Diegetic

Sound the characters would be able to hear/ where it's source is within the world of the scene

Sound effects, Sound collage, something approaching from off stage, music within the scene (eg Disco)

Non-Diegetic

Sound that is from outside the scene- that the characters would not be able to hear

Underscoring (music/ sound effects to add tension/ atmosphere), voice over

Useful Revision:

Real Acting:

tinyurl.com/cm33r5e

Giving the lines:

tinyurl.com/ykcfay97

Performance nerves:

tinyurl.com/2p9fdbww

Line Learning:

tinyurl.com/redh6bbp

REMEMBER

Make sure every performance choice you make supports your **artistic intention**.

Artistic Intention = What you want your audience to think, feel, do post performance.

Vocal Skills	Definition	Example	Physical Skills	Definition	Example
P - Pitch	How high or low your voice sounds.	High squeaky voice or low deep voice.	P - Posture	The way you hold yourself.	Hunched back, straight back.
I - Intonation	How clearly you speak.	Mumbling or saying every word clearly.	E - Eye Contact	Where you are looking.	Staring, looking at the floor, quickly looking.
P - Pace	The speed in which you speak.	Fast or slow.	T - Tension	How tight or relaxed your body is.	Clenched fists, locked knees.
E - Emphasis	The importance you put on certain words.	Using volume or pause to highlight a word. I (pause) AM right.	F - Facial Expression	How you are modifying your face.	Closed Eyes, Wide open mouth.
D - Dynamics	The volume that you are speaking at.	Loudly or quietly.	L - Levels	The heights used within the performance.	Standing on toes, crawled up in a ball.
B - Breath Control	How many breaths you take in a sentence.	Do you take lots of breaths or none at all.	A - Action	Movements that have specific meanings.	Thumbs up, waving, peace sign.
A - Accent	The way you pronounce words.	American, Australian, Jamaican, British.	G - Gait	The way you are walking.	Skipping, stomping, floating.
P - Pause	How many breaks you take.	I am (pause) NOT going to see you again.	S - Space	The area that you are using.	Are you standing close or far away.

Antonin Artaud 	Bertolt Brecht 	Frantic Assembly 	Konstantin Stanislavski 
1896 – 1948	1898 – 1956	1994 – Present	1863 – 1938
French playwright, poet, actor and theatre director.	German poet, playwright and director (Marxist, political activist).	Theatre Company established by Scott Graham, Steven Hoggett & Vicki Middleton.	Russian theatre practitioner, actor, director.
Style: Theatre of Cruelty.	Style: Epic Theatre.	Style: Physical Theatre.	Style: Naturalism.
Aims for the audience to be “affected”, shocked, & involved; wanted to cleanse the audience of their secret fears & desires.	Aims to present a “political message”; educating the audience about an issue.	Aims to create non-realistic pieces of theatre through the use of movement and music. To emphasize cultural and social themes.	Aims to create an illusion of reality.
Techniques: <ul style="list-style-type: none"> • Visual Poetry - movement, gesture and dance instead of words to communicate feelings/context/dramatic elements etc. • Creating a dream world - use of ritual and masks, etc; to affect subconscious - like a dream. • Assaulting the audience - with lights, music, sound, images to continue to make them feel uncomfortable. • Involving the audience - action would take place all around the audience (to feel a part of it). • Sounds – Groans, screams and breathing used to make the audience feel uncomfortable. • Deliberate Cruelty – Showcasing cruelty on stage to shock them into realising how inhumane and wrong it is. • Non-Verbal Language – Using the body to create meaning and intent. • The Plague- Act with jerky, bizarre movements as if you have the plague, and might infect the audience. • Rhythmic speaking/Incantation – speaking syllables or words in time to a regular beat. 	Techniques: <ul style="list-style-type: none"> • Placards – signs to get audience to react or to highlight a key message. • Narrators, music and singers Used to directly address the audience and provide political comment. • Lack of pretence: set, costume changes, etc. not hidden and done to show visible scene changes. • Multi-rolling – Each actor takes on more than one part. • Breaking the fourth wall – Directly addressing the audience so they know they are watching a performance. • Split stage – Scenes happening on stage at the same time. • Gestus – A clear character gesture or movement used by the actor that captures a moment or attitude rather than delving into emotion. • Speaking in 3rd person – Using pronouns instead of names. • Spass – Breaking the tension by ensuring your audience is laughing through the use of comic songs, slapstick, physical comedy etc. 	Techniques: <ul style="list-style-type: none"> • Distill to the essence – Find out what the super objective (what is at stake) is. • Alternative Endings – Finding different ways a scene can end. • Sing the Dialogue – Finding sections of the play that can be sung and ascertain the story that comes from it. • Marking the moment – Using tableaux and soundscape to emphasize a key moment. • Happy Accidents – When you find a special moment through rehearsal. • Push Hands – Leading exercise to explore paired movement, trust, pace and levels. • Lifts – Using your bodies to elevate fellow actors into the air. • Chair Duets – Dance which explores the relationship between two characters. • Ensemble Movement – Moving as one in a group. • Improvisation – Creating and rehearsing pieces in the moment. • Three Universes – this gets the actors to think about the relationship between the touch. 	Techniques: <ul style="list-style-type: none"> • Emotional Memory – the actor finds a real past experience where they felt a similar emotion to that demanded by the role they are playing. They then ‘borrow’ those feelings to bring the role to life. • Given Circumstances – The information about the character that you start off with and the script as a whole. • Subtext – All of the information that is learnt when the actor reads between the lines. • Magic If – this technique means that the actor puts themselves into the character’s situation. This then stimulates the motivation to enable the actor to play the role. • Objective/Super Objective – An objective is the reason for our actions in the moment. The super-objective is an over-reaching objective, linked to the overall outcome in the play. • Through line – is the journey from the beginning to the character achieving their super objective. • Method of physical actions – completing everyday actions and then completing them with a character’s motive to ascertain emotion needed.

Dynamics:

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

Tempo:

- What tempo am I working at? Largo (slow), Andante (walking pace), Allegro (fast)?

Instrumentation:

- How can I combine instruments appropriately (families/including voices)?
- Have I written appropriate parts (inc range)?
- Can all the parts be played live?
- Where would it be performed?

Texture:

Have I contrasted my piece using more than one of the following:

- Monophonic: Unison/ Octaves
- Homophonic: Parallel motion/Melody & accompaniment/Chordal
- Polyphonic: Counter melody, Imitation

Rhythm:

- Have I combined long and short notes to different effect?
- Have I considered a dotted rhythms/ Syncopation/Triplets?
- How about Hemiola/Cross rhythm/ Accelerando/Rubato?

Creativity/development of musical ideas

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

Technical control of music elements/resources

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

Structure and stylistic coherence

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

Melody:

- What type of scale am I using?
- Is there a contrast between conjunct/disjunct?
- Are my phrases balanced?
- Am I using any interesting intervals?
- Have I included any ornaments?
- Have I used these devices appropriately? Imitation/ Anacrusis/Sequence?

Context:

- Does your composition follow the set brief?

Articulation:

- Have I considered different techniques on the instruments; Slurring/tremolo/pizzicato?
- Have I contrasted my piece with the following: Staccato/ Legato/ Accented notes?

Harmony:

- What key am I working in? Major or Minor?
- Have I used any interesting chords; Sus4/Diminished/ Augmented/7th?
- Have I added a key change? Have I used a Pedal note/Drone?
- How often do the chords change?

Structure:

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

- AOS1: Classical styles: Binary/Ternary/Rondo/Rounded binary?
- AOS2: Strophic/Verse-chorus/32 Bar form? Any other ideas?
- AOS3: Episodic? How can I add contrast?
- AOS4: If using verse-chorus can I add other sections e.g. Pre-chorus/instrumental section?

Am I Developing my ideas if repeated?

- What is the length of the piece?
- How many sections will it have?
- Will sections repeat, and in what order?
- What form will the introduction and ending take? Will they use extracts from other sections?
- Is the structure of the piece appropriate for the style of music?

Term	Definition	Example
Dynamics	Dynamics is how loud or quiet the music is played.	The piece of music is Forte (loud).
Rhythm	Is created by combining a variety of notes of different durations.	The rhythm had two short notes and one long note.
Context	Context refers to the genre and or style of music.	The style of music was rock.
Articulation	How a particular instrument is played	The Violin is played with a bow (Arco).
Texture	Texture describes how melodies, rhythms and harmonies are layered in a piece of music.	The texture of the piece was monophonic. It only had one layer.
Structure	Structure (or form) is the overall plan of a piece of music.	The structure of the piece consisted of an Intro, verse, chords, bridge, verse, outro,
Melody	A Sequence of notes arranged in a definite pattern of pitch and rhythm	The melody of the piece was cheerful.
Instrumentation	The instruments that are used.	I could hear a guitar and drum kit being played.
Harmony	The combination of simultaneously sounded musical notes.	The harmony of the piece used G and C Chords.
Tempo	Tempo is how fast or slow a piece of music is played.	The tempo of the piece was fast (Presto).

MAJOR CHORD PROGRESSIONS						
I	ii	iii	IV	V	vi	vii ^o
Major	Minor	Minor	Major	Major	Minor	Diminished
A	B	C#	D	E	F#	G#
B	C#	D#	E	F#	G#	A#
C	D	E	F	G	A	B
D	E	F#	G	A	B	C#
E	F#	G#	A	B	C#	D#
F	G	A	Bb	C	D	E
G	A	B	C	D	E	F#

MINOR CHORD PROGRESSIONS						
i	ii ^o	III	iv	v	VI	VII
Minor	Diminished	Major	Minor	Minor	Major	Major
A	B	C	D	E	F	G
B	C#	D	E	F#	G	A
C	D	Eb	F	G	Ab	Bb
D	E	F	G	A	Bb	C
E	F#	G	A	B	C	D
F	G	Ab	Bb	C	Db	Eb
G	A	Bb	C	D	Eb	F

Ensemble Performance

Within this unit you will create one ensemble performance. This will require you to work with the other people in your class to create a piece that lasts for 4- 6 minutes and is linked to one of the areas of study.

You must work as a group to perform the piece as intended by the composer ensuring specifically that your rhythm and pitch is as intended by the composer. Your tempo is sustained throughout the piece and that the score is followed completely. You are required to perform as part of an ensemble. An ensemble performance may be on any instrument, voice or technology-based option.

In each case you are required to:

- perform in a group of between two and eight live performers,
- perform a significant individual part which is not doubled
- perform accompanied or unaccompanied as a group but not conducted (the accompaniment can be live or a backing track).

Time Signature	Song Title
2/4	Slaidburn March - A march is usually in 2/4 (Left, Right, Left, Right 1,2,1,2....)
3/4	Shostakovich's Waltz No.2 A waltz is a dance usually in ¾.
4/4	All that Jazz (from Chicago) Chicago is a Musical.
5/4	Take Five (By Dave Brubeck) Listen to the bass drum.
7/4	The start of Money (By Pink Floyd) Listen out for the opening bass riff.
6/8	We Are The Champions (by Queen) Queen are a famous British rock band.
12/8	The way you make me feel (By Michael Jackson) Count 1&a 2&a 3&a 4&a.

Time Signatures
Written at the start of the music (and anywhere it changes) to show how many beats there are per bar, plus what type of beat

Simple Time Signatures *Each beat can be divided into two equal halves

4 crotchet beats per bar

3 crotchet beats per bar

2 crotchet beats per bar

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

4 dotted crotchet beats per bar (12 quavers)

3 dotted crotchet beats per bar (9 quavers)

2 dotted crotchet beats per bar (6 quavers)

D	R	C	A	T	S	M	I	T	H
Dynamics	Rhythm	Context	Articulation	Texture	Structure	Melody	Instrument	Tempo	Harmony
Crescendo Diminuendo Loud/forte <i>ff</i> <i>f</i> <i>mf</i> <i>mp</i> <i>p</i> Quiet/piano <i>pp</i>	Semi-breve Minim Crotchet Quaver Semi-quaver Triplet Syncopation Dotted Time signature /Metre 3/4 4/4 6/8 4/4 4/8	Baroque CLASSICAL Romantic 20 th Century Pop ROCK HIP HOP Jazz Blues Soul FOLK Reggae R&B Fusion Musical Film Minimalism BAND ORCHESTRA String Quartet Choir Ensemble	Mel-ic - ma - tic... Syl-lab-ic Staccato (short) Legato (smooth) Pizzicato/Picking Arco/Bowed Strummed Tremolo Glissando/Slide	Monophonic Homophonic Polyphonic Call and Response Canon Drone	Binary Ternary Rondo Theme and Variation Minuet and Trio 12 Bar Blues Verse Chorus Bridge	High pitch Ascending Descending Low pitch Conjunct Disjunct Sequence Repetition Arpeggio Semitone Tone	Strings Woodwind Brass Percussion Voice	Vivace Allegro Allegretto Moderato Andante Adagio Lento	Major Minor Chords I ii iii IV V vi vii° i ii° III iv v VI VII Key Signature Cadence Circle of 5ths

Staccato

Staccato means short and detached /separated.



Shown by writing a **dot** just above/below the head of the note.

**You will likely hear a gap between each note.*



Accented

Give extra emphasis or force to the marked notes.



Shown by writing an **accent** above/below the head of the note.



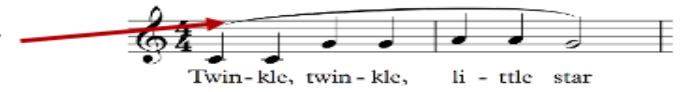
Structure **Stylistic intent**

Intro	The Beginning. Sets the mood & style. Usually Just instruments.
Verse	Tells the story. Lyrics Change each time but stays the same.
Chorus	The main message of the song. Same words and tune each time.
Bridge	A section that links two other sections.
Middle 8	A contrasting section of new ideas-usually 8 bars long.
Outro	Extra bit of music to finish off the song.

Some Associated Markings On Vocal Music...

Phrase markings

Slurs drawn onto the score to show singers what to sing in one breath.



Syllabic

Where the music is written with one note per syllable.



Melismatic

Where the music is written with more than one note per syllable.

**A slur is used to show the notes on one syllable*



Legato

To play the music smoothly, without breaks between notes.

Slurred

Playing the notes in a legato style, without breaks between notes.



Shown with a **slur** on the score.

How? Some examples:

String Instruments - Play the notes without changing the direction of the bow.



**Don't change direction until you've finished the slurred notes*

Brass & Wind Instruments - Only tongue the first note, not the others.

GCSE PE UNIT 1: CARDIO-RESPIRATORY

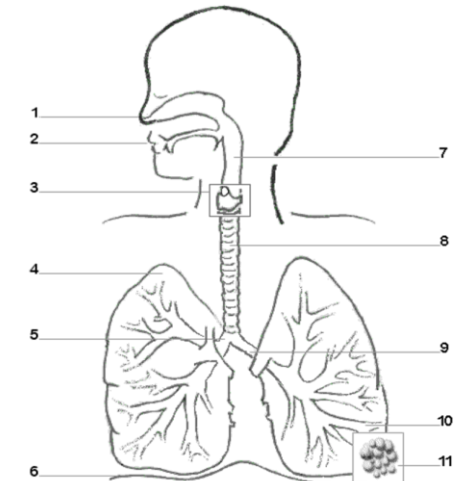
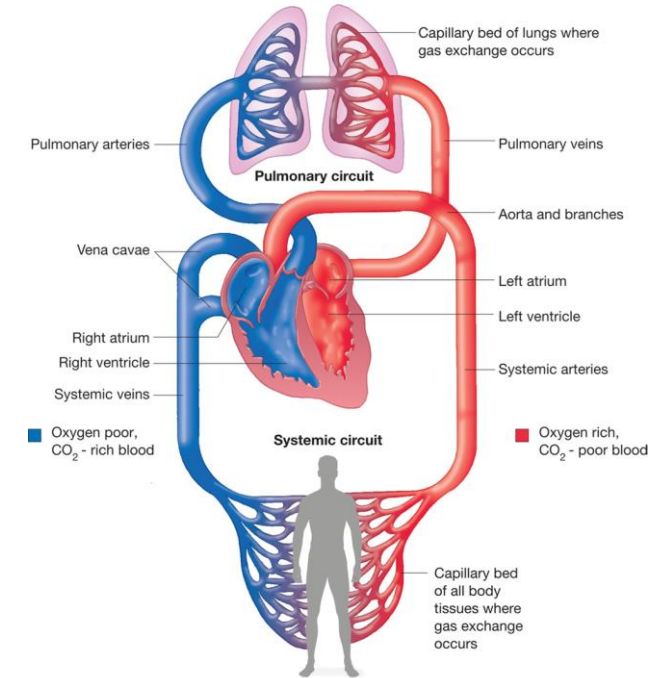
ONE: Key Vocabulary

Word	Definition
Aerobic exercise	Use of oxygen for the duration of the exercise. Usually at moderate intensity at a continuous rate e.g. long distance running.
Anaerobic exercise	Exercise which does not allow for the predominant usage of oxygen. Usually high or very high intensity for a short period of time. E.g. sprinting up a hill.
Blood vessels	Tubular structures that carry blood around our bodies.
Heart rate	Number of heart beats per minute.
Stroke volume	The amount of blood pumped out of the heart (left ventricle - to the body) during each contraction.
Cardiac output	Cardiac output = stroke volume x heart rate. The volume of blood pumped per minute by each ventricle of the heart.
Breathing rate	The number of breaths taken in a minute.
Tidal volume	The amount of air which enters the lungs during normal inhalation at rest.
Minute ventilation	The volume of gas inhaled or exhaled from the lungs per minute.
Gas exchange	The movement of gases taking place at the alveoli and capillaries.

TWO: Core Questions

Question	Answer
Identify the order of the pathway of air.	Nose/mouth, trachea, bronchi, bronchioles, alveoli
Double circulatory system	The human body has two circulatory loops in which blood circulates. One is oxygenated, and the other is deoxygenated. Systemic – the circulatory loop that controls blood flow from the heart to the rest of the working muscles and organs. Pulmonary - the circulatory loop that controls blood flow from the heart to the lungs.
Identify three characteristics of veins	Carry blood back to the heart (away from body or away from lungs), thinner and less elastic walls, have valves to prevent backflow of blood
Identify three characteristics of arteries	Have thick walls, carry blood at high pressure away from heart (to body or to lungs), have no valves, have more elastic walls, arterioles
Identify three characteristics of capillaries	Small, allow carbon dioxide, water & waste products to pass through, thin walls

THREE: ...



GCSE PE UNIT 1: EFFECTS OF EXERCISE

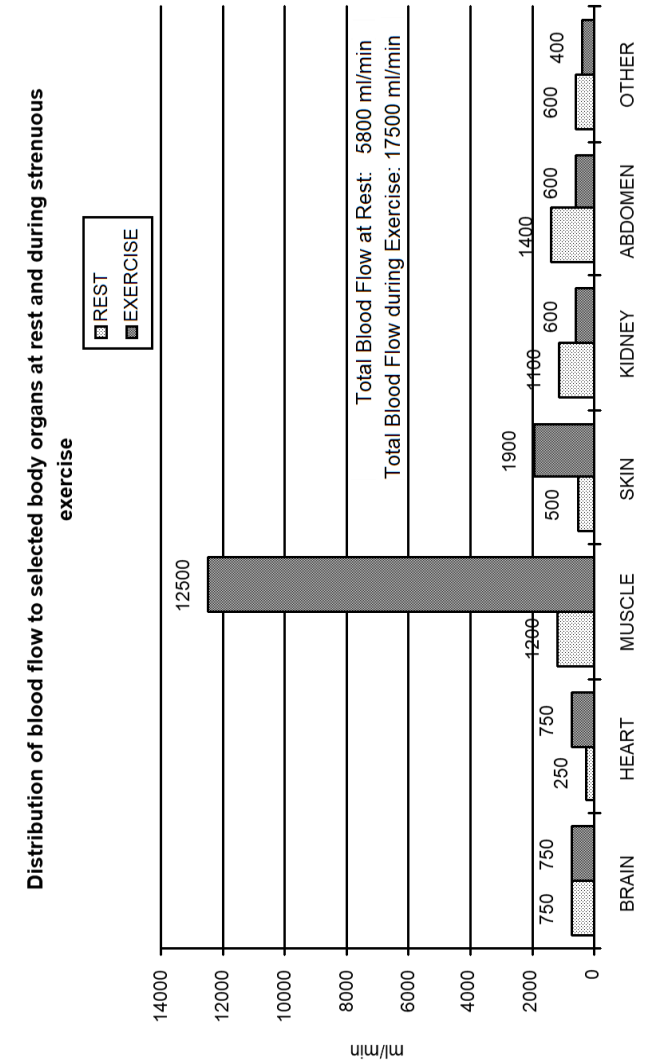
ONE: Key Vocabulary

Word	Definition
Capillarisation	The development of blood capillaries in the body which increases through long term effects of exercise.
Hypertrophy	The increase in size of skeletal or cardiac muscle.
Lactic acid	A waste product produced in the muscle tissues during strenuous exercise where the anaerobic energy system is in use.
Rate of recovery	The speed at which the body returns back to normal after exercise.
Redistribution of blood flow / Vascular shunt	When you exercise the blood is diverted from inactive areas to the muscles that are being used. This action is completed through vasodilation and vasoconstriction
Vasodilation	Widening of the diameter of a blood vessel to increase blood flow
Vasoconstriction	Narrowing of the diameter of a blood vessel to decrease blood flow
Anticipatory rise	Raising of the heart rate before exercise begins. Caused by adrenaline

TWO: Core Questions

Question	Answer
Identify three long term effects of exercise	Change in body shape, muscle/cardiac hypertrophy, increase muscular strength, increase muscular endurance, lower resting heart rate, improved flexibility, improved muscular endurance
Identify three short term effects of exercise	Increased heart rate, increase stroke volume, increased cardiac output, sweaty, red face, increase in breathing rate, increased tidal volume, increased minute ventilation, fatigue, nausea, headaches, aching, DOMS, cramp
What is Bradycardia?	A resting heart rate of fewer than 60 beats per minute (BPM)
Increased heart rate and increased stroke volume leads to...	Increased cardiac output
What is adrenaline?	Is a hormone that is released to prepare the body for 'fight or flight'

THREE: ...



GCSE PE UNIT 2: SPORTS PSYCHOLOGY

ONE: Key Vocabulary

Word	Definition
Closed skill	Skills that are performed in a predictable environment. E.g. a Player taking a line out in Rugby.
Complex skill	A skill which requires a lot of focus and decision making to perform.
Motor Skill?	Learned actions or learned behaviours with the intention of bringing about predetermined results
Feedback	Information that is given to a performer either during or after their performance with the aim of improving future performances.
Guidance	Given to aid the learning of a skill.
Mental preparation	The rehearsal of a physical skill that takes place within the mind of the performer without any actual physical movement.
Open skill	These are affected by the environment and are predominantly perceptual as they must be adapted to suit the environment. These skills are usually externally paced. E.g. a pass within a game situation in football.
Simple skill	Consists of basic movement actions that are not difficult to perform with few decisions to make. E.g. A chest pass, a straight up and down jump.
Skilful movement	A fluent and coordinated movement which is efficient, technically accurate and aesthetically pleasing.
Skills continua	A method of categorising skills along a continuum, classified according to their level of difficulty.

TWO: Core Questions

Question	Answer
Explain verbal guidance	This involves using your sense of hearing and could involve listening to a coach give instructions.
Explain visual guidance	This involves the performer being able to actually see something using sight which could be a demonstration, a video, you tube clip or photograph, chart, court markings.
Explain mechanical guidance	This involves the use of objects or aids such as RoboGolfPro machine for golfers to practice the golf swing, floats in swim.
Explain manual guidance	This is where the performer can be assisted in a physical movement e.g. supporting somebody do a gym vault.
Describe knowledge of results	This is feedback the performer gets through the end result of a performance e.g. the score, how many runs made
Describe knowledge of performance	This is how the performer feels about their actions from the performance that has just taken place
Describe what is meant by positive feedback	Feedback about what was good and correct about a performance
Describe what is meant by negative feedback	Feedback about what was bad or incorrect about a performance

THREE: ...

Specific A specific goal, not a vague desire to improve
Measurable There is standard to measure progress against
Achievable The goal is agreed by both the performer and the coach
Realistic It is possible to achieve
Timed A specific time period gives the goal added focus

Write your own SMART target:

Specific:

Measurable:

Achievable:

Realistic:

Timed:

CNAT SPORT STUDIES

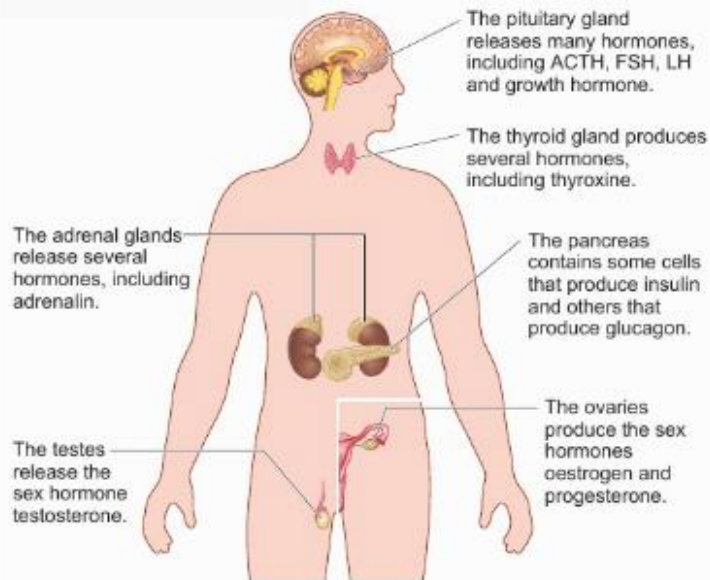
- UNIT R184: CONTEMPORARY ISSUES IN SPORT

Topic Area 1: Issues which affect participation in sport	Topic Area 3: The implications of hosting a major sporting event for a city or country
Teaching content	Teaching content
<p>1.1.1 Different user groups who participate in sport:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Gender <input type="checkbox"/> People from different ethnic groups <input type="checkbox"/> Retired people/people over 60 <input type="checkbox"/> Families with children <input type="checkbox"/> Carers <input type="checkbox"/> People with family commitments <input type="checkbox"/> Young children <input type="checkbox"/> Teenagers <input type="checkbox"/> People with disabilities <input type="checkbox"/> Parents (singles or couples) <input type="checkbox"/> People who work <input type="checkbox"/> Unemployed/economically disadvantaged people 	<p>3.1.1 The types and scheduling of major sporting events:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Regular <input type="checkbox"/> 'One-Off' <input type="checkbox"/> Regular and recurring <p>3.1.2 The nature of the participants and spectators</p>
<p>1.2.1 Possible barriers which affect participation in sport:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Employment and unemployment <input type="checkbox"/> Family commitments <input type="checkbox"/> Lack of disposable income <input type="checkbox"/> Lack of transport <input type="checkbox"/> Lack of positive sporting role models <input type="checkbox"/> Lack of positive family role models or family support <input type="checkbox"/> Lack of appropriate activity provision <input type="checkbox"/> Lack of awareness of appropriate activity provision <input type="checkbox"/> The lack of equal coverage in media in terms of gender and ethnicity by the media 	<p>3.2.1 Positive and negative pre-event aspects of hosting a major sporting event:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Bidding for the event <input type="checkbox"/> Infrastructure and transport systems development <input type="checkbox"/> Financial/commercial investment/support <input type="checkbox"/> The potential for increased employment <input type="checkbox"/> Local/national objections to the bidding process
<p>1.3.1 Possible solutions to the barriers which affect participation in sport:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Provision of: - Appropriate programmes - Sessions - Activities - Times for the different user groups <input type="checkbox"/> Promotion strategies: - The use of targeted promotion - Role models - Initiatives <input type="checkbox"/> Increased and appropriate transport availability <input type="checkbox"/> Availability of appropriate user group facilities and equipment <input type="checkbox"/> Improved access to facilities for all user groups <input type="checkbox"/> Appropriate pricing for all user groups 	<p>3.3.1 During the event:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Positive aspects/benefits include: - Improved social infrastructure - Improved national morale/social cohesion - Increase in national status - Greater national interest in sport - Increased media coverage of the sport(s) - A potential increase in direct and indirect tourism - An increase in short-term employment during the event <input type="checkbox"/> Negative aspects/drawbacks include: - An increase in transport, litter and noise - The potential for an increase in terrorism and crime - Poor performance by home nation/team and the impact on national pride/morale - Perceived relegation/lack of investment in regional areas not involved in the national event - Negative media coverage of perceived deficiencies in the organisation or infrastructure/facilities
<p>1.4.1 Positive and negative impacts on the popularity of sport in the UK includes:</p> <ul style="list-style-type: none"> <input type="checkbox"/> The number of people participating <input type="checkbox"/> The provision of facilities <input type="checkbox"/> Environment/climate activity influences <input type="checkbox"/> Live spectator opportunities <input type="checkbox"/> The amount and range of media coverage <input type="checkbox"/> The high-level success of both individuals and teams <input type="checkbox"/> The number and range of positive role models available in a sport <input type="checkbox"/> Social acceptability 	<p>3.3.2 Immediate and longer term post-event:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Positive aspects/benefits include: - A legacy of improved/new sporting facilities - An increase in the sports' participation - An increase in the profile of sports involved - A legacy of improved transport and social infrastructure - Raising of the city/nation's international profile/ status - An increase in future financial investment <input type="checkbox"/> Negative aspects/drawbacks include: - The event might have costed more to host than the revenue generated - Sports facilities unused after the event - A loss in national reputation/status if the event was badly organised, the host nation's participants performed badly, or scandals emerged
<p>1.5.1 The growth of emerging/new sports in the UK:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Examples of current emerging sports <input type="checkbox"/> The development and opportunities to participate in emerging sports 	

Combined and separate Biology B7: Hormones

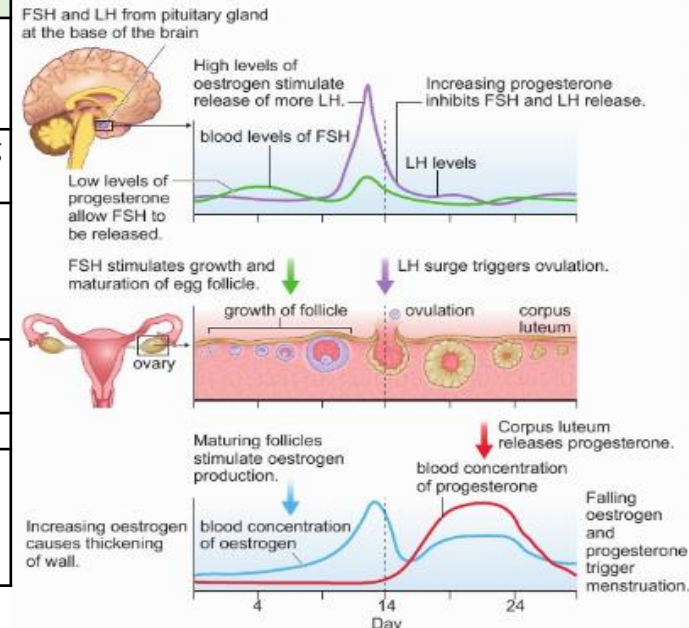
Combined and Separate lessons

- Hormones
 - Thyroxine and adrenalin
 - The menstrual cycle
 - Hormones and the menstrual cycle
 - Contraception and fertility treatment
 - Controlling blood glucose
 - Diabetes
- Separate only lessons**
- Thermoregulation
 - Osmoregulation
 - kidneys



3. The menstrual cycle

Menstrual cycle	A (roughly) 28 day cycle that prepares a woman's body for pregnancy.
Fertilisation	When a sperm cell fuses with an egg cell to form a zygote.
Days 1-5	Menstruation (a period): the lining of the uterus breaks down and leaves the body through the vagina.
Days 6-12	The uterus lining begins to thicken again.
Days 13-15	Ovulation happens- release of egg
Days 16-28	The uterus lining continues to thicken and would be able to accept an embryo if fertilisation happens.



1. Hormones

Hormone	A chemical messenger that changes the way a part of the body works.
Important hormones	Insulin, glucagon, adrenalin, oestrogen, progesterone, testosterone, thyroxine, LH, FSH, ACTH, growth hormone.
Endocrine gland	Parts of the body that produce hormones
Important endocrine glands	Pituitary gland, thyroid gland, pancreas, adrenal glands, ovaries and testes.
Target organ	The part of the body affected by a hormone.
Important hormones	Insulin, glucagon, adrenalin, oestrogen, progesterone, testosterone, thyroxine, LH, FSH, ACTH, growth hormone.
Sex hormones	Women: oestrogen and progesterone Men: testosterone

2. Thyroxine and adrenaline (HT)

Metabolic rate	The rate at which the bod uses the energy stored in food.
Thyroxine	Role: To control your metabolic rate. Endocrine gland: Thyroid gland Target organ: Most of the body
Negative feedback	The way the body responds to high levels of something by bringing them down, and low levels by bringing them up.
<p>The diagram shows the following process:</p> <ul style="list-style-type: none"> Hypothalamus releases TRH (Thyrotrophic Releasing Hormone), which stimulates the Pituitary gland. The Pituitary gland releases TSH (Thyroid Stimulating Hormone), which stimulates the Thyroid gland. The Thyroid gland releases thyroxine, which acts on target organs. Negative feedback: <ul style="list-style-type: none"> If thyroxine levels are higher than normal, it inhibits the hypothalamus and pituitary. If thyroxine levels are lower than normal, it stimulates the hypothalamus and pituitary. 	
Adrenaline	Role: To prepare the body for fight or flight Endocrine gland: Adrenal glands Target organ: Heart (beats faster and stronger), blood vessels going to muscles (get wider), blood vessels going to organs (get narrower), liver (releases glucose)

4. Hormones and the menstrual cycle (HT)

Egg follicle	A layer of tissue surrounding each of the immature eggs in the ovaries.
Oestrogen	Causes the release of FSH and the thickening of the uterus lining. High oestrogen levels cause LH release.
FSH	Causes one follicle to develop and mature the egg cell within it.
LH	Causes ovulation when the egg is released from the follicle.
Corpus luteum	The follicle becomes a corpus luteum after ovulation, and releases progesterone. It breaks down over two weeks.
Progesterone	Maintains the thickness of the uterus lining, inhibits FSH release. Falling progesterone levels trigger ovulation.

Combined and separate Biology B7: Hormones

5 Contraception and fertility treatment	
Contraception	Preventing sexual intercourse from leading to fertilisation and pregnancy.
Condom	Worn on the penis, they prevent sperm from entering the vagina. Also prevent STDs.
Diaphragm or cap	Placed over the cervix at the top of the vagina. Prevent sperm entering uterus, do not prevent STDs.
Contraceptive pill / implant	Uses hormones to prevent ovulation. Does not prevent STDs.
Clomifene therapy	Clomifene increases the levels of FSH and LH to make egg successful ovulation more likely.
In vitro fertilisation (IVF)	Sperm is extracted from a man, and eggs from a woman. The eggs are fertilised in a laboratory and one or more is placed into the uterus.

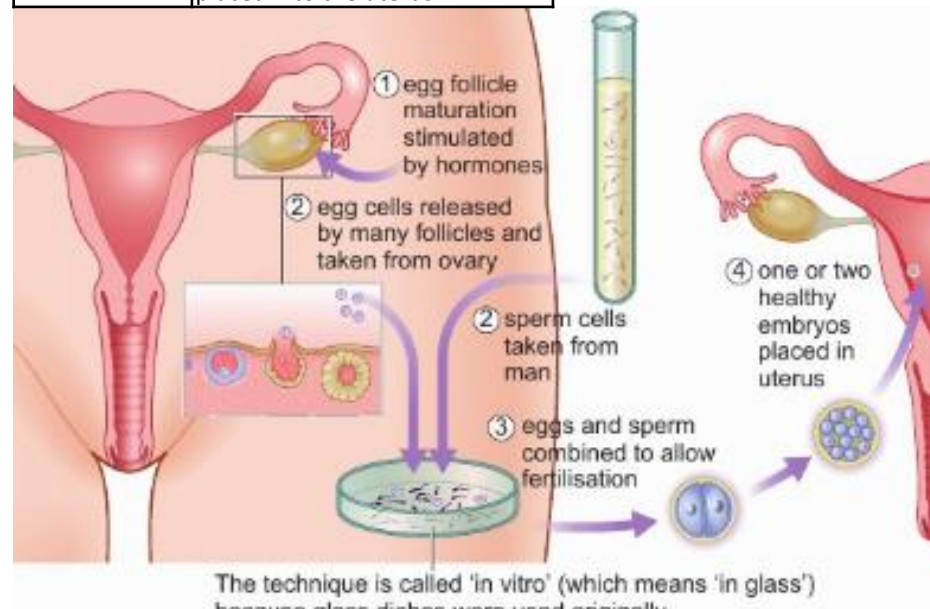
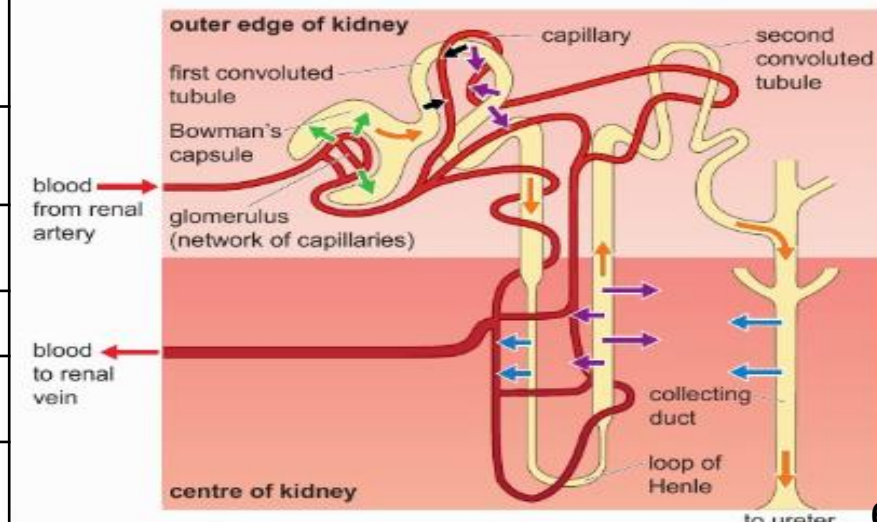
6. Controlling blood glucose	
Homeostasis	Maintaining constant conditions in the body, such as temperature or blood glucose concentration.
Blood glucose concentration	The concentration (amount) of glucose in the blood. Both too high and too low are dangerous.
Glycogen	A stored form of glucose made by joining glucose molecules together in long chains.
Insulin	Role: To reduce blood glucose concentration Endocrine gland: Pancreas Target organ: Liver and muscles which convert glucose into glycogen.
Glucagon	Role: To increase blood glucose concentration Endocrine gland: Pancreas Target organ: Liver and muscles which convert glycogen back into glucose.

7. Diabetes	
Diabetes	A disease in which the body cannot quickly reduce blood glucose concentrations after eating.
Type 2 diabetes	Diabetes caused when a person does not produce enough insulin (because of very high glucose levels) or stops responding to insulin.
Risk factors for type 2 diabetes	Obesity and inactivity (lack of exercise).
Treating type 2 diabetes	Low-sugar diet, increased exercise, medication to make the body more sensitive to insulin.
Measuring obesity	BMI = mass in kg / height in metres ² Waist:hip ratio = waist / hip

9. Osmoregulation separate only	
Osmoregulation	Controlling water and salt concentrations
Dialysis	Using a machine to filter the blood a few times a week

10. The kidneys separate only	
Selective Reabsorption	The absorption of some of the substances back into the blood
Loop of Henle	Part of the nephron where water and salt is reabsorbed
Collecting duct	Where urine is collected from the distal convoluted tubule
ADH	Hormone that controls the level of water reabsorption
Nephrons	Is the basic structural and functional unit
Glomerulus	A cluster of capillaries around the
Bowman's	A cup-like sack at the beginning of the nephron
Ultrafiltration	It is the non-specific filtration of the blood under high pressure

8. Thermoregulation separate only	
Thermoregulation	Controlling your body internal body temperature
Shivering	Muscles begin to shake to create metabolic heat
Erector Muscle	A muscle which causes goosebumps
Vasodilation	The dilatation of blood
Vasoconstriction	The constriction of blood
Sweating	This causes heat loss through evaporation.



Lesson sequence

- Hydrocarbons
- Fractional distillation of crude oil
- The alkanes
- Complete and incomplete combustion
- Fuels and pollution
- Cracking
- The early atmosphere
- The changing atmosphere
- The atmosphere today
- Climate change

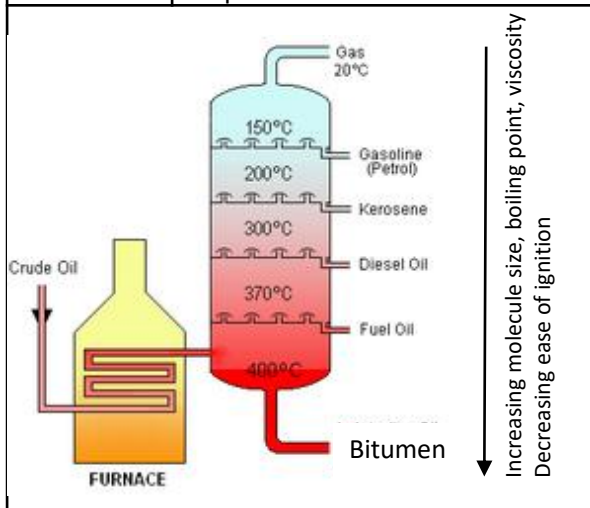
1. Hydrocarbons

Hydrocarbon	A compound containing only hydrogen and carbon.
Crude oil	A thick brown liquid made of a mixture of many different hydrocarbons found in deposits underground.
Properties of hydrocarbons in crude oil	Most of the hydrocarbons in crude oil are liquids, but each of them has a different boiling point.
Hydrocarbons in crude oil	Mostly alkanes.
Uses of crude oil	Fuel, feedstock (supply of basic chemicals) for the chemical industry.
Crude oil as a finite resource	There is a limited amount: at some point it will run out.
Non-renewable	A resource that will eventually run out.

2. Fractional distillation of crude oil

Fractional distillation	A type of distillation used to separate mixtures of two or more liquids.
--------------------------------	--

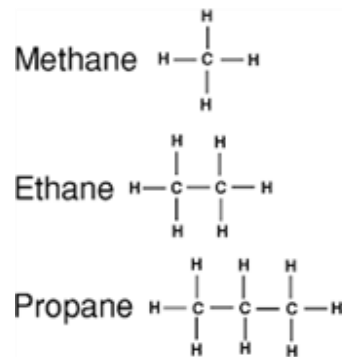
Separation in fractional distillation	Fractional distillation separates compounds according to their boiling point.
Separating crude oil in a fractionating column	Crude oil is passed through a heater to heat it to about 400°C so that nearly everything is a gas. The hot gases rise up the fractionating column until cool enough to condense.
Fractions of crude oil	The separated liquids and gases collected at different temperatures.



Viscosity	How easily a fluid flows – higher viscosity = runnier.
Ease of ignition	How easily a substance catches fire.
Uses of fractions	Gases-domestic heating & cooking Petrol-fuel for cars Kerosene-fuel for aircraft Diesel oil-fuel for larger vehicles Fuel oil-fuel for ships & power stations Bitumen-surfacing roads & roofs

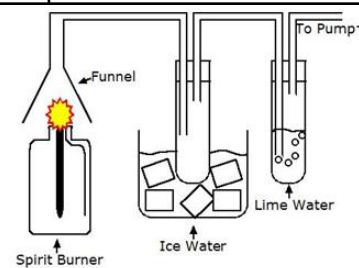
3. The alkanes

Homologous series	A family of closely related compounds with molecular formulae that differ only in the number of 'CH ₂ 's.
Physical properties in a homologous series	Vary gradually, for example the boiling point gradually increases.
Chemical properties in a homologous series	Very similar.
General formula	Describes the number of each atom in any member of a homologous series. Alkanes = C _n H _{2n+2}
Alkanes	Hydrocarbons containing only single bonds. The names end with '-ane'.
First three alkanes	Methane – CH ₄ Ethane – C ₂ H ₆ Propane – C ₃ H ₈

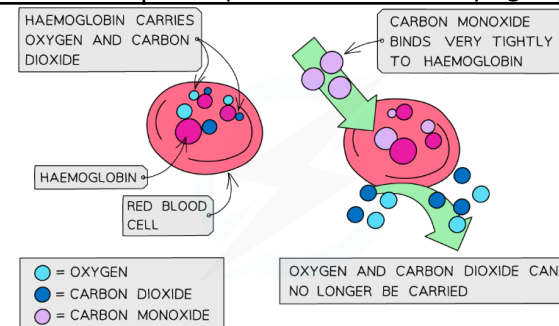


4. Complete and incomplete combustion

Combustion	When a compound reacts with oxygen producing energy.
Complete combustion	Combustion that produces only water and carbon dioxide and releases the most possible energy.
Complete combustion equation	Fuel + oxygen → carbon dioxide + water $2\text{C}_2\text{H}_6 + 7\text{O}_2 \rightarrow 4\text{CO}_2 + 6\text{H}_2\text{O}$



Incomplete combustion	Combustion that produces a mixture of carbon dioxide, carbon monoxide, carbon and water and produces less energy.
Why incomplete combustion happens	When there is not enough oxygen for all of the reactants to be fully oxidised.
Carbon monoxide	CO. A colourless odourless a highly toxic gas.
How carbon monoxide kills	It sticks to haemoglobin in the blood which prevents it from carrying oxygen.




Combined Chemistry SC20-21: Fuels and the atmosphere

Soot	The small particles of carbon produced by incomplete combustion.
Problems with soot	- Causes lung problems when breathed in - Blackens and dirties buildings
Preventing incomplete combustion	It is important that boilers at home have a good air supply to prevent incomplete combustion. For this reason a boiler's flue pipe should be checked for blockages every year.


5. Combustible fuels and pollution

Sulfur	An impurity that is naturally present in small amounts in oil and coal.
Sulfur dioxide	SO ₂ . A gas formed from the sulfur in oil and coal when it is burnt.
Acid rain	Rain with a pH lower than 5.2
Formation of acid rain	Sulfur dioxide dissolves in water in clouds to form sulfurous acid (H ₂ SO ₃) which oxidises to become sulfuric acid (H ₂ SO ₄)


The effects of acid rain.



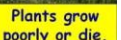
Corrodes metals.



Erodes limestone & marble Buildings.



Acidifies lakes; insects and fish die, eggs don't hatch.

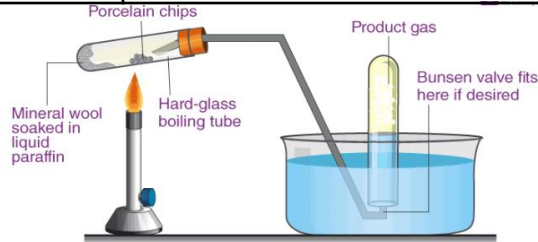


Makes soil more acidic.
Plants grow poorly or die.

Nitrogen oxides	NO _x . Various gases formed at high temperatures inside internal combustion engines.
Problems of nitrogen oxides	- Can dissolve in clouds to form acid rain - NO ₂ causes lung damage - NO _x can cause smog to form

6. Cracking

Cracking	Breaking down longer less useful hydrocarbons into shorter more useful ones.
How to crack hydrocarbons	Heat the hydrocarbons and pass the vapours over an aluminium oxide catalyst heated to 650°C.



Products of cracking an alkane	An alkane and an alkene. Hexane → butane + ethene C ₆ H ₁₄ → C ₄ H ₁₀ + C ₂ H ₄
---------------------------------------	---

Alkene	A hydrocarbon containing a C=C double bond.
---------------	---

Usefulness of cracking	There is more demand for shorter hydrocarbons – such as petrol and gas – than longer ones such as bitumen. Cracking turns the less useful ones into more useful ones.
-------------------------------	---

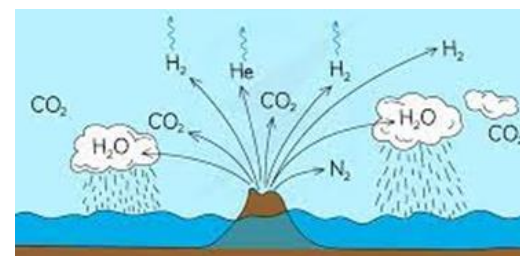
Hydrogen gas as a fuel	H ₂ . Hydrogen has the potential to be used as a fuel for cars.
-------------------------------	--

Advantages of hydrogen as a fuel	- It only produces H ₂ O when burnt so does not directly contribute to global warming - It can be produced using renewable energy
---	---

Disadvantages of hydrogen as a fuel	- Most of it is currently produced in ways that also produce CO ₂ which contributes to global warming - It is difficult to store
--	--

7. The early atmosphere

The early Earth	4.5-3.5 billion years ago the Earth was extremely hot and there were many volcanoes.
The early atmosphere	Little or no oxygen, a lot of carbon dioxide, water vapour, small amounts of other gases such as nitrogen.
Origin of the early atmosphere	Gases from volcanoes.



Evidence for a lack of oxygen	The oldest rocks on Earth contain compounds such as iron pyrite that cannot form in the presence of oxygen.
--------------------------------------	---

Formation of the oceans	As the Earth cooled, water vapour in the air condensed, forming the oceans.
--------------------------------	---

8. The changing atmosphere

Changes to the atmosphere	The amount of carbon dioxide decreased, water vapour decreased, oxygen increased.
----------------------------------	---

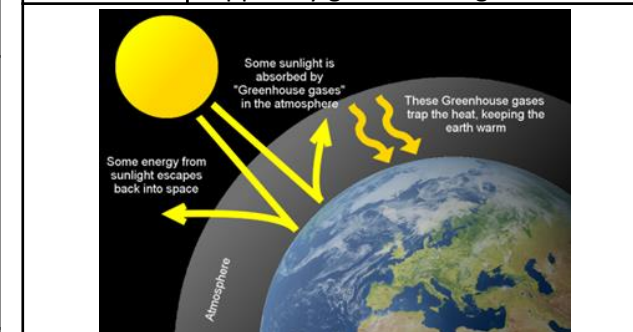
Photosynthesis and the atmosphere	Photosynthesis – by cyanobacteria and plants – consumes carbon dioxide (decreasing it) and produces oxygen (increasing it).
--	---

Oceans and carbon dioxide	Carbon dioxide dissolves in the ocean and is used by sea creatures to make their shells, enabling even more CO ₂ to dissolve.
----------------------------------	--

Test for oxygen	A glowing splint (stick) placed in oxygen will relight.
------------------------	---

9 and 10. Global warming

Greenhouse effect	Infrared radiation (heat) from the sun travels through the atmosphere and warms the ground. The ground re-emits slightly different infrared radiation that is not able to pass back through the atmosphere and is trapped by greenhouse gases.
--------------------------	--



Greenhouse gases	Including carbon dioxide, methane and water vapour.
-------------------------	---

Importance of the greenhouse effect	The greenhouse effect is extremely important; without it the average global temperature would be 32 °C lower and most life could not exist.
--	---

Increased greenhouse effect	Human activities are increasing the concentration of greenhouse gases such as carbon dioxide and methane, meaning the greenhouse effect is strong and traps more heat.
------------------------------------	--

Global warming	Increase in global temps caused by increased greenhouse effect.
-----------------------	---

Climate change	Change in global weather patterns caused by global warming.
-----------------------	---

Effects of climate change	- Rising average global temperature - Rising sea level from melting ice - Increased drought in some areas and flooding in others - Increase in dangerous weather
----------------------------------	---

Lesson sequence

1. Electrolysis
2. Half-equations (HT)
3. Products of electrolysis
4. Core practical – electrolysis of copper sulfate solution

1. Electrolysis

Electrolysis	Using direct current to break compounds down into their elements.
Electrolyte	Liquid used for electrolysis because ions can move – either molten or dissolved ionic compounds
Electrolysis of solids	Does not work as ions can't move.
Cathode	Negative electrode where cations (+) are discharged.
Anode	Positive electrode where anions (-) are discharged.

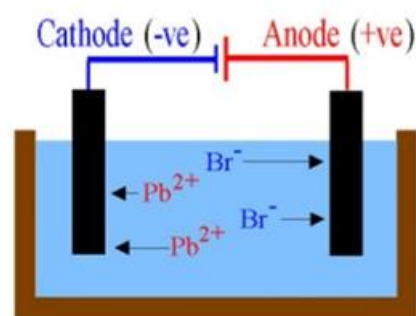
2. Half-equations (HT)

Oxidation	Loss of electrons (OIL)
Reduction	Gain of electrons (RIG)
AnOx	<u>A</u> node is for <u>o</u> xidation
CaRe	<u>C</u> athode is for <u>r</u> eduction
Half-equations	An equation that shows what happens to just one of the ions during chemical reaction. Two half-equations combine to give the overall ionic equation
Half-equations in electrolysis	Show electron transfer: Cathode (reduction): $M^+ + e^- \rightarrow M$ Anode (oxidation): $X^- \rightarrow X + e^-$

Electrons in half equations	Cations will gain the same number of electrons as their charge. Anions will lose the same number of electrons as their charge.
Non-metals in half-equations	Most non-metals will form molecules: $O_2, F_2, Cl_2, Br_2, I_2$ etc – so you will need two of them in the half-equation. $O^{2-} \rightarrow O_2 + 4e^-$
Gas test for chlorine	Damp blue litmus paper Turns red, then white

3. Products of electrolysis

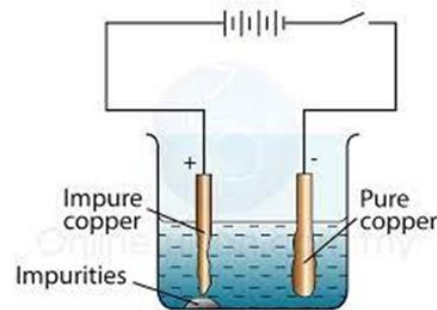
Discharged	When an ion loses its charge to become an atom
Electrolysis of molten salts	Cathode: metal produced Anode: non-metal produced

Electrolysis of molten lead bromide


Lead produced at the cathode $Pb^{2+} + 2e^- \rightarrow Pb$

Bromine produced at the anode $2Br^- \rightarrow Br_2 + 2e^-$

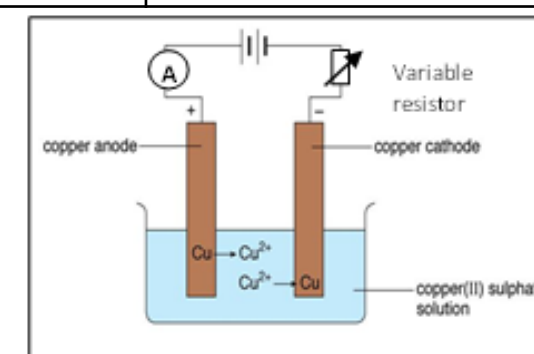
Ions in salt solutions	Metal, non-metal and H^+ and OH^- from water
Electrolysis of salt solutions - cathode	Metal, unless reactive metal such as K, Na, Li, Mg, Ca in which case hydrogen.
Hydrogen half-equation	$2H^+(g) + 2e^- \rightarrow H_2(g)$
Electrolysis of salt solutions - anode	Non-metal if it is a halide ion. If sulphate salt oxygen from OH^- $4OH^- \rightarrow O_2 + 2H_2O + 4e^-$
Electrolysis of water	Cathode: hydrogen Anode: oxygen
Gas test for hydrogen	Lit splint Squeaky pop
Gas test for oxygen	Glowing splint relights
Purifying copper - setup	Anode: impure copper Cathode: pure copper Electrolyte: copper sulphate solution



Purifying copper - explanation	Copper atoms leave the anode ($Cu \rightarrow Cu^{2+} + 2e^-$), travel through solution and go to cathode ($Cu^{2+} + 2e^- \rightarrow Cu$). Impure atoms on the anode fall to the bottom as sludge.
---------------------------------------	--

4. Core practical – electrolysis of copper sulfate solution

Video of practical	Search you tube 'Edexcel core practical electrolysis copper sulfate'
Aim	To see how the changing the current affects the rate of electrolysis.
Prepare electrodes	Clean two copper electrodes, label one anode and one cathode, weigh each and record mass.



Run the experiment	Switch the power supply on, adjust the variable resistor so the ammeter reads 0.2 A and leave for 20 minutes.
Record results	Carefully remove each electrode, rinse them with water and then with propanone. Re-weigh each and record.
Variations	Repeat the experiment with a current of 0.3 A, 0.4 A and 0.5 A.
Results	The anode loses mass whilst the cathode gains mass. The higher the current the greater the mass change.

Lesson sequence

1. Transition metals
2. Corrosion
3. Electroplating
4. Alloying
5. Uses of metals and their alloys

1. Transition metals

Transition metals Metal element in the block between groups 2 and 3 in the periodic table.



Physical properties Transition metals have typical properties of metals: malleable, ductile, high melting points, high densities

Malleable A substance that can be hammered or rolled into shape without shattering.

Ductile A substance that can be stretched out to make a thin wire.

Chemical properties Transition metals form metal compounds that are coloured and show catalytic activity



Catalyst A substance that speeds up a process, without itself being used up.

2. Corrosion

Corrosion The gradual deterioration of a substance when it reacts with substances in the environment, for example when a metal oxidises in air.

Desiccant A substance that absorbs water or water vapour.

Oxidise To gain oxygen in a chemical reaction, or to lose electrons.

Rusting The corrosion of iron or steel. (Water and oxygen must be present for rusting to occur.)

Sacrificial protection Using a more reactive metal to protect iron from rusting.



Tarnish A thin layer that forms on a metal due to oxidation. A metal is also said to tarnish as this layer forms.

3. Electroplating

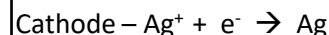
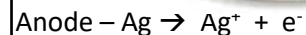
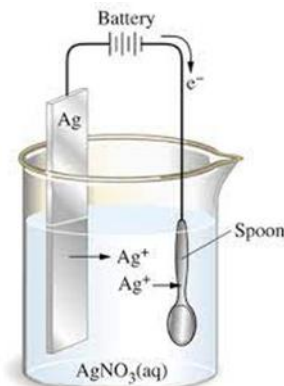
Anode The positive electrode.

Cathode The negative electrode.

Electrolyte An ionic compound that is molten or dissolved in water.

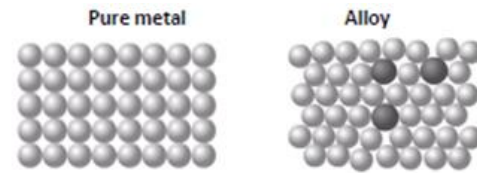
Electroplating Using electricity to coat one metal with a thin layer of another metal.

Galvanising Coating iron or steel with a thin layer of zinc to improve its resistance to rusting.



4. Alloying

Alloy A metal with one or more other elements (usually metals) added to improve its properties. They are harder than pure metals because atoms of different sizes disrupt the layers so they cannot slide over each other.



Stainless steel Alloy steel containing elements such as chromium, to resist rusting.

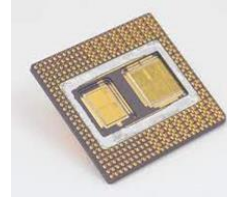
Alloy steel Iron with other elements added to make an alloy.

5. Uses of metals and their alloys

Properties The uses of a metal or alloy depend upon its chemical and physical properties.

Copper Used for electrical wiring as it resists corrosion, is a very good conductor and is malleable and ductile.

Gold Used in tiny amounts to connect microprocessors as like copper it is a very good conductor but is too expensive for wiring.



Aluminium Also a good conductor and due to its low density is used for overhead electrical cables



Brass An alloy of copper and zinc. Used for plug pins as stronger than copper.

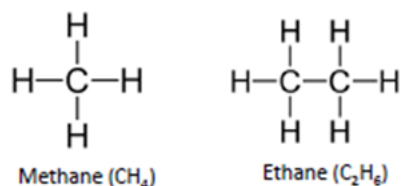
Magnalium An alloy of aluminium and magnesium. Used for aircraft parts, it is less dense than aluminium alone and stronger.

Lesson sequence

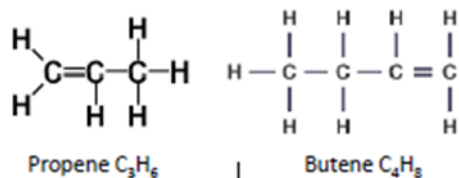
- Alkanes and alkenes
- Reactions of alkanes and alkenes
- Ethanol production
- Alcohols
- Core practical – combustion of alcohols
- Carboxylic acids
- Addition polymerisation
- Polymer properties and uses
- Condensation polymerisation
- Problems with polymers

1. Alkanes and alkenes

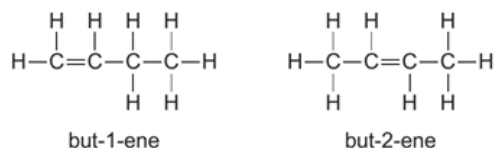
Functional group	An atom or group of atoms that are mainly responsible for a molecule's chemical properties.
general formula	The formula showing the proportions of different atoms in molecules of a homologous series. For example, alkenes have the general formula C_nH_{2n} .
homologous series	A family of compounds that have the same general formula, functional group and similar chemical properties. They increase by CH_2 .
hydrocarbons	A compound containing only carbon and hydrogen atoms.
saturated	A molecule that contains only single bonds between the carbon atoms in a chain.
unsaturated	A molecule that contains one or more double bonds between carbon atoms in a chain.
Alkanes	Alkanes are saturated hydrocarbons. Obtained by fractional distillation of crude oil Functional group: none General formula: C_nH_{2n+2}



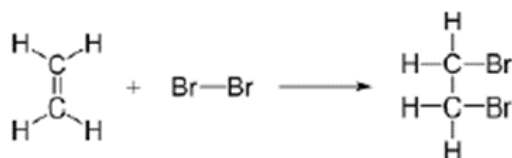
Alkenes Alkenes are unsaturated hydrocarbons.
They are produced by cracking alkanes
Functional group: C=C
General formula: C_nH_{2n}



isomers Molecules with the same molecular formula but different arrangements of atoms.


2. Reactions of alkanes and alkenes

addition reaction A reaction in which reactants combine to form one larger product molecule and no other products.


Testing for alkenes

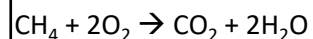
Alkenes react with bromine water, bromine water changes from orange to colourless.

(Alkanes do NOT react with bromine water, the bromine water stays orange)

complete combustion

Combustion of hydrocarbons with enough oxygen to convert all the fuel into carbon dioxide and water.

e.g. methane + oxygen \rightarrow carbon dioxide + water


incomplete combustion

When a substance reacts only partially with oxygen, such as when carbon burns in air producing carbon dioxide, carbon monoxide and soot (unburnt carbon).

oxidation

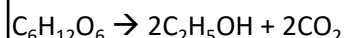
A reaction in which oxygen is added to a chemical.

3. Ethanol production

fermentation Anaerobic respiration occurring in microorganisms. Reaction used to produce alcoholic drinks.

Glucose \rightarrow ethanol + carbon

dioxide


Conditions required for fermentation

Anaerobic conditions

Warm

Mix carbohydrate with water

anaerobic respiration

A type of respiration that does not need oxygen.

carbohydrate

A group of compounds made of carbon, hydrogen and oxygen. Sugars and starch are examples of carbohydrates.

enzyme

A protein that can speed up some processes in living things (e.g. breaking down food molecules).

Yeast is used in fermentation

fractional distillation

A method of separating, or partially separating, mixtures of liquids into different fractions depending on their boiling points.

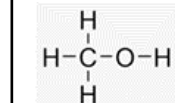
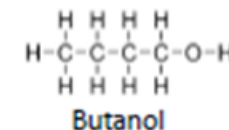
Fractional distillation is used to increase the concentration of ethanol in alcoholic drinks

4. Alcohols
Functional group

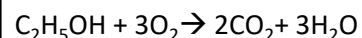
-OH E.g. ethanol $\text{C}_2\text{H}_5\text{OH}$

General formula

$\text{C}_n\text{H}_{2n+1}\text{OH}$


Methanol

Reactions of alcohols

-combustion



-oxidation to form carboxylic acids

-react with reactive metals such as sodium forming a salt and hydrogen

5. Core Practical – Combustion of alcohols

Video for practical	Search you tube 'Edexcel core practical combustion of alcohols'
Aim	To investigate the temperature rise produced by combustion of alcohols
Setup	Place 100cm ³ of water in a conical flask and measure initial temperature. Measure mass of spirit burner.
Method	Light wick and allow water to heat up by about 40°C. Measure final mass of spirit burner and record final temperature Repeat with different alcohols
Results	Calculate the mass of alcohol burned to produce a 1°C temperature rise by dividing the mass of alcohol burnt by the temperature rise

6. Carboxylic acids

Functional group	-COOH E.g. ethanoic acid CH ₃ COOH
General formula	C _n H _{2n+1} COOH
CARBOXYLIC ACIDS	

Production of carboxylic acids	Carboxylic acids are produced by the oxidation of alcohols using an oxidising agent. [O] C ₃ H ₇ OH + [O] → C ₃ H ₅ COOH + H ₂ O
Chemical properties of carboxylic acids	-form solutions with pH less than 7 -react with metals to form a salt and hydrogen -react with bases to form a salt and water -react with carbonates to form a salt, water and carbon dioxide
Oxidising agent	A substance that causes another substance to be oxidised in an oxidation reaction.
	Magnesium + propanoic acid → magnesium propanoate + hydrogen Mg + 2C ₂ H ₅ COOH → Mg(C ₂ H ₅ COO) ₂ + H ₂
Test for carboxylic acids	Add calcium carbonate – fizzes producing a gas, carbon dioxide, that turns limewater cloudy

7. Addition Polymerisation

monomer	A small molecule used to make a polymer.
polymer	A long-chain molecule made by joining many smaller molecules (monomers) together.
polymerisation	A reaction in which a large number of small molecules (monomers) join together to form a long chain polymer
repeating unit	The part of a polymer that can be repeated many times to form the polymer chain.
addition polymerisation	A type of polymerisation in which the monomers add on to each other and no small molecules are eliminated.

repeating unit	The part of a polymer that can be repeated many times to form the polymer chain.
Repeat unit for polyethene	
synthetic polymer	A polymer that is manufactured in a laboratory or factory.
naturally occurring polymer	Exists naturally as a polymer in plants, animals etc., such as DNA, starch and proteins.

8. Polymer properties and uses

Polyethene	Properties - flexible, cheap, good insulator Uses – plastic bags, plastic bottles, cling film
Polypropene	Properties – flexible, does not shatter Uses – buckets and bowls, crates, ropes, carpets
Polychloroethene	Common name – polyvinyl chloride or PVC Properties – tough, insulator, can be hard or flexible Uses – window frames, gutters, pipes, insulation for wires
Poly tetrafluoroethene	Common name – TPFE/ Teflon Properties – tough, slippery Uses – non-stick coating for frying pans

9. Condensation polymers

ester	A compound formed when an alcohol and a carboxylic acid react together e.g. ethanol + ethanoic acid → ethyl ethanoate + water
condensation polymerisation	A reaction in which monomers join together to form a polymer and eliminate a small molecule, such as water. E.g polyesters
Ester link	This link is present in all polyester molecules. It consists of -COO-.

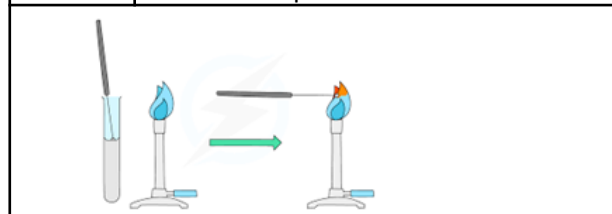
10. Problems with polymers

Non-biodegradable	Most synthetic polymers are not biodegradable, they do not break down.
Disposal of polymers by incineration	Some polymer waste is incinerated Pros – energy released can be used to generate electricity Cons – produces carbon dioxide (a greenhouse gas) and toxic fumes
Disposal of polymers by landfill	Half of polymer waste goes to landfill Pros – cheap and no toxic fumes Cons- polymers non-biodegradable so last a really long time and take up too much space in landfill sites
Disposal of polymers by recycling	Pros – conserves our resources of crude oil and stops land fill sites filling up Cons – difficult and expensive to recycle as lots of steps: collection, sorting into different types, cleaning, purifying.

Lesson sequence	
1.	Flame tests and photometry
2.	Tests for positive ions
3.	Tests for negative ions
4.	Core Practical – Identifying ions
5.	Choosing materials
6.	Composite materials
7.	Nano particles

1. Flame tests and photometry

Flame test	Used to identify metal ions in substances. Pick up a small sample of test substance using a wire loop and hold the sample in the Bunsen flame.
-------------------	--



Flame test colours	Lithium – red Sodium – yellow Potassium – lilac Calcium – red-orange Copper – blue-green
---------------------------	--

Flame photometer	A machine used to identify metal ions in solution and to determine their concentration. Compared to flame tests they are more sensitive and more accurate.
-------------------------	--

Calibration curve	A graph used to determine the concentration of a substance in a sample.
--------------------------	---

Emission spectrum	The spectrum of light emitted by a metal ion
--------------------------	--



Unknown solution	A metal ion can be identified by matching its spectrum to the spectrum from an unknown ion.
-------------------------	---

2. Tests for positive ions

Flame tests	A test used to identify metal ions in substances
--------------------	--

Cation	A positively charged ion formed by losing electrons.
---------------	--

Precipitation reaction	A reaction in which an insoluble product is formed from two soluble reactants.
-------------------------------	--

Precipitation reaction with sodium hydroxide	Different metal ions produce different coloured hydroxide precipitates: Iron (II) – green Iron (III) – brown Copper – blue Calcium – white Aluminium - white
---	---

Distinguishing between Calcium and aluminium	Add excess sodium hydroxide Calcium – white ppt remains Aluminium – white ppt dissolves to form a colourless solution
---	---

Balanced Equation	Copper sulfate + sodium hydroxide → copper hydroxide + sodium sulfate $\text{CuSO}_4 + 2\text{NaOH} \rightarrow \text{Na}_2\text{SO}_4 + \text{Cu(OH)}_2$
--------------------------	---

Ionic equation	$\text{Cu}^{2+} + 2\text{OH}^- \rightarrow \text{Cu(OH)}_2$
-----------------------	---

Ammonium ion test	Dilute sodium hydroxide solution is added and warmed gently. Ammonia gas is produced that turns red litmus paper blue.
--------------------------	--

Confirmatory test	A chemical test carried out to check the conclusion from the results of another test.
--------------------------	---

3. Tests for negative ions

Anion	A negatively charged ion formed by gaining electrons.
--------------	---

Halide ion	A negatively charged ion formed from one of the group 7 elements.
-------------------	---

Test for halide ions	Add nitric acid and silver nitrate solution. This will produce a coloured silver halide precipitate. Chloride – white Bromide – cream Iodide - yellow
-----------------------------	--

Halide test equation	$\text{KBr} + \text{AgNO}_3 \rightarrow \text{AgBr} + \text{AgNO}_3$
-----------------------------	--

ionic equation	$\text{Cl}^- + \text{Ag}^+ \rightarrow \text{AgCl}$
-----------------------	---

Test for carbonate ions	Add dilute hydrochloric acid to test substance. Bubbles of gas will be produced that turn limewater cloudy
--------------------------------	--

Carbonate test equation	$\text{CaCO}_3 + 2\text{HCl} \rightarrow \text{CaCl}_2 + \text{CO}_2 + \text{H}_2\text{O}$
--------------------------------	--

Test for sulfate ions	Add dilute hydrochloric acid and barium chloride solution. A white precipitate of barium sulfate forms.
------------------------------	---

Sulfate test equation	$\text{MgSO}_4 + \text{BaCl}_2 \rightarrow \text{BaSO}_4 + \text{MgCl}_2$
------------------------------	---

Ionic equation	$\text{Ba}^{2+} + \text{SO}_4^{2-} \rightarrow \text{BaSO}_4$
-----------------------	---

4. Core Practical – Identifying ions

Video for practical	Search you tube 'Edexcel core practical Identifying ions'
----------------------------	---

5. Choosing materials

Ceramics	A range of hard, durable, non-metallic materials, generally unaffected by heat.
-----------------	---

Glass	A solid produced by cooling a molten substance. The atoms are joined to form a giant structure without crystals.
--------------	--

Polymer	A substance made up of very long molecules formed by joining monomer molecules together.
----------------	--

Metals	Metals are strong, hard, shiny solids with high melting points. Good conductors
---------------	---

Alloy	A metal with one or more other elements added to improve its properties.
--------------	--

6. Composite material

Composite material	Mixture of 2 or more materials with contrasting properties, combined to produce materials with both properties.
---------------------------	---

Matrix	In a composite material, the substance that binds the reinforcement material together.
---------------	--

Reinforcement	In a composite material, the substance that is bound together by the matrix material.
----------------------	---

Compressive strength	A measure of how well a substance resists squashing.
-----------------------------	--

Tensile strength	A measure of how well a substance resists stretching.
-------------------------	---

7. Nanoparticles

Bulk	A substance in form of lumps or powders is described as being in bulk.
-------------	--

Nanoparticle	Piece of a material consisting of a few hundred atoms, 1 nm - 100 nm in size.
---------------------	---

Nanoparticle	A substance made of nanoparticles. They have different properties to bulk materials due to the small size of the particles and their high SA:V
---------------------	--

Use of nanoparticles	Titanium dioxide in sunscreen is transparent due to its small size but still absorbs UV
-----------------------------	---

Risks of nanoparticles	Due to small size they can be breathed in or can pass through cell membranes. High SA:V may allow them to catalyse harmful reactions.
-------------------------------	---

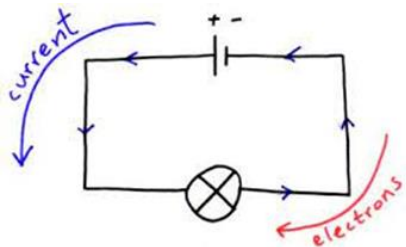
Combined and Separate Physics SP10 Electricity

Lesson sequence

1. Electric circuits
2. Current and potential difference
3. Current, charge and energy
4. Resistance
5. More about resistance
6. Core practical – investigating resistance
7. Transferring energy
8. Electrical power
9. Transferring energy by electricity
10. Electrical safety

1. Electric circuits

Delocalised electrons	Electrons that are free to move between many different atoms.
Conventional current	The flow of positive charge from the positive terminal towards the negative terminal (goes in the opposite direction to electrons).
Electron flow	Electrons flow from the negative terminal towards the positive terminal.

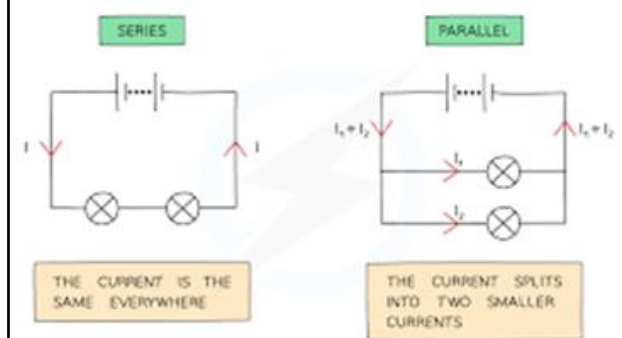


Series circuit	A circuit in which there is only one path for the current to flow.
-----------------------	--

Parallel circuit	A circuit with multiple paths for the current to flow.
-------------------------	--

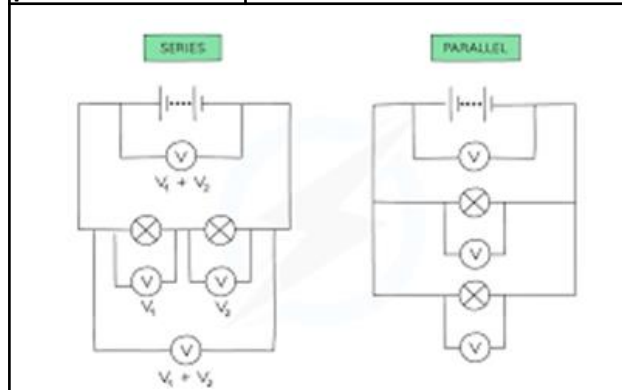
2. Current and potential difference

Amperes, A	The unit of measurement for current. Amps for short.
Ammeter	Used for measuring current. Connected in series.
Potential difference	Aka voltage. This is what pushes electrons around a circuit.
Volts, V	The unit of measurement for potential difference.
Voltmeter	Used for measuring potential difference. Connected in parallel.
Current in series circuits	The same at all points in the circuit.
Current in parallel circuits	Less on the branches than at the battery. Current on branches adds up to that at the battery.



Potential difference in series circuits	Potential difference is shared between the components on a circuit. It adds up to be the same as the battery.
--	---

Potential difference in parallel circuits	The same across each branch as it is across the battery.
--	--

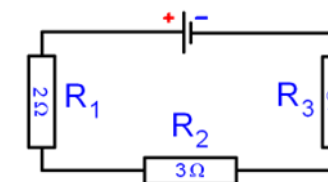


3. Current, charge and energy

Charge	The amount electricity that has flowed through a circuit.
Coulombs, C	The unit of measurement for charge.
Current	The number of coulombs of charge that flows past a point each second.
Calculating charge	Charge = current x time Q = I x t Charge = coulombs Current = amps Time = seconds
The meaning of volts	The amount of energy transferred by each coulomb of charge. One volt = 1 joule per coulomb.
Calculating energy	Energy = charge x potential difference E = Q x V Energy = joules Charge = coulombs Potential difference = volts

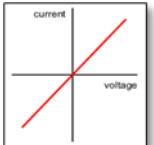
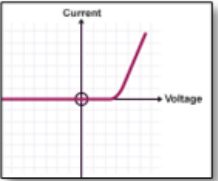
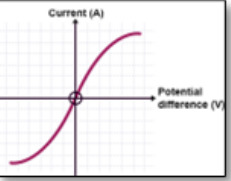
4. Resistance

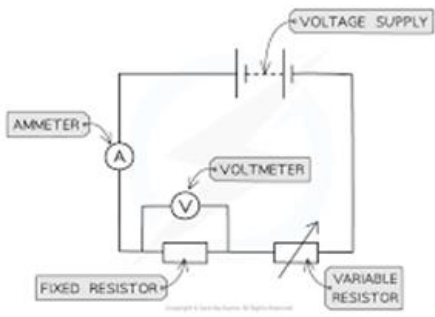
Resistance	The difficulty with which current passes through materials.
Ohms, Ω	The unit of measurement for resistance.
High/low resistance	Higher resistance → better insulator Lower resistance → better conductor
Calculating potential difference	Potential diff = current x resistance V = I x R Current, I = amps, A Potential diff, V = volts, V Resistance, R = ohms, Ω
Changing current	Higher voltage → higher current Higher resistance → lower current
Resistors	Circuit components with differing resistance to control how much current flows to parts of a circuit.
Resistors in series	Total resistance is the sum of each of the resistors.



Total resistance = 2+3+4=9 Ω

Voltage and resistors in series	Voltage is shared in proportion to the resistance. The resistor with more resistance takes more of the voltage. Calculate this using V=IR.
Resistors in parallel	Think about each branch of the circuit as a different series circuit. Resistors on different branches do not affect each other.
Variable resistors	Resistors where you can change the resistance to adjust the current. 70

5. More about resistance	
Resistor	Circuit component with a set resistance to control the current.
Resistor graph	Current increases in direct proportion to voltage (straight line going through (0,0)). 
LDR	Light-dependent resistor. High resistance in dark, low resistance in light.
Thermistor	High resistance when cold, low resistance when hot.
Diode	High resistance in one direction, low resistance in the other.
Diode graph	Graph slopes up with a positive voltage but stays at 0 with a negative voltage. 
Filament lamp	High resistance causes the filament to heat up, producing light.
Filament lamp graph	Current increases as voltage increases, but levels out eventually. 

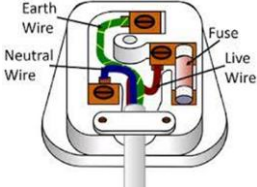
6. Core practical – investigating resistance	
Video for practical	Search you tube 'Edexcel core practical Investigating resistance'
Aim	To explore how resistance changes in different circuits.
	
Investigating resistance	Set up a circuit with an ammeter, resistor and voltmeter across the resistor. Use the variable resistor to vary the voltage and record voltage and current. Replace fixed resistor with two filament lamps and repeat.
Investigating series circuits	Set up a series circuit with an ammeter, two bulbs and voltmeters across each bulb and the power supply. Vary the voltage and record readings on ammeter and voltmeters
Investigating parallel circuits	Set up parallel circuit with two bulbs & ammeters on each branch & ammeter by power supply, & voltmeters across each bulb and the power supply. Vary voltage, record all readings.
Results	<p><u>Resistor</u> – doubling voltage doubles current = proportional</p> <p><u>Series circuit</u> – voltage at bulbs half of that at power supply</p> <p><u>Parallel circuit</u> – voltage at bulbs equal to power supply, current half that at power supply</p>

7. Transferring energy	
Calculating energy transfer	Energy = current x potential difference x time $E = I \times V \times t$ Energy = joules Current = amps P.d = volts Time = seconds
Resistance and energy transfer	Electrons flowing through wires collide with atoms and lose energy. This energy is transferred to heat.
Electrical energy dissipation	When electrical energy is transferred to wasted heat energy by resistance.
Reducing resistance	Use thicker wires, use shorter wires, use lower-resistance metals, reduce the temperature.

8. Electrical power	
Power	The rate of energy transfer.
Watts, W	The unit of power: 1 W = 1 J/s
Power and work done	$P = \frac{E}{t}$ Where 'P' is power in W, 'E' is work done in J, 't' is time in s.
Power, current and voltage	$P = I \times V$ Where 'P' is the power in W, 'I' is the current in A, V is the potential difference in V.
Power, current and resistance	$P = I^2 \times R$ Where 'P' is the power in W, 'I' is the current in A, 'R' is the resistance in Ω .

9. Transferring energy by electricity	
Mains electricity	The electricity supplied from wall sockets.
National grid	The systems of power lines and sub-stations that distributes electricity from power stations to homes and businesses.

Heaters	Transfer energy from electrical to thermal.
Motors	Transfer energy from electrical to kinetic.
Direct current	Current that flows in one direction.
Alternating current	Current that switches direction many times each second.
Frequency of mains current	Mains current alternates (switches direction) 50 times each second. The frequency is 50 Hz.
Power rating	Power rating of an appliance is measured in watts (W). e.g. A kettle with a power rating of 3kW transfers 3000 joules of energy each second.

10. Electrical safety	
	
Live wire	Brown, 230 V, connects the appliance to the power station.
Neutral wire	Blue, 0 V, completes the circuit.
Earth wire	Green and yellow, 0 V. Connects the appliance to the ground so current can flow there in the event of a short circuit.
Fuse	A thin metal wire that melts and breaks the circuit if there is too much current.
Circuit breaker	Breaks the circuit if too much current flows.
Advantages of circuit breakers	Quicker than fuses, just need switching rather than replacing.

Circuit symbols	
Switch	
Cell	
Battery	
Lamp	
Ammeter	
Voltmeter	
Resistor	
Variable resistor	
Diode	
LDR	
Thermistor	

P2h. Braking distance and energy (separate only)

kinetic energy A name used to describe energy when it is stored in moving things. The amount of energy stored depends on the mass of the object and on its speed (or velocity) squared

$KE = \frac{1}{2} mv^2$

KE measured in joules, J
 M = mass measured in kilograms, kg
 V = velocity measured in m/s²

work done The energy transferred when a force acts through a distance to move an object or change its speed. It is calculated using the size of the force and the distance moved in the direction of the force.

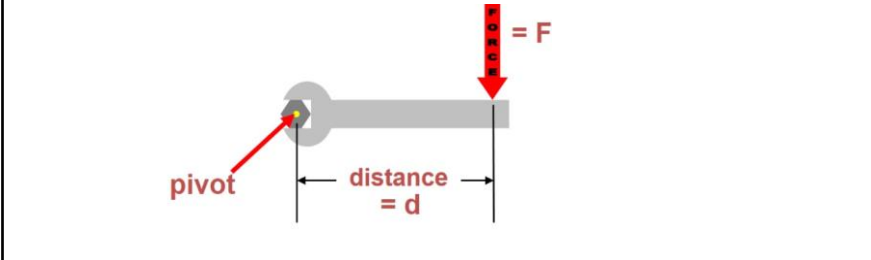
$W = F \times d$

W= work done, measured in Joules, J
 F = force measured in newtons, N
 d = distance, measure in metres, m

P9c Rotational forces (separate only)

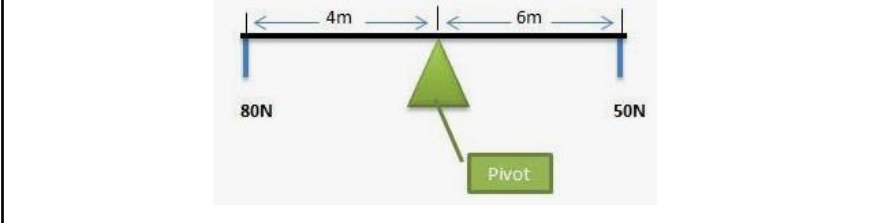
Moment A turning force is called a moment. The moment of a force depends on the size of the force and where the force is applied.

Newton metre	The unit for moments is the newton metre Nm
Calculating moments	Moment = force x distance (Nm) (N) (m)
	The distance between the force and the pivot is measure normal (at right angles) to the direction of the force.



Equilibrium Equilibrium is when a system involving rotational forces is balanced.

In equilibrium Sum of clockwise moments = sum of anticlockwise moments




Gears The rotational effect of a force can be transmitted by gears.

Gear x has 20 teeth and gear Y has 5 teeth. Gear x has 4 times as many teeth so every time gear x turns 4 times, gear Y will only turn once. Gear z has 10 teeth, twice as many as gear y, so each turn gear y makes gear z will turn twice.

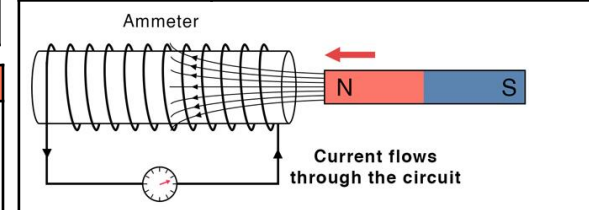
Combined and Separate Physics SP12-13: Magnetism and the Motor Effect and Electromagnetic Induction

Lesson sequence	
1.	Magnets and magnetic fields
2.	Electromagnetism
3.	Magnetic forces (HT)
4.	Electromagnetic induction (separate only)
5.	The National Grid
6.	Transformers
7.	Transformers and energy

Earth's magnetic field	The North Pole is a magnetic south pole (because it attracts the north of bar magnet).
Plotting a magnetic field	Draw around a magnet. Place a plotting compass on it and draw a small arrow to show needle direction. Move a cm in that direction and repeat. Connect arrows to form lines. Repeat.

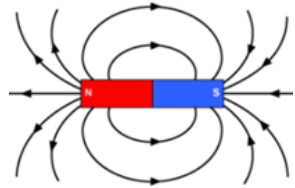
Electromagnet	A temporary magnet made by placing an iron core inside a solenoid.
	

4. Electromagnetic induction (separate)	
Electromagnetic induction	A changing magnetic field induces a voltage in a wire. A voltage can also be induced if a wire is moved in a magnetic field.

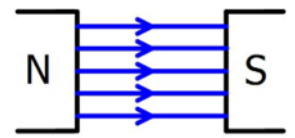


1. Magnets and magnetic fields

Permanent magnet	A magnet that is always magnetic.
Temporary magnet	A magnet that is not always magnetic.
Induced magnet	When something becomes temporarily magnetic when close to another magnet.
Uses of magnets	Motors, loud speakers, generators, door locks, knife holders.
Magnetic field	The area of magnetic force around a magnet.
Bar magnet field shape	Curved lines going from north to south

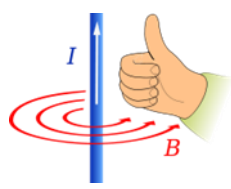


Uniform magnetic field shape	When the north of one magnet is near the south of another, straight field lines connect them.
-------------------------------------	---

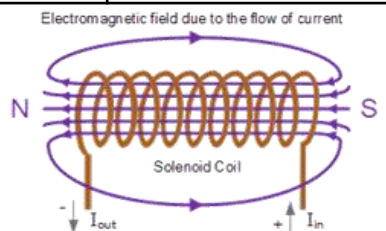


2. Electromagnetism

Electromagnetism	Current flowing through a wire creates a magnetic field around it.
Wire magnetic field shape	Concentric circles.
Wire magnetic field strength	Stronger nearer the wire and with higher current.
Wire magnetic field direction	Right hand rule – thumb points towards negative, field in same direction as fingers.

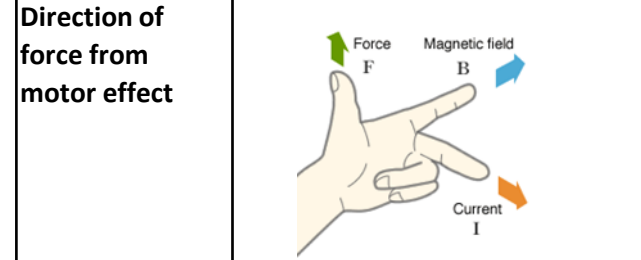


Solenoid	A coil of wire with current running through it.
Solenoid magnetic field shape	Outside: similar to bar magnet. Inside: almost uniform



3. Magnetic forces (HT)

Motor effect	Force produced when the magnetic field from a permanent magnet pushes a magnetic field from a wire.
---------------------	---



Force from motor effect is greatest when...	Magnetic field and electric field are at right angles, wire is longer, current is greater, magnet is stronger.
--	--

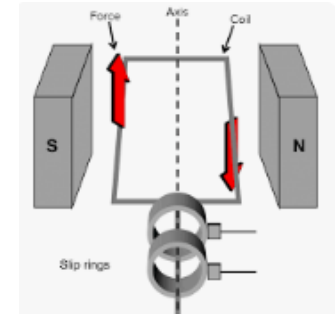
Magnetic flux density B	The strength of a magnetic field.
Newtons per amp metre (N / A m)	Units of magnetic flux density.

Tesla, T Same as newtons per amp metre.

Calculating forces from the motor effect	Force = magnetic flux density x current x length $F = B \times I \times L$ Force = newtons Magnetic flux density = teslas Current = amps Length = metres
---	---

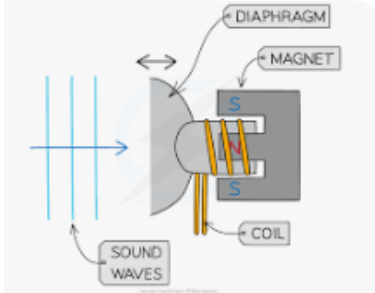
Size of induced potential	The size of the induced potential depends on: -number of turns in coil of wire -strength of magnetic field -speed magnet moving
----------------------------------	--

Generator or alternator	A generator consists of a coil or wire that is rotated inside a magnetic field. As the coil turns, a voltage is induced in the wire. A generator like this produces an alternating current
--------------------------------	--

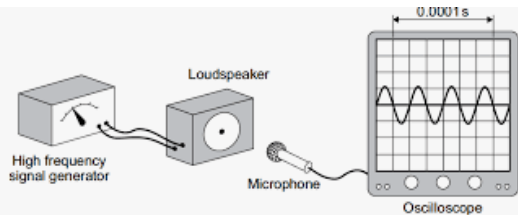
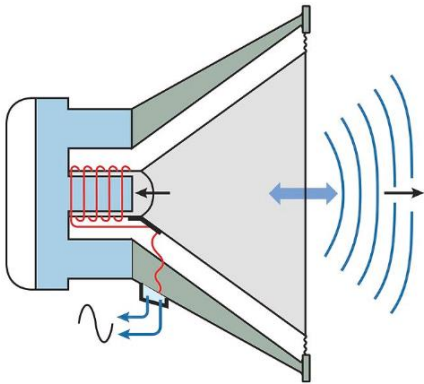


Commutator	A commutator switches over the connections every half-turn of the coil producing direct current
-------------------	---

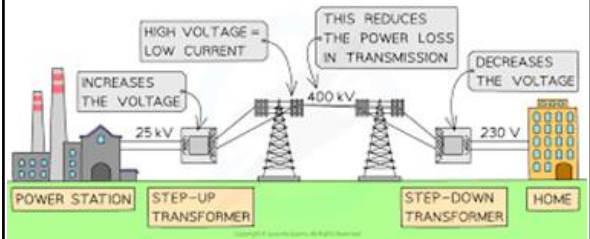
Microphones Convert the pressure variations in sound waves into variations in current in electrical circuits using electromagnetic induction



Loud speakers Convert variation in electrical current into sound waves.



5. The National Grid
National grid The system of cables and transformers that transfers electricity from power stations to homes and businesses.



Voltage in the national grid
 Power station = 25 kV
 Overhead cables = 400 kV
 Factories = 33 kV
 Homes = 230 V

Efficiency When electricity flows through a wire, the wire gets warm. This warmth is wasted energy. In power cables the electricity is transmitted at a higher voltage so less energy is transferred by heating and it is more efficient.

Safety In our homes the voltage is reduced to 230V so that it is safe for us to use.



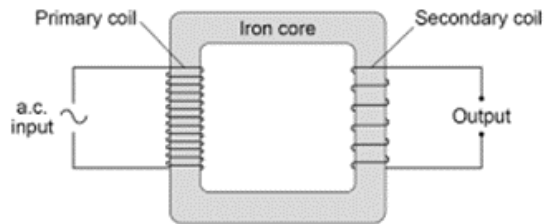
6. Transformers
Transformers and current Transformers only work with alternating current.

Step-up transformer Increase voltage and decreases current.

Step-down transformer Decrease voltage and increases current.

Transformer structure Two coils of wire wrapped around an iron core. Current goes in the primary coil and comes out from the secondary coil (or vice versa)

How transformers work Current passing through the primary coil induces a current in the secondary coil of higher voltage and lower current



Factors affecting the potential difference induced in a transformer
 Coils: more coils → higher voltage
 Frequency: how many times the magnetic field changes or moves past the wire

The potential difference across the coils of a transformer can be worked out using this equation:

$$\frac{\text{p.d of primary coil}}{\text{p.d of secondary}} = \frac{\text{number of turns in primary coil}}{\text{number of turns in secondary}}$$

$$\frac{V_p}{V_s} = \frac{N_p}{N_s}$$

7. Transformers and energy
Electrical power Electrical power = current x p.d (W) (A) (V)
 $P = I \times V$

Conservation of energy in transformers If the voltage increases, the current decreases, so energy is conserved since: Power = current x voltage

Transformer calculations Primary current x primary voltage = secondary current x secondary voltage
 $V_p \times I_p = V_s \times I_s$

Voltage = volts
 Current = amps

Power equations Power(W) = energy(J)/time(s)
 $P = \frac{E}{T}$
 Power(W)= current(A) x p.d(V)
 $P = I \times V$
 P = current squared x resistance
 $P = I^2 \times R$

Increasing efficiency Transmitting power at high voltages is more efficient. You can use the following equations to explain why this is the case:
 1. Calculate current: $I = P/V$
 2. Calculate power: $P = I^2 \times R$
 3. Calculate energy wasted: $E = P \times t$

SOCIOLOGY: Year 11 - Crime and Deviance Knowledge Organiser

Social Order: For people to live and work together a certain amount of order and predictability is needed.

Functionalists argue this is based on value consensus.
Marxists: Social order is maintained because of class conflict. The bourgeoisie have power and control to enforce order and influence the law.

Functionalist	Crime is vital and necessary of all societies. It helps to remind people about boundaries of acceptable & unacceptable behaviour. When the public come together over a reaction to a major crime, it creates social cohesion. (Durkheim)
Marxist	Because society is based on values such as materialism, consumerism and competition- an unequal society. Some people cannot earn enough to fit these norms & values, therefore they commit illegal activities to get them.
Feminist	Women are treated and punished as double deviants- they have firstly broken the law and second the norms that govern their gender behaviour. Arguments around the 'chivalry thesis'
Interactionalists	Labelling produces a self-fulfilling prophecy. Social groups create deviance by making rules and applying them to particular people and labelling them as 'outsiders'. Groups whose social position gives them power are able to label people. These people see this as a self-fulfilling prophecy.

The class deal & the gender deal.

- Most people conform to the rules because of the 'deals' that offer them rewards.
- Class Deal:** Material rewards if you work for your wage
- Gender deal:** Material & emotional rewards if you live with a male breadwinner within the family.

Refusing the class deal: Not found legitimate ways of earning a decent living. More to gain than to lose by offending.

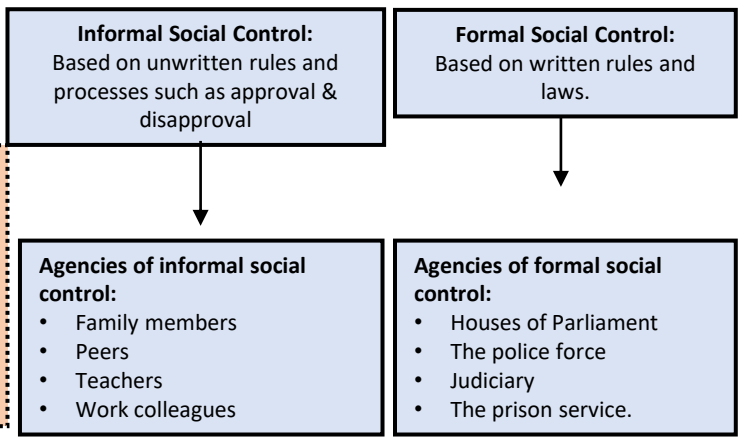
Refusing the gender deal: Supposed to be rewarded with happiness & fulfilment from family life. Many women may be abused, no bonds with family & friends. Nothing to lose and everything to gain.

Mass Media & Deviancy Amplification (Stan Cohen 1972):

- The media creates **moral panics**- exaggerating the extent and significance of a social problem.
- A particular group is set as **folk devil**- a threat to society's values.
- The media distorts the events and incidents and create a false image of young people and their activities.
- This can encourage other young people to behave in the way the media portrays.
- Recent moral panics: school violence, bullying & shootings, benefit cheats and single mothers, refugees & asylum seekers.



Social Control:
 Much of our behaviour is socially controlled.



How useful are statistics recorded by the police?

- If a crime isn't witnessed it won't be reported.
- Many crimes are witnessed and not reported.
- The dark figure of crime**

Sources of data into crime:

- Victim Surveys
- Self-report studies
- Crime Survey
- National Statistics

Deviance: Behaviour that does not conform to society's rules and norms.





White Collar Crime: Crimes committed by people in relatively high-status positions. E.g. tax evasion, fraud, misuse of expense account

Crime: An illegal act punishable by law.

Those at high risk from crime:

Class: The poor, living in private rented housing
Gender: Males
Age: The Young
Ethnicity: Minority ethnic groups.

Key Sociologists				
Albert Cohen (1955) (Functionalist)	Robert Merton (1938) (Functionalist)	Pat Carlen (1988) (Marxist Feminist)	Frances Heidensohn (1985, 1996) (Feminist)	Howard Becker (1997) (Interactionist)
Cultural deprivation accounts for working class boys' lack of educational success. They turn to criminality as an alternative route to success.	Deviance results from the culture and structure of society. All members of society hold the same values. However, because members of society have different positions in the social structure, for example in terms of social class, Merton identified five possible ways that individuals will respond to the goals of success in society.	Control theory is the basis for her approach, this starts from the assumption that human beings are neither naturally good nor bad but will make a rational decision to turn to crime when the advantages outweigh the disadvantages. It supports the view that criminal behaviour becomes more likely when social control breaks down.	Control theory is the basis why women commit fewer crimes than men. She argues that male-dominated patriarchal societies control women more effectively than men, making it difficult for women to break the law.	Becker argued that an act only becomes deviant when others define it as such. Whether the 'label' of deviancy is applied depends on who commits the act, when and where it is committed, who observes the act, and the negotiations that take place between the various actors involved in the interaction.

Who commits crime? Why do differences occur?			
Gender 	Ethnicity	Social Class	Age 
<p>Women committing less crime.</p> <ul style="list-style-type: none"> Gender socialisation Fewer opportunities More domestic responsibilities May be treated differently in the criminal justice system e.g. sad, rather than bad, given a lenient sentence. Chivalry thesis Others argue they are treated more harshly- double deviancy. Therefore do not commit crime. <p>Women's involvement in crime is increasing:</p> <ul style="list-style-type: none"> Lost a lot of their controls and restraints Women are not experiencing equality in the work place- gender pay gap. 	<ul style="list-style-type: none"> Inaccurate statistics Labelling- racism and stereotyping within the police practice. More ethnic groups are stopped and searched. Institutional racism within the police- most police officers are white and may label particular groups (Stephen Lawrence murder) Linked to their social class, higher levels of crime in the ethnic minority groups could link to the fact they are also possibly experiencing poverty and this leads to crime. Media reinforcing views- reporting in the media on particular groups can generate mistrust and hostility. 	<ul style="list-style-type: none"> Inaccurate statistics- lower-class criminals may commit crimes that are more identifiable and more likely to be targeted by the police. Socialisation Material deprivation- may commit crime to obtain the things others have Education- W/C more likely to be in the bottom sets/streams so may look for other routes to get what they need e.g. crime. Anomie- mismatch between goals and the means to achieve the goals. Labelling. White collar crime is not as easily identifiable as crimes committed at lower levels. 	<ul style="list-style-type: none"> Status frustration- lack of independence and caught in transition. Lack of responsibilities can lead them to drift into deviant and criminal behaviour. Peer Pressure Edgework- thrill seeking and risk-taking. Getting a "buzz" from committing a crime or displaying deviant behaviour. Socialisation- Some young people are inadequately socialised and have learned criminal behaviour as a norm or value. Police stereotyping Media moral panic/folk devil. Subcultural theory 

Treatments of young offenders:

Should young people be sentenced for crimes or educated to prevent them committing crime in the future?

- Age of criminal responsibility is 10.

They **should** be put in custody

- ✓ They must take the punishment
- ✓ If they are danger the public needs to be protected
- ✓ They need to learn societies norms & values

They **should not** be put in custody:

- ✗ 73% reoffend within a year
- ✗ Too much money is spent on youth offender institutes
- ✗ Education would be more worthwhile

Punishment:

Should people be punished and sent to prison or rehabilitated?

They **should** be put in prison:

- ✓ Criminals deserve to be shamed and deprived of their liberty
- ✓ Prison is a deterrent
- ✓ Essential to keep others safe

They **should not** be put in custody:

- ✗ Doesn't make people take responsibility for their actions
- ✗ Reoffending rate is 57% of adults, 73% within young people.
- ✗ Heavily structured regime can damage a prisoners abilities to think and act for themselves
- ✗ They are ineffective- too easy.

The media:

- Are the media biased in their presentation of crime?
- Does the media create crime in society?

1. Are the media biased in their presentation of crime?

- When individuals do not have direct knowledge or experience of what is happening, they rely on the media to inform them.
- The media set the agenda in terms of what is considered to be important.
- The editors filter what they see as newsworthy (news value) they tend to include and emphasis elements of a story for their audience. Stories they are more likely to report (news value) are stories involving children, violence, celebrities, if the event has occurred locally, easy to understand and if graphic images are involved.
- 46% of media reports are about violence or sexual crimes, yet these only make up for 3% of crime recorded by the police (Ditton & Delphy 1983)
- Deviancy amplification is usually used to describe the impact of the media on the public perception of crime.

2. Does the media create crime?

- Media content can have a negative impact on the behaviour of young people, particularly children.
- It is suggested that some people may imitate violence and immoral or antisocial behaviour seen in media. The media are regarded as a powerful secondary agent of socialisation.
- Video games are often blamed as a link between increased aggressive behaviour and crime.





Trabajos Jobs

Soy... / Es...	I am... / He/She is...
Me gustaría ser...	I would like to be...
abogado/a	lawyer
albañil	bricklayer / builder
amo/a de casa	Househusband/wife
azafato/a	flight attendant
bailarin(a)	dancer
bombero/a	firefighter
camarero/a	waiter / waitress
cantante	singer
cocinero/a	cook
contable	accountant
dependiente/a	shop assistant
diseñador(a)	designer
electricista	electrician
enfermero/a	nurse
escritor(a)	writer
fontanero/a	plumber
fotógrafo/a	photographer
funcionario/a	civil servant
guía turístico/a	tour guide
ingeniero/a	engineer
jardinero/a	gardener
mecánico/a	mechanic
médico/a	doctor
músico/a	musician
peluquero/a	hairdresser
periodista	journalist
policía	police officer
profesor(a)	teacher
repcionista	receptionist
socorrista	lifeguard
soldado	soldier
veterinario/a	vet

¿Cómo es el trabajo? How is the job?

Es un trabajo...	It's a ... job
artístico	artistic
emocionante	exciting
exigente	demanding
importante	important
fácil	easy
difícil	difficult
manual	manual
monótono	monotonous
variado	varied
repetitivo	repetitive
con responsabilidad	with responsibility
con buenas perspectivas	with good prospects
con un buen sueldo	with a good salary
Tengo que... / Suelo...	I have to...
Suelo...	I tend to...
cuidar a los clientes / pacientes /	look after the customers / patients /
pasajeros	passengers
contestar llamadas telefónicas	answer telephone calls
cuidar las plantas y las flores	look after the plants and flowers
enseñar / vigilar a los niños	teach / supervise the children
hacer entrevistas	do interviews
preparar platos distintos	prepare different dishes
reparar coches	repair cars
servir comida y bebida	serve food and drink
trabajar en un taller / en un hospital /	work in a workshop / in a hospital /
en una tienda / a bordo de un avión	in a shop / aboard a plane
vender ropa de marca	sell designer clothing
viajar por todo el mundo	travel the world

¿Qué tipo de persona eres? What type of person are you?

Creo que soy...	I think I'm...
ambicioso/a	ambitious
comprensivo/a	understanding
creativo/a	creative
extrovertido/a	extroverted
fuerte	strong
inteligente	intelligent
organizado/a	organised
paciente	patient
práctico/a	practical
serio/a	serious
trabajador(a)	hardworking
valiente	brave

SPANISH



¿Qué haces para ganar dinero? What do you do to earn money?

¿Tienes un trabajo a tiempo parcial?	Do you have a part-time job?
Reparto periódicos.	I deliver newspapers.
Hago de canguro.	I babysit.
Trabajo de cajero/a.	I work as a cashier.
Ayudo con las tareas domésticas.	I help with the housework.
Cocino.	I cook.
Lavo los platos.	I wash the dishes.
Paso la aspiradora.	I do the vacuuming.
Plancho la ropa.	I iron the clothes.
Pongo y quito la mesa.	I lay and clear the table.
Paseo al perro.	I walk the dog.
Corto el césped.	I cut the lawn.
Lo hago...	I do it...
los sábados	on Saturdays
antes / después del insti	before / after school
cuando necesito dinero	when I need money
cuando mi madre está trabajando	when my mum is working
cuando me necesitan	when they need me
cada mañana	each / every morning
una vez / dos veces a la semana	once / twice a week
Gano ... euros / libras a la hora /	I earn ... euros / pounds per hour /
al día / a la semana.	day / week.
Me llevo bien con mis compañeros.	I get on well with my colleagues.
Mi jefe/a es amable.	My boss is nice.
El horario es flexible.	The hours are flexible.

Prácticas laborales Work experience

Hice mis prácticas laborales en...	I did my work experience in...	hacia una variedad de tareas	I did a variety of tasks
Pasé quince días trabajando en...	I spent a fortnight working in...	iba en transporte público	I went by public transport
un polideportivo	a sports centre	llevaba ropa elegante	I wore smart clothes
una agencia de viajes / una granja	a travel agency / a farm	ponía folletos en los estantes	I put brochures on the shelves
una escuela / una oficina	a school / an office	sacaba fotocopias	I did photocopying
una fábrica de juguetes	a toy factory	Mi jefe/a era...	My boss was...
una tienda benéfica / solidaria	a charity shop	Mis compañeros eran...	My colleagues were...
la empresa de mi madre	my mum's company	Los clientes eran...	The customers were ...
El primer / último día	On the first / last day	alegre(s)	cheerful
conocí a /	I met	(des)agradable(s)	(un)pleasant
llegué...	I arrived...	(mal) educado/a(s)	polite (rude)
Cada día / Todos los días...	Each / Every day...	El trabajo era duro.	The job was hard.
archivaba documentos	I filed documents	Aprendí...	I learned
ayudaba...	I helped...	muchas nuevas habilidades	lots of new skills
cogía el autobús / el metro	I caught the bus / underground	a trabajar en equipo	to work in a team
empezaba / terminaba a las ...	I started / finished at...	a usar...	to use...

No aprendí nada nuevo.

I didn't learn anything new.



De compras Shopping



Normalmente voy... / Suelo ir...	Usually I go... / I tend to go...
a los centros comerciales	to shopping centres
de tiendas con mis amigos	shopping with my friends
Nunca me ha gustado / Prefiero	I've never liked / I prefer
Odio...	I hate...
comprar en...	shopping in...
cadena / grandes almacenes	chain stores / department stores
tiendas de diseño / segunda mano	designer shops / second-hand shops
comprar por Internet / en la red	shopping on the internet / online
hacer cola	queueing
porque...	because...
es más económico / práctico /	it's cheaper / more practical /
es más cómodo	more convenient
es un buen sitio para pasar	it's a good place for spending
la tarde	the afternoon
hay más variedad /	there is more variety /
demasiada gente	there are too many people
los precios son más bajos	the prices are lower
hay más ofertas	there are more offers
ropa alternativa / de moda	alternative clothing / fashionable clothing
gangas	bargains
artículos de marca	branded items

Recuerdos y regalos Souvenirs and present

el abanico/ el llavero	fan/ key ring
el chorizo	chorizo (sausage)
el oso de peluche	teddy bear
los pendientes	earrings
la gorra / la taza	cap / mug
las golosinas	sweets
las pegatinas	stickers
¿Me puede ayudar?	Can you help me?
Quiero comprar...	I want to buy...
¿Tiene uno/a/os/as más barato/a/os/as?	Do you have a cheaper one(s) / cheaper?
un billete de (cincuenta) euros	a (fifty) euro note
tengo cambio	I have change



Quejas Complaints



Quiero devolver...	I want to return...
está roto/a	it is broken
es demasiado estrecho/a / largo/a	it is too tight / long
tiene un agujero / una mancha	it has a hole / a stain
falta un botón	it's missing a button
¿Puede reembolsarme (el dinero)?	Can you reimburse me (the money)?
Podemos hacer un cambio.	We can exchange (it).
¿Qué me recomienda?	What do you recommend?
¿Qué tal...? / ¿Qué te parece(n)...?	What about...? / What do you think of...?
Te queda bien.	It suits you.
Te quedan demasiado grandes.	They are too big on you.
una talla más grande / pequeña	a bigger / smaller size
en rebajas	on sale
Me lo/la/los/las llevo.	I'll take it / them.

Destino Arequipa Destination Arequipa

Vi / Vimos lugares interesantes.	I saw / We saw interesting places.
Tuvimos un guía.	We had a guide.
Nos hizo un recorrido.	He/She did a tour for us.
Nos ayudó a entender toda la historia	S/he helped us to understand all of the history.
Recorrí a pie el centro histórico.	I walked around the historic centre.
Compré tantas cosas.	I bought so many things.
Alquilé una bici de montaña.	I hired a mountain bike.
Cogí un autobús turístico.	I took a tourist bus.
subimos / bajamos	we went up / we went down
Aprendí mucho sobre la cultura.	I learned a lot about the culture.
Me quedé impresionado con la ciudad.	I was really impressed by the city.
Había vistas maravillosas.	There were amazing views.
La comida estaba muy buena.	The food was very good.
La gente era abierta.	The people were open.
Lo que más me gustó fue / fueron...	What I liked most was / were...
¡Fue una experiencia única!	It was a one-off experience!
¡Qué miedo!	What a scare!
Volveré algún día.	I will go back one day.
Aprenderé a hacer surf.	I will learn to surf.
Trabajaré como voluntario/a.	I will work as a volunteer.

Los pros y los contras de la ciudad The for and against of living in a city

Lo mejor de vivir en la ciudad	The best thing about living in a city
es que...	is that...
es tan fácil desplazarse	it's so easy to get around
hay una red de transporte público	there is a public transport system
hay tantas diversiones	there are so many things to do
hay muchas posibilidades de trabajo	there are lots of job opportunities
Lo peor es que...	The worst thing is that...
el centro es tan ruidoso	the centre is so noisy
hay tanto tráfico / tantos coches	there is so much traffic / so many cars
se lleva una vida tan frenética	life is so frenetic
la gente no se conoce	people don't know each other
En el campo...	In the countryside...
el transporte público no es fiable	public transport is not reliable
hay bastante desempleo	there is quite a lot of unemployment
no hay tantos atascos como antes	there are not as many traffic jams as before
yo conozco a todos mis vecinos	I know all my neighbours

Las tiendas Shops

el banco	bank	la tienda de ropa	clothes shop
el estanco	tobacconist's	la zapatería	shoe shop
la cafetería	café	un regalo	a present
la carnicería	butcher's	sellos	stamps
la estación de trenes	train station	una carta / unas cartas	a letter / a few letters
la farmacia	pharmacy / chemist	recoger	to pick up
la frutería	greengrocer's	mandar	to send
la joyería	jeweller's	horario comercial / horas de apertura	business hours / opening hours
la librería	book shop	de lunes a viernes	from Monday to Friday
la panadería	bakery	abre a la(s)... / cierra a la(s)...	it opens at... / it closes at...
la papelería	stationery shop	no cierra a mediodía	it doesn't close at midday
la pastelería	cake shop	cerrado domingo y festivos	closed on Sundays and public holidays
la peluquería	hairdresser's	abierto todos los días	
la pescadería	fish shop		



El future The future

Me interesa(n)...	...interest(s) me.	Cuando...	When...
Me importa(n)...	...matter(s) to me.	gane bastante dinero...	I earn enough money...
Me preocupa(n)...	...worry/worries me.	me enamore...	I fall in love...
el desempleo / el paro	unemployment	sea mayor...	I'm older...
el dinero / el éxito	money / success	tenga ... años...	I'm ... years old...
el fracaso / el matrimonio	failure / marriage	vaya a la universidad...	I go to university...
la responsabilidad	responsibility	termine este curso /	I finish this course /
la independencia / la pobreza	independence / poverty	el bachillerato / la formación profesional	my A Levels / my vocational course /
los niños / las notas	children / marks	la licenciatura...	my degree
Espero...	I hope to...	buscaré un trabajo	I will look for a job
Me gustaría ...	I would like to...	compartiré piso con...	I will share a flat with...
Pienso...	I plan to/intend to...	compraré un coche / una casa	I will buy a car / house
Quiero...	I want to...	iré a otro insti / a la universidad	I will go to another school / to university
Tengo la intención de...	I intend to...	me casaré	I will get married
Voy a...	I am going to...	me iré de casa	I will leave home
aprender a conducir	learn to drive	seguiré estudiando en mi insti	I will carry on studying at my school
aprobar mis exámenes	pass my exams	seré famoso/a	I will be famous
casarme	get married	me tomaré un año sabático	I will take a gap year
conseguir un buen empleo/trabajo	get a good job	trabajaré como...	I will work as...
estudiar una carrera universitaria	study a university course		
montar mi propio negocio	set up my own business		
sacar buenas notas	get good marks		
ser feliz	be happy		
tener hijos	have children		
trabajar como voluntario/a	work as a volunteer		



Viajando en tren Travelling by train

El tren con destino a...	The train to...
efectuará su salida...	will leave / depart...
de la vía / del andén	from platform two
el (tren) AVE	high-speed train
la taquilla	the ticket office
Quisiera un billete de ida a...	I would like a single ticket to...
Quisiera un billete de ida y vuelta a...	I would like a return ticket to...
¿De qué andén sale?	From which platform does it leave?
¿A qué hora sale / llega?	What time does it leave / arrive?
¿Es directo o hay que cambiar?	Is it direct or do I have to change?



Solicitando un trabajo Applying for a job

Se busca / Se requiere...	... required.
(No) Hace falta experiencia.	Experience (not) needed.
Muy señor mío	Dear Sir
Le escribo para solicitar el puesto de...	I'm writing to apply for the post of...
Le adjunto mi currículum vitae.	I'm enclosing my CV.
Le agradezco su amable atención.	Thank you for your kind attention.
Atentamente	Yours sincerely/faithfully
Me apetece trabajar en...	Working in... appeals to me.
(No) Tengo experiencia previa.	I (don't) have previous experience.
He estudiado / trabajado...	I've studied / worked...
He hecho un curso de...	I've done a course in...
Tengo...	I have...
buen sentido del humor	a good sense of humour
buenas capacidades de comunicación	good communication
resolución de problemas	problem-solving skills
buenas habilidades lingüísticas	good language skills

¿Por qué aprender idiomas? Why learn languages?

Aumenta tu confianza.	It increases your confidence.
Estimula el cerebro.	It stimulates the brain.
Mejora tus perspectivas laborales.	It improves your job prospects.
Te abre la mente.	It opens your mind.
Te hace parecer más atractivo.	It makes you appear more attractive.
Te ayuda a... /	It helps you to...
Te permite...	It allows you to...
apreciar la vida cultural de otros países	appreciate the cultural life of other countries
conocer a mucha gente distinta	meet lots of different people
conocer nuevos sitios	get to know new places
encontrar un trabajo	find a job
descubrir nuevas culturas	discover new cultures
establecer buenas relaciones	establish good relationships
hacer nuevos amigos	make new friends
mejorar tu lengua materna	improve your first language
solucionar problemas	solve problems
trabajar o estudiar en el extranjero	work or study abroad
Me hace falta saber hablar	I need to know how to speak
idiomas extranjeros.	foreign languages.
(No) Domino el inglés.	I (don't) speak English fluently.
Hablo un poco de ruso.	I speak a bit of Russian.

¿Cómo viajarías? How would you travel?

Cogería el / Viajaría en autobús / autocar / avión / tren.	I would catch the / travel by bus / coach / plane / train.
Es más barato / cómodo / rápido.	It's cheaper / more comfortable / quicker.
Puedes...	You can...
ver videos mientras viajas	watch videos whilst you travel
dejar tu maleta en la consigna	leave your suitcase in the left-luggage office
Hay muchos / pocos atascos / retrasos...	There are lots of / few traffic jams / delays...
en las autopistas / las carreteras	on the motorways / roads
Los billetes son carísimos.	The tickets are extremely expensive.
Los conductores están en huelga.	The drivers are on strike.
Odio esperar en la parada de autobús.	I hate waiting at the bus stop.
Tengo miedo a volar.	I'm scared of flying.



Un año sabático A gap year

Si pudiera tomarme un año sabático...	If I could take a gap year...
Si tuviera bastante dinero...	If I had enough money...
apoyaría un proyecto medioambiental	I would support an environmental project
aprendería a esquiar	I would learn to ski
ayudaría a construir un colegio	I would help to build a school
buscaría un trabajo	I would look for a job
enseñaría inglés	I would teach English
ganaría mucho dinero	I would earn a lot of money
haría un viaje en Interrail	I would go Interrailing
iría a España, donde...	I would go to Spain, where...
mejoraría mi nivel de español	I would improve my level of Spanish
nunca olvidaría la experiencia	I would never forget the experience
pasaría un año en...	I would spend a year in...
trabajaría en un orfanato	I would work in an orphanage
viajaría con mochila por el mundo	I would go backpacking around the world

Highly frequent verbs

Preterite		Imperfect		Present		Immediate future		Future		Conditional	
fui	<i>I was</i>	era	<i>I used to be</i>	soy	<i>I am</i>	voy a ser	<i>I am going to be</i>	seré	<i>I will be</i>	sería	<i>I would be</i>
fué	<i>S/he/it was</i>	era	<i>s/he/it used to be</i>	es	<i>S/he/it is</i>	va a ser	<i>You are going to be</i>	será	<i>S/he will be</i>	sería	<i>S/he would be</i>
fuimos	<i>We were</i>	éramos	<i>We used to be</i>	somos	<i>We are</i>	Vamos a ser	<i>We are going to be</i>	seremos	<i>We will be</i>	seríamos	<i>We would be</i>
fueron	<i>They were</i>	eran	<i>They used to be</i>	son	<i>They are</i>	van a ser	<i>They are going to be</i>	serán	<i>They will be</i>	serían	<i>They would be</i>
compré	<i>I bought</i>	compraba	<i>I used to buy</i>	compro	<i>I buy</i>	voy a comprar	<i>I'm going to buy</i>	compraré	<i>I will buy</i>	compraría	<i>I would buy</i>
compró	<i>S/he bought</i>	compraba	<i>S/he used to buy</i>	compra	<i>S/he buys</i>	va a comprar	<i>S/he is going to buy</i>	comprará	<i>S/he will buy</i>	compraría	<i>S/he would buy</i>
compramos	<i>We bought</i>	comprábamos	<i>We used to buy</i>	compramos	<i>We buy</i>	vamos a comprar	<i>We are going to buy</i>	compraremos	<i>We will buy</i>	compraríamos	<i>We would buy</i>
compraron	<i>They bought</i>	compraban	<i>They used to buy</i>	compran	<i>They buy</i>	van a comprar	<i>They are going to buy</i>	comprarán	<i>They will buy</i>	comprarían	<i>They would buy</i>
trabajé	<i>I worked</i>	trabajaba	<i>I used to work</i>	trabajo	<i>I work</i>	voy a trabajar	<i>I'm going to work</i>	trabajaré	<i>I will work</i>	me gustaría	<i>I would like to work</i>
trabajó	<i>S/he worked</i>	trabajaba	<i>S/he used to work</i>	trabaja	<i>S/he works</i>	va a trabajar	<i>S/he is going to work</i>	trabjará	<i>S/he will work</i>	trabajar	<i>S/he would like to work</i>
trabajamos	<i>We worked</i>	trabajábamos	<i>We used to work</i>	trabajamos	<i>We work</i>	vamos a trabajar	<i>We are going to work</i>	trabajaremos	<i>We will work</i>	le gustaría	<i>S/he would like to work</i>
trabajaron	<i>They worked</i>	trabajaban	<i>They used to work</i>	trabajan	<i>They work</i>	van a trabajar	<i>They are going to work</i>	trabjarán	<i>They will work</i>	trabajar	<i>to work</i>
gané	<i>I earned (won)</i>	ganaba	<i>I used to earn (win)</i>	gano	<i>I earn (win)</i>	voy a ganar	<i>I'm going to earn</i>	ganaré	<i>I will earn</i>	ganaría	<i>I would earn</i>
ganó	<i>S/he earned (won)</i>	ganaba	<i>S/he used to earn (win)</i>	gana	<i>S/he earns (wins)</i>	va a ganar	<i>S/he is going to earn</i>	ganará	<i>S/he will earn</i>	ganaría	<i>S/he would earn</i>
ganamos	<i>We earned (won)</i>	ganábamos	<i>We used to earn (win)</i>	ganamos	<i>We earn (win)</i>	vamos a ganar	<i>We are going to earn</i>	ganaremos	<i>We will earn</i>	ganaríamos	<i>We would earn</i>
ganaron	<i>They earned (won)</i>	ganaban	<i>They used to earn (win)</i>	ganan	<i>They earn (win)earn</i>	van a ganar	<i>They are going to earn</i>	ganaran	<i>They will earn</i>	ganarían	<i>They would earn</i>
hice	<i>I did</i>	hacía	<i>I used to do</i>	hago	<i>I do</i>	voy a hacer	<i>I'm going to do</i>	haré	<i>I will do</i>	haría	<i>I would do</i>
hizo	<i>S/he did</i>	hacía	<i>S/he used to do</i>	hace	<i>S/he does</i>	va a hacer	<i>S/he is going to do</i>	harás	<i>S/he will do</i>	haría	<i>S/he would do</i>
hicimos	<i>We did</i>	hacíamos	<i>We used to do</i>	hacemos	<i>We do</i>	vamos a hacer	<i>We are going to do</i>	haremos	<i>We will do</i>	haríamos	<i>We would do</i>
hicieron	<i>They did</i>	hacían	<i>They used to do</i>	hacen	<i>They do</i>	van a hacer	<i>They are going to do</i>	harán	<i>They will do</i>	harían	<i>They would do</i>

he trabajado *I have worked*

he estado *I have been*

SPANISH



Preterito vs Imperfecto

Remember to use the **preterite** for completed actions in the past.

Comí de todo. *I ate everything.*

Use the imperfect to describe what something was like, and for repeated actions in the past.

La ciudad era acogedora. *The city was welcoming.*

Quedarse To stay/remain

Quedarse literally means to stay or to remain.

Me quedé en un hotel. *I stayed everything.*

It is also used idiomatically to mean 'to end up', but we sometimes translate it into English using other verbs.

Me quedé sin dinero. *I ended up without money/ I run out of money.*

	Si + presente + futuro	If + present + future
(1st Type)	Si tengo dinero, lo gastaré en ropa.	If I have money, I will spend it on clothes.
	Si hace buen tiempo, iremos a la playa.	If the weather is nice, we will go to the beach.
	Si no llueve , iré al trabajo a pie.	If it doesn't rain , I will go to work on foot.
(2nd Type)	Si + Imperf subj + condicional	If + imperfect subjunctive + conditional **Hypothetical situation**
	Si podiera , trabajaría en España.	If I could , I would work in Spain.
	Si tuviera dinero, compraría una casa enorme y moderno.	If I had the money, I would buy an enormous modern house.
	Si fuera rico/a, viviría en una mansión.	If I were rich, I would live in a mansion.
(3rd Type)	Si + pluperfe subj + condicional pasado	If + pluperfect subjunctive + past conditional **Hypothetical situation in the past**
	Si hubiera podido ir, habría trabajado de azafata.	If I had been able to, I would have worked as an air steward.
	Si hubiera tenido dinero, me habría comprado un coche.	If I had had the money, I would have bought a car.
	Si hubiera sido rico/a, habría vivido en una mansión con vistas al mar.	If I had been rich, I would have lived in a mansion with sea views.