DIXONS
FAZAKERLEY
ACADEMY

Year 9

Student Planner and Knowledge Navigators

2023-24 Cycle 3

Full Name:	**Advisory:**
Advisor:	**Head of Year:**

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Toilet during lesson permission

Date	Time	Period	Subject	Staff

Date	Time	Period	Subject	Staff

Parent permission - paracetamol

Occasionally students can develop headaches or other minor ailments in school. These can usually be resolved by staff in Mountain Rescue by supplying water; allowing a time out; providing a quiet space and by providing paracetamol.

Staff on site will always administer paracetamol in accordance with guidelines for a child's age and only where we have consent from a parent / carer. Paracetamol will be given by a trained first aider if it is deemed appropriate. If we issue paracetamol to your child in the school day, we will always call home to let you know that paracetamol has been given and the time the student took it.

If, after interventions above, your child continues to worsen or their condition does not improve, we will contact you to decide on the best course of action for the remainder of the day.

Consent

I agree, subject to the conditions above, to allow a trained forst aider at the academy to administer an appropriate dose of paracetamol should my child present with a minor ailment.

Parent name:_____________________________________ Relationship to student:________________________

Parent signature:____ Date: _____ /_____ /_____

Revision Space

Mission

We ensured all students succeeded at university, or a real alternative, thrived in a rewarding career and had a purposeful and happy life.

My sentence:

Values

Determination - We never give up. No matter how challenging things get, we keep climbing.

Integrity - We do the right thing because it is the right thing to do. We do this even when people are not watching.

Respect - We value each other. We promote the hopes, qualities and achievements of every member of our community.

Drivers

Mastery - To get better at things that matter.

Autonomy - To direct our own lives.

Purpose - To connect to a cause larger than ourselves.

Introduction to the student planner

The student planner is the main method of communication between the academy and home. The planner is used to record key dates, homework, corrections and notes from staff and families, as well as used for Morning Meeting work. It should be kept tidy and free from damage, with all writing neat and appropriate. If the student planner becomes damaged or messy, a replacement must be purchased from the academy.

This Planner contains key information about our expectations of students, information on our culture and values, and a diary section to support students in their work management.

Students are expected to have their planner with them at all times and should present it immediately to any member of staff that requests it.

Attendance and Punctuality

In order to reach their full potential, it is imperative that students attend the academy on time every day. Every student has a target attendance level of 100% - we accept nothing less.

All students must:

- Be in the academy every day
- Make medical / dental appointments outside of academy time
- Not take holidays in academy time
- Ensure their family call the academy before 8.30am if students are too ill to attend school
- ensure their family write a note in the student planner stating the reason for absence
- record their own attendance in their planner

If students are late to the academy and arrive before 9.00am they will receive a late mark and a 30 minute same day correction.

If students are late to the academy and arrive after 9.00am they must sign in at the main reception and will receive an unauthorised absence mark for the morning and a 1 hour same day correction.

If students need to leave the academy early for an appointment, families must call the academy to advise of this. Families will also be expected to provide evidence of any appointment. For their safety, students must sign in and out of the academy if they are arriving after 9.00am or leaving before the end of the day.

Positive consequence of good attendance

- Golden tickets
- Student appreciations
- Regular prize draws
- Every opportunity to achieve your potential

Negative consequence of good attendance

- Same day corrections
- Education and grades suffer
- Staff spend unnecessary time contacting home
- Potential fines and court action

Revision Space

Revision Space

Safeguarding - ”Be safe, tell someone”

It is everybody’s responsibility in school to keep you safe. This incudes:

- Looking after the building to make sure the site is safe.
- Doing fire tests and fire alarms so we can evacuate in an emergency.
- Preventing you from feeling threatened, bothered or bullied by other students.
- Looking out for you on the roads at the end of the day, ensuring cars are parked safely and that you are free from problems outside of our gates.
- Looking out for signs that you are unwell, struggling in some way or at risk of harm inside or outside school.
- Speaking to the right people at the right time to support you; including having conversations with your family.

If you are worried or concerned you can speak to any member of staff. They will listen to you and then, if necessary, they will tell one of the designated members of staff.

Designated safeguarding lead - Mrs S Kokosalakis

Deputy Designated safeguarding leads - Ms K McKee, Mrs J Simms, Ms R Sayer, Mr A Roberts & Ms K Claughton

Write the names of the staff you will speak to if you have a safeguarding concern here:

Bullying

Bullying is when a person or group of people repeatedly hurt, threaten, frighten or make someone unhappy.

At Dixons Fazakerley Academy , we believe that we should all work together to stop bullying. This can only be done if you tell us about it.

If you are being bullied (or you witness someone else being bullied), **be safe, tell someone**. This could be your advisor, any member of staff or your family.

What actions may be taken when bullying is reported?

- Someone will talk to you about it. They will talk to you about the best action to take to solve the problem.
- You could be given help and advice to deal with the problem yourself.
- The person doing the bullying could be spoken to.
- A supervised meeting could be arranged between the bully and the victim so that problems could be discussed.
- Families may be informed.
- Families may be invited into school to discuss the problem.
- Sanctions may be put in place which may escalate if the situation does not improve.

If you would prefer to speak to a counsellor online, please visit childline.org.uk or call 0800 1111.

Home - Academy Agreement

The Dixons Difference is our relentless focus on student achievement, led by highly committed and highly professional staff. By creating a can-do, independent culture with an emphasis on self-discipline, we prepare our learners for future success in an ever-changing world. Our Academies put students at their heart and work in close partnership with parents. We value diversity and cultivate happy schools, based on strong relationships, mutual respect, integrity and honesty.

Dixons Fazakerley Academy will ensure that:

- we provide a safe and supportive environment for students to enjoy learning and achieve their full potential
- we provide a consistently high standard of teaching
- students have the best possible education by providing a suitable curriculum and individual support
- we provide parents / carers with regular reports and opportunity for discussion about their child's progress
- we set regular homework
- we contact home to acknowledge students' successes
- we contact home if there are concerns about students' behaviour, progress or attendance
- we contact home if students are to be retained for more than 10 minutes after the end of the academy day
- we provide a wide variety of co-curricular electives and expeditions

Parents / carers will ensure that:

- your child attends every day, on time, unless they are seriously ill
- your child does not take extended family trips or holidays during term-time
- your child has the correct learning equipment needed for the day, including PE kit when necessary
- you support the academy's policies and regulations on behaviour and uniform including same day after-school corrections (detentions) until 4.30pm after communication from the academy
- you provide a suitable environment for your child to work at home
- your child completes their homework on time and to the highest standard
- you attend advisor consultations and parent / carer evenings to discuss your child's progress, and any other meetings arranged with your support
- you read and sign the student planner every week
- your contact details are up-to-date and you let reception know if your contact details change
- your child participates in co-curricular electives and expeditions
- you pay for the replacement of any equipment or books your child loses or damages

Students will ensure that they:

- work hard and follow the learning habits in every lesson and around the academy
- attend regularly, arrive on time, wear the correct uniform and bring the correct equipment
- behave responsibly both at the academy and travelling to and from the academy
- complete all homework to the highest standard and hand it in on time
- treat all adults and students with respect • are polite at all times and open the door to let an adult through first
- respect the academy building and equipment and leave all rooms tidy after using them
- do not undermine the safety of others • take letters and messages home and deliver them to their parents / carers
- keep their planner up to date with homework and next steps and show it to academy staff if requested
- take an active part in academy life

Advisor Signature	Parent Signature	Student Signature

Revision Space

Revision Space

Uniform Expectations for all students

- Academy striped tie (tie is optional for girls in Years 10 & 11, they may choose to wear a blouse with no tie).
- Girls can opt to wear plain black shalwar kameez or tunic with a white shirt and with their blazer over the top.
- Hijabs, scarves, turbans, crowns and top knots, worn for religious reasons, must be plain black and well secured.
- Socks should be plain black, a small bow at the side is permitted. Socks worn with a skirt can be ankle or knee-length but not over the knee. Tights should be black opaque 40 denier or more.
- Shoes must be sensible and **entirely** plain black with no large badges or logos (for example Vivienne Westwood X Melissa shoes and similar are not acceptable), laces must be fastened and be plain black. Heels, boots (including Doc Marten boots) and trainers are not acceptable. Students wearing the wrong footwear will be asked to change into academy footwear.
- No jewellery is allowed, this includes facial jewellery or visible body-piercings. Plasters cannot be worn to cover piercings. Any student wearing jewellery will be asked to instantly remove it and it will be placed in the academy safe until the end of the day. The only exception to this is where there is a religious expectation, for example the Sikh Kara.
- **Smart watches are not allowed**.
- Hair must be a natural colour and appropriate to a place of work with no unusual styles or colours, shavings or patterns.
- Students may be asked to tie hair back for health and safety reasons.
- Hair bands should be plain.
- Belts, if worn, should be plain black.
- The students' school bag should be the academy school back pack with Dixons Fazakerley logo.
- Outdoor jackets, jumpers, cardigans other than academy uniform, should not be worn at any time inside the academy.
- Hats, hoods and caps need to be removed before entering the building.
- The PE kit consists of a Trutex Akoa label black buttoned polo shirt with purple inserts featuring the academy logo, shorts and PE socks, in the same design.

Key Stage 3 (KS3) Uniform Expectations (Years 7, 8 and 9)

- Graphite grey academy Trutex blazer with academy logo.
- A white shirt with no coloured garments underneath the shirt.
- A grey, black or purple V-neck jumper or cardigan with a contrasting V.
- Black tailored trousers - jeans / tracksuits / leggings / very flared, tight, knee length or trousers which gather at the ankle are not considered appropriate wear. Jeans are defined as trousers with patch pockets and rivets. Trousers should not trail on the floor.
- Black **knee length** box pleated or double pleated skirt, or students may choose to wear a black knee length pinafore.
- Make-up, false eyelashes, lash extensions (classic, volume, Russian, express etc.), nail varnish, false nails (gel nails, shellac, acrylic etc.) are **not allowed** at any time.

Key Stage 4 (KS4) Uniform Expectations (Year 10 & 11)

- Formal Suit jacket or blazer in choice of plain black, grey or navy blue.
- White shirt or blouse, no coloured garments are to be worn underneath the shirt.
- Black, grey or navy blue tailored trousers - jeans / tracksuits / leggings / very flared, tight, knee length or trousers which gather at the ankle are not considered appropriate wear. Jeans are defined as trousers with patch pockets and rivets. Trousers should not trail on the floor.
- Jumpers or cardigans should be black, grey or navy blue with a v neck to match the suit in a plain solid colour (optional item).
- Skirts should be black, grey or navy blue, knee-length, straight, pleated or A line fit. **Tube skirts and mini-skirts are not allowed**. Pinafores should be knee length, plain black, grey or navy.
- Make up, if worn, should be entirely discreet and natural. **False eyelashes are not allowed**.
- Nail varnish, false nails (gel nails, shellac, acrylic etc.) are **not allowed** at any time.

Learning Habits

Successful students will develop good learning habits during their time at Dixons Fazakerley Academy. This takes hard work! Our learning habits are:

Homework and deadlines: Hand in homework on time and to a good standard.

On-Task behaviour: Make sure you are learning and following academy routines at all times, in lessons, at break and during transition.

Punctuality and attendance: You should be in school every day by 8.30am for Morning Meeting. Book any appointments outside of school hours and aim for

Perfect uniform: Take pride in your appearance and only wear the items that are part of our academy uniform. This includes jewellery, hair and make up.

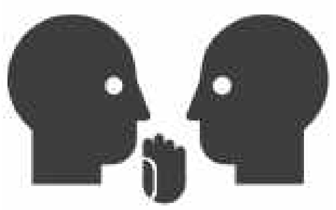
Equipment: Ensure you have 2 black pens, 2 green pens, a pencil, ruler, rubber, whiteboard pen and your PE kit with you so you are ready to learn.

Positive response: Always respond positively and politely to adults and end sentences with Miss, Sir or a teacher's name e.g. Mr Wilson.

Learning Modes

In all classrooms, we use our four learning modes to ensure all students know what is expected of them. Failure to follow any of these learning modes will result in a correction being issued. The four learning modes are:

Independent silent study This is the default position. Students work indvidually and silently without communicating with other students.



Quiet partners Students are allowed to speak quietly to the person next to them about the task.

Polite tables and groups Students are allowed to speak to, and work with other students in their group or on their table.

Respectful whole class Students should track the teacher. There are no hands up and no shouting out. The teacher will direct questions to the class.

DFA Reads

Reading well allows us to succeed with our studies, to have access to information we might want, and it opens the gates to worlds beyond our own experiences. Every student at Dixons Fazakerley Academy will be supported to become a fluent and confident reader. One of the key parts of supporting students with this is 20 minutes of 'DFA Reads' at the beginning of our day.

During DEAR, students are supported to develop their reading through programmes matched to their current reading needs. Students are challenged to read a range of texts, which will include the selection of the books that form our 'Dixons Fazakerley Academy canon', as well as exploring and understanding a range of new and important vocabulary.

Students who read regularly at school and at home are happier , more successful students. We encourage all students to read at home and are grateful to all families for supporting our students in developing this lifelong skill, which can unlock so many opportunities throughout life.

Revision Space

Revision Space

Monday Morning Meeting - Cycle 3 Week 10

Mastery Next Step

Word of the Week	

Tuesday Morning Meeting: English Masterclass

English Masterclass: Retrieval Practice

1. ____

2. ____

3. ____

4. ____

5. ____

6. ____

English Masterclass: Application Practice

I Do	You Do

English Masterclass: Additional Notes

Wednesday Morning Meeting: Behaviour Curriculum and Cognitive Science

Behaviour Curriculum Brain Dump

Behaviour Curriculum: Retrieval Practice

1. ____

2. ____

3. ____

4. ____

5. ____

6. ____

Cognitive Science Brain Dump

Personal Reflection: How will I apply what I have learnt in today's session?

Revision Space

Revision Space

Thursday Morning Meeting: English Masterclass

English Masterclass: Retrieval Practice

1. ____

2. ____

3. ____

4. ____

5. ____

6. ____

English Masterclass: Application Practice

I Do	You Do

English Masterclass: Additional Notes

Friday Morning Meeting: Cultural Studies

Quote of the day

“Everyone has inside them a piece of good news. The good news is you don’t know how great you can be! How much you can love! What you can accomplish! And what your potential is.” — Anne Frank

What have you learnt from today’s session? Write down at least three facts below.

1.
2.
3.
4.
5.

Review of Mastery Next Step:

Did you achieve your mastery next step from Monday? If so, how did you achieve it?

If not, why not?

Monday Morning Meeting - Cycle 3 Week 11

Mastery Next Step

Word of the Week: Definition	
Word of the Week: Use in a sentence	

Revision Space

Revision Space

Tuesday Morning Meeting: Maths Masterclass

Maths Masterclass: Retrieval Practice

1. ____
2. ____
3. ____
4. ____
5. ____
6. ____

Maths Masterclass: Application Practice

I Do	You Do

Maths Masterclass: Application Practice

1. ____
2. ____
3. ____
4. ____
5. ____
6. ____

Maths Masterclass: Diagnostic Question

Wednesday Morning Meeting: Behaviour Curriculum and Cognitive Science

Behaviour Curriculum Brain Dump

Behaviour Curriculum: Retrieval Practice

1. ____
2. ____
3. ____
4. ____
5. ____
6. ____

Cognitive Science Brain Dump

Personal Reflection: How will I apply what I have learnt in today's session?

Revision Space

Revision Space

Thursday Morning Meeting: English Masterclass

English Masterclass: Retrieval Practice

1. ____

2. ____

3. ____

4. ____

5. ____

6. ____

English Masterclass: Application Practice

I Do	You Do

English Masterclass: Additional Notes

Friday Morning Meeting: Cultural Studies

Quote of the day

“I hated every minute of training, but I said, ‘Don’t quit. Suffer now and live the rest of your life as a champion.” — Muhammad Ali

What have you learnt from today’s session? Write down at least three facts below.

1.

2.

3.

4.

5.

Review of Mastery Next Step:

Did you achieve your mastery next step from Monday? If so, how did you achieve it?

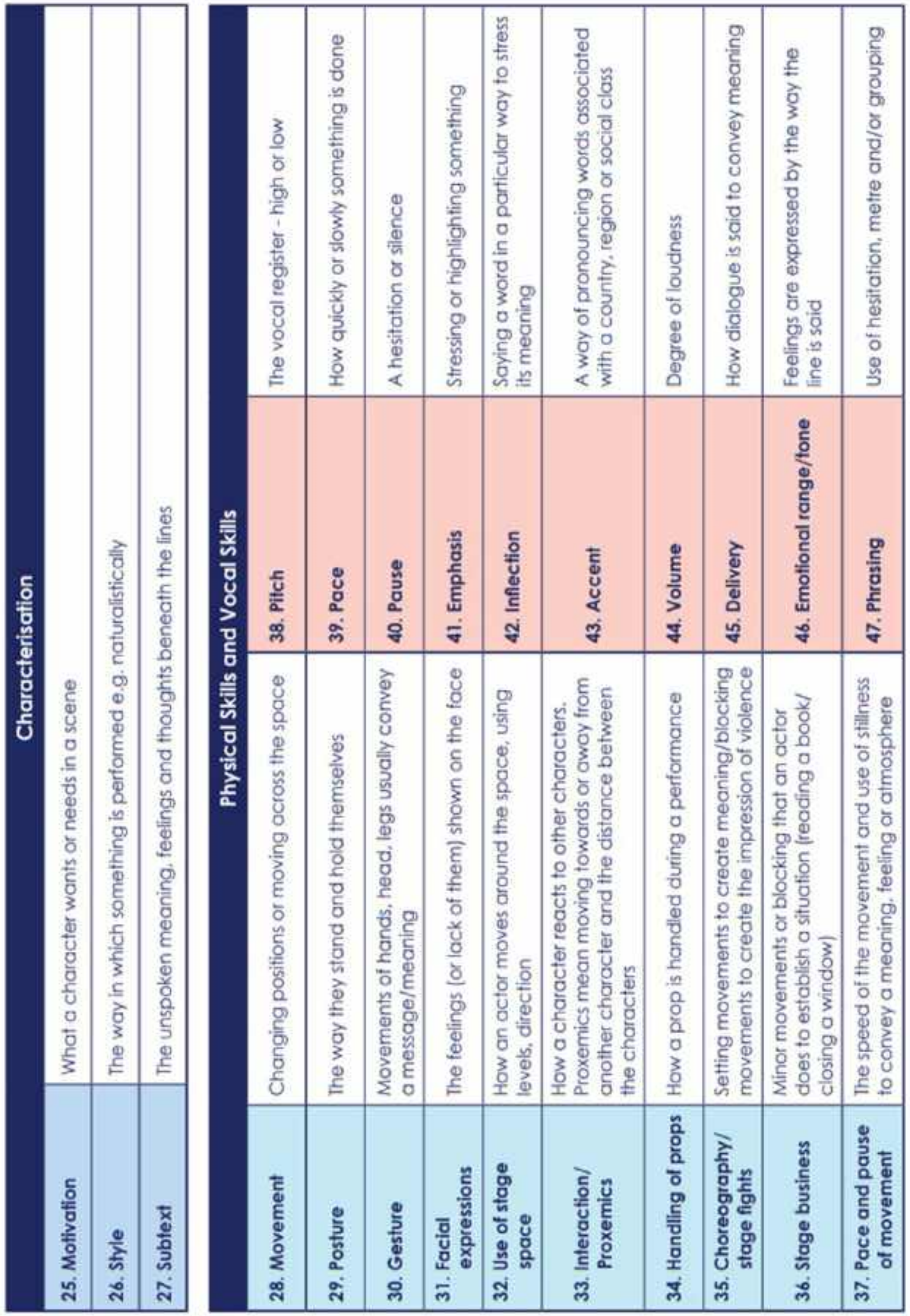
If not, why not?

Monday Morning Meeting - Cycle 3 Week 12

Mastery Next Step

Word of the Week: Definition	
Word of the Week: Use in a sentence	

Performing Arts Knowledge Navigator



Characterisation	
25. Motivation	What a character wants or needs in a scene
26. Style	The way in which something is performed e.g. naturalistically
27. Subtext	The unspoken meaning, feelings and thoughts beneath the lines

Physical Skills and Vocal Skills			
28. Movement	Changing positions or moving across the space	**38. Pitch**	The vocal register - high or low
29. Posture	The way they stand and hold themselves	**39. Pace**	How quickly or slowly something is done
30. Gesture	Movements of hands, head, legs usually convey a message/meaning	**40. Pause**	A hesitation or silence
31. Facial expressions	The feelings (or lack of them) shown on the face	**41. Emphasis**	Stressing or highlighting something
32. Use of stage space	How an actor moves around the space, using levels, direction	**42. Inflection**	Saying a word in a particular way to stress its meaning
33. Interaction/ Proxemics	How a character reacts to other characters. Proxemics mean moving towards or away from another character and the distance between the characters	**43. Accent**	A way of pronouncing words associated with a country, region or social class
34. Handling of props	How a prop is handled during a performance	**44. Volume**	Degree of loudness
35. Choreography/ stage fights	Setting movements to create meaning/blocking movements to create the impression of violence	**45. Delivery**	How dialogue is said to convey meaning
36. Stage business	Minor movements or blocking that an actor does to establish a situation (reading a book/ closing a window)	**46. Emotional range/tone**	Feelings are expressed by the way the line is said
37. Pace and pause of movement	The speed of the movement and use of stillness to convey a meaning, feeling or atmosphere	**47. Phrasing**	Use of hesitation, metre and/or grouping

Design Technology Knowledge Navigator

KS3 DT Knowledge Navigator

Key Terms	
1. Customer	A person who will buy OR use your product.
2. Client	A person or company asking you to work for them.
3. Design Brief	A guide for a project given to you by the client.
4. Ore	The solid material which metal is taken from.
5. Ferrous Metal	A metal which contains iron.
6. Non-Ferrous Metal	A metal which does not contain iron.
7. Alloy	A metal made from 2 or more metals to improve its properties.
8. Pewter	Alloy metal which will melt at low temperatures. Contains many metals including Tin & Copper.
9. Mould	A hollow container designed for casting.
10. Casting	The process of using the mould to pour molten metal inside and create a shape when the metal has cooled.
11. Sprue Hole	The gap where the metal enters the mould.
12. Sprue	The metal which is left over from moulding which takes the shape of the sprue hole.
13. Hearth	The base of the furnace in the workshop used for heating metal.

6 Rs	
R Reduce	Minimise the amount of material and energy used in the production or use of the product.
R Recycle	Take an existing product that has become waste and reprocess the material to use in a new product.
R Reuse	Take an existing product that's become waste and use the material or parts for another purpose, without processing it.
R Repair	When a product breaks down or doesn't function properly, you should be able to fix it.
R Refuse	Don't use or buy a product if you think you don't need it or if it is bad for the environment.
R Rethink	Ask if we can sustain our current way of life and the way we design and make. Come up with new solutions.

Key Terms	
Health and Safety	A set of **rules and regulations** enforced to keep people safe in the chosen environment.
Hazard	A risk of harm or injury.
Precaution	A measure taken to **minimise** the **chance** of harm or injury.
Pillar Drill	A drill mounted on a column or Pillar. It is used to drill holes in wood, metal and plastics. You must clamp your work.
Dowel	A hardwood rod made of ramin with a circular profile.
Sand Paper	Made from Aluminium Oxide comes in a variety of grades.
Isometric Drawing	A drawing with vertical lines and lines at 30dearees from the horizontal.
Manufactured Board	Large sheets of processed wood such as plywood and MDF.

Key Terms	
Polymer	Technical term for what we commonly call **plastics**.
Molecule	A group of atoms **bonded** together.
Polymer Chain	A **chain** of **molecules** found in all polymers.
Thermoforming	A polymer which can be **reheated** and **reformed repeatedly**.
Cross links	**Connections** between polymer chains.
Thermosetting	A polymer which **cannot** be reheated and reformed.
Raw material	The **natural material** from which a product is made.
Extracting oil	**Drilling** into the earth to remove oil.
Fractional distillation	**Separating** oil into different parts, including what is needed to **make polymers**.
Moulding	Turning a polymer into a product shape.
Stock Form	How we **buy** polymers/plastics to use to make products at school e.g. sheet, tubular, square profile.
PVA	Glue used to join timber or paper/board together.
Epoxy Resin	Glue used to join timber/metal/polymers together.
Solvent Cement	Glue used to join polymers together.
Contact Adhesive	Glue used to join timber/metal/polymers together.

Tuesday Morning Meeting: Maths Masterclass

Maths Masterclass: Retrieval Practice

1. ____
2. ____
3. ____
4. ____
5. ____
6. ____

Maths Masterclass: Application Practice

I Do	You Do

Maths Masterclass: Application Practice

1. ____
2. ____
3. ____
4. ____
5. ____
6. ____

Maths Masterclass: Diagnostic Question

Wednesday Morning Meeting: Behaviour Curriculum and Cognitive Science

Behaviour Curriculum Brain Dump

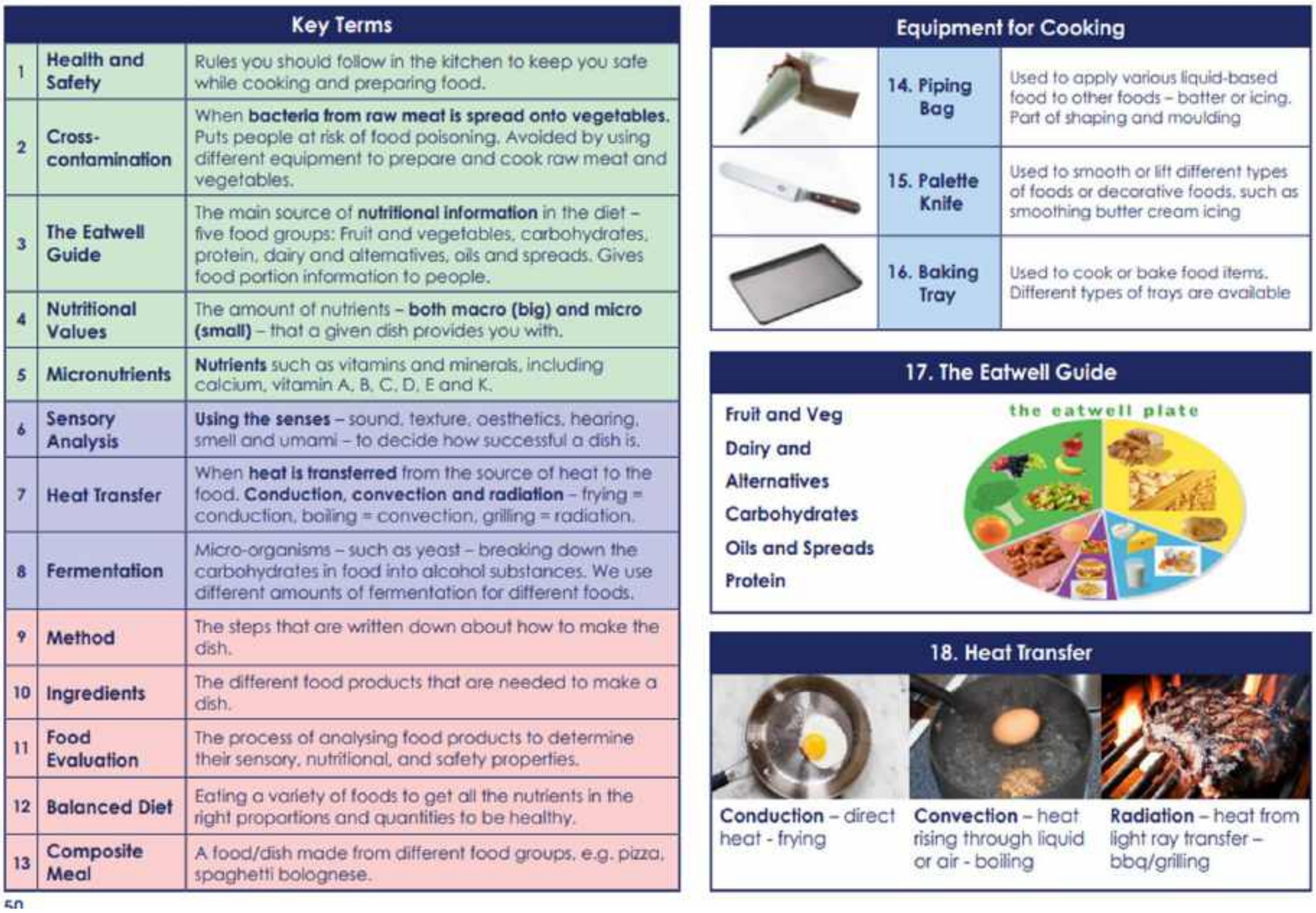
Behaviour Curriculum: Retrieval Practice

1. ______________________________	4. ______________________________
2. ______________________________	5. ______________________________
3. ______________________________	6. ______________________________

Cognitive Science Brain Dump

Personal Reflection: How will I apply what I have learnt in today's session?

Food Technology Knowledge Navigator



Key Terms

1	**Health and Safety**	Rules you should follow in the kitchen to keep you safe while cooking and preparing food.
2	**Cross-contamination**	When **bacteria from raw meat is spread onto vegetables.** Puts people at risk of food poisoning. Avoided by using different equipment to prepare and cook raw meat and vegetables.
3	**The Eatwell Guide**	The main source of **nutritional information** in the diet – five food groups: Fruit and vegetables, carbohydrates, protein, dairy and alternatives, oils and spreads. Gives food portion information to people.
4	**Nutritional Values**	The amount of nutrients – **both macro (big) and micro (small)** – that a given dish provides you with.
5	**Micronutrients**	**Nutrients** such as vitamins and minerals, including calcium, vitamin A, B, C, D, E and K.
6	**Sensory Analysis**	**Using the senses** – sound, texture, aesthetics, hearing, smell and umami – to decide how successful a dish is.
7	**Heat Transfer**	When **heat is transferred** from the source of heat to the food. **Conduction, convection and radiation** – frying = conduction, boiling = convection, grilling = radiation.
8	**Fermentation**	Micro-organisms – such as yeast – breaking down the carbohydrates in food into alcohol substances. We use different amounts of fermentation for different foods.
9	**Method**	The steps that are written down about how to make the dish.
10	**Ingredients**	The different food products that are needed to make a dish.
11	**Food Evaluation**	The process of analysing food products to determine their sensory, nutritional, and safety properties.
12	**Balanced Diet**	Eating a variety of foods to get all the nutrients in the right proportions and quantities to be healthy.
13	**Composite Meal**	A food/dish made from different food groups, e.g. pizza, spaghetti bolognese.

Equipment for Cooking

	14. Piping Bag	Used to apply various liquid-based food to other foods – batter or icing. Part of shaping and moulding
	15. Palette Knife	Used to smooth or lift different types of foods or decorative foods, such as smoothing butter cream icing
	16. Baking Tray	Used to cook or bake food items. Different types of trays are available

17. The Eatwell Guide

Fruit and Veg
Dairy and Alternatives
Carbohydrates
Oils and Spreads
Protein

18. Heat Transfer

Conduction – direct heat - frying

Convection – heat rising through liquid or air - boiling

Radiation – heat from light ray transfer – bbq/grilling

Food Technology Knowledge Navigator

Key Terms

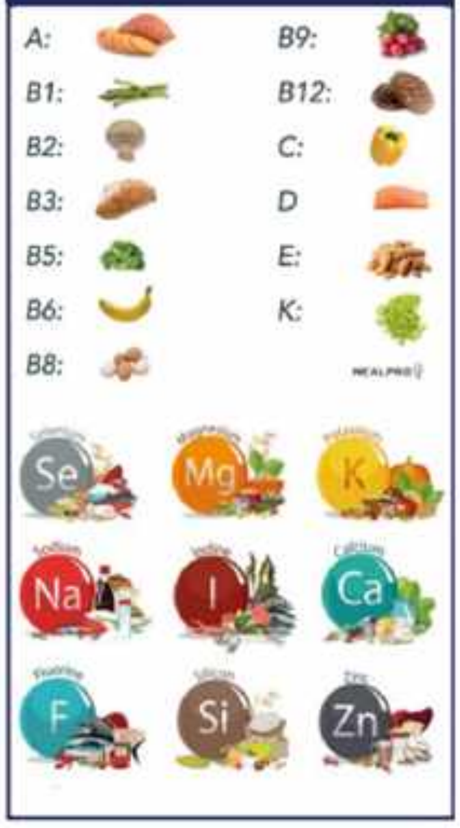
1	**Health and Safety**	Rules you should follow in the kitchen to keep you safe while cooking and preparing food.
2	**Cross-contamination**	When bacteria from raw meat is spread onto vegetables. Puts people at risk of food poisoning. Avoided by using different equipment to prepare and cook raw meat and vegetables.
3	**The Eatwell Guide**	The main source of **nutritional information** in the diet – five food groups: Fruit and vegetables, carbohydrates, protein, dairy and alternatives, oils and spreads. Gives food portion information to people.
4	**Nutritional Values**	The amount of nutrients – **both macro (big) and micro (small)** – that a given dish provides you with.
5	**Macronutrients**	**Nutrients** we supposed to consume in large amounts such as carbohydrates, proteins and fats.
6	**Micronutrients**	**Nutrients** we supposed to consume in small amounts such as vitamins and minerals, including calcium, vitamin A, B, C, D, E and K.
7	**Raising Agents**	Three types: **Chemical** (such as baking powder), **biological** (yeast) and **mechanical** (whisk) used **to get air into food** to change the characteristics. For example, yeast fermenting to release CO_2 to help create air bubbles in bread and make it rise.
8	**Time Plan**	A plan for how you will allocate time to each step of a **method** in a recipe while cooking.
9	**Enzymic Browning**	When a food reacts with oxygen to make it brown.
10	**Food Sources and Origins**	Where a food comes from – the original place. Such as pork from a pig.
11	**Seasonality and Food Miles**	**The distance a product has travelled** to reach the destination it is cooked and eaten in. For instance, peaches bought from abroad to the UK because they're not **seasonal.**

Equipment for Cooking

	**Spatula**	Used to combine, smooth, separate, or collect mixtures or food during cooking or preparation. Different types of spatulas are available.
	**Frying Pan**	Used for different types of frying such as shallow frying, stir fry, deep frying
	**Weighing Scale and Measuring Spoons**	Used to measure the correct amount of solid food and liquid

15. The Eatwell Guide

16. Micronutrients



17. Seasonality

Thursday Morning Meeting: English Masterclass

English Masterclass: Retrieval Practice

1. ____

2. ____

3. ____

4. ____

5. ____

6. ____

English Masterclass: Application Practice

I Do	You Do

English Masterclass: Additional Notes

Friday Morning Meeting: Cultural Studies

Quote of the day

'It's never too late to be what you might've been." — George Eliot

What have you learnt from today's session? Write down at least three facts below.
1.
2.
3.
4.
5.

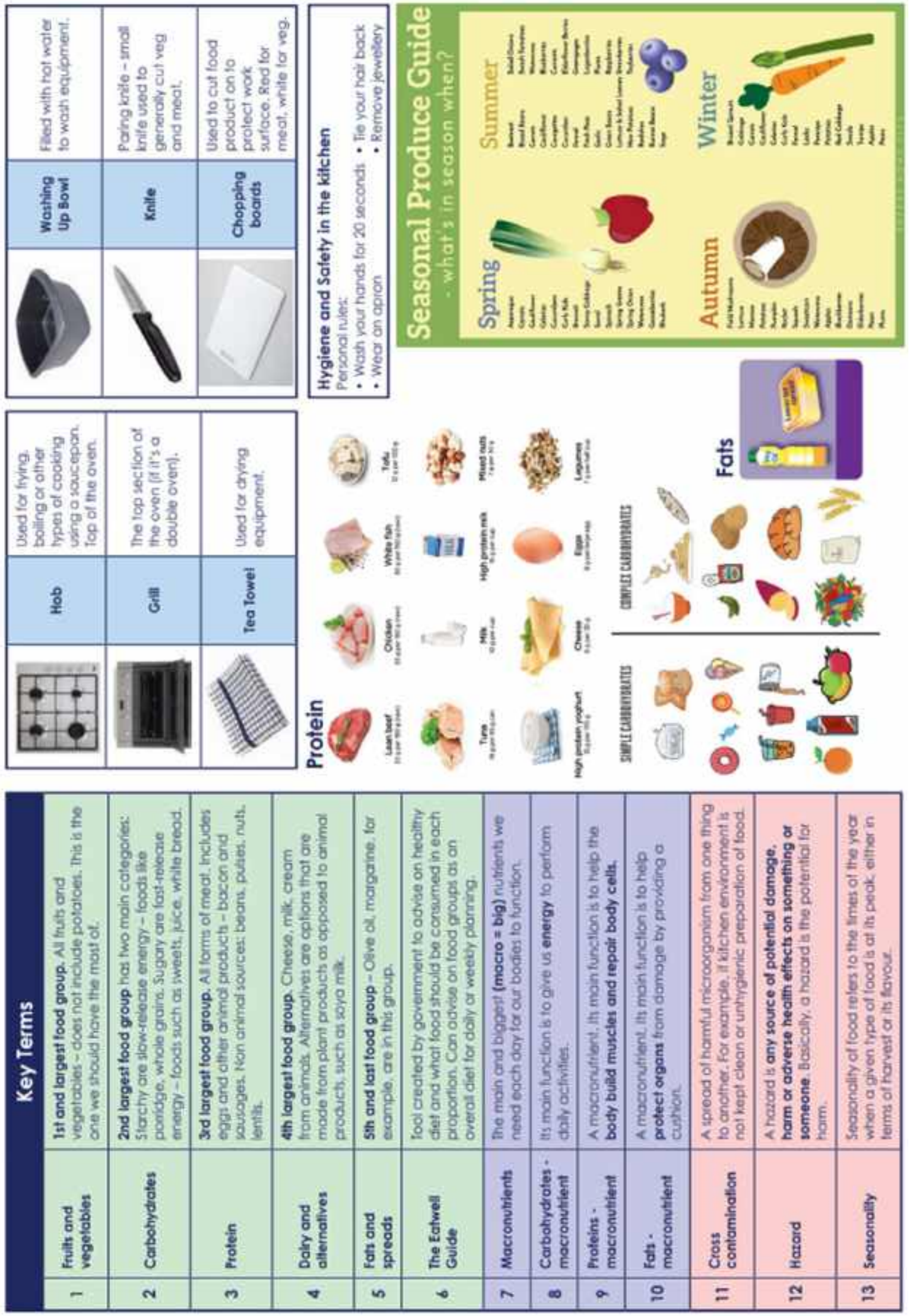
Review of Mastery Next Step: Did you achieve your mastery next step from Monday? If so, how did you achieve it? If not, why not?

Monday Morning Meeting - Cycle 3 Week 13

Mastery Next Step

Word of the Week: Definition	
Word of the Week: Use in a sentence	

Food Technology Knowledge Navigator



	Washing Up Bowl	Filled with hot water to wash equipment.
	Knife	Paring knife – small knife used to generally cut veg and meat.
	Chopping boards	Used to cut food product on to protect work surface. Red for meat, white for veg.

	Hob	Used for frying, boiling or other types of cooking using a saucepan. Top of the oven.
	Grill	The top section of the oven (if it's a double oven).
	Tea Towel	Used for drying equipment.

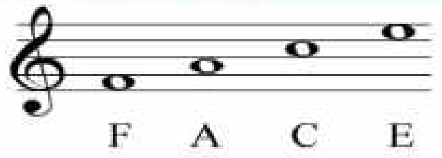
Hygiene and Safety in the kitchen
Personal rules:
- Wash your hands for 20 seconds
- Wear an apron
- Tie your hair back
- Remove jewellery

Key Terms		
1	Fruits and vegetables	**1st and largest food group.** All fruits and vegetables – does not include potatoes. This is the one we should have the most of.
2	Carbohydrates	**2nd largest food group** has two main categories: Starchy are slow-release energy – foods like porridge, whole grains. Sugary are fast-release energy – foods such as sweets, juice, white bread.
3	Protein	**3rd largest food group.** All forms of meat. Includes eggs and other animal products – bacon and sausages. Non animal sources: beans, pulses, nuts, lentils.
4	Dairy and alternatives	**4th largest food group.** Cheese, milk, cream from animals. Alternatives are options that are made from plant products as opposed to animal products, such as soya milk.
5	Fats and spreads	**5th and last food group** – Olive oil, margarine, for example, are in this group.
6	The Eatwell Guide	Tool created by government to advise on healthy diet and what food should be consumed in each proportion. Can advise on food groups as an overall diet for daily or weekly planning.
7	Macronutrients	The main and biggest **(macro = big)** nutrients we need each day for our bodies to function.
8	Carbohydrates - macronutrient	Its main function is to give us **energy** to perform daily activities.
9	Proteins - macronutrient	A macronutrient. Its main function is to help the **body build muscles and repair body cells.**
10	Fats - macronutrient	A macronutrient. Its main function is to help **protect organs** from damage by providing a cushion.
11	Cross contamination	A spread of harmful microorganism from one thing to another. For example, if kitchen environment is not kept clean or unhygienic preparation of food.
12	Hazard	A hazard is **any source of potential damage, harm or adverse health effects on something or someone.** Basically, a hazard is the potential for harm.
13	Seasonality	Seasonality of food refers to the times of the year when a given type of food is at its peak, either in terms of harvest or its flavour.

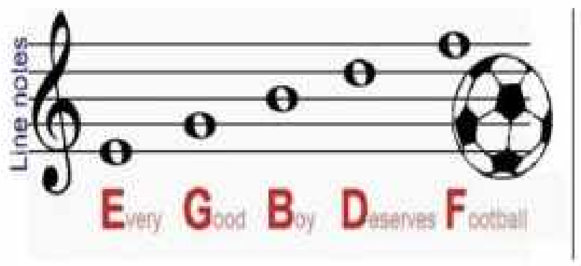
Music Knowledge Navigator

Key Definitions		
1.	**Notation**	A series or system of written symbols used to represent elements in music.
2.	**Clef**	Any of several symbols placed at the left hand end of a stave, indicating the pitch of the notes written on it.
3.	**Treble Clef**	A symbol found at the beginning of a stave to indicate how the notes on that stave should be read.
4.	**Stave**	A set of five parallel lines on which a note is written to indicate its pitch.
5.	**Ledger Line**	A ledger line is used in musical notation to notate pitches above or below the lines and spaces of the regular musical staff.
6.	**Accidental**	A sign seen before a note on the stave that raises or lowers the pitch of a note.
7.	**Semitone**	The smallest interval used in classical Western music, equal to a twelfth of an octave or half a tone.
8.	**Whole Tone**	The distance of two semitones between two notes.
9.	**Enharmonic**	Relating to or denoting notes which are the same in pitch (in modern tuning) though bearing different names.

The Notes in the Spaces on the Stave



The Notes on the Lines of the Stave

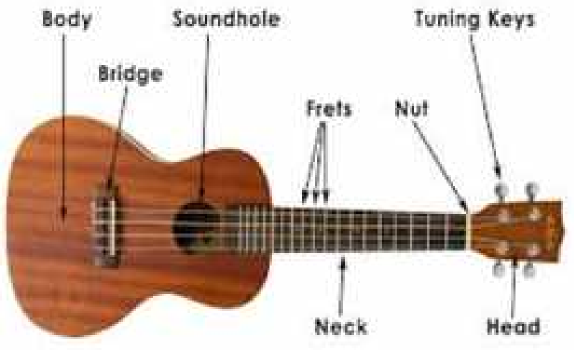


Exploring Chords and Melodies

A-Musical Elements-Key Definitions		
8.	**Ukulele**	A small four-stringed guitar of Hawaiian origin.
9.	**Chord**	A group of (typically three or more) notes sounded together, as a basis of harmony.
10.	**Sequence**	A particular order in which related things follow each other.
11.	**Tempo**	The speed of a piece of music.
12.	**Technique**	A skilful or efficient way of doing or achieving something.
13.	**Ensemble**	To perform music to an audience as part of a group.
14.	**Performance**	The act of entertaining an audience by singing or playing a piece of music on a music instrument.
15.	**Rhythm**	Patterns of long and short sounds played within a steady beat.
16.	**Pitch**	The highness or lowness of sound.

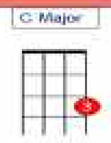
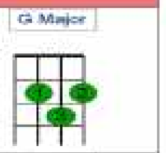
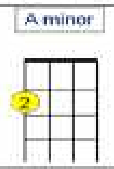
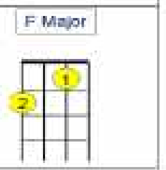
B-The parts of a Ukulele

10.



11. The ukulele has four strings tuned to the notes G C E A (Greedy Cats Eat Ants).

C-Chords on the Ukulele

	Chord Name	Notes in the Chord	Position on the insturment	Diagram		Chord Name	Notes in the Chord	Position on the instrument	Diagram
12.	C Major	C E G	A string, 3rd fret	 C Major	14.	G Major	G B D	C string 2nd fret, E string 3rd fret & A string 2nd fret	 G Major
13.	A minor	A C E	G string, 2nd fret	 A minor	15.	F Major	F A C	G string fret 2 & E string fret 1	 F Major

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Tuesday Morning Meeting: Maths Masterclass

Maths Masterclass: Retrieval Practice

1. ____

2. ____

3. ____

4. ____

5. ____

6. ____

Maths Masterclass: Application Practice

I Do	You Do

Maths Masterclass: Application Practice

1. ____

2. ____

3. ____

4. ____

5. ____

6. ____

Maths Masterclass: Diagnostic Question

Wednesday Morning Meeting: Behaviour Curriculum and Cognitive Science

Behaviour Curriculum Brain Dump

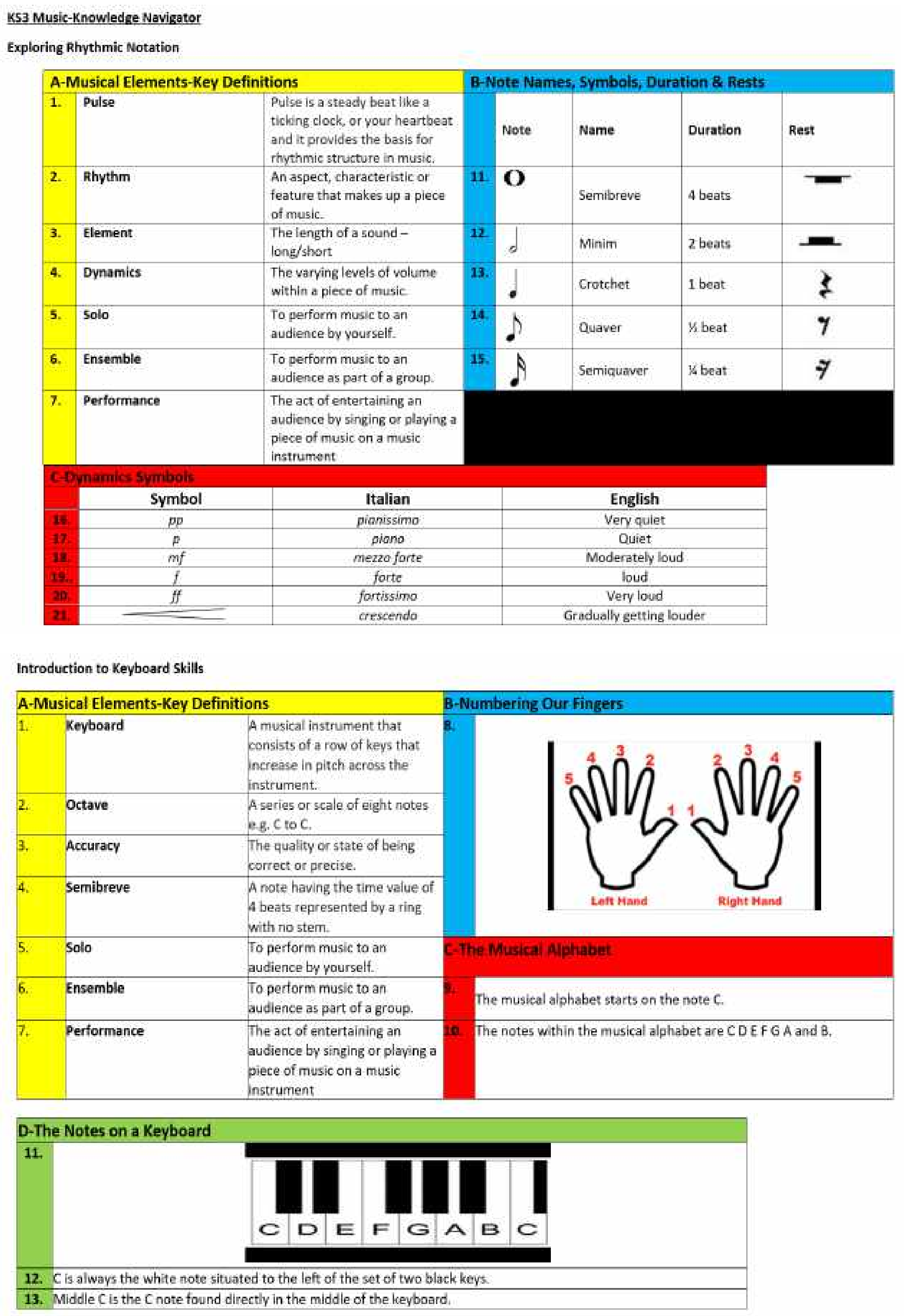
Behaviour Curriculum: Retrieval Practice

1. ______________________________	4. ______________________________
2. ______________________________	5. ______________________________
3. ______________________________	6. ______________________________

Cognitive Science Brain Dump

Personal Reflection: How will I apply what I have learnt in today's session?

Music Knowledge Navigator



KS3 Music-Knowledge Navigator

Exploring Rhythmic Notation

A-Musical Elements-Key Definitions		
1.	**Pulse**	Pulse is a steady beat like a ticking clock, or your heartbeat and it provides the basis for rhythmic structure in music.
2.	**Rhythm**	An aspect, characteristic or feature that makes up a piece of music.
3.	**Element**	The length of a sound – long/short
4.	**Dynamics**	The varying levels of volume within a piece of music.
5.	**Solo**	To perform music to an audience by yourself.
6.	**Ensemble**	To perform music to an audience as part of a group.
7.	**Performance**	The act of entertaining an audience by singing or playing a piece of music on a music instrument

B-Note Names, Symbols, Duration & Rests				
	Note	**Name**	**Duration**	**Rest**
11.	𝅝	Semibreve	4 beats	𝄻
12.	𝅗𝅥	Minim	2 beats	𝄼
13.	♩	Crotchet	1 beat	𝄽
14.	♪	Quaver	½ beat	𝄾
15.	𝅘𝅥𝅯	Semiquaver	¼ beat	𝄿

C-Dynamics Symbols			
	Symbol	**Italian**	**English**
16.	*pp*	*pianissimo*	Very quiet
17.	*p*	*piano*	Quiet
18.	*mf*	*mezzo forte*	Moderately loud
19.	*f*	*forte*	loud
20.	*ff*	*fortissimo*	Very loud
21.	<	*crescendo*	Gradually getting louder

Introduction to Keyboard Skills

A-Musical Elements-Key Definitions		
1.	**Keyboard**	A musical instrument that consists of a row of keys that increase in pitch across the instrument.
2.	**Octave**	A series or scale of eight notes e.g. C to C.
3.	**Accuracy**	The quality or state of being correct or precise.
4.	**Semibreve**	A note having the time value of 4 beats represented by a ring with no stem.
5.	**Solo**	To perform music to an audience by yourself.
6.	**Ensemble**	To perform music to an audience as part of a group.
7.	**Performance**	The act of entertaining an audience by singing or playing a piece of music on a music instrument

B-Numbering Our Fingers

8.

C-The Musical Alphabet	
9.	The musical alphabet starts on the note C.
10.	The notes within the musical alphabet are C D E F G A and B.

D-The Notes on a Keyboard

11.

12. C is always the white note situated to the left of the set of two black keys.
13. Middle C is the C note found directly in the middle of the keyboard.

Art Knowledge Navigator

How Do Artists Use the Different Elements of Art?

1. I will learn how artists use the different elements of art.
2. I will research and respond to a wide range of artists.
3. I will explore a range of materials, techniques, and processes.

Artists we will use to explore the Elements of Art: Sonia Delaunay; Wassily Kandinsky; Paul Klee

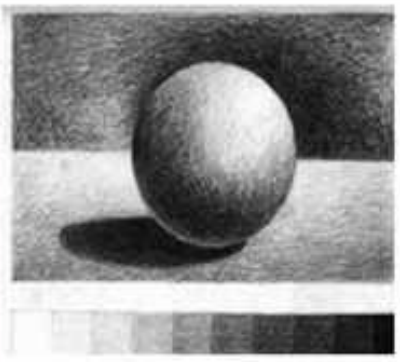

Sonia Delaunay 1885-1979


Wassily Kandinsky 1866

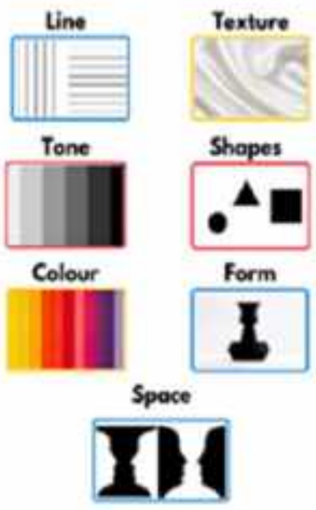

Paul Klee 1879-1940

All artists use the colour wheel to make decisions about their work.

You will learn how to paint with accuracy and how to create a colour wheel.



What are the Elements of Art?
The Elements are LINE; COLOUR; VALUE; SPACE; SHAPE; FORM; TEXTURE.
You will be learning how the Elements of Art are the foundation of ALL Art created. Artists use the Elements in all forms.



You will explore mark making, creating tone and texture. Your sketchbook will become a pathway towards GCSE Art and Design as you become even more confident in Art.

Thursday Morning Meeting: English Masterclass

English Masterclass: Retrieval Practice

1. ____
2. ____
3. ____
4. ____
5. ____
6. ____

English Masterclass: Application Practice

I Do	You Do

English Masterclass: Additional Notes

Friday Morning Meeting: Cultural Studies

Quote of the day

"Twenty years from now you'll be more disappointed by the things you did not do than the ones you did." — Mark Twain

What have you learnt from today's session? Write down at least three facts below.

1.

2.

3.

4.

5.

Review of Mastery Next Step:

Did you achieve your mastery next step from Monday? If so, how did you achieve it?

If not, why not?

Revision: Advice and Guidance

One of the best revision techniques is Look, Cover, Write, Check. The process is outlined below.

1. Look at the first bullet point or sentence.

2. Read it through three to five times.

3. Cover the page so that you can no longer see it.

4. Write it out exactly (word for word) as it appears in your knowledge navigator from memory.

5. Check what your wrote. Tick if correct, change if incorrect.

6. Repeat.

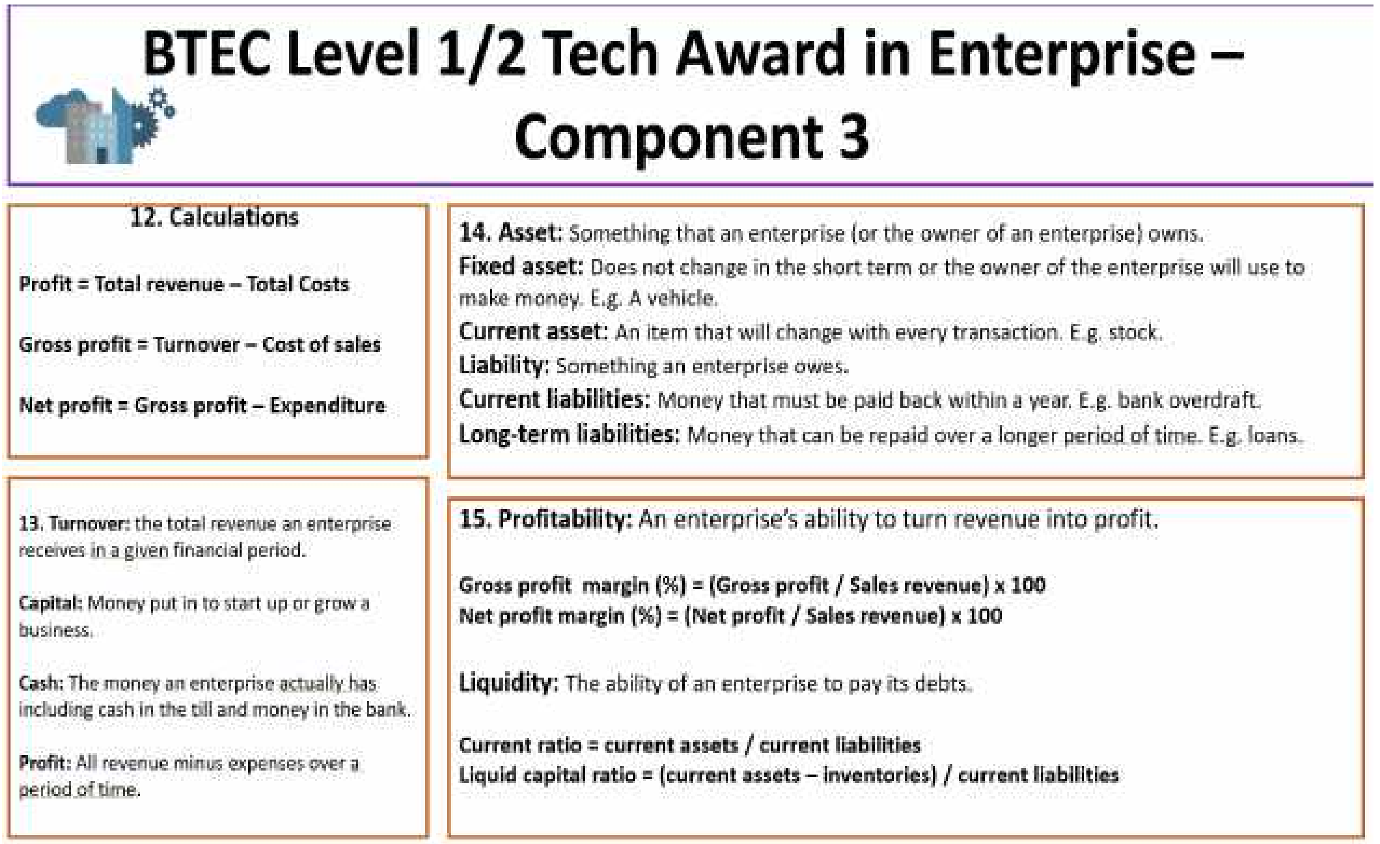
7. When you get it 100% correct then move on to the next chunk of information.

Remember

If information retrieved (remembered) often enough then it will gradually form part of our long term memory. Then we will never forget it.

This process is hard. If it isn't hard then it isn't working.

Enterprise Knowledge Navigator



BTEC Level 1/2 Tech Award in Enterprise – Component 3

12. Calculations

Profit = Total revenue – Total Costs

Gross profit = Turnover – Cost of sales

Net profit = Gross profit – Expenditure

13. Turnover: the total revenue an enterprise receives in a given financial period.

Capital: Money put in to start up or grow a business.

Cash: The money an enterprise actually has including cash in the till and money in the bank.

Profit: All revenue minus expenses over a period of time.

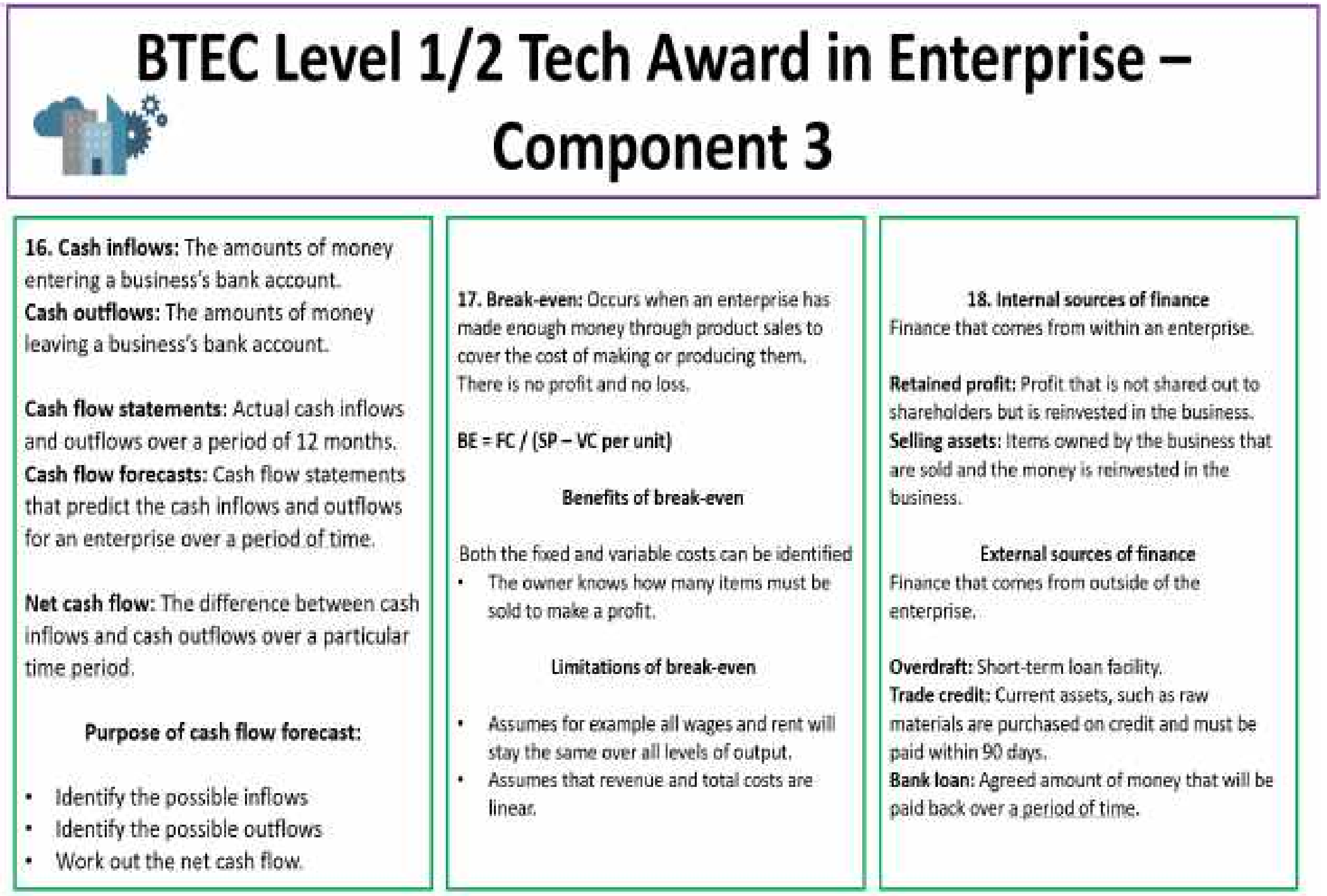
14. Asset: Something that an enterprise (or the owner of an enterprise) owns.
Fixed asset: Does not change in the short term or the owner of the enterprise will use to make money. E.g. A vehicle.
Current asset: An item that will change with every transaction. E.g. stock.
Liability: Something an enterprise owes.
Current liabilities: Money that must be paid back within a year. E.g. bank overdraft.
Long-term liabilities: Money that can be repaid over a longer period of time. E.g. loans.

15. Profitability: An enterprise's ability to turn revenue into profit.

Gross profit margin (%) = (Gross profit / Sales revenue) x 100
Net profit margin (%) = (Net profit / Sales revenue) x 100

Liquidity: The ability of an enterprise to pay its debts.

Current ratio = current assets / current liabilities
Liquid capital ratio = (current assets – inventories) / current liabilities



BTEC Level 1/2 Tech Award in Enterprise – Component 3

16. Cash inflows: The amounts of money entering a business's bank account.
Cash outflows: The amounts of money leaving a business's bank account.

Cash flow statements: Actual cash inflows and outflows over a period of 12 months.
Cash flow forecasts: Cash flow statements that predict the cash inflows and outflows for an enterprise over a period of time.

Net cash flow: The difference between cash inflows and cash outflows over a particular time period.

Purpose of cash flow forecast:

- Identify the possible inflows
- Identify the possible outflows
- Work out the net cash flow.

17. Break-even: Occurs when an enterprise has made enough money through product sales to cover the cost of making or producing them. There is no profit and no loss.

BE = FC / (SP – VC per unit)

Benefits of break-even

Both the fixed and variable costs can be identified
- The owner knows how many items must be sold to make a profit.

Limitations of break-even

- Assumes for example all wages and rent will stay the same over all levels of output.
- Assumes that revenue and total costs are linear.

18. Internal sources of finance
Finance that comes from within an enterprise.

Retained profit: Profit that is not shared out to shareholders but is reinvested in the business.
Selling assets: Items owned by the business that are sold and the money is reinvested in the business.

External sources of finance
Finance that comes from outside of the enterprise.

Overdraft: Short-term loan facility.
Trade credit: Current assets, such as raw materials are purchased on credit and must be paid within 90 days.
Bank loan: Agreed amount of money that will be paid back over a period of time.

BTEC Level 1/2 Tech Award in Enterprise – Component 3

1. Enterprise: Word used to represent the ideas and initiative involved in starting a new business.

Promotion: Enterprises use promotion to communicate with their current and potential customers.

Main aims:

- Build positive associations with the enterprise
- Encourage customers to purchase products or services.

Features and benefits:

- Inform customers
- Remind customers
- Persuade customers.

Medium: refers to the type of advertising that a business choses to use e.g. TV, radio, magazines, etc.

2. Advertising: This entails an enterprise paying for space in the media to communicate with the public about its goods and services.

Purpose of advertising

- **To inform people:** an enterprise needs to make potential customers aware of a new product and its benefits.
- **To persuade people to make a purchase:** an enterprise might tell people about the benefits its products offer or their value for money.

Examples = moving image, print, ambient (e.g. on the sides of buses), digital and audio.

3. Sales promotion: This gives customers an incentive (often limited to a period of time) to buy an enterprise's products.

Purpose of sales promotion

- To entice people in
- To boost sales figures
- To attract first-time buyers
- To clear old stock.

5. Personal selling: Where a representative of an enterprise contacts potential customers directly. E.g. face-to-face, by telephone, via email or through video or web conferencing

Public relations: Involves promoting an enterprise, a brand, a product or service by placing information about it in the media without paying for the time or media space directly. E.g. exhibitions, sponsorship or press releases

6. Types of market

Business to consumer (B2C): Products or services that you buy for yourself. E.g. Clothes, toys, food, etc.

Business to business (B2B): When an enterprise sells goods or services to other enterprises. E.g. Kellogg's selling to Tesco and Sainsbury's.

7. Direct marketing: When an enterprise communicates with a customer directly to try and sell them a product or service. E.g. direct mail (junk mail), mail order catalogues, magazines and telemarketing.

BTEC Level 1/2 Tech Award in Enterprise – Component 3

8. Market segmentation: Markets can be divided into different sections or market segments. Each segment is made up of customers who have similar characteristics and needs.

Benefits of segmenting the market

- Understand the characteristics and needs of their customers better
- Develop goods and services for a specific market segment
- Identify and choose a target market to specialise in
- Choose promotional strategies that are better suited to their target market.

9. Different market segments:

- **Demographic** – age, race, religion, gender, family size, ethnicity, income, education level and socio-economic group
- **Geographic** – location
- **Psychographic** – social class, attitudes, lifestyle and personal characteristics
- **Behavioural** – spending, consumption, usage, loyalty status and desired benefits.

10. Factors influencing the choice of promotional methods:

- **Size of enterprise** – large enterprises can use all promotional strategies, whereas small enterprises can't
- **Budgetary constraints** – the amount of money an enterprise has available to spend on promotion
- **Appropriateness for product/service** - choosing the best method for the product / service the enterprise is selling
- **Target market** – the enterprise must ensure their target market sees their promotion.

11. Financial documents: Enterprises need to fill in a range of documents when completing financial transactions. The purpose of these documents is to ensure that the business, its customers and its suppliers have an accurate record of all trading that has taken place.

Revenue: The income of an enterprise receives through various activities.

Revenue = Number of sales x price per unit

Fixed costs: The costs that have to be paid no matter how many products the business sells. E.g. rent on a factory.

Variable costs: The costs that are directly related to the number of items sold or produced. E.g. materials to manufacture products.

English Language Paper 1 KS3 Knowledge Organiser

READING THE EXTRACT
1. Read and annotate for **10 MINUTES** 2. Read the questions 3. Highlight information in the extract that will help you with the questions.
4. Make notes alongside each paragraph of the extract to explain what is happening.

Qs	Time	What should I do for this question?
Q1 **COMPREHENSION**	5 minutes	• Write 4 things that are asked for in the question. • You can write in bullet points.
Q2 **LANGUAGE ANALYSIS**	10 minutes	You will **ANALYSE** the language of the extract. Aim to analyse **3 QUOTATIONS** from the specific part of the text. • **WHAT** is shown about the focus of the question? Make clear points about the presentation of character or theme. Then, embed relevant evidence. • **HOW** does the writer show the focus? Zoom in on key words from selected evidence, analyse the use of language techniques. • **WHY** does the writer present the focus in this way? What is the writer trying to show about the focus?
Q3 **STRUCTURE ANALYSIS**	10 minutes	You will **ANALYSE** the **BEGINNING, MIDDLE AND END** of the extract. You will explore how the technique has been set out to **INTEREST THE READER**. • What is happening at the this part of the text? What is the reader's focus on? Does the writer use a specific structure technique? Include evidence to support this. Why does this make the reader interested? • Do not analyse the language of quotations.
Q4 **EVALUATION**	25 minutes	You will **EVALUATE** the extract – this means you will give your opinion on the question set and **ANALYSE** evidence from the text to support this. • **WHAT** is your opinion on the question? • **HOW** is this opinion supported by the extract? Provide evidence to support and analyse key words and techniques within this. • **WHY** is the writer presenting the character of idea in this way? Evaluate what impact this has on the reader.
Q5 **NARRATIVE (STORY) OR DESCRIPTIVE WRITING**	45 minutes	Content Narrative • Story progression: opening to introduce the narrator → build up → climax → resolution → ending • One narrator and just one other character. • DO NOT write an action packed story! Just write a simple story of something that could happen every day. Description • Details on the whole scene → zoom in 1 → zoom in 2 → zoom in 3 • Have a clear narrator who is guiding the reader through the scene. • Sensory imagery – sight, smell, sound, taste, touch. Technical Accuracy • Correct punctuation . , ! ? : ; - ( ) " • Capital letters for the start of sentences and proper nouns • Paragraphing - start a new paragraph for a new focus in your writing • Sentence structures – simple, complex, compound • Sentence openers – fronted adverbials, list of three • Vocabulary – a variety of exciting words

Language Techniques:
- Adjective / verb / noun
- Simile
- Metaphor
- Personification
- Alliteration
- Hyperbole
- Repetition
- Rhetorical question
- Juxtaposition
- Pathetic fallacy
- /Imperative/Exclamative/Declarative sentences

Structure Techniques:
- Beginning
- Middle
- End
- Climax
- Cliff-hanger
- Foreshadowing
- Rising action
- Panoramic
- Narrative perspective
- Cyclical structure
- Chronological

Synonyms for SHOWS:
- Suggests
- Conveys
- Portrays
- Illustrates
- Presents
- Displays
- Demonstrates
- Indicates
- Reveals
- Highlights
- Reflects

Sentence Starters:

Q2
The writer uses language to describe…
This is shown in, '…………'
The use of …………. suggests…………
Connotations *of the word '……….' portray………*
This makes the reader feel……… because…………

Q3
At the beginning, the writer focuses on…
This is shown in '…….'
The writer uses the technique… to suggest…
This makes the reader feel ……………..

Q4
My opinion on the text is…
This is supported in the text with '…'
The writer uses ……… to suggest………
This is effective……… because………
This makes the reader feel……… because……..

Year 9 Unit 2: Algebraic Expressions

SEQUENCES	
sequence	a **pattern** of **terms/numbers** which **follow** a **rule**
position-to-term rule *(nth Term)*	a **rule** which allows you to **calculate any term** that is in the **nth position** of the sequence
generate	to **produce** or **create**
linear sequences	a sequence where the **difference between terms increases or decreases** by the **same amount** each time also known as an **arithmetic** sequence use **DiNO** to find the **nth term** to **generate a sequence substitute values of 'n' in**, e.g. 2nd term, n=2 *algebraically:* $x_n = an + b$
common difference	the amount we **add** or **subtract** each time in a **linear sequence**
quadratic sequences	a sequence of numbers with an n^2 in the **position to term rule** (nth term) the **second difference** between consecutive terms is **constant** *algebraically:* $x_n = an^2 + bn + c$
geometric sequences	a sequence of numbers where each term is found by **multiplying** the **previous one by** a number called the **common ratio 'r'** *algebraically:* $x_n = ar^{n-1}$ **increasing**: the **ratio** is an **integer**, **decreasing**: the **ratio** is a **fraction**
common ratio (r)	the amount we **multiply** by each time in a geometric sequence, can be a fraction

INSTRUCTIONS: GENERAL	
expand	**multiply** terms inside a bracket by those outside the bracket, **remove the brackets using the grid method**
simplify	to reduce to its **simplest form**

FACTORISING	
factorise	finding the **factors** of an expression the reverse of **expand**, it is when we write an expression **using brackets**, use **reverse grid**
factor	a quantity which **divides equally** into a number, e.g. *factors of 8 are* ***1, 2, 4 and 8***
factorising a general quadratic	quadratic: $x^2 + bx + c$, factorised form: $(x + ?)(x + ?)$ '?' are **two numbers** whose **product is 'c'** and **sum is 'b'**, **split the middle term** and put into a **reverse grid** to find the **brackets**
difference of two squares	quadratic: $a^2 - b^2$ factorised form: $(a - b)(a + b)$ **square root each number** from the **original expression**

INSTRUCTIONS: EQUATIONS AND INEQUALITIES	
rearrange	**changing the subject** of a formula sometimes called **transposing** use **inverse operations** and the **balancing method**, like when we solve an equation
inverse	the **opposite**
balance ***an equation***	do the **same** to **both sides of the "="** use to **solve** an equation, or **rearrange** a formula
subject ***of an equation***	a **single** unknown or **variable** that everything else is **equal** to
solution ***of an equation***	a **value** we can put in **place of a variable** that makes the equation **true**
order of operations	the laws regarding the **order** in which to **calculate**, used in algebra too **brackets, other, multiply and divide, add and subtract**
solving inequalities	using the **balancing method** to write an inequality in its **simplest form**
solving quadratic equations	To solve you must **factorise** the **quadratic equation** then set each bracket **equal to zero** to find **solutions for x.**

LINEAR SEQUENCES inks to: LINEAR GRAPHS	
y = mx + c	the **general equation** of a linear graph **m** is the **gradient** **c** is the **y-intercept**

ALGEBRAIC NOTATION	
coefficient	a number used to **multiply** a variable the number that comes **in front** of a **letter**, e.g. 3b means 3xb the **coefficient** is **3**, the **variable** is **b**
simplifying algebraic fractions	**factorise** the **numerator** and **denominator** and **cancel common factors,** sometimes requires factorisation
identity	an equation that is **true for all** of its **variables,** indicated by the **≡ symbol** *e.g. b + b ≡ 2b*
prove	**even** number: **2n**, **odd** number: **2n+1 or 2n-1**, **consecutive** numbers: **n, n+1, n+2**, **consecutive even** numbers: **2n, 2n+2, 2n+4**, **consecutive odd** numbers: **2n+1, 2n+3, 2n+5** or 2n-1, 2n-3, 2n-5, **multiples** of a number: **it will factorise by that number**

Knowledge Organiser: Computer Crime & Cyber Security

Summary

Malware is a general term that describes lots of different programs that try to do something unwanted to your computer. Malware is made to stop your device from running properly and sometimes to steal your information.

Anti-malware software is designed to find and stop malware from damaging your computer or a network. To protect your computer you need to install **anti-malware** software and run regular scans.

When you are online you need to watch out for **phishing** and **spam emails** and protect your private information. **Phishing** emails are trying to trick someone into giving out information over email. **Spam emails** can contain **malware.**

Smartphones and mobile devices allow for photos, videos and your location to be shared instantly on the internet. **Be careful what you get up to in public as anyone might have a smartphone pointed at you.** Do not post photos or videos of other people online without their permission.

Key Vocabulary

Backup	A copy of important files that is kept separately in case your original files are lost or damaged.
Chat room	Accessed on the internet, users can meet to chat in real-time, messages are typed out but voice chat rooms exist too.
Copyright	A set of rights that prevents people copying and distributing a piece of work without the copyright holder's permission.
Data	Values, typically letters or numbers.
File sharing	The act of sharing files over the internet.
Firewall	An application that prevents unauthorised connections to and from the Internet.
Hack	Gaining unauthorised access to a computer.
Information	Data that has meaning, not just a number or a letter.
Licence	A legal agreement between the company who published the software and the end user covering areas such as copyright.
Malware	Malicious software created to damage or gain illegal access to computer systems.

Phishing emails are trying to trick someone into giving out information over email.

? What to look out for in a phishing email ?

- **The greeting is not personalised**
- Poor spelling and grammar
- Forged link
- Sense of urgency
- Request for personal information
- The sender's address is often a variation on a genuine address

Spam emails offer all kinds of things like money and prizes and can contain malware too.

Ways to reduce spam:

Use a spam filter - most email clients try to stop spam from reaching you by using a spam filter.

Do not give your email address out – if you don't trust the website or if supplying your email address is optional, don't give it to them.

Keep an eye out for tick boxes – when you sign up to a website, it might try to sign you up to its newsletter.

Malware is software that can harm devices

Typical actions of malware include deleting or modifying files.

Spyware—secretly monitors user actions, e.g. key presses, and sends information to the hacker. Some spyware can even use your webcam without your knowledge.

Viruses—spreads through normal programs and might slow down your device or change your applications and documents.

Worms— spread from device to device and copy themselves hundreds of times. A worm might copy itself onto your email account and then send a copy to all of your email contacts!

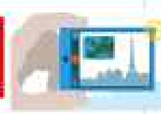
Trojan horse— pretends it will be a useful and safe program, when actually it will try to attack your device.

Adware—displays adverts while it is running; some can serve as spyware, gathering information about you from your hard drive, the web sites you visit, or your keystrokes.

Staying safe online

Never disclose your name telephone number address or school

It's wise not to share your location. Especially on websites and apps that are accessible by anyone.



Never accept someone as a 'friend' on social media simply because they claim to know another friend of yours.
Always be cautious about what you say online.

Visit these websites for advice

ChildLine 0800 1111
Webwise
THINK U KNOW

Knowledge Organiser: Understanding computers *Discover how computers work*

Summary

Computers require input hardware, processing hardware and output hardware. The hardware that defines a computer is the **CPU** and **memory.** Without these a computer could not function. The CPU and memory work together to run programs.

CPU - executes programs using the **fetch-decode-execute cycle**.

Memory - stores program operations and data while a program is being executed. There are several types of memory, including: **registers, cache, RAM** and **virtual memory**.

Storage - stores programs and files long term, even when they are not in use. Devices such as hard drives, USB memory sticks or SD cards are used to store files such as photos, music and software applications long term.

An **input device** is any piece of computer hardware **used to provide data to a computer system.** Examples include: keyboard, mouse, scanner, digital camera and webcam.

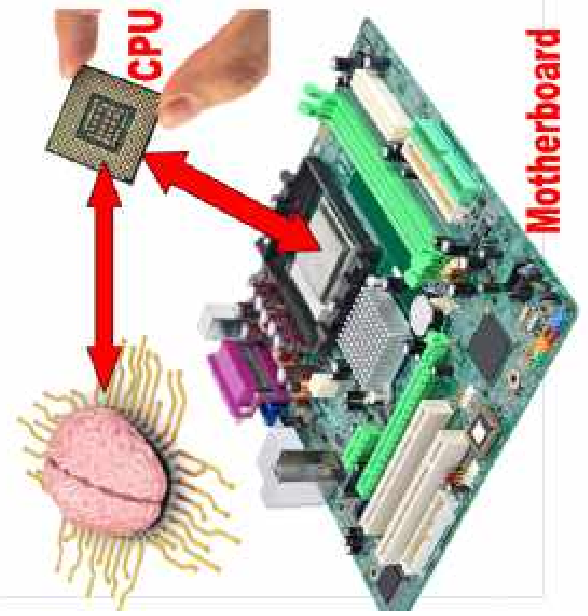
An **output device** is any piece of computer hardware used to communicate the results of data that has been processed.

Central Processing Unit

The **Central Processing Unit** or **CPU** is arguably the most important component of a computer.

You can think of the CPU is being like the brain in a human.

It is responsible for all of a computer's processing.



The Fetch – Decode – Execute cycle

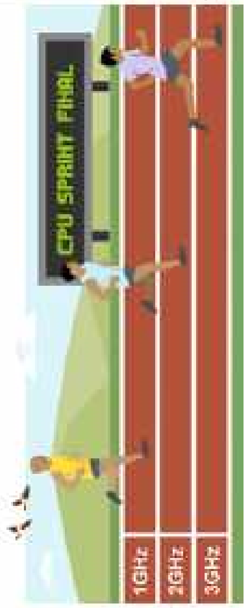
The **CPU** operates by repeating three operations:

FETCH – causes the next instruction and any data involved to be fetched from main memory

DECODE – decodes the instruction to make sure it can be carried out

EXECUTE – carries out the instruction

Repeat...



Key Vocabulary

Clock speed	The speed of a computer CPU, measured in hertz.
Cache	A piece of temporary memory. It can refer to a part of the RAM, storage disk, CPU, or an area for storing web pages.
CPU	Central Processing Unit - the brains of the computer that processes program instructions. Also called a **microprocessor**.
Execute	To run a computer program.
GHz	Gigahertz. One billion hertz per second = one gi-gahertz. This is a measure of frequency and is used to describe bus speeds and CPU clock speeds.
Hardware	The physical parts of a computer system, e.g. a graphics card, hard disk drive and CD drive.
Mother-board	The circuit board inside a computer that houses the CPU, memory and connections to other devices.
RAM	Memory that is constantly being written to and read from. It does not retain its contents without a constant supply of power, i.e. when a computer is turned off, everything stored in its RAM is lost.
Registers	The section of high speed memory within the CPU that stores data to be processed.
Software	Software is the programs that run on a computer.
Virtual memory	A section of a computer storage drive which is temporarily used as RAM.

Binary Units

Remember the units used in the binary system.

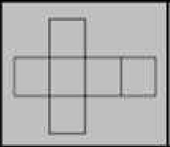
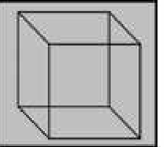
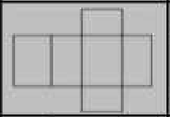
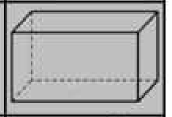
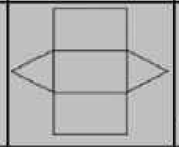
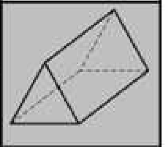
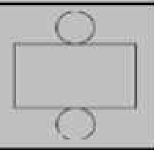
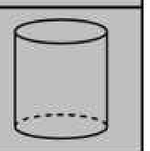
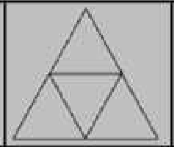
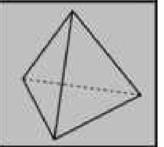
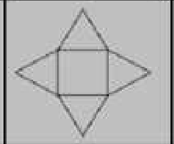
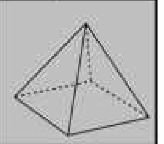
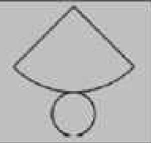
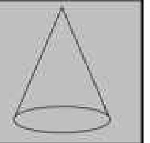
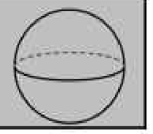
1 byte =	8 bits
1 Kilobyte =	1024 bytes
1 Megabyte =	1024 Kilobytes
1 Gigabyte =	1024 Megabytes
1 Terabyte =	1024 Gigabytes

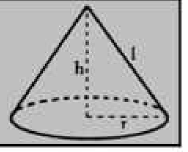
Unit 11
3D Geometry

PROPERTIES OF 3D SOLIDS	
surface	the **outside layer** of an object, it has an **area** and **can be flat or curved**
face	any of the **individual flat surfaces** of a **solid object**
edge	for a 3D shape, the **line segment** where **two faces** meet
vertex (vertices)	for a 3D shape, the **point** where **two or more edges meet**, a **corner**

2D REPRESENTATIONS OF 3D SHAPES	
plan	a **2D view** of a **3D solid** as viewed **from above**, birds-eye view
elevation	the **2D view** of a **3D solid from** the **front** or the **side**
net	a **pattern** that you can **cut** and **fold** to make a **model** of a 3D shape

VOLUME		
volume	the amount of **space a 3D shape** takes up	
volume units	**mm³, cm³, m³...**	
prism	volume = **area of cross section x length**	
cube	volume = **one side cubed** (or. **area of square x length of prism)**	$V = l^3$
cuboid	volume = **area of rectangle x length of prism**	$V = lbh$
triangular prism	volume = **area of triangle x length of prism**	$V = \frac{lbh}{2}$
cylinder	volume = **area of circle x length of prism**	$V = \pi r^2 h$
pyramid	volume = $\frac{1}{3}$ **x area of cross section x length**	
square based pyramid	volume = $\frac{1}{3}$ **x area of square base x height of pyramid**	$V = \frac{lwh}{3}$
cone	volume = $\frac{1}{3}$ **x area of circle base x height of cone**	$V = \frac{\pi r^2 h}{3}$
sphere	$V = \frac{4}{3}\pi r^3$	

3D SOLIDS			
prism	a **3D solid** with a **consistent cross section**		
cube	**6 faces** **12 edges** **8 vertices**		
cuboid	**6 faces** **12 edges** **8 vertices**		
triangular prism	**5 faces** **9 edges** **6 vertices**		
cylinder	**3 faces** **2 edges** **no vertices**		
pyramid	a **solid three-dimensional shape** with a **polygon base**, and **triangular faces** that **meet** at the **apex** (a vertex)		
triangular based pyramid (tetrahedron)	**4 faces** **6 edges** **4 vertices**		
square based pyramid	**5 faces** **8 edges** **5 vertices**		
cone	**2 faces** **1 edge** **1 vertex**		
sphere	**1** face **no** edges **no** vertices		

SURFACE AREA		
surface area	the **total area** of all the **surfaces** on a **3D shape**	
surface area method	find the **area of each face** separately, then **add** them together	
surface area of a sphere	$A = 4\pi r^2$	
surface area of a cone	**curved surface area** = πrl **circle base area** = πr^2 **add** these together	

Unit 12
Statistics

TYPES OF DATA

data	a collection of **information**
qualitative	data that can only be **written in words**, not numbers, e.g. eye colour, favourite animal
quantitative	**numerical** data, e.g. shoe size, height of a plant
continuous	**numerical data** that can be **measured**, e.g. height of a plant, it has an infinite number of possible values within a selected range, it is **on a scale**
discrete	data which can only take **certain values**, e.g. eye colour, shoe size (categorical in science)
grouped	numerical data that has been ordered and **sorted into groups** called classes
data representation	**a table or chart or graph** which gives more meaning to a set of data these include **bar charts**, **line graphs**, **pictograms**, **pie charts**, **stem and leaf diagrams**, **two-way tables**, **scatter graphs**, **frequency polygons** and **histograms**

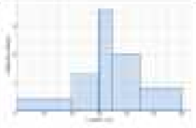
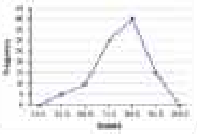
COMPARING DATA

comparing data	**compare averages** to say who is **better/faster/taller** **compare ranges** to say who is **more consistent** / less varied

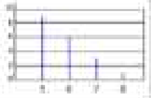
AVERAGES AND RANGE FROM A FREQUENCY TABLE

mean	method: **multiply the variables by their frequencies** (fx column), **total the fx column**, **divide by total frequency**
mode / modal class	the most frequent value or class; the one with **the highest frequency**
median	**use half the total frequency** to find the **middle position**, then **locate the row** this occurs in using the 'subtotal' column
range	**difference between** the **largest** and **smallest values of the variable (first column)**

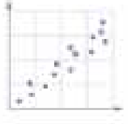
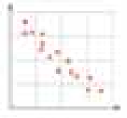
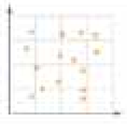
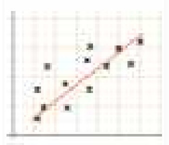
DISPLAYING GROUPED DATA

class width	the **range** of a **group** (class) i.e. aged 15-20 has a class width of **5**	
histogram	the **area** of the bars represents the frequency, there are **no gaps** between bars	
frequency density	the **heights** of the bars on a histogram $frequency\ density = \frac{frequency}{class\ width}$	
frequency polygon	a line graph made by **plotting the frequency against the midpoints** of each group	

DISPLAYING UNGROUPED DISCRETE NUMERICAL DATA

stem and leaf diagram	a way of displaying **a list of numbers** the **stem goes down** and the **leaves go out to the right**, it has a **key**	stem | leaf 5 | 6 6 | 7, 7, 9 7 | 2, 4, 7, 7, 8
vertical line graph	**like a bar chart**, **but the bars have no width**, **they are just straight lines** up the page	

DISPLAYING BIVARIATE DATA

bivariate data	data containing **two variables**	
variable	something that can **change or vary**	
two-way table	shows information about **two variables** which **do not overlap**, the **numbers represent frequencies**	
scatter graph	**a graph** to show **bivariate data**	
correlation	when there is a **relationship** between two sets of data, but we don't know if one caused the other	
causation	when the independent variable causes the dependent variable	
positive correlation	as one variable increases, the other **increases**	
negative correlation	as one variable increases, the other **decreases**	
no correlation	there is **no relationship** between the two variables	
line of best fit	a line that **best represents** the data on a scatter graph In maths GCSE it is **always straight**, but in science it can be curved	
outlier	a value that **'lies outside'** most of the other values in a set of data, **it is much smaller** or **much larger** than the other values in a set of data	

MISLEADING REPRESENTATIONS

misleading representations	Look for: • **frequency scales: too large**, or **too small**; has **missing numbers**; **doesn't start at zero**; • the **axes** are **incorrectly labelled**; • **data is missing**; • **bar charts** with **varying width bars** or **varying space between** them; • **proportions** for **pie charts not adding** up to **100%**

Section 8

Caliph:	Leader; Muslims disagreed on who was the rightful caliph of Islam after Muhamamad had died.
Shi'a:	Denomination of Islam stemming from the traditions of those who followed Ali as the rightful caliph to succeed Muhammad.
Sunni:	Denomination of Islam stemming from the traditions of those who followed Abu Bakr as the rightful caliph to succeed Muhammad.

Section 9

Six Articles:	Six key beliefs in Sunni Islam, sharing some similarity with the Five Roots of Shi'a Islam.
Malaikah:	Belief in angels; part of the Sunni six articles yet is not part of the Shi'a five roots.
Five Roots:	Five key beliefs in Shi'a Islam, sharing some similarity with the Sunni six articles of faith.
Adalat:	Belief that Allah's universe, decisions and justice are fair; part of five roots of Shi'a Islam.

Section 10

Risalah:	Belief in the 'messages' of Allah which prophets have brought to mankind over time.
Ibrahim	Prophet of Islam known as 'Abraham' in English; symbol of loyalty, built the Kaaba in Mecca.
Ka'ba:	Islam's holiest building in Mecca; prophet Adam is believed to have first built it and prophet Ibrahim and his son Ishmael later rebuilt it and destroyed idols from inside of it.
Miracle:	An unexplained event deemed an act of God; for example, prophet Ibrahim was burned alive for destroying idols yet Allah ensured the fire did not harm him.

Section 11

Adam:	The first prophet of Islam; created by Allah from soil and Allah breathes life into him.
Prostrate:	To bow in respect to someone or something; angels of Allah prostrated to Adam after his creation, showing the love Allah has for humanity and how special Allah perceives mankind.

Section 12

"The Messenger has believed in what was revealed to him… All of them have believed in Allah… We make no distinctions between any of His messengers." (Qur'an extract)

"There is for you an excellent example (to follow) in Ibrahim." (Qur'an extract)

"He created Him from dust; then He said to him, 'Be,' and he was." (Qur'an extract)

Section 13

Imam:	Leader of worship in Sunni Islam, but also means 'leader' (similar to 'caliph') in Shi'a Islam, of which some believe there were 12 that followed prophet Muhammad
Imamate:	Shi'a belief in the imams that succeeded Muhammad being Islam's rightful leaders.
Ali:	Cousin-in-law to prophet Muhammad that some believed was the rightful Imam after Muhammad's death; his sons were believed to be the 2nd and 3rd Imams.
Mahdi:	Meaning 'guided one'; a Messiah-like figure believed to one day restore peace to all on earth which some Shi'a Muslims believe is the 12th Imam who became lost and never died.

Section 1

Omnipotent: Belief that Allah is all-powerful.

Omniscient: Belief that Allah is all-knowing.

Tawhid: The oneness of Allah.

Immanent: Belief that Allah exists everywhere.

Shahadah: One of the five pillars of Islam – it is a statement of belief:
"There is no God but Allah and Muhammad is His messenger."

Section 2

Beneficent: Belief that Allah is all-loving and most merciful (one of Allah's names: 'Ar-Rahmaan').

Adalat: Important Shi'a belief that Allah's universe, decisions and justice are totally fair.

Transcendent: Belief that Allah exists beyond space and time.

Section 3

"He is Allah, the One and only: Allah, the Eternal, Absolute… there is none like Him." (Qur'an extract)

"We (Allah) are nearer to man than his jugular vein." (Qur'an extract)

Section 4

Qur'an: The holiest book of Islam, revealed to prophet Muhammad in the 7th century CE.

Revelation: The communication of God/Allah to people, such as the Qur'an being revealed to Muhammad

Hadith: Early Muslim writings on what are believed to be the actions/teachings of prophet Muhammad; Muhammad was illiterate, so these are written by early followers.

Section 5

Taqwa: God-consciousness; the mentality that Muslims aim for when worshipping or praying.

Shari'ah law: Social, religious and ethical guidelines created by Islamic scholars based off teachings in the Qur'an and Hadith; these help Muslims to live a good life.

Halal: Things/actions Allah permits (e.g. beef).

Haram: Things/actions Allah forbids (e.g. alcohol).

Section 6

Prophet: Messenger of God.

Prophecy: Messages about the plans of God revealed to prophets.

Sunnah: The way and path of the prophet Muhammad; hadith help guide Muslims on this.

Mecca: City of Saudi Arabia; holiest Muslim city on earth where Qur'an was revealed; all Muslims pray facing towards Mecca and this is where Hajj (one of the five pillars; a pilgrimage) takes place.

Medina: City of Saudi Arabia; Muhammad and his followers fled here as his teachings gained unwanted attention from the polytheistic leaders of Mecca during the early years of his revelations.

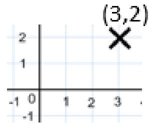
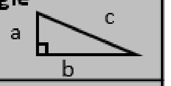
Section 7

"Muhammad is… God's Messenger and the seal of the prophets." (Qur'an extract)

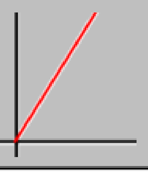
"The messenger of Allah is an excellent model for those of you who put your hope in Allah and the Last Day - remember him often." (Qur'an extract)

Unit 13: Graphs and Proportion

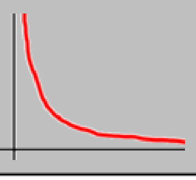
COORDINATES

axis **(plural: axes)**	the **x axis** is **horizontal** the **y axis** is **vertical**
quadrant	the **four regions** separated by the axes
coordinate *e.g.* 	give a **position** of a **point** on a grid the **first number** (**x**) moves **left** (-) or **right** (+) the **second number** (**y**) moves **up** (+) or **down** (-) **(x, y)** *e.g. (3,2) means the point that is 3 to the right and 2 up from the origin*
origin	the coordinate **(0, 0)**
line segment	a line joining **two points**
length of line segment	**distance** between two points calculated using **Pythagoras' theorem.**
Pythagoras' theorem	a relationship between the **3 sides** on a **right angled triangle** $a^2 + b^2 = c^2$ 
midpoint	the **middle** of a **line segment**

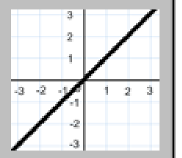
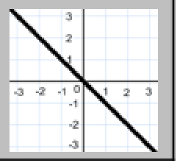
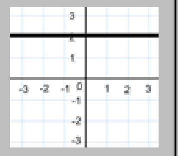
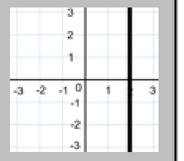
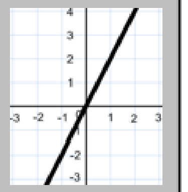
DIRECT PROPORTION

direct proportion	**as one increases**, the other **increases** at the **same rate** if **y is directly proportional to x**, this can be written as $y \propto x$
y = kx	an equation of the form **y=kx** represents direct proportion, where k is the **constant of proportionality**
direct proportion graphically	

INVERSE PROPORTION

inverse proportion	if two quantities are in inverse proportion, as **one increases**, the **other decreases** in **proportion** their **product** is always **the same** if **y is inversely proportional to x**, this can be written as $y \propto \frac{1}{x}$
$y = \frac{k}{x}$	an equation of the form $y = \frac{k}{x}$ represents inverse proportion, where **k** is the **constant**
inverse proportion graphically	

LINEAR GRAPHS

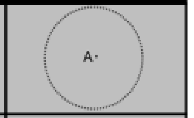
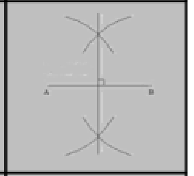
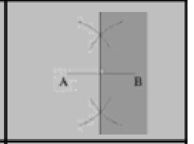
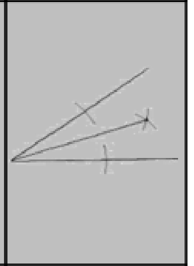
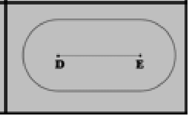
y = x	every point on this line, the **y coordinate** is **equal to** the **x coordinate** *e.g. (3,3), (-2,-2), (0,0)*	
y = -x	every point on this line, the **y coordinate** is **equal to** the **negative** of the **x coordinate** *e.g. (3, -3), (-2,2)*	
y = a	these lines are always **horizontal** *for example y = 2, every point on this graph, the y coordinate equals 2,* *e.g. (0,**2**), (5,**2**)*	
x = a	these lines are always **vertical** *for example x = 2, every point on this graph, the x coordinate equals 2,* *e.g. (**2**,0), (**2**,5)*	
y = kx	these lines always go through the **origin** *for example y = 2x, every point on this graph, the y coordinate is double the x coordinate, e.g. (2, 4), (1, 2)*	
y = mx + c	the **general equation** of a **linear graph** **m** is the **gradient** **c** is the **y-intercept** **when plotting:** use a **table of values, substitute** in values of **'x'** to generate **'y', plot the coordinates, join with line**	
gradient	How **steep** a line is. Can be positive or negative. $\frac{\textbf{(Change in y)}}{\textbf{(Change in x)}}$ It gives the **rate of change.**	
y- intercept	where the line **crosses** the **y-axis (0, a)**	

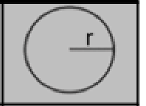
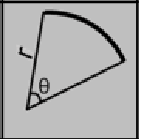
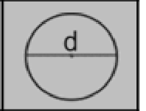
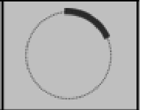
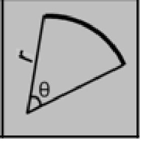
SCALE

scale	the **ratio** of the **lengths** in a **model/map/diagram** to the **lengths** in **real life**
scale factor	the **ratio** of **corresponding sides** of **two similar shapes**
units in scales	**scales *with* units:** use the **box method** to find the new value giving it in the correct units **scales *without* units: both sides** of the scale have the **same unit stated** in the **question,** use the **box method** to find the new value and then **convert** the answer **to sensible units**

Unit 15: Geometry Angles

LOCI VOCABULARY	
loci	a locus is a **path of points** that **follow a rule**
equidistant	**equal** distance
regions	'**more/further than**' indicates **shading outside the loci** '**within/less than**' indicates **shading inside the loci**

LOCI		
locus of points equidistant from A	a **circle** with **A at the centre** **radius** is the **distance given**	
locus of points equidistant from two points	**perpendicular bisector:** **open compass** to **over halfway**, draw an **arc** from **each end**, **join** where they **cross**	
locus of points closer to B than A	**perpendicular bisector** of AB, shade the side closest to **B**	
locus of points equidistant from two lines	an **angle bisector:** place compass on corner, **draw two arcs** cross both lines, one further away, draw lines **joining top left cross to bottom right** and **vice versa, join** where these lines meet **to corner**	
locus of points a set distance from a line	create **two semi-circle**s at **either end joined** by two **parallel lines**	

CIRCLE CALCULATIONS		
circle area	$A = \pi r^2$ **area = pi x radius^2**	
sector	the **region** of a circle **enclosed** by two **radii** and an **arc**	
sector area	$A = \frac{\theta}{360}\pi r^2$ **area = the fraction of the full circle x pi x radius^2**	
circumference of a circle	$C = \pi d$ **circumference = pi x diameter**	
arc	a **part** of the **circumference** of a circle	
arc length	$L = \frac{\theta}{360}\pi d$ **arc length = the fraction of the full circle x pi x diameter**	

CONGRUENCE	
congruent	objects with **exactly the same shape** and **size** **all angles** and all **sides** are **the same**
similarity	two shapes are similar when **one is an enlargement** of the other all **angles** are **the same**, but the **lengths of sides** are **different**
scale factor	the **ratio** of **corresponding sides** of two similar shapes

CONGRUENT TRIANGLES	
there are **four ways** to **prove triangle congruency**	
side, angle, side (SAS)	show **two sides** and the **angle between them** are **congruent**
angle, side, angle (ASA)	show **two angles** and the **side between them** are **congruent**
side, side, side (SSS)	show **all corresponding sides** are **congruent**
right-angle, hypotenuse, side (RHS)	show both triangles have a **right angle**, **congruent hypotenuses** and **one other congruent side**

SIMILARITY

two or more shapes with **congruent angles** but **corresponding sides** all **linked** by the **same scale factor**
if the **scale factor** of **enlargement** is x
length scale factor: x
area scale factor: x^2
volume scale factor: x^3

ANGLES IN POLYGONS: FACTS		
polygon	a **2D shape** with **3 or more straight** sides	
regular polygon	a polygon with **sides** that are all **equal** and **angles** that are all **equal**	
interior angle	an angle **inside** a **polygon**	
sum of interior angles	**(n – 2) x 180°** where n is the number of sides	
interior angle of regular polygon	$\frac{(\mathrm{n}-2) \text{ x } 180}{n}$ where 'n' is number of sides	
exterior angle	the angle formed **outside** a polygon when **one side is extended** interior angle + exterior angle = **180°** because they made a **straight line** **all exterior sum to 360°**	
some polygon interior angle sums	**triangle = 180°** **quadrilateral = 360°** **pentagon = 540°** **hexagon = 720°**	**heptagon = 900°** **octagon = 1080°** **nonagon = 1260°** **decagon = 1440°**

Section 8	
Purgatory:	Roman Catholic belief that after death most souls go to this place for purification before that soul is able to enter heaven.
Particular judgement:	The belief that our soul is judged immediately after death.
General judgement:	The belief that our soul is judged at the end of time on Judgement Day.

Section 9	
Salvation:	The idea of being saved from punishment; Christians aim for this in the afterlife.
Grace:	The unconditional love of God.
Atonement:	Acts aimed to put right what has been wrong; the life, death and resurrection of Jesus is seen as an act of atonement for mankind's sins, so faith in this is crucial.

Section 10	
"The wages of sin is death, but the gift of God is eternal life in Christ":	Extract from Romans (in the New Testament)
"I am the way, the truth and the life. No-one comes to the Father except through me.":	Extract from John's gospel.

Section 11	
"Faith not accompanied by action is dead":	Extract from James (book of the New Testament).
"Go and sin no more":	Extract from John's gospel; Jesus says this to an adulterous woman he saves from the death penalty.

Islamic Beliefs

Section 12	
Allah:	Arabic for 'God'.
Tawhid:	The belief that God is One – the Oneness of God is a key Muslim belief.
Beneficent:	The belief that God is all-loving.
Omnipotent:	The belief that God is all-powerful.

Section 13	
Qur'an:	The holiest book of the Islamic faith; it is believed to be unchanged for 1,400 years.
Muhammad:	Allah's most loved prophet; Muslims live in the way they believe Muhammad did.
pbuh:	Meaning 'peace be upon him'; this acronym often follows Prophet Muhammad's name as a sign of respect.
Hadith:	The teachings of Prophet Muhammad as written by Muslim scholars in the decades/century after his death.

✞ Christian Beliefs

Section 1

Crucifixion: Roman method of punishment where criminal is tied or nailed to a cross.

Capital punishment: Punishment where criminals are put to death due to their crime's severity.

"Father, why have you forsaken me?": Jesus' words during the crucifixion – this shows the humanity of Jesus where he suffered and felt anguish, despite knowing he had to die.

Section 2

Forgiveness: The act of letting go of hatred or resentment towards a wrongdoer.

Repentant: Being truly sorry for wrongdoing/sin.

"Today, you will be with me in paradise": Jesus' words to a sorry thief that is beside him during the crucifixion; this shows Christians the importance of compassion and forgiveness.

Section 3

Resurrection: The rising from death; Jesus is believed to have returned physically from death 3 days after his crucifixion – he appeared to disciples for 40 days after.

Ascension: The rising into heaven; Jesus is believed to have physically risen into heaven 40 days after his crucifixion.

Great Commission: Resurrected Jesus' command to his disciples to "be my witnesses… to the ends of the earth" – this led to the spread of Christianity worldwide.

Section 4

"This is what is written: "The Messiah will suffer and rise from the dead"": Jesus repeats this Old Testament prophecy when resurrected to his disciples, reminding them that his death/resurrection were needed.

"He has risen!": Angels say this to the female followers of Jesus who find his body has gone from the tomb.

Section 5

Judgement day: A future time where Jesus is believed to return, resurrect all souls and cast final judgement on where they spend eternity.

Parable: A story with deeper meaning; Jesus often told parables in the gospels.

Section 6

"What you did for the least of my brothers and sisters, you did for me.": Jesus' words from the parable of the sheep and the goats, outlining how his judgement day will be for all.

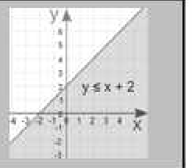
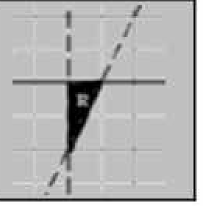
Section 7

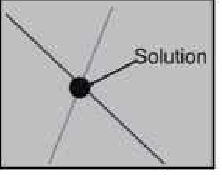
Just: Belief that God's decisions and justice is completely fair.

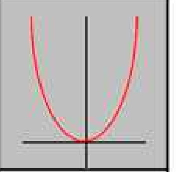
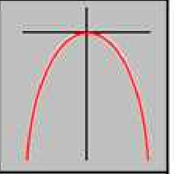
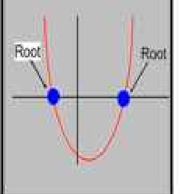
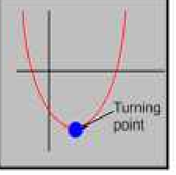
Omnibenevolent: Belief that God is all-loving.

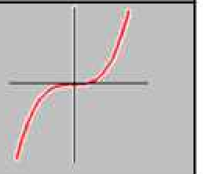
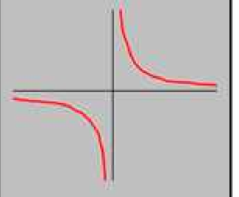
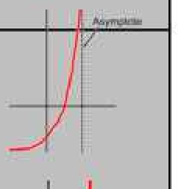
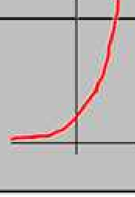
Merciful: Belief that God, in His unconditional love, will show love to repentant sinners.

Unit 16: Algebraic Graphs

INEQUALITIES		
inequality	where **two expressions** are **not equal** in value	
inequality symbols	< **less than**	> **greater than**
	≤ **less than or equal to**	≥ **greater then or equal to**
plotting inequalities	create a **table of values** and **substitute** in values of 'x' (like with linear graphs) < or > means a **dashed** line ≤ or ≥ means a **solid** line	
inequality regions	for greater than symbols, shade **above** the line for less than symbols, shade **below** the line	
simultaneous inequalities (graphically)	**regions** can be **shaded** that **satisfy inequalities**: strict (< or >) are a dashed line ------- non-strict (≤ or ≥) are a solid line _______	

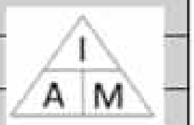
SIMULTANEOUS EQUATIONS		
simultaneous	**occurring** at the **same time**	
simultaneous equations	equations with the **same variables** whose **solutions** hold the **same value** must be **solved** at the **same time** to find the values of 'x' and 'y'	
solving	**add** or **subtract** the **equations** to **eliminate** one **variable**, then **solve** as a **linear equation** variables must have the **same coefficient** to be eliminated when one variable is known, **substitute** into one of the equations and **solve** to find the **value** of the **other variable**	
	for the variable being eliminated with… the **same sign, subtract** the equations **different signs**, **add** the equations	
same coefficients of variables	when simultaneous equations have variables with the **same coefficients**, decide whether to **add** or **subtract straight away**	
different coefficients of variables	when simultaneous equations have variables with **different coefficients**, find the **LCM** and **scale up** (multiply) the equations until they have the same coefficient, then **add** or **subtract**	
solve by substitution	make **one variable** the **subject** of one of the equations and **substitute** into the other to eliminate it, then **solve** as with linear	
simultaneous equations (graphically)	can be **solved graphically** by **plotting the two lines** and finding the **coordinate where they cross**	

QUADRATIC GRAPHS		
quadratic graph	a graph where the **highest power** of x is **x^2** general format **$ax^2 + bx + c$** it is always a **parabola** (a **U-shape**) in the general format, '**c**' is where the graph **crosses** the **y-axis**	
	$y = x^2$	
	$y = -(x^2)$	
roots (of graphs)	the '**solutions**' of a graph, where a **function equals zero** can be found in a graph where the **curve meets the x axis**	
turning point	the point where a graph **turns**, from negative to positive gradient or positive to negative gradient	

OTHER NON-LINEAR GRAPHS		
cubic graph	a graph where the highest power of x is **x^3** general format a**x^3 + bx^2 + cx + d** '**d**' is where the graph **crosses** the **y-axis**	
	$y = x^3$	
reciprocal graph	$y = \frac{k}{x}$ the graph has **asymptotes** on the **x-axis and y-axis** (as it is impossible to divide by zero)	
asymptote	a straight line a **graph approaches** but **never touches**	
exponential graph	$y = k^x$ the graph has an **asymptote** on **the x-axis**	

1 – Cell Structure and Specialised Cells	
Eukaryotic Cell	**Complex** cell with a **nucleus.**
Prokaryotic Cell	Small **simple** cell with **no nucleus.**
Prokaryotic DNA	Stored as **single DNA loop** or small **rings (plasmids).**
Ribosomes	Where **proteins** are **synthesised.**
Cell Wall	Made of **cellulose** -> **strengthens** plant and algal cells.
Sperm cells	**Fertilise** egg cells. Carry **male DNA. Tail** for **swimming.** Many **mitochondria. Enzymes** in head. **Half** a set of **DNA.**
Nerve cells	Carry **electrical signals. Long** and **branched** at the ends.
Muscle cells	Specialised for **contraction.** Cells are **long** and contain many **mitochondria.**
Root hair cells	**Absorb water** and **minerals** from the soil. Root hair **projections** provide a **large surface area.** No **chloroplasts.**
Xylem Cells	Form tubes that transport **water** and **minerals** around plant -> **dead** cells -> **no end walls.**
Phloem Cells	Form tubes that transport **dissolved food** around plants -> **living** cells -> **small pores** in **end walls.**

2 - Microscopy	
Magnification	Higher **magnification** = **larger** image.
Resolution	Higher **resolution** = **clearer** image.
Equation	**Magnification = Image size / Actual size**
Units	**From mm to µm x 1000. From µm to mm ÷ 1000.**
Preparing an Onion Slide	Peel **thin layer** with **tweezers** -> place **on slide** -> add **iodine stain** -> lower **cover slip** gently to avoid bubbles.
Using a Light Microscope	Place on **stage** -> use **lowest** power **objective lens** -> adjust with **course focus** then **fine focus** -> **repeat** with **higher magnification** if needed.
Electron Microscope	Higher **magnification** and **resolution** than a **light** microscope.



3 – Cell Cycle and Stem Cells	
Chromosomes	Molecules of **DNA, 23 pairs** found in **nucleus, carry genes.**
Cell Cycle	Three stages -> **growth & DNA replication, mitosis** and **cell division.**
Growth & DNA Replication	**Cell grows** -> number of **subcellular structures increases** -> **DNA replicates** -> forms **X shaped chromosomes.**
Mitosis	Cell division. **Chromosomes line up** in centre -> **pulled** apart by **fibres** -> **two nuclei** formed -> cytoplasm and **cell membrane divides.** Creates two **identical daughter cells.**
Differentiation	Process by which **cells become specialised.**
Stem Cells	**Undifferentiated** cells -> can become different **types of cell.**
Embryonic Stem Cells	**Grown in lab** -> made to **specialise** -> used to **replace faulty cells** -> treats disease e.g. **diabetes** and **spinal damage.**
Adult Stem Cells	Cells transferred from **bone marrow** -> replaces **faulty blood cells** in patient.
Plant Stem Cells	Found in **meristems** (tissues in the **tips** of **roots** and **shoots**) -> used to **produce clones** of **rare species** and crops with **desired features** (e.g. disease resistance).

4 – Cell Transport	
Diffusion	**Net movement** of particles -> from a **higher to lower** concentration -> **down a concentration gradient.**
Osmosis	**Net movement** of **water** molecules -> across a **partially permeable membrane** -> from a **higher** to **lower** water concentration -> **down a concentration gradient.**
Active Transport	**Movement** of particles -> from a **lower** to **higher** concentration -> **against a concentration gradient** -> requires **energy.**
Factors that Increase Rate of Cell Transport	**Steeper concentration gradient, larger surface area, shorter diffusion pathway.**

Section 7	
"In the beginning, God created the heavens and the earth":	First line of the book of Genesis.
"Let there be Light":	Extract from Genesis; God creates light by His command alone.
"In His image He made them… both male and female.":	Extract from Genesis; God creates mankind uniquely.

Section 8	
Traditionalist:	Someone who aims to maintain old values and beliefs and stay fairly true to what scripture instructs (e.g. traditionalist Christians hold patriarchal views because Adam is made first, then Eve is made as his companion, implying superiority).
Patriarchal:	Describes something male-led, for example an organisation purposely ran by men (e.g. the Roman Catholic Church forbids women from being ordained).

Section 9	
"We believe in One God, the Father, the Almighty, maker of heaven and earth":	First line of the Nicene Creed
Nicene Creed:	A declaration of faith made in the 4th century by Christian leaders wanting to clarify key Christian beliefs.

Section 10	
"The Word was with God and the Word was God… the Word became flesh and made His home among us":	Extract from John's gospel implying Jesus is the incarnation of God.
"For God so loved the world, He gave His only Son":	Extract from John's gospel.

Section 11	
Incarnation:	Belief that Jesus was the human form of God on Earth.
Messiah:	Belief that Jesus was the saviour of mankind who Jewish prophets had written about centuries before Jesus' lifetime.

Section 12	
Prophet:	Messenger of God.
Prophecy:	Messages about the future plans of God given to humanity by a prophet.
Isaiah:	Key Jewish prophet who made prophecies about the Messiah's coming.

Section 13	
"The Lord shall give you a sign: a virgin shall conceive":	One of the key prophecies about the Messiah in the Old Testament by prophets (in this case, by Isaiah).
"On the third day He will raise us up, that we may live in His presence":	Extract from Hosea (one of the prophets whose writings feature in the Old Testament)
Political Messiah:	Jews expected a revolutionary Messiah to come, not a heavenly one like Christians believe Jesus is.

Religious Education Knowledge Navigator

Section 1

Omnipotent:	Belief that God is all-powerful.
Omniscient:	Belief that God is all-knowing.
Omnibenevolent:	Belief that God is all-loving.
Just:	Belief that God's decisions and justice is completely fair.

Section 2

Denomination:	An established subgroup of a religion (e.g. Roman Catholicism)
Roman Catholic:	Largest, oldest denomination of Christianity; the Pope is the leader.
Orthodox Church:	Denomination of Christianity; old as Roman Catholicism; popular in the East.
Protestant:	Term for various global denominations of Christianity (e.g. Church of England) that were born out of the Reformation in the 16th century.

Section 3

Atheist:	A person who believes there is no God/gods
Problem of evil:	An atheist argument that evil exists because there is no omnipotent, omniscient and omnibenevolent God, for His power, knowledge and love would prevent it.
The Fall:	The story of Adam and Eve's betrayal of God in Genesis (first book of the Bible); some believe God gave mankind free will which we used to create evil, not God.

Section 4

Trinity:	Christian belief in one God who manifests simultaneously as three Persons.
The Father:	First Person of the Trinity; the Creator of all things.
The Son:	Second Person of the Trinity; the incarnation of God.
The Holy Spirit:	Third Person of the Trinity; is unseen and is present throughout the universe.

Section 5

Fundamentalist:	A believer who takes their holy scripture literally as it is believed to be the genuine word of God (e.g. Genesis' 6 days of creation)
Liberalist:	A believer who is more open to interpretations of the Bible or who may view parts of the Bible as being either unsuitable to the modern era or unreliable.

Section 6

Yom:	Hebrew for 'day' or 'era'; Genesis may describe the world's creation over 6 days or 6 eras of time – the latter view makes it more compatible with science.
Big Bang theory:	The leading scientific theory that the universe was made; there is no known cause to the 'Big Bang' which liberalist Christians believe must have been God.
13.8 billion years:	The age of the universe according to the Big Bang theory.
6,000 years:	The universe's age according to some fundamentalists, based on the Bible.

Science Knowledge Navigators

BIOLOGY PAPER 1: Organisation Part 1

Facts: Principles of organisation

1. Cell	Basic building blocks of all living **organisms.**
2. Tissue	A **group of cells** with a **similar structure** and **function.**
3. Organ	Groups of **tissues** working together, to perform a **certain function.**
4. Organ system	Groups of **organs** working together to perform body functions.
5. Organism	An **individual** animal or plant.
6. Types of tissue	**Muscular tissue** for movement. **Glandular tissue** produces hormones and enzymes. **Epithelial** tissue provides a covering for organs.

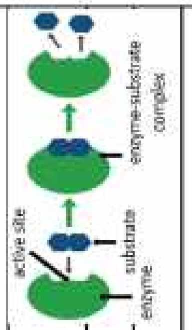
Facts: Digestion

7. Digestion	The **breakdown** of **large** food **molecules into small** food **molecules** so that they can be **absorbed** into the **blood.**
8. Mechanical digestion	Breakdown of large food molecules into smaller molecules using **chewing** and **churning.**
9. Chemical digestion	Breakdown of large food molecules into smaller molecules using **enzymes.**
10. Bile	An **alkali produced** by the **liver** and **stored** in the **gall bladder.** Bile has two main functions: **1. To neutralise** the **hydrochloric acid** from the **stomach.** **2. To emulsify lipids** (break down fats into small droplets).

Facts: Digestive system

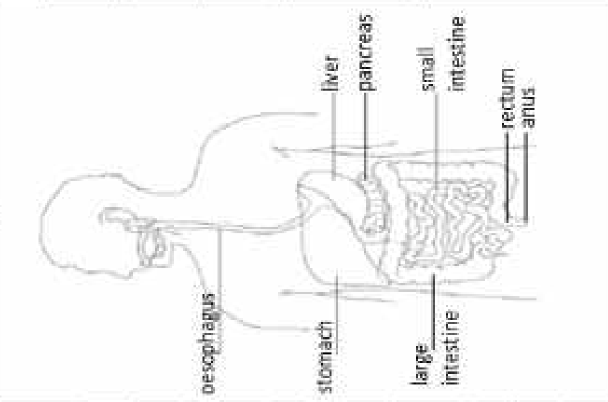
11. Digestive system	Several **organs** working together to **digest** and **absorb food.**
12. Mouth	**Teeth chew** food to start **mechanical digestion.** The **salivary glands** produce **enzymes** to start **chemical digestion.**
13. Oesophagus	A muscular tube which **moves food to the stomach** by **peristalsis.**
14. Stomach	1. **Muscular** tissue carries out **mechanical digestion** by **churning.** 2. **Glandular** tissues produces **enzymes** for **chemical digestion.**
15. Small intestine	1. **Enzymes** breakdown large food molecules into small molecules. 2. Small molecules are then **absorbed** into the **blood.**
16. Pancreas	Produces digestive enzymes.
17. Rectum	Stores faeces.
18. Anus	Where faeces leaves the body.

Facts: Enzymes

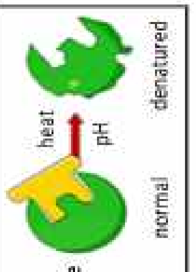
19. Proteins	Molecules made up of long chains of **amino acids.**
20. Uses	Proteins make **hormones, antibodies and enzymes.**
21. Enzyme	A **biological catalyst** which **speeds up** the rate of a **chemical reaction without being used up** or **changed.** 
22. Substrate	The **molecule** that the **enzyme breaks down.**
23. Active site	Where the **substrate binds** to the enzyme.
24. Lock and key model	The active size has a **complementary** (opposite) shape to the substrate.

Facts: Digestive enzymes

25. Carbohydrase	Breaks down **carbohydrates** into **simple sugars.** Produced in the **small intestine, pancreas** and **salivary glands.**
26. Amylase	Breaks down **starch** into **glucose.** Produced in the **small intestine, pancreas** and **salivary glands.**
27. Protease	Breaks down **proteins** into **amino acids.** Produced in the **small intestine, pancreas** and **stomach**
28. Lipase	Breaks down **lipids** into **fatty acids** and **glycerol.** Produced in the **small intestine** and **pancreas.**



Facts: Enzyme activity

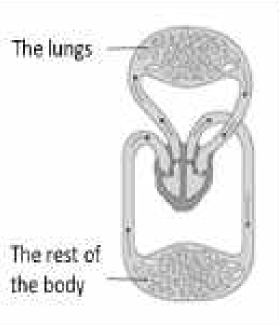
29. Optimum conditions	The **best** working **conditions** for the enzyme, were **enzyme activity** is at its **fastest rate.**
30. Enzyme activity	The activity of an enzyme is affected by two conditions; **temperature** and **pH.**
31. Optimum temperature	Enzymes **in the human body** have an optimum temperature of **37⁰C (body temperature).**
32. Optimum pH	Protease, **pH 2** as it found in the **stomach** (**hydrochloric acid** is present in the stomach). Amylase **pH 7. Bile neutralises** hydrochloric acid to provide this optimum pH.
33. Denature	The active site **changes shape** and the **substrate no longer fits.** 

BIOLOGY PAPER 1: Organisation Part 2

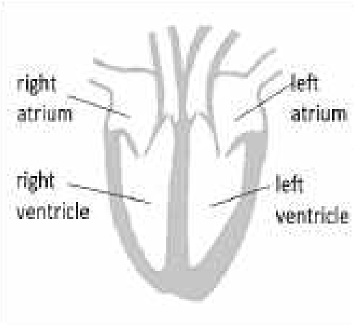
Facts: Respiratory system	
1. Structure	**Organ system** made up of the: **trachea, bronchi, lungs** and **alveoli.**
2. Breathing	The mechanical action of taking air in and out of the lungs (inhaling and exhaling).
3. Respiration	A **chemical reaction** that takes place in our cells, to provide **energy.**
4. Gaseous exchange	Happens through the process of diffusion, gases move from an area of high concentration to an area of low concentration.
5. Alveoli	**Where gas exchange occurs in the lungs. Oxygen** diffuses from the **alveoli** into the **blood** and **carbon dioxide** diffuses from the **blood** into the **alveoli.**
6. Alveoli adaptations	**1. Lots of alveoli** to provide a **large surface area.** **2. Good blood supply** to **maintain** a **steep concentration gradient.** **3. Thin wall** so particles only have to diffuse a **short distance.**

Facts: Circulatory system	
7. Structure	**Organ system** made up of the: **heart, blood vessels** and **blood.**
8. Double system	Blood passes through the heart twice on each journey around the body.
9. The Heart	The right side of the heart pumps blood to the lungs and the left side of the heart pumps blood around the body.
10. Atria	The **top two chambers** of the heart. The right atrium and the left atrium.
11. Ventricles	The **bottom two chambers** of the heart. The right ventricle and the left ventricle.
12. Resting heart rate	Controlled by a **group of cells** in the **right atrium.**
13. Blood vessels	**Transport blood** around the body. There are 3 main types; **arteries, veins and capillaries**

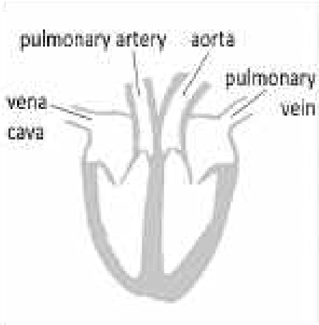
14. Double circulatory system



15. Chambers of the Heart



16. Blood vessels of the Heart



Facts: Blood vessels	
17. Arteries	Carry **blood** under **high pressure away from the heart.** They have **thick walls** with **lots of muscle tissue** and **elastic fibres** to allow them to **stretch** and **spring back.**
18. Vein	Carry **blood** under **low pressure back into the heart.** They have **thin walls** with **little muscle tissue and elastic fibres.** They have **valves** to keep blood flowing in the **right direction.**
19. Capillaries	Carry blood through organs and body tissues **directly to cells.** They are one cell thick which allows **rapid diffusion** of materials between the blood and body to take place.

Facts: Blood	
20. Blood	Blood is a **tissue** containing **plasma, red blood cells, white blood cells** and **platelets.**
21. Plasma	**Transports carbon dioxide,** food molecules, urea and hormones.
22. Red blood cells	**Carry oxygen.** They have a **large surface area, no nucleus** and lots of **haemoglobin** so they can carry as much oxygen as possible.
23. White blood cells	Change shape to **engulf** and **destroy pathogen,** produce **antibodies** and **antitoxins.**
24. Platelets	Help the **blood** to **clot.**

Facts: Non-communicable diseases – Coronary Heart disease and Cancer	
25. Non communicable	A disease that is **not caused** by a **pathogen** (bacteria or virus) and **cannot be transferred** (spread) between people or other organisms.
26. Coronary heart disease	Caused by the build up of **fatty deposits** in the coronary arteries. This **narrows arteries, reducing blood flow** and therefore the amount of oxygen reaching heart muscle. This can then cause **heart attacks** and **heart failure.**
27. Stents	**A metal mesh** used to **open** and **widen blocked arteries** to **increase** the **flow of blood** containing **oxygen and glucose.** **1. Benefits:** A life-long fix to the artery, no more medication. **2. Risks:** An operation, meaning a risk of developing an infection and/or blood clots.
28. Statins	**Drugs** that help **lower cholesterol** in the blood. **1.Benefits:** No operation, reduce the risk of CHD and strokes. **2.Risks:** Must be taken regularly to be effective, side-effects.
29. Cancer	**Uncontrollable cell growth** and **division** causing a **tumour.**
30. Benign tumour	Grows quickly but **does not invade other parts of the body,** can **easily be removed.**
31. Malignant tumour	Grows quickly and **invades other tissues, spreading** to other parts of the body to form **secondary tumours.**

YEAR 9 GEOGRAPHY – CYCLE 3 – RIVER LANDSCAPES

BOX 1: UK PHYSICAL LANDSCAPES	
fluvial landscape	**extensive** area of **land** → has been **shaped** by a flowing **river**
fluvial landform	a **specific feature** found in river landscapes e.g. a **waterfall** landform
UK upland areas	**more than 200m** above sea level → mostly **north/west** UK e.g. **Pennines**
UK lowland areas	**less than 200m** above sea level → mostly **south/east** UK e.g. **The Fens**
UK river systems	many river systems in the UK e.g. the **River Severn** → **longest river in UK**

BOX 2: FLUVIAL PROCESSES	
erosion	to **erode** → the **wearing away** and **removal** of **sediment** (e.g. rocks)
transportation	to **transport** → eroded **sediment** is **moved** to a **new location** by water
deposition	to **deposit** → eroded **sediment** is **dropped** when the **water loses energy**

BOX 3: TYPES OF EROSION	
1. hydraulic action	moving **water forces air** into **cracks** in **rocks** → **pressure weakens rocks**
2. abrasion	**rocks** carried by river **wear down** the **river bed** and **banks**
3. attrition	**rocks** carried by river **smash together** → get **smaller smoother rounder**
4. solution	**soluble** particles of **sediment are dissolved** into the **river**
5. vertical erosion	**downward erosion** of **bed** (bottom of river)
6. lateral erosion	**sideways erosion** of **banks** (sides of river)

BOX 4: TYPES OF TRANSPORTATION	
1. traction	the **rolling** of **boulders** and **large pebbles along** the **river bed**
2. saltation	particles of **sediment bouncing along** the **river bed**
3. suspension	**small** pieces of **sediment floating** in the **moving** river **water**
4. solution	**soluble** particles of **sediment** are **moved** whilst **dissolved** in flowing **river**

BOX 5: WHY DO RIVERS DEPOSIT SEDIMENT?	
river loses energy	1) at **inside bend** of a **meander** 2) in **shallow water** 3) at **mouth** of **river**

BOX 6: RIVER KEYWORDS	
source	**where** a river **begins/starts** → **upland** areas (**upper course**)
mouth	**where** a river **ends/flows into sea** → **lowland** areas (**lower course**)
channel	the **area** in the **river** where the **water flows** e.g. the river bed and banks
valley	the **V shaped** area of **land around** a **river**

BOX 7: HOW DOES THE PROFILE OF A RIVER CHANGE FROM SOURCE TO MOUTH?		
	cross profile	**long profile**
upper course/source	channel **narrow/shallow**→ valley **steep V** shaped	**steepest** gradient
middle course	channel **wider/deeper**→ valley **flatter** shape	**medium** gradient
lower course/mouth	channel **widest/deepest**→ valley **wide/flat** shape	**flattest** gradient

BOX 8: FLUVIAL LANDFORMS FORMED BY EROSION → UPPER COURSE	
1. interlocking spurs	river **erodes softer rock** → leaves **'zip'** shaped **pattern** of **harder rocks**
2. waterfalls	**hard** rock **on top** of **soft** rock → **soft** rock **erodes** → **hard** rock **overhangs**
3. gorges	overhanging **rock** at waterfall **collapses** → waterfall **retreats** → **gorge**

BOX 9: FLUVIAL LANDFORMS FORMED BY EROSION + DEPOSITION	
1. meanders	**faster flow** on **outside bank** = **lateral erosion** → **slower flow** on **inside bank** = **deposition**→ creates **bend shape** in river called a **meander**
2. oxbow lakes	**flood breaks** through **meander neck** → creates new **channel** and **lake**

BOX 10: FLUVIAL LANDFORMS FORMED BY DEPOSITION → LOWER COURSE	
1. levées	**flood** → **heaviest** sediment **deposited** river **edge** → creates **higher banks**
2. flood plains	**lateral erosion** of **meanders** makes **lower course** of **valley wider/flatter**
3. estuaries	**mouth** of some rivers **flooded** by **rising sea levels** after **last ice age** ended

BOX 11: HOW DO PHYSICAL FACTORS AFFECT FLOOD RISK?	
flood risk	**predicted frequency** of **floods** in an **area** → how **likely** an **area** is to **flood**
1. precipitation	**prolonged, intense rainfall** can **saturate soil** → increases **surface run-off**
2. geology - rock type	water **cannot infiltrate impermeable** rock →increases **surface run-off**
3. relief	water **cannot infiltrate** into **steep slopes** → increases **surface run-off**

BOX 12: HOW DO HUMAN FACTORS AFFECT FLOOD RISK?	
1. land use	**impermeable** surfaces (e.g. **tarmac**) and **deforestation** increase flood **risk**

BOX 13: HYDROGRAPHS	
hydrograph	shows **link** between **discharge** and **precipitation** over period of **time**
discharge	**volume** of **water** flowing past a point on a **river** (e.g. per **second**)
lag time	**length of time** between **peak** (highest) **precipitation** and **peak discharge**

BOX 14: MANAGEMENT STRATEGY 1 → HARD ENGINEERING → ARTIFICIAL		
	benefits ☺ → positives	**costs** ☹ → negatives
dams and reservoirs	used to **store water**	**people** displaced by construction
river straightening	water **flows away** more **quickly**	flood **risk increases downstream**
embankments	**higher banks hold more water**	can be **unattractive**
flood relief channels	**river** has **extra capacity** for **water**	**expensive**

BOX 15: MANAGEMENT STRATEGY 2 → SOFT ENGINEERING → NATURAL		
	benefits ☺ → positives	**costs** ☹ → negatives
flood warnings	**warning** people → can **evacuate**	**does not stop** the **flooding**
flood plain zoning	**important buildings not near river**	**less land** for **housing**
planting trees	trees **infiltrate** and **absorb water**	**less land** available **for farming**
river restoration	**reduces flooding downstream**	**floods** still **likely near restoration**

BOX 16: CASE STUDY → FLOOD MANAGEMENT SCHEME IN THE UK → LEEDS	
scheme/strategy	**Leeds Flood Alleviation Scheme** → **glass embankments, deflatable weirs**
required because	**reduce flooding** from **River Aire** → e.g. large **flood** in **Leeds** 26th Dec **2015**
social issues	**paths near** river **may still flood** and **moves water** to **homes downstream**
economic issues	**expensive** → predicted to cost **£160 million** to finish the **entire project**
environmental issues	some **habitats disturbed** during the **construction** of the scheme

Exam Paper 1 (Living with the Physical Environment) Section C (Physical Landscapes in the UK) Topic (River Landscapes)

YEAR 9 GEOGRAPHY – CYCLE 3 – ECONOMIC CHANGE (UK CASE STUDY)

BOX 1: KEYWORDS

industrial structure	**percentage** of **people working** in **each of the four employment sectors**
1. primary sector employment	**getting raw materials from** the **land** and **sea** e.g. **farming → lower pay**
2. secondary sector employment	**making products** in **factories** from **raw materials** e.g. **car manufacturing**
3. tertiary sector employment	**service industries → employment** that **provides** a **service** to **other people** e.g. **doctors** and **teachers → higher pay**
4. quaternary sector employment	**highly skilled employment** in **IT** and **research** e.g. **computer designers** and **scientists →** requires **high level** of **education**

BOX 2: THE CLARK FISHER MODEL

Clark Fisher Model	**graph →** shows **how industrial structure changes as a country develops**
1. pre-industrial	**employment →** mostly **primary** e.g. **farming, mining, fishing (LICs)**
2. industrial	**employment →** mostly **secondary** e.g. **manufacturing (NEEs)**
3. post-industrial	**employment →** mostly **tertiary** (service industries) e.g. **teachers (the UK)**

BOX 3: CAUSES OF ECONOMIC CHANGE IN THE UK → A POST-INDUSTRIAL ECONOMY

globalisation	**more connected world**, **more movement** of **goods/people → UK imports manufactured goods** from **NEEs** (cheaper) **→ less UK factories**
de-industrialisation	1960s → **rapid decline** in **traditional manufacturing industry** in UK→ due to **mechanisation, globalisation** and more **tertiary sector** employment
government policies	1980s → government policy **'privatisation' → encouraged primary** and **secondary industries** to **close**. 2010 → government tried to **rebalance economy → infrastructure investment** and new **high-tech industries**

BOX 4: A POST-INDUSTRIAL ECONOMY IN THE UK → MORE TERTIARY/QUATERNARY JOBS

service industries	**tertiary** sector → now **largest** sector in UK **→ over 75% of economy →** e.g. **health** care, **education, retail, entertainment** and **hospitality** jobs
IT employment	**more information technology** companies → due to **more internet access**
finance	e.g. **banking →** over **1 million** people **employed** in **finance** jobs (2019)
research	research important for **economic growth** e.g. **UK Energy Research Centre**
science parks	located **near universities →** provides **educated workforce → 1500 high-tech scientific industries grouped together** at **Cambridge Science Park** so can **work together →** e.g. **AstraZeneca** (created a **COVID-19 vaccine**)
business parks	**specially built areas → offices and warehouses →** at **edge** of **city** with access to **main road** e.g. **Thorpe Park (Leeds)** has over **100 businesses**

BOX 5: IMPACTS OF INDUSTRY ON THE PHYSICAL ENVIRONMENT IN THE UK

negative impacts	**greenhouse gases,** air **pollution**, **toxic chemicals, landscape damage**
sustainable solutions	**modern industrial development** can be **environmentally sustainable →** • making **electric cars →** e.g. **'Nissan Leaf'** car manufactured in UK • **'The Unicorn Group'** manufacture **medical bins → factory** uses **100% renewable energy** e.g. **solar** and **recycles waste** (steel/plastic)

BOX 6: POPULATION GROWTH → IN RURAL AREAS IN THE UK

example (rural area)	**South Cambridgeshire** (popular → quick commute to city of Cambridge)
social changes	too **many people** for **doctors** and **schools → long waiting lists**
economic changes	**popular** area→ so house **prices high → local** people **cannot afford** homes

BOX 7: POPULATION DECLINE → IN RURAL AREAS IN THE UK

example (rural area)	**Outer Hebrides, Scotland** (people leaving area to find jobs elsewhere)
social changes	**schools closing** due to **not enough children, public transport decreasing**
economic changes	**shops closing → not enough customers →** creating **unemployment**

BOX 8: IMPROVEMENTS TO TRANSPORT IN THE UK

road infrastructure	**'Smart Motorways' → electronic signs → vary speed limits** and **provide information to drivers → reduce traffic →** but can **cause accidents**
rail (train) infrastructure	**High Speed 2 (HS2) →** plan for **new train line** between **northern cities** and **London → reduce travel time →** aims to **boost employment** in the **north →** but estimated to **cost £80 billion** to build
port capacity	new **port → 'London Gateway' →** can accommodate **larger container ships (400 m long) →** boost **trade** worldwide → will employ **2000 people**
airport capacity	plans **for 3rd runway** at **Heathrow Airport** (would cost **£18.6 billion**) → would **increase flights** and **business →** but lots of **environmental impacts**

BOX 9: THE NORTH-SOUTH DIVIDE → REGIONAL DIFFERENCES IN THE UK

regional differences (differences between different areas)	**de-industrialisation → closed secondary industries** (mostly in **north**) → created **economic** and **social gap between Southern** and **Northern England → Northern England** has **worse health** (**5 year difference** in life **expectancy**), **lower house prices, lower income** and **worse education**

BOX 10: STRATAGIES TO RESOLVE THE REGIONAL DIFFERENCES OF NORTH-SOUTH DIVIDE

assisted areas	**identifies areas** of **UK** that **need help →** provides **money** for **businesses**
devolution	**more power** to **individual areas →** can **decide how** to **best spend money**
24 enterprise zones	government **encourages investment, new businesses, faster internet**
transport links	**improvements** to **rail** (e.g. **HS2**) and **motorways →** boost **employment**

BOX 11: THE PLACE OF THE UK IN THE WIDER WORLD

trade links	**trade** is the **buying** and **selling** of **goods** and **services between countries → the UK imports** and **exports** goods from/to countries **around world**
culture links	**UK events watched** around **world** e.g. **Glastonbury** and **Premier League**
transport links	**Channel Tunnel links UK to France** by **rail,** also **airports** e.g. **Heathrow**
electronic communication	**UK linked** to **wider world** by **internet, mobile phones** and **satellites** (**90% of people** in **UK now use internet compared** to **just 27%** in **2000**)
economic and political links	• **'The Commonwealth' →** group of **53 countries → territories** of **former British Empire → united** by **language, history, culture,** and **shared values** of **democracy, human rights,** and the **rule of law** • **'The European Union (EU)' → UK no longer part** of the **EU (BREXIT)**

BIOLOGY PAPER 1: Organisation Part 3

Facts: Plant organisation

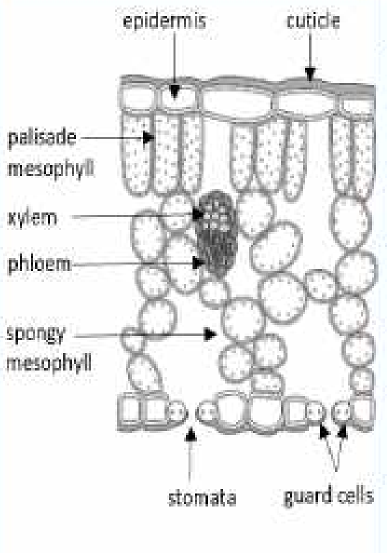
1. Cells	The main cells in a plant are the **palisade cells, guard cells and root hair cells.**
2. Tissue	The main tissues in a plant are the **xylem, phloem and meristem.**
3. Meristem	**Tissue** in the **shoots and roots of plants** containing cells that can **differentiate** into **any type of plant cell throughout the life of the plant.**
4. Organ	The main organs of a plant are the **roots, stem, leaves and flowers.**
5. Organ system	The **roots, stem and leaves** make up the transport system of a plant. Moving substances such as **glucose** and **water** up and down the plant.

Facts: Root hair cells

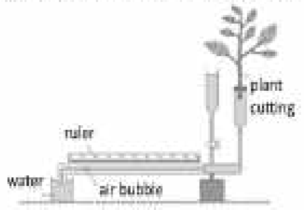
6. Root hair cells	Absorb **water** and **mineral ions** from the soil.
7. Water	Absorbed by **osmosis** (high water concentration to a low water concentration).
8. Absorbing water adaptations	Root hair cells have a **large surface area** and a **thin cell wall** making **osmosis faster.**
9. Mineral ions	Absorbed by **active transport** (low concentration to a high concentration).
10. Absorbing mineral ions adaptations	Root hair cells have **many mitochondria** that produce **energy** by **respiration.** This energy is needed because active transport moves ions **against** the **concentration gradient** from a **low to high concentration.**

Facts: The leaf

11. Leaf	Where **photosynthesis** occurs; glucose + carbon dioxide → glucose + oxygen
12. Epidermis and cuticle	**Covers** the outer surfaces of the plant. **Coated in a waxy cuticle** to **prevent water loss.** The upper epidermis is **transparent** to allow light to pass through it.
13. Palisade mesophyll	Made up of palisade cells. Most **photosynthesis** occurs here. Cells are **tightly packed** and contain **many chloroplasts** to absorb light.
14. Spongy mesophyll	Cells are **loosely packed** and contain air spaces, which increases the rate of diffusion of gases to and from the cells.
15. Xylem tissue	Transports **water** and **minerals up** the plant.
16. Phloem tissue	Transports **sugar** (glucose, sucrose) **up** and **down** the plant.
17. Stomata	**Tiny holes** in the underside of the leaf, which allows **carbon dioxide to diffuse into** the leaf for photosynthesis and **oxygen to diffuse out.**
18. Guard cells	**Control** the opening and closing of the **stomata.**



Facts: Xylem tissue

19. Xylem	Transports **water** and **minerals up** the plant.
20. Structure	**Hollow, dead** tubes **strengthened** with **lignin.**
21. Transpiration stream	The **movement of water** from the roots, through the xylem and out of the leaves.
22. Transpiration	The **loss of water** from the **leaves.**
23. Rate of transpiration	**How fast water is lost** into the atmosphere through the **stomata.**
24. A Potometer	Measures the rate of transpiration.
25. Equipment diagram	As **water** is **lost** from the leaves. The **plant absorbs** the **water** from the beaker causing the **air bubble** to **move toward the plant.** The **further** the air **bubble moves** the **faster the rate.** 
26. Factors affecting transpiration	**Increasing** transpiration → **windy, high light intensity** (sunny), **high temperature.** **Decreasing** transpiration → **humid** (lots of water in the atmosphere).

Facts: Phloem tissue

27. Phloem	Transports **sugar** (glucose, sucrose) **up** and **down** the plant.
28. Structure	Columns of **elongated living cells** with small pores in the end walls to allow cell sap to flow through.
29. Translocation	The **movement of sugar** (glucose, sucrose) **up** and **down** the plant.
30. Importance	Sugar needs to be able to reach **all** the **cells** of a **plant** so that **respiration** can take place.

BIOLOGY PAPER 1: Infection and response

PAGE 3

Facts: Communicable disease	
1. Communicable disease	A disease **passed** on from person to person **caused** by a **pathogen**.
2. Pathogen	A **microorganism** that causes infectious **disease**.
3. The four pathogens	1. Bacteria 2. Virus 3. Fungus 4. Protist
4. Bacteria	**Prokaryotic** cells (no nucleus) that **reproduce rapidly** in the body and produce poisons (**toxins**) that damage tissues and **make us feel ill**.
5. Virus	Smaller than bacteria. They live and **reproduce in cells.** The **cell** then **bursts** and this **cell damage makes us ill.**
6. Fungus	**Eukaryotic cells** (have a **nucleus**). **Yeast** is a fungus
7. Protist	Usually a single-celled eukaryotic organism.
8. Vector	An **organism** that can **spread a disease** (usually insects or rats).
9. Salmonella (bacteria)	Causes fever, vomiting, diarrhoea. Spread by eating **contaminated food.** Prevented by **cooking food properly** and **vaccinating poultry** (chickens).
10. Gonorrhoea (bacteria)	Causes pain when urinating and thick yellow/green discharge. Spread by **sexual contact.** Prevented by using **condoms.** Treated by **antibiotics.**
11. Measles (virus)	Causes fever and red skin rash. Spread through sneeze or cough droplets. Prevented by **vaccination, MMR** (measles, mumps and rubella).
12. HIV (virus)	Causes a flu-like illness and long term **damage to the immune system.** Spread by sexual contact and sharing needles. Prevented by using **condoms.**
13. Tobacco Mosaic Virus	Causes **leaves** to become **discolored.** Spread by contact between plants or farmers. Treated by removing infected plants and, washing hands and tools.
14. Rose black spot (fungus)	Causes **black/purple spots on leaves.** Spread by **air, water** and **direct contact** by gardeners. Treated by **removing** infected leaves and fungicides.
15. Malaria (protist)	Causes episodes of fever. Spread by **mosquitos** (vector). Prevented by **removing breeding sites**, sleep under **nets** and use **insect repellent.**

Facts: Human defence system	
16. Non-specific system	The first line of the body's defence. **Stops** the **pathogens entering** the body.
17. Eyes and mouth	**Enzymes** in tears and saliva **kill the pathogen** or make it inactive.
18. Skin	Acts as a **physical barrier. Platelets clot** the skin if cut.
19. Nose and trachea	**Mucus traps** the pathogens. Then **the tiny hairs on the cilia** cells **move** mucus and trapped pathogens out of the airways.
20. Stomach	**Chemical barrier, hydrochloric acid** kills bacteria.
21. Immune system	When a pathogen enters the body **white blood cells** (WBCs) will **destroy** the pathogens in **3** ways: 1. Phagocytosis 2. Antibody production 3. Antitoxin production.
22. Phagocytosis	White blood cells **surround and engulf pathogens**, releasing **chemicals** to **digest them.**
23. Antibodies	White blood cells produce antibodies which **attach to the antigens** on the surface of a pathogen. So other white blood cells can easily find and destroy the pathogen.
24. Antitoxins	White blood cells can produce antitoxins, which **neutralise the toxins** produced by bacteria.

Facts: Vaccination	
25. Vaccine (vaccination)	A small amount of **dead/inactive pathogen injected** into the body.
26. Immunisation	Making someone **immune** to a **disease** (don't get it), the **result of a having a vaccine.**
27. Vaccines advantages	Less **chance** of getting an infectious disease, they can eradicate (get rid of) a disease and money is saved on treating the disease.
28. Vaccine disadvantages	Vaccines are expensive, they do not always work and they can cause side effects.

Facts: Discovery and development of drugs	
29. Traditional drugs	Extracted from plants and microorganisms. E.g. Aspirin extracted from **willow (tree).**
30. Antibiotics	**ONLY kill bacteria. Do not kill viruses** as they **live inside cells.**
31. Painkillers	**Treat symptoms** of disease e.g. **fever. Do not kill** pathogens.
32. Antibiotic resistance	When a bacterium **cannot be killed** by an antibiotic. E.g. **MRSA** bacteria.
33. Drug trial	A thorough testing procedure to check that new drugs are safe and effective. Made up of two parts, **preclinical and clinical testing.**
34 Preclinical testing	Drug testing carried out on cells, tissues, and animals **before** it is tested on human volunteers. To test for **efficacy** (does the drug work) and **toxicity** (is the drug safe).
35. Clinical testing	Drug testing carried out on humans, healthy volunteers first then on volunteers who suffer from the illness. To test for **side effects** and to work out the **optimal** (best) **dosage**
36. Placebo (fake drug)	A substance that is like the drug being tested but it **does not actually do anything.**
37. Double blind trial	One group of patients is given the new drug and the other is given a placebo. **Neither the patient nor the doctor knows** who has taken the new drug or placebo. Removes **bias**

What did Nazi rule mean for the people of Europe, 1939-1945?

The Contrasting Nature of Nazi Rule: East and West and The Holocaust

Nazi Rule in Poland

- Nazi leaders believed that Germany needed **Lebensraum.** So when the Nazis invaded Poland in September 1939, they aimed to **remove any element of Polish control or culture.** Their plan was to **totally Germanise** the country.
- From 1940, thousands of native Polish citizens were expelled, and **500,000 'ethnic Germans'** were settled in their houses

Treatment of the Poles

- The Nazis considered Slavic Poles to be **racially inferior** and, from the outset, large numbers were murdered by the Wehrmacht and the SS.
- It is estimated that **1.9 million non-Jewish citizens were killed.** Other Poles were sent to work in Germany through forced labour schemes.
- Between 1939 and 1945, **over 1.5 million were deported and forced to work in labour camps.** In May 1940, the Polish Decrees established rules for Poles working in Germany.

Nazi Rule in the Netherlands (Holland)

- By **May 1940** the **German Luftwaffe** had bombed the city of **Rotterdam** and forced the Dutch to surrender.
- The Dutch shared the **same ethnic background as Germans** and were therefore **treated very differently** from the Slavs of the east.
- Civil servants were **allowed to continue working** if they chose to, although 30 per cent of town mayors stepped down.
- The Dutch education system was **not changed** as the Nazi rulers realised there would be a backlash if they tried to interfere

Responses to Nazi Rule

- **Collaboration:** working with the Nazis and helping them to rule
- **Accommodation:** doing as you were told by the Nazis
- **Resistance:** Opposing the Nazis.
- **Collaboration Example:** In Latvia, the SS created the Latvian Auxiliary Security Police. The group took up the job of killing Jews and Communists. The group alone murdered **26,000 Jews**, half the Jewish population of Latvia.
- **Accommodation Example:** Many if not most people in France, Holland and Belgium simply got on with their lives.
- **Resistance Example:** The 'French Resistance' undertook **guerrilla warfare** against the Nazis, publishing underground newspapers and providing intelligence to the Allies.

The First Solution: Persecution and Emigration (1938-39)

- In the countries the Nazis occupied before the start of the Second World War, the first solution was to **force Jews to leave** the country.
- This policy was adopted in Austria following the Nazi invasion in March 1938.
- During the Nazi occupation of Austria, Jews were **beaten and humiliated** by being forced to scrub the pavements to get rid of pro-Austrian graffiti. .
- The persecution led many Jews to **consider emigration.** This was actively encouraged by the Nazis, who created a **Central Office for Jewish Emigration.**
- According to official reports, **110,000 Jews emigrated in two years.**

The Second Solution: Concentration in Ghettos (1939-41)

- When the Nazis invaded Poland in 1939 they controlled **over 3.5 million Polish Jews** – too many for emigration.
- Polish Jews were now forced into **ghettos** – enclosed districts that isolated Jews from the rest of the population.
- The largest ghetto in Nazi-occupied Poland was **in Warsaw.**
- Completed in November 1940, the ghetto had three-metre-high walls topped with barbed wire. By March 1941, the Warsaw Ghetto **held 445,000 Jewish inhabitants.**
- This was a **third of the city's population**, in just **2.4 per cent** of its area.
- On average, **fifteen people** shared a small apartment. Unsurprisingly, these conditions led to disease and death, particularly among the vulnerable, like the young and old.

The Final Solution: Murder (1941-5)
Phase One: The Einsatzgruppen

- The mass murder of Jews began with the Nazi invasion of the Soviet Union in **June 1941**. For the Nazis, this was a life-and-death struggle against **communists and Jews** in the east. The men who carried out the mass murders in the east belonged to the **Einsatzgruppen.** These were **mobile killing units,** which consisted of SS men.
- **Four Einsatzgruppen** (A, B, C and D), each consisting of **500–1000 men,** followed the German fighting troops as they advanced into Russian-held territory.
- As they reached different villages and towns, the Einsatzgruppen rounded up Jews and communists. Men, women and children were taken to secluded areas, often in woodland.
- There, the victims were forced to dig a large pit. They were then lined up at the edge of the pit and shot.
- Approximately **90 per cent** of those murdered in the autumn and winter of 1941 were Jews, **around 1 million people**

The Final Solution: Murder (1941-5)
Phase Two: Use of Poison Gas

- In the autumn of 1941, **Operation Reinhard,** the extermination of all the Jews in the General Government, was agreed. New extermination or death camps were created, the sole purpose of which was to murder. By 1942, **Belzec** (March), **Sobibor** (May) and **Treblinka** (July) were all operational, murdering Jews in newly constructed gas chambers.

What was the impact of Second World War on the German People?

War Economy, Shortages, Women, Bombing, Evacuation and Total War

War Economy
- In December 1939, Hitler announced that Germany would become a war economy.
- All industries would focus on supporting the war effort and there would be ambitious targets for every aspect of war production.
- In 1939, 23 per cent of the goods produced in German factories were related to the military; by 1941 this had risen to 47 per cent.
- By 1941, 55 per cent of the German workforce was employed in war-related work

Albert Speer
- By the end of 1941 Germany was not producing many tanks, guns and aircraft.
- Things changed in **February 1942** with the appointment of **Albert Speer** as **Minister of Armaments and War Production.**
- He decided to: focus factories on producing a single product; employ more women in factories and use concentration camp prisoners as workersThis had a massive impact on production.
- In 1940 Germany produced **1,600 tanks.** In 1944 they produced **19,000.**
- In 1940 Germany produced **10,200 aircraft**. In 1944 they produced **39,600.**

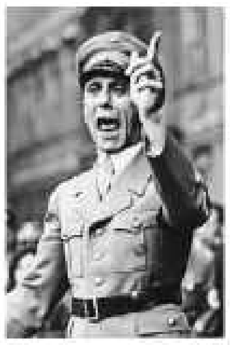
Shortages
- The war economy led to serious **shortages of food** and other product throughout the war years.
- Rationing had been introduced from the outset.

Women
- The Nazi leadership was divided over the role of women in the war effort.
- Speer wanted them to work in the factories to boost production, but Hitler and others still believed they should remain at home to continue their role as wives and mothers.
- In 1939, **760,000 women** worked in war industries and this had risen to **1.5 million** by 1941.
- However, the total number of German women aged 15 to 65 was nearly **30 million.** With men away at war it seemed that most women preferred to stay at home.

Bombing
- On 28 August 1940, British planes made a first devastating attack on Berlin.
- Hamburg, Berlin and Dresden were repeatedly bombed by the British and Americans
- During the autumn of 1940, people in many cities were faced with air raids three or four nights each week.
- The German government introduced a massive programme to build air raid shelters and to improve air defences in the cities.
- Night after night, people sought protection in the air raid shelters, but they were not always safe..

Evacuation
- In September 1940, the Nazis became increasingly concerned about the safety of German children in the cities.
- They therefore introduced a programme of evacuation known as **KLV.**
- This system of voluntary evacuation to the countryside was first applied to the cities of **Hamburg and Berlin**, which were considered to be most at risk from attack.
- All children below the age of fourteen could live in the countryside.

The move towards 'Total War'
- At the beginning of 1943 Germany had **suffered two defeats**, one against the Russians at **Stalingrad** and another against the British in North Africa.
- Faced with these losses, the Nazis needed a **new plan**. The war could only be won if the German people made **huge sacrifices. 'Total war'** was now required.
- On **18 February 1943** Joseph Goebbels made a speech to a huge crowd of Nazi supporters. He explained the need for 'total war' – that every part of German society needed to be involved in the war effort.



Impact of the 'Total War' speech
- **The Nazis finally tried to mobilise women into the war effort.**
- A total of 3 million eligible women between the ages of 17 and 45 were called to work. Only 1 million actually took up the call
- **Anything that did not contribute to the war effort was eliminated** - Professional sport stopped.
- **The shortages became even worse.** In August 1943, Germany stopped producing clothes.
- **There was an increase in propaganda** encouraging people to embrace the idea of total war. Goebbels' speech was shown in cinemas around the country and posters.

3.1 – Modern Periodic Table	
Periodic Table	**118 elements** in order of **atomic number.**
Groups	Vertical **columns.** Contain elements with **similar chemical properties.**
Group number	Tells you the **number** of **electrons** in the **outer shell.**
Periods	Horizontal **rows.**
Period Number	Tells you the **number** of **shells.**
Metals	Found on **left** side. **Conductors** of **heat** and **electricity, strong, malleable** and **high melting** and **boiling** points.
Non-metals	Found on **right** side. **Insulators** of **heat** and electricity, **dull, brittle, lower melting** and **boiling** points.
3.2 – Development of Periodic Table	
Early tables	**Fewer elements** (e.g. no noble gases). Arranged in **order** of **atomic mass** (no knowledge of atomic number yet).
Newland's table	Not well accepted. Elements in **same group** often had **different properties,** some boxes had **2 elements.**
Mendeleev's table	Well accepted. Left **gaps** for **undiscovered** elements and **switched places** of some to ensure elements with **similar properties** in **same group.**
Mendeleev's predictions	Used table to **predict properties** of **undiscovered** elements. Turned out to be **correct.**

3.3 – Group 1 Alkali Metals (lithium, sodium, potassium)	
Properties	**Soft, low density, shiny** when **cut** but **quickly** go **dull** when they **react** with **oxygen** in air.
Reactions with water	**Vigorous** reactions - produce an **alkaline solution.** **metal** (s) + **water** (l) -> **metal hydroxide** (aq) + **hydrogen** (g)
Reactions with chlorine	Produce a **white metal chloride salt.** **metal** (s) + **chlorine** (g) -> **metal chloride** (s)
Reactions with oxygen	Forms **dull metal oxide layer.** **metal** (s) + **oxygen** (g) -> **metal oxide** (s)
Trends down the group	**Increasing reactivity** and **decreasing melting** and **boiling points.**
3.4 – Group 7 Halogens (fluorine, chlorine, bromine, iodine)	
Properties	Fluorine = **pale yellow gas,** chlorine = **yellow-green gas,** bromine = **red-brown liquid,** iodine = **grey solid** with **purple vapour.**
Diatomic Molecules	Made of **pairs of atoms** –> F_2, Cl_2, Br_2, I_2.
Trends down the group	**Decreasing reactivity** and **increasing melting** and **boiling points.**
Reactions with metals	React with metals to form **metal halide salts.**
Displacement Reactions	A **more reactive** halogen can **displace** a **less reactive** halogen from its **salt.**
3.5 – Group 0 Noble Gases (helium, neon, argon, krypton)	
Properties	**Inert** (very **unreactive**), colourless gases, **non-flammable.**
Electrons	**Full outer shell** of electrons –> **very stable** -> do not **react.**
Trends down the group	**Increasing boiling point.**

Y9 Science

Chemistry 1b – Periodic Table

3.1 – States of Matter		
Particle Theory		Models particles as **small, solid, inelastic spheres.**
Solid	Particles	**Regular** arrangement, **touching** each other, **strong** forces, **vibrating** in fixed positions.
	Properties	**Fixed shaped** and **volume. Cannot flow** or be **compressed.**
Liquid	Particles	**Random** arrangement, **touching** each other, **weak** forces, **moving around** each other.
	Properties	**No fixed shape** but **fixed volume.** Can **flow** but **cannot** be **compressed.**
Gas	Particles	**Random** arrangement, **not touching** each other, **no** forces, moving **randomly** in **straight lines** at a **range** of speeds.
	Properties	**No fixed shape** or volume. Can **flow** and can be **compressed.**

3.2 – Changes of State	
Melting (S -> L)	Particles gain **energy** and move faster -> forces **weaken** -> particles **break free** from positions.
Boiling (L -> G)	Particles have **enough energy** to **break** the forces between them.
Condensing (G -> L)	Particles **no longer** have **enough energy** to **overcome** forces. Forces **re-form.**
Freezing (L -> S)	Particles lose **energy** and move **slower** -> forces **strengthen** -> particles **held** in positions.
Melting Point	Temperature at which a **solid melts** or a **liquid freezes.**
Boiling Point	Temperature at which a **liquid boils** or a **gas condenses.**
Energy Required	**Stronger** forces -> **more energy** required -> **higher** melting and boiling points.

3.3 – Formation of Ions	
Ions	**Charged particles.**
Cations	**Positive** ions formed when electrons are **lost.**
Anions	**Negative** ions formed when electrons are **gained.**
Group 1 metals	**Lose 1** electron -> form ions with **1+** charge.
Group 2 metals	**Lose 2** electrons -> form ions with **2+** charge.
Group 6 non-metals	**Gain 2** electrons -> form ions with **2-** charge.
Group 7 non-metals	**Gain 1** electron -> form ions with **1-** charge.

3.4 – Ionic Bonding	
Electron Transfer	Electrons transferred from **metal** to **non-metal** atoms. Both gain **full outer shells.**
Ionic Bond	**Electrostatic attraction** between a **positive metal ion** and a **negative non-metal ion.**
Structure of Compound	**Lattice** of **oppositely charged ions** held together by **strong electrostatic forces** in all directions.
Melting & Boiling Points	**High** -> many **strong** electrostatic forces -> require a lot of **energy** to break.
Electrical Conductivity	**Solid** = does **not** conduct -> ions **not** free to move **Molten** or **aqueous** = does **conduct** -> ions **free** to move.

3.5 – Explaining Reactivity Trends in Group 1 and 7	
Group 1 Trend	**More reactive** as you go down the group.
Group 1 Explanation	Down the group: number of **shells increases** -> outer shell electron **further** from nucleus -> **less attraction** -> electron **lost more easily.**
Group 7 Trend	**Less reactive** as you go **down** the group.
Group 7 Explanation	Down the group: number of **shells increases** -> outer shell electrons **further** from nucleus -> **less attraction** -> electron **gained less easily.**

Y9 Science

Chemistry 2a – States of Matter & Ionic Bonding

How did the lives of German people change, 1933-1939?

Workers, Women , Youth and Jews

Workers
- On the surface, the Nazis greatly improved life for workers. During the election of 1932, when there were **nearly 6 million unemployed**
- By 1939, unemployment had officially been reduced to **35,000 out of a total of 25 million men.**

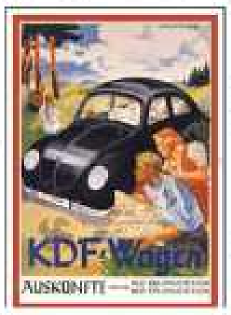
Nazi Policies towards Workers
- The Nazis set up the **Deutsche Arbeitsfront (DAF)**, literally meaning German Labour Front.
- One aspect of the DAF was the **Strength Through Joy Programme** (KdF). This improved workers' leisure time. This included subsidised holidays, cheap theatre tickets, touring orchestras and gym evenings.

Nazi Policies towards Workers
- The **Beauty Through Labour** aimed to improve work places.
- Through this branch, new toilets, changing rooms and showers were built at factories across Germany.

Nazi Policies towards Workers
- The **Reich Labour Service** was set up to tackle unemployment by providing cheap labour for big state projects like new motorways. From 1935, all men aged between **18 and 25** had to serve for **six months.**
- In 1938, the DAF created the **Volkswagen scheme**, which meant that workers could **pay 5 marks per week** and eventually earn a car.
- Many paid in to the scheme but no one ever received a car as the Second World War stopped production

Nazi views on how women should live
- Women should **not smoke**, should appear natural and **not wear makeup.**
- Women should dress in **traditional German clothes**
- Women should not be thin but **'physically robust'**. Strong women were best for bearing children

Nazi policies towards women
- **Loans to encourage women to marry and have children.**
- The couple could receive goods of up to **1000 Reichsmarks** in value if the woman gave up her job.
- The loan was reduced by a quarter for every child the couple went on to have.



Impact of Nazi policies towards women
- Marriages did increase from **516,000** in 1932 to **772,000** in 1939.
- Births rose in the early 1930s but by 1939 the rate had **declined again.**
- The average number of children per couple in 1932 had been **3.6** and by 1939 it had dropped to **3.3.**
- The number of women in employment **increased** between 1933 and 1939.

Nazi policies on education
- After the Nazis took power in 1933 unreliable teachers had to resign whilst Jewish teachers were banned. A National Socialist Teachers League was established, **97 per cent** of teachers had joined it by 1936.

Nazi control of the school curriculum
- Old textbooks were thrown out and a Nazi curriculum was imposed. History was taught with a focus on how Germany was betrayed by Communists and Jews in World War 1.
- PE took up an extensive part of the curriculum while Biology focussed on race study.

Youth Organisations
- The **Hitler Youth** led by **Baldur von Schirach** and became compulsory to join in 1936. No other youth organisations were allowed.
- Meetings for both boys and girls focused on indoctrination and physical activities. Commonly they sang political songs, read Nazi books and paraded through towns. Boys' activities were often more focused **on preparation for the military.**
- Girls' groups concentrated on **domestic duties** and even military nursing. For both boys and girls there was the possibility of going on holiday camps. This was particularly attractive to the working classes.

Nazi Policies Against Jews
- **March 1933:** Jewish lawyers are banned from conducting legal affairs in Berlin.
- **September 1935:** Marriages between Germans and German Jews are punishable by imprisonment. Jews are no longer 'citizens'; they are just 'subjects' with no rights.
- **October 1938:** Jewish passports have to be stamped with a 'J' and passports belonging to Jews whose emigration is undesirable are to be confiscated.
- **November 1938:** All Jewish children are expelled from non-Jewish state schools.
- Jews are no longer allowed to buy newspapers and magazines.
- Jews are banned from cinemas, theatres, operas and concerts.

Kristallnacht (Night of Broken Glass) – 9-10 November 1938
- **267** synagogues were destroyed and **7500 Jewish businesses** had their windows smashed.
- At least **91** Jews were murdered while up to **30,000** Jewish men were arrested.

How much opposition was there to Nazi Rule?

Opposition: 1933-1945

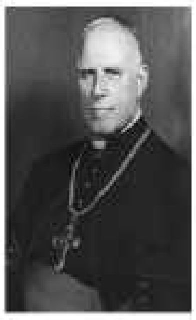
Opposition from the Social Democrats
- After the Nazi takeover in 1933, the leaders of the **Social Democratic Party** fled the country.
- They produced anti-Nazi leaflets and posters, but were hunted down by the Gestapo, who **arrested 1200** of them in the Rhine Ruhr region alone.

Opposition from the Communists
- The Communists were more active than the Social Democrats. They aimed to provide visible resistance with meetings, propaganda and newsletters.
- One of these newsletters, The Red Flag, produced **10,000 copies at least once a month**.
- However, this visibility meant Communists were easily identified and **soon arrested** by the Gestapo.

Opposition from the Church
- With about **22 million Catholics, 40 million Protestants**, religious groups were by far the largest non-Nazi organisations in Germany.
- Hitler saw the Church as a potential threat and so he:
- made an agreement called the **'Concordat'** with the leader of the Pope. The Pope promised that German Catholics would stay out of politics if, in return, the Nazis would leave them alone.

Resistance from Individuals (Niemoller and Cardinal Galen)
- Martin Niemoller was a Protestant pastor (priest – see right above) refused to join the Reich Church and instead founded an alternative, the non-Nazi **Confessional Church**.
- By 1934, **6,000 pastors had joined**. The Confessional Church preached against violence and Nazi racial policy.
- **800** pastors were arrested and sent to concentration camps.
- Niemoller was sent to **Sachsenhausen** then Dachau but survived.
- In 1934 the Catholic Bishop of Münster, **Cardinal Galen** began sermons criticising the Nazi regime over its racial policy.
- The Gestapo were sent to question Galen, but he **was too high profile** to remove from power, so he continued to provide resistance.

Ernst Thalmann (pictured above) Leader of the German Communist Party. He was arrested in 1933.

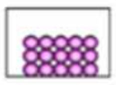
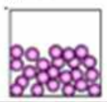
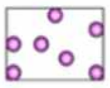


Swing Kids
- These young people came together to listen to **jazz**, dance and talk openly. The Swing Kids wanted to develop their own individual personalities.
- Himmler saw the group as so dangerous he personally wrote to Heydrich, asking the Gestapo to deal with them. Many were arrested and some were sent to concentration camps.

Eidelweiss Pirates
- Members of this group wore an **Edelweiss flower** on their clothing.
- Some listened to **foreign radio** and spread news. They produced flyers and **painted slogans on walls**. Some actively picked fights with the Nazis, with reported **beatings of the Hitler Youth members**.

Public Criticism: The White Rose Group
- The White Rose was a group at Munich University centred around **Hans and Sophie Scholl**.
- The students decided to produce a series of **anti-Nazi leaflets.**
- Between **6000 and 9000 leaflets** were distributed to **nine** large cities around Germany
- On **18 February 1943** the Scholls distributed their leaflets outside lecture theatres at Munich University.
- They were then identified, **arrested and executed.**

Wartime Opposition
- As the war progressed, German army officers such as **Colonel Stauffenberg** became disillusioned with the Nazi leadership and particularly disagreed with the **policy towards Jews**.
- He (Stauffenberg) joined a resistance group led by Ludwig Beck and Henning von Tresckow, and took charge of planning and leading an assassination attempt. The plan was to kill Hitler and initiate **Operation Valkyrie**, an emergency order which would allow the plotters to use the reserve army to remove the SS and the Gestapo.
- On 20 July 1944 Stauffenberg planted a bomb at the **Wolfschanze ('Wolf's Lair')**, Hitler's headquarters in Rastenburg, East Prussia. The bomb exploded yet Hitler survived.
- Back in Berlin, the plotters were tried in a hastily arranged **court martial** and **executed** by firing squad.

States of Matter	
Solids 	Particles have a regular arrangement
	Particles vibrate around a fixed point
	Strong intermolecular forces hold the particles in place
	High density
Liquid 	Particles are close together and randomly arranged.
	Particles can move over each other
	Moderate intermolecular forces keep the particles in contact
	Medium density.
Gas 	Particles are far apart and randomly arranged.
	Particles move quickly in all directions.
	Weak intermolecular forces between the particles
	Low density.
Changes of State	
Melting	Solid to liquid – Internal energy decreases - Physical change.
Freezing	Liquid to solid – Internal energy increases - Physical change.
Boiling	Liquid to gas – Internal energy increases - Physical change.
Condensing	Gas to liquid – Internal energy decreases - Physical change.
Sublimation	Solid to gas - – Internal energy increases - Physical change.
Physical change	No new substance is made, process can be reversed.
Melting Point	Temperature at which a substance melts when heated or when it freezes when cooled. (ice/ water = 0°C)
Boiling Point	Temperature at which a substance boils when heated or when it condenses when cooled. (water/ water vapour = 100°C)
Density of Materials	
Density	Mass of a substance in a given volume
Volume of a cube/cuboid	Length x width x height
Density equation	Density = mass ÷ volume (kg/m^3) (kg) (m^3) (g/cm^3) (g) (cm^3)
How to Measure the Density of a Regular Object, e.g. cuboid or cube.	
Mass	1. Check top pan balance reads zero 2. Place the object on the scale and record mass
Volume	1. Use a ruler to measure the length, width and height 2. Multiply the 3 numbers together (length x width x height)
Density	Once you have mass and volume, density = mass ÷ volume

How to Measure the Density of an Irregular Object (method 1)	
Mass	1. Check top pan balance reads zero. 2. Place the object on the scale and record mass.
Volume 	1. Fill displacement can with water to the spout. 2. Place the can at the end of a table holding a measuring cylinder under the spout. 3. Carefully submerge the object into can and wait for the water to pour out into the spout. 4. Measure the water collected in the measuring cylinder – this the volume of the object.
How to Measure the Density of an Irregular Object (method 2)	
Mass	1. Check top pan balance reads zero. 2. Place the object on the scale and record mass.
Volume 	1. Half fill a measuring cylinder with water. 2. Measure initial volume of water. 3. Place object into measuring cylinder. 4. Measure the rise in water. 5. Minus the rise in water from the initial volume. The difference is the volume of the object.
Internal Energy	
Internal energy	Total kinetic energy and potential energy of all the particles
Kinetic energy	Is the speed of the particles - increases with higher temperature
Potential energy	Is how far apart the particles are - to do with the bonds or attractions between particles
Specific Latent Heat	
Specific heat capacity	Amount of energy needed to raise 1kg of a material by 1°C
Specific latent heat of fusion	Energy needed to change 1kg of a solid into 1kg of a liquid at the same temperature
Specific latent heat of vaporisation	Energy needed to change 1kg of a liquid into 1kg of a gas at the same temperature
Gas Pressure	
Temperature of gas	Is related to the average kinetic energy of the particles
Increasing temperature	1. Increases the pressure (if the volume is kept the same) 2. Increases the volume (if the pressure is kept the same)

Physics P3 - Particle Model of Matter

Parle-moi de ta maison (Tell me about your house)

Habiter - tenses	Types of houses	tense	Rooms
J'habite *(I live)* **Nous habitons** *(we live)* **J'habitais** *(I used to live)* **Nous habitions** *(we used to live)* **J'habiterais** *(I would live)* **Nous habiterions**	**Dans une maison** *(in a house)* **Dans une maison individuelle** *(in a detached house)* **Dans une maison jumelé** *(in a semi-detached house)* **Dans une maison mitoyenne** *(in a terraced house)* **Dans un immeuble** *(in an apartment building)* **Dans un appartement** *(in an apartment/flat)*	**Dans ma maison** *(in my house)* **Il y a** *(there is)* **Il y avait** *(there was)* **Il y aurait** *(there would be)*	**Un bureau** *(an office)* **Une cave** *(a cellar)* **Une salle à manger** *(a dining room)* **Une salle de séjour** *(a living room)* **Un salon***(a living room)* **Un sous-sol** *(a basement)* **Une pièce** *(a room)* **Une chambre** *(a bedroom)* **Une salle de bains** *(a bathroom)* **Une cuisine** *(a kitchen)* **Un jardin** *(a garden)*

Parle-moi de ta maison (Tell me about your house)

Starter	Rooms	tense	Furniture
Dans *(in)*	**Mon salon** *(my living room)* **Ma chambre** *(my bedroom)* **Mon bureau** *(my office)* **Ma cave** *(my cellar)* **Ma salle à manger** *(my dining room)* **Ma salle de séjour** *(my living room)* **Mon sous-sol** *(my basement)* **Ma pièce** *(my room)* **Ma salle de bains** *(my bathroom)* **Ma cuisine** *(my kitchen)* **Mon jardin** *(my garden)*	**Il y a** *(there is)* **J'ai** *(I have)* **Il y avait** *(there was)* ***J'avais*** *(I used to have)* **Il y aurait** *(there would be)* **J'aurais** *(I would have)*	**Une armoire** *(a wardrobe)* **Une bibliothèque** *(a library)* **Un canapé** *(a sofa)* **Une chaise** *(a chair)* **Une étagère** *(a shelf)* **Une fenêtre** *(a window)* **Un lit** *(a bed)* **Les meubles** *(furniture)* **Les murs** *(walls)* **Une table** *(a table)* **Un bureau** *(a desk)*

Why was it so hard to oppose Nazi rule?

Terror and Propaganda

Heinrich Himmler and the SS

- The SS was made up of men of **pure German blood** and had the ideal Aryan features.
- In 1934 the SS truly rose to power after removing the leadership of the SA. Hitler now looked to the **obedience and ruthlessness** of the SS to carry out purges and remove political enemies.
- The SS was made an independent organisation led by **Heinrich Himmer** – see right.

Reinhard Heydrich and the SD

- The SD (Secret Service) was the main **official intelligence gathering agency**.
- The role of the SD was to identify enemies of the Nazi leadership.
- The SD focused on any opposition to the party itself. It **spied on all aspects of education, the arts, government and administration**, as well as churches and the Jewish community.
- From their findings, agents wrote extensive reports on the morale and attitude of the German people.
- These enabled the Nazi leadership to monitor the impact of the changes they made and to tailor propaganda as and when it was necessary.
- The SD did not take action against individuals but passed information on to those who did – the Gestapo.
- The SD was led by **Reinhard Heydrich** – see right

The Gestapo

- The Gestapo (Secret Police) spied on the public to remove any opposition.
- At its height, the Gestapo had **15,000** active officers to police a population of 66 million. This works out as **only one officer per 4,400 people**. Yet even with such low numbers, the Gestapo was deeply feared.
- It had the power to arrest and imprison any person suspected of opposing the Nazi state.
- They could **tap telephones and open mail**, but mostly they relied on **informers** who might pass on remarks they had overheard or just general suspicions.

Joseph Goebbels

- Joseph Goebbels was the **Minister for Propaganda and Public Enlightenment** – see right.
- His ministry controlled radio messages, all newspapers, films and organised posters and displays of propaganda through rallies – see below.
- These messages persuaded many Germans to support the Nazis.

Newspapers

- The Nazis **took control** over existing papers and closed any opposition papers down.
- By 1939 they owned **two-thirds** of all German newspapers and magazines
- Any articles that did not show the Nazis in a positive way would be **censored** (banned).

Radio

- The Ministry for Propaganda controlled the output of every radio station so that they always included Nazi messages, Hitler's speeches.
- The Nazis produced **cheap radio sets**, the People's Receivers. These were sold at a week's wage for the average manual worker and could be paid for in instalments.
- In 1933, **1.5 million** of these sets were produced, and by 1939, **70 per cent** of Germans had a radio in their home.

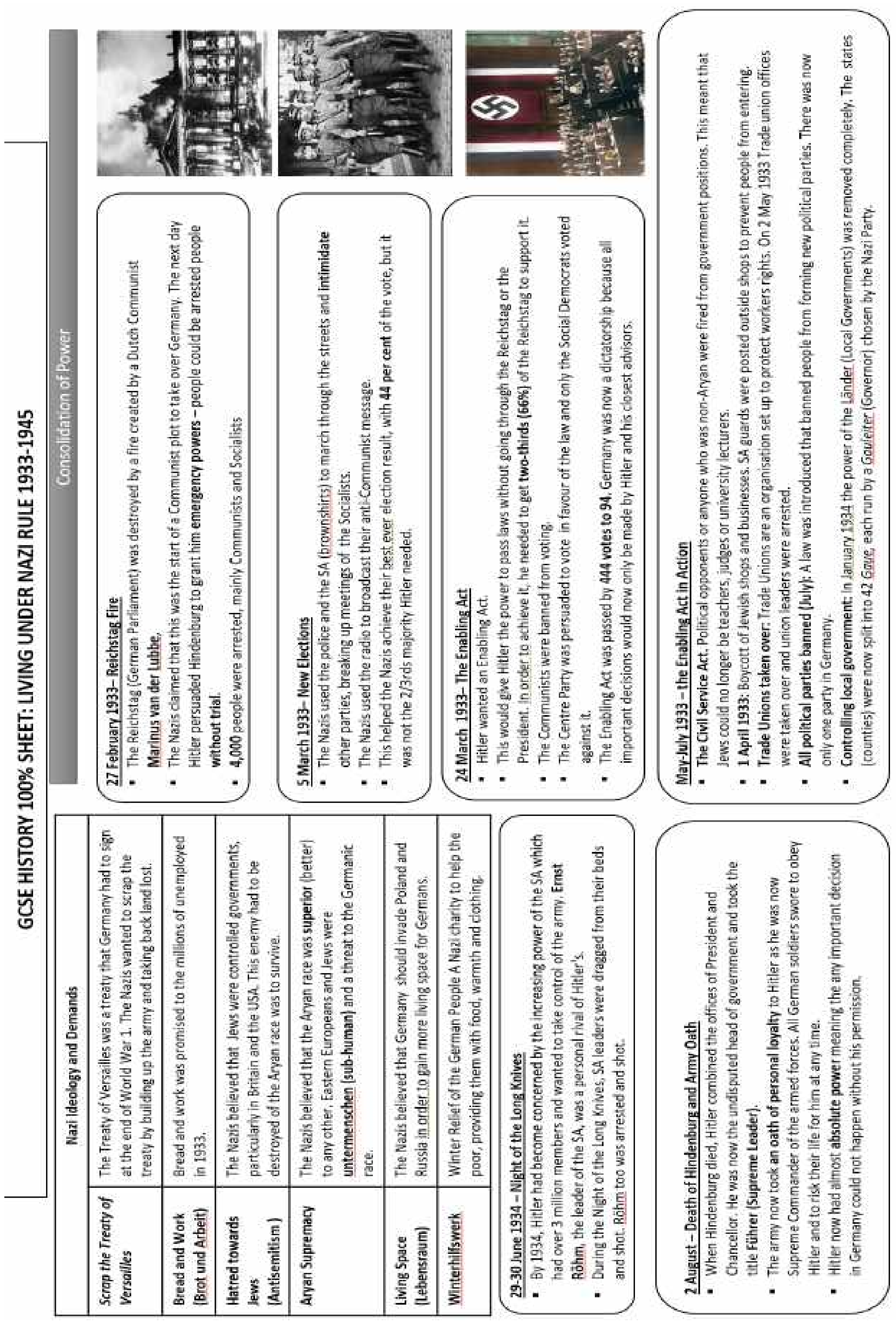
Posters

- The Nazis were mastered at the visual message, using bold colours and eye catching phrases which made messages clear and obvious. Thousands were out up all over Germany.

Rallies

- Giant rallies were held to emphasise and celebrate the strength of the Nazi movement. They involved speeches, choruses, marches, torch-lit parades and even mock battles.
- The annual party rally at Nuremberg was the largest of these and the 1934 event lasted a whole week.
- For the 1934 **Nuremberg Rally, 30,000 swastika flags** were placed around the field, each with its own spotlight.

History Knowledge Navigator



GCSE HISTORY 100% SHEET: LIVING UNDER NAZI RULE 1933-1945

Nazi Ideology and Demands	
Scrap the Treaty of Versailles	The Treaty of Versailles was a treaty that Germany had to sign at the end of World War 1. The Nazis wanted to scrap the treaty by building up the army and taking back land lost.
Bread and Work (Brot und Arbeit)	Bread and work was promised to the millions of unemployed in 1933.
Hatred towards Jews (Antisemitism)	The Nazis believed that Jews were controlled governments, particularly in Britain and the USA. This enemy had to be destroyed of the Aryan race was to survive.
Aryan Supremacy	The Nazis believed that the Aryan race was **superior** (better) to any other. Eastern Europeans and Jews were **untermenschen (sub-human)** and a threat to the Germanic race.
Living Space (Lebensraum)	The Nazis believed that Germany should invade Poland and Russia in order to gain more living space for Germans.
Winterhilfswerk	Winter Relief of the German People A Nazi charity to help the poor, providing them with food, warmth and clothing.

29-30 June 1934 – Night of the Long Knives

- By 1934, Hitler had become concerned by the increasing power of the SA which had over 3 million members and wanted to take control of the army. **Ernst Röhm**, the leader of the SA, was a personal rival of Hitler's.
- During the Night of the Long Knives, SA leaders were dragged from their beds and shot. Röhm too was arrested and shot.

2 August – Death of Hindenburg and Army Oath

- When Hindenburg died, Hitler combined the offices of President and Chancellor. He was now the undisputed head of government and took the title **Führer (Supreme Leader)**.
- The army now took **an oath of personal loyalty** to Hitler as he was now Supreme Commander of the armed forces. All German soldiers swore to obey Hitler and to risk their life for him at any time.
- Hitler now had almost **absolute power** meaning the any important decision in Germany could not happen without his permission.

Consolidation of Power

27 February 1933– Reichstag Fire

- The Reichstag (German Parliament) was destroyed by a fire created by a Dutch Communist **Marinus van der Lubbe**.
- The Nazis claimed that this was the start of a Communist plot to take over Germany. The next day Hitler persuaded Hindenburg to grant him **emergency powers** – people could be arrested people **without trial**.
- **4,000** people were arrested, mainly Communists and Socialists

5 March 1933– New Elections

- The Nazis used the police and the SA (brownshirts) to march through the streets and **intimidate** other parties, breaking up meetings of the Socialists.
- The Nazis used the radio to broadcast their anti-Communist message.
- This helped the Nazis achieve their best ever election result, with **44 per cent** of the vote, but it was not the 2/3rds majority Hitler needed.

24 March 1933– The Enabling Act

- Hitler wanted an Enabling Act.
- This would give Hitler the power to pass laws without going through the Reichstag or the President. In order to achieve it, he needed to get **two-thirds (66%)** of the Reichstag to support it.
- The Communists were banned from voting.
- The Centre Party was persuaded to vote in favour of the law and only the Social Democrats voted against it.
- The Enabling Act was passed by **444 votes to 94.** Germany was now a dictatorship because all important decisions would now only be made by Hitler and his closest advisors.

May-July 1933 – the Enabling Act in Action

- **The Civil Service Act.** Political opponents or anyone who was non-Aryan were fired from government positions. This meant that Jews could no longer be teachers, judges or university lecturers.
- **1 April 1933**: Boycott of Jewish shops and businesses. SA guards were posted outside shops to prevent people from entering.
- **Trade Unions taken over:** Trade Unions are an organisation set up to protect workers rights. On 2 May 1933 Trade union offices were taken over and union leaders were arrested.
- **All political parties banned (July):** A law was introduced that banned people from forming new political parties. There was now only one party in Germany.
- **Controlling local government:** In January 1934 the power of the Länder (Local Governments) was removed completely. The states (counties) were now split into 42 *Gaue*, each run by a *Gauleiter* (Governor) chosen by the Nazi Party.

French Knowledge Navigator

Parle-moi de ta ville (Tell me about your town)

Starter	verb	Places	Activity
Dans ma ville *(in my town)* **En ville** *(in town)* **À Liverpool** *(in Liverpool)*	**Il y a** *(there is)* ***Il n'y a pas de**** (there isn't) **On peut trouver** *(you can find)* **On a** *(we have)* **Nous avons** *(we have)*	**Une bibliothèque** *(a library)* **Un centre commercial** *(a shopping centre)* **Un centre sportif** *(a sports centre)* **Une gare** *(a train station)* **Une gare routière** *(a bus station)* **Un musée** *(a museum)* **Un parc d'attractions** *(a theme park)* **Une patinoire** *(an ice-rink)* **Une piscine** *(a swimming pool)* **Un stade** *(a stadium)* **Les monuments historiques** *(historical monuments)* **Un marché** *(a market)* **Une mosquée** *(a mosque)* **Une église** *(a church)*	**Où on peut** *(where you can)* **Prendre un bus ou un car** *(take a bus or coach)* **Regarder les sports** *(watch sports)* **Faire do patinage** *(do ice skating)* **Faire de l'exercice** *(do exercise)* **Voir des châteaux ou sites intéressants** *(see castles or interesting sites)* **Trouver de bonnes affaires** *(find good deals)* **Apprendre des choses intéressantes** *(learn interesting things)* **Trouver et lire des romans** *(find and read novels)* **Nager/faire de la natation** *(swim)* **Acheter beaucoup de choses** *(buy lots of things)* **S'amuser avec les amis** *(have fun with friends)* **Prier** *(pray)*

French Knowledge Navigator

Parle-moi de ta ville (Tell me about your town)

Opinion	verb	Connectives	Activity
J'adore *(I love)* **J'aime** *(I like)* **Je n'aime pas** *(I don't like)* **Je déteste** *(I hate)* **Je ne supporte pas** *(I can't stand)*	**Où j'habite** *(where I live)* **Ma ville** *(My town)* **Habiter à Liverpool** *(living in Liverpool)*	**Car** *(because)* **Parce que** *(because)* **Mais** *(but)* **Cependant** *(however)* **Puisque** *(since)*	**La ville a du caractère** *(the town has character)* **La ville a du charme** *(the town has charm)* **La vieille ville est très belle** *(the old town is very beautiful)* **Les transports en commun sont fantastiques** *(the public transport is fantastic)* **Il y a toujours quelque chose à faire** *(there is always something to do)* **Il n'ya rien à voir** *(there is nothing to see)* **Il y a pleine de tourists en été** *(there are plenty of tourists in summer)* **Il y a du bruit jour et nuit** *(there is noise day and night)* **Il y a trop de circulation dans les rues** *(there is too much traffic on the roads)* **Il n'ya pas beaucoup de magasins intéressants** *(there aren't a lot of interesting shops)*

Quels sont les problèmes sociaux principaux?

Starter	Social problems	Connectives	Activity
Je m'inquiète de *(I am worried about)* **Le plus grand problème est** *(the biggest problem is)*	**Les victimes de catastrophes naturelles et de guerre** *(victims of natural disasters and war)* **Les personnes qui ont besoin de l'aide médicale** *(people who need medical aid)* **Les personnes qui ont faim** *(people who are hungry)* **Les victimes du cancer** *(victims of cancer)* **Les victimes du racisme** *(victims of racism)* **La pauvreté** *(poverty)*	**On peut** *(you can)* **On devrait** *(you should)*	**Aider les enfants défavorisés** *(help disadvantaged children)* **Organiser les activités pour récolter des fonds** *(organise activities to raise funds)* **Donner des vêtements** *(donate clothes)* **Donner de la nourriture** *(donate food)* **Travailler dans un magasin pour une association caritative** *(work in a charity shop)* **Communiquer avec les seniors** *(communicate with seniors)* **Devenir bénévole** *(become a volunteer)*

¿Qué hay en la foto? *(What is there in the photo?)*

En la foto hay mi familia, In the photo there is my family, **En la foto hay mi mejor amiga,** In the photo there is my best friend (f), **En la foto hay 1 persona,** In the photo there is 1 person,	**está** he/she is	**en el centro de la foto** in the middle of the photo **adentro** inside **sonriendo** smiling **pensando** thinking **contento/a** happy **triste** sad
En la foto hay ___ personas, In the photo there are ___ people, **En la foto hay mis mejores amigos,** In the photo there are my best friends,	**están** they are	**afuera** outside **jugando** playing **comiendo** eating **hablando** speaking **contentos/as** happy (m/f) **tristes** sad

¿Cómo es? *(What is he/she like?) [How he/she is?]* ¿Cómo son? *(What are they like?) [How they are?]*

Mi mejor amiga My best friend (f) **Mi amiga Julia** My friend Julia **Mi madre** My mum	**es** he/she is	**alta** tall **delgada** slim **rubia** blonde **honesta** honest **graciosa** funny
Mis hermanos My brothers / siblings **Mis mejores amigos** My best friends **Mis primos** My cousins (m)	**son** they are	**bajos** short **gordos** fat **pelirrojos** ginger-haired **trabajadores** hardworking

¿Qué estás haciendo? *(What are you doing?) [What you are doing?]*

Ahora mismo Right now **Actualmente** Currently **Ahora** Now **Hoy** Today **En este momento** At the moment	**estoy** I am **estás** you (singular) are **está** he / she / it is **estamos** we are **estáis** you (plural) are **están** they are	**repasando para mis exámenes** revising for my exams **escuchando música** listening to music **tomando el sol en el balcón** sunbathing on the balcony **esperando a mi amigo / a** waiting for my friend **viendo una peli en casa** watching a film at home **escribiendo en Instagram** writing on Instagram **pensando en salir** thinking about going out **descansando en mi habitación** relaxing in my room

¿Quieres salir conmigo? *(Do you want to go out with me?) [You want to go out with me?]*

(No) puedo porque I can (not) because	**tengo que** I have to **quiero** I want to	**cuidar a mis hermanos** look after my siblings **visitar a mis abuelos** visit my grandparents **quedarme en casa** stay at home **subir mis fotos a Instagram** upload my photos on Instagram

¿Te llevas bien con tu familia y tus amigos? *(Do you get on well with your family and friends?)*			
***Diría que** I would say that **A mi modo de ver** To my way of thinking	**me llevo (muy) bien** I get on (very) well **no me llevo (muy) bien** I don't get on (very) well **nos llevamos (muy) bien** we get on (very) well **me peleo** I argue **nos peleamos** we argue **me divierto** I have fun **nos divertimos** we have fun	**con** with	**mi familia** my family **mi hermano menor** my younger brother **mi madre** my mum **mi padre de acogida** my foster dad **mi mejor amigo/a** my best friend (m/f) **mi hermana mayor** my older sister **mi tío** my uncle **mi marido** my husband **mi mujer** my wife
porque because **dado que** because **ya que** because	**siempre** always **a veces** sometimes **de vez en cuando** from time to time **nunca** never	**es** he/she is	**optimista** optimistic **paciente** patient **gracioso/a** funny **impaciente** impatient **trabajador/a** hardworking **perezoso/a** lazy **fiel** loyal
		***me hace reír** he/she makes me laugh ***me hace llorar** he/she makes me cry ***me ayuda** he/she helps me ***me dice la verdad** he/she tells me the truth ***me apoya** he/she supports me	

¿Cuáles son tus aplicaciones favoritas? (*What are your favourite apps?) [Which are your apps favourites?]*					
(no) uso I (don't) use ***(no) suelo usar** I (don't) usually use	**Instagram** **Snaphat** **Whatsapp** **Youtube** **Spotify** **Facebook**	**para** in order	**subir y ver vídeos** to upload and watch videos **compartir fotos** to share photos **pasar el tiempo** to pass the time **organizar las salidas con mis amigos** to organise going out with my friends **contactar con mi familia** to contact my family **descargar música** to download music **conocer a nueva gente** to meet new people **chatear y mandar mensajes** to chat and send messages	**ya que** ***diría que** **(no) es** because I would say that is(n't)	**práctico / a** practical **fácil de usar** easy to use **popular** popular **útil** useful **gratis** free **rápido / a** fast **peligroso / a** dangerous **cómodo / a** comfortable **necesario / a** necessary **amplio / a** broad

¿Con quién vives? *(Who do you live with?) [With who you live?]*			
Vivo con I live with	**mi madre** my mum **mi madrastra** my stepmum **mis madres** my mums **mi tía** my auntie **mi tío** my uncle **mi abuelo** my grandad **mi padre de acogida** my foster dad **mi hermanstro/a** my stepbrother/sister	**y** and	**su hermana** her/his/their sister **mi padrastro** my stepdad **sus hijos** his/her/their children **mi primo/a** my cousin (m/f) **su sobrino** his/her/their nephew **sus sobrinas** his/her/their nieces **su nieto** his/her/their grandson/ **sus nietas** his/her/their granddaughters

¿Cómo es? *(What is he/she like?) [How he/she is?]*						
Mi madre My mum **Mi tío** My uncle **Mi madre de acogida** My foster mum **Tu madrastra** Your stepmum **Su prima** His/her cousin (f) **Su nieto** His/her grandson **Nuestra hermana** Our sister **Nuestro sobrino** Our nephew	**tiene** has	**el pelo** the hair	**rubio** blonde **negro** black **castaño** brown **rojo** red **largo** long **corto** short **liso** straight **rizado** curly **ondulado** wavy	**y** and	**lleva** wears	**gafas** glasses **trenzas** braids **velo** a headscarf **bigote** a moustache **barba** a beard
		los ojos the eyes	**verdes** green [greens] **azules** blue [blues] **marrones** brown [browns] **grises** grey [greys]		**es** he/she is	**alto/a** tall **bajo/a** short **gordo/a** fat **delgado/a** slim **calvo/a** bald **pelirrojo/a** ginger-haired
		pecas freckles				