HOUSTONE
SCHOOL

Year 10 – 100% Book 1
Autumn 2023

NAME	
FORM GROUP	

The Science of Learning

How to do Retrieval Practice

1. Study the material you are trying to learn first. Take about 20 minutes the first time BUT this will get less and less each time as you get to know the material.

   You can study the material by;
   - Reading it again, over and over
   - Look/cover/write/check
   - Creating flashcards that you test yourself on

2. Pick up and use a **black pen**.
   Put away all the answers and test yourself writing everything you remember in the blank spaces provided. Do not cheat!

3. Now pick up and use a **green pen**.
   Check your answers:-
   - Tick all of your correct answers
   - Amend any incorrect answers (even if they are slightly wrong)
   - Fill in any blank spaces with the correct answer copying the answer word for word
   - Check all spellings are correct

4. Repeat the process as many times as you need to, pay special attention to your previous green pen answers (as these are the bits you need to learn!)

5. *Tip:- Lay blank pieces of paper over the answers in order to re-use the quiz again and again*

   Tip: - *Even if you think you know it test yourself a week or so later to check you do.*

   Tip: - *Do not leave it until the last minute – do some every week in the summer holidays (this is called Spaced Practice)*

   Tip: - *Once you think you know it test yourself on everything AGAIN*

Retrieval practice feels hard but it is a really effective way to learn and commit knowledge to long term memory!

ENGLISH 1

Knowledge Organiser: *An Inspector Calls*

WHO'S WHO? KEY CHARACTERS	
1. Mr Arthur Birling	The patriarch of the Birling family. Factory owner and capitalist. Birling is arrogant, avaricious and ignorant
2. Mrs Sybil Birling	Arthur's wife, from a higher social background. Chairwoman of a Brumley Women's Charity. Mrs Birling is prejudiced, snobbish and supercilious
3. Gerald Croft	Son of Lord and Lady Croft. Engaged to be married to Sheila Birling. Gerald is handsome, privileged and traditional
4. Sheila Birling	Arthur and Sybil Birling's daughter. Engaged to be married to Gerald Croft. Sheila is naïve, inquisitive and open-minded
5. Eric Birling	Arthur and Sybil Birling's son. Seems to have a drinking problem. Eric is unstable, uncertain and reckless
6. Edna	The Birling family's maid. Has very few lines in the play. Edna is a visual representation of the voiceless underclass
7. Inspector Goole	A mysterious Inspector who arrives to investigate the death of Eva Smith. Embodies Priestley's own socialist values. The Inspector is enigmatic, authoritative and influential
8. Eva Smith/Daisy Renton	Suicide victim, involved with the lives of all the Birling family. Does not physically appear on stage. Eva is sympathetic, vulnerable and tragic

WHAT HAPPENS?	
9. Act One	We are introduced to the privileged Birling family, who are celebrating Sheila's engagement to Gerald Croft. Their celebrations are interrupted by the arrival of a Inspector, who is here to investigate the suicide of a working class woman, Eva Smith. It is revealed that Eva once worked at Mr Birling's factory, but was sacked for becoming involved in strike action. She was then dismissed from another job in a clothes shop after Sheila made a complaint about her. Whilst Sheila feels immensely guilty for her actions, Mr Birling does not. Act One concludes when it becomes obvious that Gerald Croft also knew Eva Smith too, once she changed her name to Daisy Renton.
10. Act Two	It is revealed that Gerald Croft and Eva/Daisy had an affair, though due to their class differences Gerald had no intention of continuing it beyond the summer. Sheila gives him back the engagement ring. The Inspector reveals that Eva was due to have a child, and went to Mrs Birling's charity committee for help. Mrs Birling turned her away. The final reveal of Act Two is that Eric was the father of Eva's unborn child.
11. Act Three	Eric is confronted for his role in Eva Smith's death – he forced himself upon her, got her pregnant and stole money from his father's company to offer to her. When realising that Eva's child was his, and that Mrs Birling turned her away, Eric is distraught. The Inspector leaves, telling the Birlings that they all must share the responsibility for what they did and that they have a wider social responsibility. After the Inspector leaves, the older Birlings and Gerald try to deflect the blame, but Sheila and Gerald are horrified by their elders' actions. Whilst Gerald discovers that the Inspector may have been a hoax and that no girl has apparently died, the play ends with the reveal that an Inspector is in fact on his way to interrogate the family for real...

ENGLISH 2

KEY THEMES AND CONCEPTS	
12. Social Responsibility	The extent to which people should look after others in their community
13. Duty	One's responsibility to one's family and wider community
14. Class	One's social position, determined by their money, birth, environment, education and opportunities
15. Gender Roles	The expected behaviour and roles of men and women within society
16. Generational Differences	The expected behaviour and roles of older and younger people within society
17. Power	The use (and abuse) of positions of authority and privilege
18. Change	The ability for individuals and societies to evolve and progress
19. Exploitation	The abuse of power over those in lower social positions

KEY CONTEXT	
20. Edwardian Era - 1912	A time of great social division, where the rich got richer and the poor got poorer. When Priestley set the play
21. Post-war era - 1945	A time of potential social change and rebuild, following the Second World War. When Priestley wrote the play
22. The Titanic	An enormous cruise ship, built to show off Britain's industrial might in the Edwardian era. Sank on its maiden voyage when it hit an iceberg, killing 1500 people (mostly lower class citizens)
23. The Suffragettes	A group of women, led by Emmeline Pankhurst, who campaigned for women's rights (especially the right to vote) during the Edwardian era
24. Strikes	Many industrial strikes occurred in Britain during the early part of the twentieth century, as workers protested against low pay and poor conditions

KEY VOCABULARY	
25. privilege	a special right, advantage, or immunity granted or available only to a particular person or group
26. prejudice	preconceived opinion that is not based on reason or actual experience
27. capitalism	an economic and political system in which a country's trade and industry are controlled by private owners for profit, rather than by the state
28. socialism	a political and economic theory of social organization which advocates that the means of production, distribution, and exchange should be owned or regulated by the community as a whole
29. conscience	a person's moral sense of right and wrong, viewed as acting as a guide to one's behaviour
30. hierarchy	a system in which members of an organization or society are ranked according to relative status or authority
31. individualism	social theory favouring freedom of action for individuals over collective or state control
32. collectivism	the practice or principle of giving a group priority over each individual in it
33. conceited	excessively proud of oneself; vain
34. brazen	bold and without shame
35. mouthpiece	a person or organization who speaks on behalf of another person or organization
36. open-minded	willing to consider new ideas; unprejudiced
37. misogynistic	strongly prejudiced against women
38. microcosm	a community, place, or situation regarded as encapsulating in miniature the characteristics of something much larger
39. omniscient	knowing everything

ENGLISH 3

Knowledge Organiser: Creative Reading and Writing

Key Skills	
1. Retrieve	To find and re-state explicit information
2. Analyse	To explore the possible meaning and effect of a writer's choices
3. Language	The choice and meaning of words, and the effect they generate on a reader
4. Structure	The sequencing and order of a text, and the effect this generates on a reader
5. Evaluate	To make a judgement relating to an idea or statement. To express and justify your own opinion
6. Story	A short piece of fictional writing
7. Description	A short piece of writing focusing on building a detailed, multi-sensory image of a character, setting, event and/or atmosphere

Key Language Techniques	
8. simile	A comparison between two things using 'like' or 'as'
9. metaphor	A direct comparison between two things
10. personification	The use of language to give life or personality to an inanimate object
11. onomatopoeia	A word whose sound reflects the sound it describes
12. imagery	Descriptive language that creates a multi-sensory image for a reader
13. hyperbole	Exaggeration; going over the top
14. repetition	A word or phrase is used more than once in quick succession
15. alliteration	A letter or sound is used more than once in quick succession
16. emotive language	Language that is designed to trigger a particularly strong feeling or emotion in the reader
17. rhetorical question	A question phrased in such a way that the questioner does not expect an answer (usually because the answer is implied)
18. tone	The general character or 'feel' of a piece of writing

Key Structural Techniques	
19. opening sentence	The first sentence of a piece of writing
20. foregrounding	The focus of a section of text – placed in the 'foreground'
21. establishing setting	The writer focuses on building a description of place
22. establishing character	The writer focuses on building a description of one or more characters
23. exposition	The writer provides backstory or additional information needed to understand the story
24. dialogue	The written form of conversation between two or more characters
25. spatial and temporal shifts	A significant change, or 'shift' during the story. Spatial shifts are changes in setting; temporal shifts are changes in time
26. flashback	The writer 'goes back in time' to describe something that happened earlier
27. thought tracking	The writer allows the reader an insight into the thought process of a character
28. perspective	The point of view from which the piece of writing is told
29. pace	The speed at which the story is told, and/or the reader is encouraged to read
30. contrast/juxtaposition	Opposite ideas, concepts, characters and settings are placed in close proximity to one another to emphasise the difference between them
31. closing sentence	The final sentence of a piece of writing
32. foreshadowing	The writer provides hints, references or clues to events that will happen later in the piece of writing

Key Parts of a Story	
33. Introduction	The characters and/or setting are introduced
34. Rising action	Events occur that build tension and lead to a problem or conflict
35. Climax	The main problem or conflict in action. Tension and excitement are at their peak
36. Falling action	Characters work to solve the problem or conflict
37. Conclusion	How the story ends

BIOLOGY: B5 – Enzymes

1. What are enzymes?	Protein molecules that catalyse specific reactions in organisms.
2. What does catalyse mean?	Speed up the reaction.
3. Why are enzymes described as specific?	Each enzyme only catalyses a specific reaction, because the active size only fits together with one certain substrates (like a lock and key).
4. Describe the function of amylase.	To break down starch into simple sugars.
5. Where is amylase produced?	Salivary glands, pancreas and small intestine.
6. Describe the function of proteases.	To break down proteins into amino acids.
7. Where are proteases produced?	Stomach, pancreas and small intestine.
8. Describe the function of lipases.	To break down lipids into fatty acids and glycerol.
9. Where are lipases produced?	Pancreas and small intestine.
10. What are the two factors that affect the rate of activity of an enzyme?	Temperature and pH.
11. What does denatured mean?	The shape of an enzymes active site is changed by high temperatures or an extreme pH so it can no longer bind with the substrate.
12. Describe the effect of temperature on enzyme activity.	As temperature increases rate of reaction increases until it reaches the optimum for enzyme activity – Above this temperature, enzyme activity decreases and eventually stops.
13. Describe the effect of pH on enzyme activity.	Different enzymes have a different optimum pH at which their activity is greatest – At a pH much lower or higher than this, enzyme activity decreases and stops.
14. Why do different digestive enzymes have different optimum pHs?	Different parts of the digestive system have very different pH's – the stomach is strongly acidic and the pH in the small intestine is close to neutral.

BIOLOGY: B7 – The spread of diseases

1. What is a communicable disease?	A disease that can be transmitted from one organism to another.
2. What is a pathogen?	A microorganism that causes disease.
3. Name four types of pathogen.	Bacteria, fungi, protists and viruses.
4. How can pathogens be spread?	Air, water, direct contact.
5. How do bacteria make you ill?	Produce toxins that damage tissues.
6. How do viruses make you ill?	Reproduce rapidly inside cells, damaging or destroying them.
7. Name three viral diseases.	Measles, HIV, tobacco mosaic virus.
8. Name two bacterial diseases.	Salmonella, gonorrhoea.
9. Name one fungal disease.	Rose black spot.
10. Name one protist disease and how it spreads.	Malaria – caused by a protist pathogen that is spread from person to person by mosquito bites and causes recurrent fevers.
11. Name four methods of controlling the spread of communicable disease.	Good hygiene, isolating infected individuals, controlling vectors, vaccination.
12. What does a vaccine contain?	Small quantities of a dead or inactive form of a pathogen.
13. How does vaccination protect against a specific pathogen?	Vaccination stimulates the body to produce antibodies against a specific pathogen – if the same pathogen re-enters the body, white blood cells rapidly produce the correct antibodies.
14. What is herd immunity?	When most of a population is vaccinated against a disease, meaning it is less likely to spread.

BIOLOGY: B8 – Preventing and treating disease

1. What non-specific systems does the body use to prevent pathogens getting into it?	Skin Cilia and mucus in the nose, trachea and bronchi Stomach acid
2. What three functions do white blood cells have?	Phagocytosis, producing antibodies, producing antitoxins.
3. What happens during phagocytosis?	Phagocyte is attracted to the area of infection, engulfs a pathogen and releases enzymes to digest the pathogen.
4. What are antigens?	Proteins on the surface of a pathogen.
5. Why are antibodies a specific defence?	Antibodies must be the right shape for a pathogen's unique antigens, so they target a specific pathogen.
6. What is the function of an antitoxin?	Neutralise toxins produced by pathogens by binding to them.
7. What does a vaccine contain?	Small quantities of a dead or inactive form of a pathogen.
8. How does vaccination protect against a specific pathogen?	Vaccination stimulates the body to produce antibodies against a specific pathogen – if the same pathogen re-enters the body, white blood cells rapidly produce the correct antibodies.
9. What is herd immunity?	When most of a population is vaccinated against a disease, meaning it is less likely to spread.
10. What is an antibiotic?	A drug that kills bacteria, but not viruses.
11. What do painkillers do?	Treat some symptoms of disease and relieve pain.
12. What properties of new drugs are clinical trials designed to test?	Toxicity, efficacy and optimum dose.
13. What happens in the pre-clinical trial stage of a drug trial?	Drug is tested on cells, tissues and live animals.
14. What is a placebo?	Medicine with no effect that is given to patients instead of the real drug in a trial.
15. What is a double-blind trial?	A trial where neither patients nor doctors know who receives the real drug and who receives the placebo.

BIOLOGY: B9 – Non-communicable diseases

1. What is coronary heart disease?	Layers of fatty material build up inside the coronary arteries, narrowing them – resulting in a lack of oxygen for the heart.
2. What is a stent?	A device inserted into a blocked artery to keep it open, allowing more blood and oxygen to the heart.
3. What are statins?	Drugs that reduce blood cholesterol levels, slowing the rate of fatty material deposit.
4. What is a faulty heart valve?	A heart valve that doesn't open properly or leaks.
5. How can a faulty heart valve be treated?	Replace with a biological or mechanical valve.
6. When do heart transplants take place?	In cases of heart failure.
7. What are artificial hearts used for?	Keep patients alive whilst waiting for a transplant or allow the heart to rest for recovery.
8. Define health.	State of physical and mental wellbeing.
9. What factors can affect health?	Disease, diet, stress, exercise, life situations.
10. What is a risk factor?	Aspect of lifestyle or substance in the body that can increase the risk of a disease developing.
11. Give five risk factors.	Poor diet, smoking, lack of exercise, alcohol, carcinogens.
12. What is cancer?	A result of changes in cells what lead to uncontrolled cell growth by mitosis.
13. What are malignant tumours?	Cancerous tumours than can spread to neighbouring tissues and other parts of the body in the blood, forming secondary tumours.
14. What are benign tumours?	Non-cancerous tumours that do not spread in the body.
15. What two types of risk factor affect the development of cancers?	Lifestyle and genetic risk factors.
16. What is a carcinogen?	A substance that can cause cancers to develop.

CHEMISTRY: C3 – Bonding

1. What is an ion?	An atom that has lost or gained electrons.
2. Which kinds of compounds form ionic bonds?	Metals and non-metals.
3. What charges do ions from Groups 1 and 2 form?	Group 1 form 1+, Group 2 form 2+
4. What charges do ions from Groups 6 and 7 form?	Group 6 form 2-, Group 7 form 1-
5. Name the force that holds oppositely charged ions together.	Electrostatic force of attraction.
6. Describe the structure of a giant ionic lattice.	Regular structure or alternating positive and negative ions, held together by the electrostatic force of attraction.
7. Why do ionic substances have high melting points?	Electrostatic force of attraction between positive and negative ions is strong and requires a lot of energy to break.
8. Why don't ionic substances conduct electricity when solid?	Ions are fixed in position so cannot move, and there are no delocalised electrons.
9. When can ionic substances conduct electricity?	When melted or dissolved.
10. Why do ionic substances conduct electricity when melted or dissolved?	Ions are free to move and carry charge.
11. How are covalent bonds formed?	By atoms sharing electrons.
12. Which type of atoms form covalent bonds between them?	Non-metals.
13. Describe the structure and bonding of a giant covalent substance.	Billions of atoms bonded together by strong covalent bonds.
14. Describe the structure and bonding of small molecules.	Small numbers of atoms group together into molecules with strong covalent bonds between the atoms, and weak intermolecular forces between the molecules.
15. Describe the structure and bonding of polymers.	Many identical molecules joined together by strong covalent bonds in a long chain, with weak intermolecular forces between the chains.
16. Why do giant covalent substances have high melting points?	It takes a lot of energy to break the strong covalent bonds between the atoms.
17. Why do small molecules have low melting points?	Only a small amount of energy is needed to break the weak intermolecular forces.

CHEMISTRY: C3 – Bonding

18. Why do large molecules have higher melting and boiling points than small molecules?	The intermolecular forces are stronger in large molecules.
19. Why do most covalent substances not conduct electricity?	Do not have delocalised electrons or ions.
20. Describe the structure and bonding in graphite.	Each carbon atom is bonded to three others in hexagonal rings arranged in layers – it has delocalised electrons and weak forces between the layers.
21. Why can graphite conduct electricity?	The delocalised electrons can move through the graphite.
22. Explain why graphite is soft?	Layers are not bonded so can slider over each other.
23. What is graphene?	One layer of graphite.
24. Give two properties of graphene.	Strong, conducts electricity.
25. What is a fullerene?	Hollow cage of carbon atoms arranged as a sphere or a tube.
26. What is a nanotube?	Hollow cylinder of carbon atoms.
27. Give two properties of nanotubes.	High tensile strength, conduct electricity.
28. Give three uses of fullerenes.	Lubricants, drug delivery (spheres), high-tech electronics.
29. Describe the structure of a pure metal.	Layers of positive metal ions surrounded by delocalised electrons.
30. Describe the bonding in a pure metal.	Strong electrostatic forces of attraction between metal ions and delocalised electrons.
31. What are four properties of pure metals?	Malleable; high melting/boiling points; good conductors of electricity; good conductors of thermal energy.
32. Explain why pure metals are malleable.	Layers can slide over each other easily.
33. Explain why metals have high melting and boiling points.	Electrostatic force of attraction between positive metal ions and delocalised electrons is strong and requires a lot of energy to break.
34. Why are metals good conductors of electricity and thermal energy?	Delocalised electrons are free to move through the metal.
35. What is an alloy?	Mixture of metal with atoms of another element.
36. Explain why alloys are harder than pure metals.	Different sized atoms disturb the layers, preventing them from sliding over each other.

CHEMISTRY: C4 – Quantitative chemistry

1. What is the conservation of mass?	In a chemical reaction, atoms are not created of destroyed, just rearranged. Total mass before = total mass after the reaction.
2. When a metal forms a metal oxide, why does the mass increase?	Atoms from gaseous oxygen have been added.
3. When an acid reacts with a metal, why does the mass decrease?	A gas is produced and escapes.
4. What is relative formula mass?	The sum of the relative atomic masses of each atom in a substance.
5. What are the four state symbols and what do they stand for?	(s) Solid, (l) liquid, (g) gas, (aq) aqueous (meaning dissolved in water).
6. How can you tell when a symbol equation is balanced?	The number of atoms of each element is the same on both sides.
7. What is a mole?	Mass of a substance that contains 6.02×10^{23} particles.
8. Give the value for the Avogadro constant.	6.02×10^{23}
9. Which formula is used to calculate the number of moles from mass or M_r?	$moles = \frac{mass}{M_r}$
10. Which formula is used to calculate the mass of a substance from number of moles and M_r?	$Mass = moles \times M_r$
11. What is a limiting reactant?	The reactant that is completely used up in a chemical reaction.
12. What is a unit for concentration?	g/dm^3
13. Which formula is used to calculate concentration from mass and volume?	$Concentration\ (g/dm^3) = \frac{mass\ (g)}{Volume\ (dm^3)}$
14. Which formula is used to calculate volume from concentration and mass?	$Volume\ (dm^3) = \frac{mass\ (g)}{Concentration\ (g/dm^3)}$
15. Which formula is used to calculate mass from concentration in g/dm^3 and volume?	$Mass\ (g) = concentration\ (g/dm^3) \times volume\ (dm^3)$
16. How can you convert a volume reading in cm^3 to dm^3	Divide by 1000
17. If the amount of solute in a solution is increased, what happens to its concentration?	Increases
18. If the volume of water in a solution is increased, what happens to its concentration?	Decreases

PHYSICS: P2 National and global energy resources

1. What is a non-renewable energy resource?	An energy source that will eventually run out, it is not replaced at the same rate as it is being used.
2. What is a renewable energy resource?	An energy source that will not run out, it is being (or can be) replaced at the same rate as it is used.
3. What are the main renewable and non-renewable resources available on Earth?	• Renewable: solar, tidal, wave, wind, geothermal, biofuel, hydroelectric • Non-renewable: coal, oil, gas, nuclear
4. What are the main advantages of using coal as an energy resource?	Enough availability to meet current demand, reliable, can control supply, to match demand, cheap to extract and use
5. What are the main disadvantages of using coal as an energy resource?	Will eventually run out, release CO_2, which contributes to climate change, releases sulfur dioxide which causes acid rain.
6. What are the main advantages of using nuclear fuel as an energy resource?	Lots of energy released from a small mass, reliable, can control supply to match demand, enough fuel available to meet current demand, no polluting gases.
7. What are the main disadvantages of using nuclear fuel as an energy resource?	Wate is dangerous and difficult and expensive to deal with, expensive initial set up, expensive to shut down and to run.
8. What are the main advantages of using solar energy?	Can be used in remote places, no polluting gases, no waste products, very low running costs.
9. What are the main disadvantages of using solar energy?	Only available during hours of daylight, cannot control supply, initial set up expensive, cannot be used on a large scale.
10. What are the main advantages of using tidal power?	No polluting gases, no waste products, reliable, can produce large amounts of electricity, low running costs, no fuel costs.
11. What are the main disadvantages of using tidal power?	Can harm aquatic habitats, initial setup expensive, cannot increase supply when needed, times the energy is available varies each day, hazards for boats.
12. What are the main advantages of using wave turbines?	No polluting gases produced, no waste products, low running cost, no fuel costs.
13. What are the main disadvantages of using wave turbines?	Unreliable, dependent on weather, cannot control supply, initial set up expensive, can harm aquatic habitats, hazard for boats, cannot be used on a large scale.
14. What are the main disadvantages of using wind turbines	Unreliable, dependent on weather, cannot control supply, take up a lot of space, can produce noise pollution.
15. What are the advantages and the disadvantages of using geothermal energy?	• Advantages: no polluting gases, low running cost • Disadvantages: initial set up expensive, only available in a few locations.
16. What are the main advantages and disadvantages of using biofuels?	• Advantages: can be 'carbon neutral', reliable • Disadvantages: expensive to produce. Use land/water that might be needed to grow food.
17. What are the main advantages and disadvantages of using hydroelectric power?	• Advantages: no polluting gases, no waste products, low running cost, no fuel cost, reliable, can be controlled to meet demand. • Disadvantages: initial set up expensive, dams can harm/ destroy aquatic habitats

PHYSICS: P3- Supplying electricity

1. Why is the current provided by a cell called a direct current (d.c.)?	Only flows in one direction
2. What is an alternating current (a.c.)?	Current that repeatedly reverses direction
3. What kind of current is supplied by mains electricity?	Alternating current
4. What is the frequency and voltage of mains electricity?	50Hz, 230 V
5. What colours are the live, neutral, and earth wires in a three-core cable?	Live=brown, neutral= blue, earth= green and yellow stripes
6. What is the function of the live wire in a three-core cable?	Carries the alternating potential difference from the supply
7. What is the function of the neutral wire in a three-core cable?	Completes the circuits
8. What is the function of the earth wire in a three-core cable?	Safety wire to stop the appliance becoming live
9. When is there a current in the earth wire?	When there is a fault
10. Why is the live wire dangerous?	Provides a large p.d. what would cause a large current to flow through a person if they touched it.
11. What is the National Grid?	Nationwide network of cables and transformers that link power stations to customers.
12. What are the step-up transformers used for in the National Grid?	Increase the p.d. from the power station to the transmission cables
13. What are step-down transformers used for in the National Grid?	Decrease the p.d. from the transmission cables to the mains supply in buildings so that it is safe to use.
14. How does having a large potential difference in the transmission cables help to make the National Grid an efficient way to transfer energy?	Large p.d. means a small current is needed to transfer the same amount
15. What two things does energy transfer to an appliance depend on?	Power of appliance, time it is switched on for.
16. What are the units for power, current, potential difference and resistance?	Watt (W), Amp (A), Volt (V) and Ohm (Ω).

PHYSICS: P4- Electrical circuits

1. How does a material become charged?	Becomes negatively charged by gaining electrons, becomes positively charged by losing electrons
2. What will two objects carrying the same type of charge do if they are brought close to each other?	Repel each other
3. What is an electric field?	Region of space around a charged object in which another charged object will experience an electrostatic force
4. What happens to the strength of an electric field as you get further from the charged object?	It decreases
5. What is electric current?	Rate of flow of charge
6. What units are charge, current and time measured in?	Coulomb (C), Ampere (A) and Second (s)
7. What is the same at all points when charge flows in a closed loop?	Current
8. What must there be in a closed circuit so that electrical charge may flow?	Source of potential difference (p.d.)
9. Which two factors does current depend on and what are their units?	Resistance unit: ohm (Ω) p.d. unit: volt (V)
10. What happens to the current if the resistance is increased but the p.d. stays the same	Current decreases
11. What is an ohmic conductor?	Conductor where current is directly proportional to the voltage so resistance is constant (at constant temperature)
12. What happens to the resistance of a filament lamp as its temperature increases?	Resistance increases
13. What happens to the resistance of a thermistor as its temperature increases?	Resistance decreases
14. What happens to the resistance of a light-dependent resistor when light intensity increases?	Resistance decreases
15. What are the main features of a series circuit?	Same current through each component, total p.d. of power supply is shared between components – total resistance of all components is the sum of the resistance of each component.
16. What are the main features of a parallel circuit?	p.d. across each branch is the same, total current through circuit is the sum of the currents in each branch- total resistance of all resistors is less than the resistance of the smallest individual resistor

GEOGRAPHY 1

Unit 1a

The Challenges of Natural Hazards

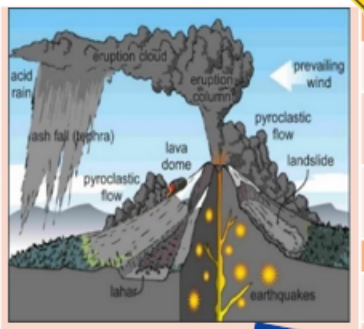
AQA

The structure of the Earth

The Crust	Varies in thickness (5-10km) beneath the ocean. Made up of several large plates.
The Mantle	Widest layer (2900km thick). The heat and pressure means the rock is in a liquid state that is in a state of convection.
The Inner and outer Core	Hottest section (5000 degrees). Mostly made of iron and nickel and is 4x denser than the crust. Inner section is solid whereas outer layer is liquid.

Volcanic Hazards

Ash cloud	Small pieces of pulverised rock and glass which are thrown into the atmosphere.
Gas	Sulphur dioxide, water vapour and carbon dioxide come out of the volcano.
Lahar	A volcanic mudflow which usually runs down a valley side on the volcano.
Pyroclastic flow	A fast moving current of super-heated gas and ash (1000°C). They travel at 450mph.
Volcanic bomb	A thick (viscous) lava fragment that is ejected from the volcano.



Managing Volcanic Eruptions

Warning signs	Monitoring techniques
Small earthquakes are caused as magma rises up.	Seismometers are used to detect earthquakes.
Temperatures around the volcano rise as activity increases.	Thermal imaging and satellite cameras can be used to detect heat around a volcano.
When a volcano is close to erupting it starts to release gases.	Gas samples may be taken and chemical sensors used to measure sulphur levels.

Preparation	
Creating an exclusion zone around the volcano.	Being ready and able to evacuate residents.
Having an emergency supply of basic provisions, such as food	Trained emergency services and a good communication system.

Convection Currents

The crust is divided into tectonic plates which are moving due to convection currents in the mantle.

1. Radioactive decay of some of the elements in the core and mantle generate a lot of heat.
2. When lower parts of the mantle molten rock (Magma) heat up they become **less dense** and **slowly rise**.
3. As they move towards the top they cool down, become **more dense** and **slowly sink**.
4. These **circular movements** of semi-molten rock are **convection currents**
5. Convection currents create **drag** on the base of the tectonic plates and this causes them to move.

LIC -CS: Haiti Earthquake 2010

Causes
On a conservative plate margin, involving the Caribbean & North American plates. The magnitude 7.0 earthquake was only 15 miles from the capital Port au Prince. With a very shallow focus of 13km deep.

Effects
230,000 people died and 3 million affected. Many **emotionally affected**.
250,000 homes collapsed or were damaged. **Millions homeless.**
Rubble blocked roads and shut down ports.

Management
Individuals tried to recover people.
Many countries **responded with appeals** or **rescue teams.**
Heavily relied on **international aid**, e.g. **$330 million** from the EU.
98% of rubble remained after **6 months.**

Earthquake Management

PREDICTING

Methods include:
- Satellite surveying (tracks changes in the earth's surface)
- Laser reflector (surveys movement across fault lines)
- Radon gas sensor (radon gas is released when plates move so this finds that)
- Seismometer
- Water table level (water levels fluctuate before an earthquake).
- Scientists also use seismic records to predict when the next event will occur.

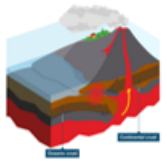
PROTECTION

You can't stop earthquakes, so earthquake-prone regions follow these three methods to reduce potential damage:
- Building earthquake-resistant buildings
- Raising public awareness
- Improving earthquake prediction

Types of Plate Margins

Destructive Plate Margin

When the denser plate subducts beneath the other, friction causes it to **melt and become molten magma**. The magma forces its ways up to the surface to form a volcano. This margin is also responsible for **devastating earthquakes**.



Constructive Plate Margin

Here two plates are **moving apart** causing new magma to reach the surface through the gap. Volcanoes formed along this crack cause a submarine mountain range such as those in the **Mid Atlantic Ridge**.

Conservative Plate Margin

A conservative plate boundary occurs where plates **slide past each other** in opposite directions, or in the same direction but at different speeds. This is responsible for earthquakes such as the ones happening along the San Andreas Fault, USA.

What is a Natural Hazard

A natural hazard is a natural process which could cause death, injury or disruption to humans, property and possessions.

Geological Hazard	Meteorological Hazard
These are hazards caused by land and tectonic processes.	These are hazards caused by weather and climate.

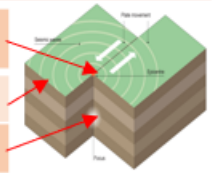
Causes of Earthquakes

Earthquakes are caused when two plates become **locked** causing **friction** to build up. From this **stress**, the **pressure** will eventually be released, triggering the plates to move into a new position. This movement causes energy in the form of **seismic waves**, to travel from the **focus** towards the **epicentre**. As a result, the crust vibrates triggering an earthquake.

The point directly above the focus, where the seismic waves reach first, is called the **EPICENTRE**.

SEISMIC WAVES (energy waves) travel out from the focus.

The point at which pressure is released is called the **FOCUS**.



HIC - CS: Eyjafjallajokull (E15) Eruption, Iceland 2010

Causes
The North-American and Eurasian plates move apart on a constructive plates.
The disruption caused by Eyjafjallajökull was the result of a series of small volcanic eruptions from March to October.

Effects
The **thick ice cap** melted which caused major flooding.
No reported deaths.
Airspace closed across Europe, with at least **17,000** flights cancelled
Costed insurers **£65m** to cancelled flights.

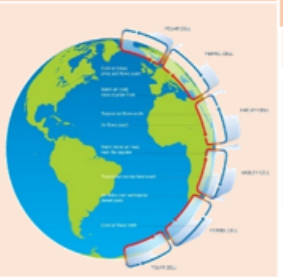
Management
Iceland had a good warning system with **texts being sent** to residents within **30 minutes.**
Large sections of **European airspace were closed** down due ash spread over the continent.
Airlines developed **ash monitoring equipment**.

GEOGRAPHY 2

Global pattern of air circulation

Atmospheric circulation is the large-scale movement of air by which heat is distributed on the surface of the Earth.

Hadley cell	Largest cell which extends from the **Equator** to between **30° to 40° north & south**.
Ferrel cell	Middle cell where air flows **poleward** between **60° & 70°** latitude.
Polar cell	**Smallest & weakness** cell that occurs from the poles to the Ferrel cell.

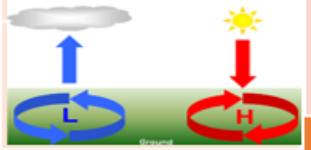


Distribution of Tropical Storms.

They are known by many names, including hurricanes (North America), cyclones (India) and typhoons (Japan and East Asia). They all occur in a band that lies roughly 5-15° either side of the Equator.

High and Low Pressure

Low Pressure	High Pressure
Caused by hot air rising. Causes stormy, cloudy weather.	Caused by cold air sinking. Causes clear and calm weather.



Formation of Tropical Storms

1	The sun's rays heats large areas of ocean in the summer and autumn. This causes **warm, moist air** to rise over the particular spots
2	Once the **temperature is 27°**, the rising warm moist air leads to a **low pressure**. This eventually turns into a thunderstorm. This causes air to be sucked in from the **trade winds**.
3	With trade winds blowing in the opposite direction and the rotation of earth involved (Coriolis effect), the thunderstorm will eventually start to **spin**.
4	When the storm begins to **spin faster than 74mph**, a tropical storm (such as a hurricane) is officially born.
5	With the tropical storm growing in power, **more cool air sinks** in the centre of the storm, creating calm, clear condition called the **eye of the storm**.
6	When the tropical storm hits land, it **loses its energy source** (the warm ocean) and it begins to lose strength. Eventually it will 'blow itself out'.

Changing pattern of Tropical Storms

Scientist believe that global warming is having an impact on the frequency and strength of tropical storms. This may be due to an increase in ocean temperatures.

Management of Tropical Storms

Protection
Preparing for a tropical storm may involve construction projects that will improve protection.

Aid
Aid involves assisting after the storm, commonly in LIDs.

Development
The scale of the impacts depends on the whether the country has the resources cope with the storm.

Planning
Involves getting people and the emergency services ready to deal with the impacts.

Prediction
Constant monitoring can help to give advanced warning of a tropical storm

Education
Teaching people about what to do in a tropical storm.

Primary Effects of Tropical Storms

- The intense winds of tropical storms can destroy whole **communities, buildings** and **communication networks**.
- As well as their own destructive energy, the winds can generate abnormally high waves called **storm surges**.
- Sometimes the most destructive elements of a storm are these subsequent **high seas and flooding** they cause to coastal areas.

Secondary Effects of Tropical Storms

- People are **left homeless**, which can cause distress, poverty and ill health due to lack of shelter.
- **Shortage of clean water** and **lack of proper sanitation** makes it easier for diseases to spread.
- **Businesses are damaged** or destroyed causing employment.
- Shortage of food as **crops are damaged**.

Case Study: Typhoon Haiyan 2013

Causes
Started as a tropical depression on 2nd **November 2013** and gained strength. Became a Category 5 **"super typhoon"** and made landfall on the Pacific islands of the Philippines.

Effects
- Almost **6,500 deaths**.
- **130,000 homes destroyed.**
- Water and sewage systems destroyed had caused **diseases**.
- **Emotional grief** for dead.

Management
- The UN raised **£190m in aid**.
- USA & UK **sent helicopter carrier ships** deliver aid remote areas.
- **Education** on typhoon preparedness.

Case Study: UK Heat Wave 2003

Causes
The heat wave was caused by an anticyclone (areas of high pressure) that stayed in the area for most of August. This blocked any low pressure systems that normally brings cooler and rainier conditions.

Effect
- People suffered from heat strokes and dehydration.
- 2000 people died from causes linked to heatwave.
- Rail network disrupted and crop yields were low.

Management
- The NHS and media gave guidance to the public.
- Limitations placed on water use (hose pipe ban).
- Speed limits imposed on trains and government created 'heatwave plan'.

What is Climate Change?

Climate change is a large-scale, long-term shift in the planet's weather patterns or average temperatures. Earth has had tropical climates and ice ages many times in its 4.5 billion years.

Recent Evidence for climate change.

Global temperature	Average global temperatures have increased by more than **0.6°C since 1950**.
Ice sheets & glaciers	Many of the world's glaciers and ice sheets are melting. E.g. the Arctic sea ice has declined by **10% in 30 years**.
Sea Level Change	Average global **sea level has risen by 10-20cms** in the past 100 years. This is due to the additional water from ice and thermal expansion.

Enhanced Greenhouse Effect

Recently there has been an increase in **humans burning fossil fuels** for energy. These fuels (gas, coal and oil) emit **greenhouse gases**. This is making the Earth's atmosphere thicker, therefore trapping more solar radiation and causing **less to be reflected**. As a result, the Earth is becoming warmer.

Evidence of natural change

Orbital Changes	Some argue that climate change is linked to how the Earth orbits the Sun, and the way it wobbles and tilts as it does it.
Sun Spots	Dark spots on the Sun are called Sun spots. They increase the **amount of energy Earth receives** from the Sun.
Volcanic Eruptions	Volcanoes release large amounts of **dust containing gases**. These can **block sunlight** and results in cooler temperatures.

Managing Climate Change

Carbon Capture
This involves new technology designed to reduce climate change.

Planting Trees
Planting trees increase the amount of carbon is absorbed from atmosphere.

International Agreements
Countries aim to cut emissions by signing international deals and by setting targets.

Renewable Energy
Replacing fossil fuels based energy with clean/natural sources of energy.

HISTORY 1

	Question	Answer
1	What was the Witan?	A council of nobles that advised the king
2	Which Anglo-Saxon kingdom became dominant?	Wessex
3	How was the king chosen in Anglo-Saxon England?	He was chosen by the Witan, and was usually the richest and most powerful noble
4	Why was the Church so important to Anglo-Saxon kings?	It had a significant influence on popular opinion and had a near-monopoly on literacy
5	What was the role of the king in Anglo-Saxon England?	To defend the kingdom, protect the Church and enforce the law
6	Which Viking king came to rule England in the 11th century?	King Cnut
7	How did Cnut secure his control of England during his absences?	He divided the country into four earldoms
8	Which two changes did Edward the Confessor introduce to English government?	Sheriffs and writs
9	Why did Henry II fall out with Thomas Becket?	They disagreed about benefit of clergy
10	How was Thomas Becket killed?	He was attacked by four knights in Canterbury Cathedral
11	Did the Becket dispute pose a major challenge to Henry II's power?	No - Henry still had the power to appoint some bishops and collect money from vacant bishoprics
12	Why did the barons rebel against King John?	Because he did not consult them, taxed them highly and abused the justice system
13	What was agreed in Magna Carta?	The king could not sell justice, and was to be monitored by a council of 25 barons
14	Identify three years in the thirteenth century in which Magna Carta was reissued.	1225, 1265 and 1297
15	Why did Simon de Montfort lead a rebellion against Henry III?	He and many other barons resented Henry's high taxes and unwillingness to consult his nobles
16	What were the Provisions of Oxford?	A set of constitutional reforms forced on Henry III by his barons. They required him to defer to a council of 24 advisors.
17	How was Edward I's parliament different to Henry III's?	He summoned it voluntarily
18	Why did Wat Tyler lead the Peasants' Revolt against Richard II?	He and the rebels resented high taxation
19	Who overthrew Richard II and why?	Henry Bolingbroke because Richard was arresting and killing his opponents
20	What were the Wars of the Roses?	A three-decade-long dispute between the houses of York and Lancaster over the throne
21	How was the power of the monarchy challenged during the Wars of the Roses?	Several times, members of the nobility attempted to overthrow the monarch and place their own preferred candidate on the throne by force
22	What was the Act of Supremacy?	The act that made Henry VIII supreme head of the new Church of England
23	What is the 'Political Nation'?	The people who have a say in government
24	What was the 'divine right of kings'?	The idea that kings were appointed by God and only answerable to God
25	What was the Petition of Right?	An agreement by Charles not to tax the people without parliament's approval
26	When was Charles I's 'Personal Rule'?	1629-1640
27	What action by Charles I triggered the Civil War in January 1642?	The attempted arrested of 5 MPs (involved in the Grand Remonstrance)
28	What was the New Model Army?	The well-disciplined and well-trained parliamentary army that won the Civil War
29	What influence did the execution of Charles I have on the idea of divine right?	It profoundly challenged the idea of divine right
30	Who were the Whigs?	A political group that wanted more restrictions on the power of the king, and greater powers for parliament
31	Who were the Tories?	A political group that wanted more power for the king and less power for parliament

HISTORY 2

32	Why was the monarchy restored in 1660?	Richard Cromwell was extremely unpopular, many people wanted stability, and the country was still being run in many ways like a monarchy
33	What was the Glorious Revolution?	A bloodless revolution in which William and Mary were invited to take the throne from James II
34	What was agreed in the Bill of Rights?	Parliament was to meet at least once a year, and had to approve taxation every four years
35	What is parliamentary monarchy?	A system of government in which the monarch is notionally in charge but in practice elected ministers do most of the business of running the country
36	Give two examples of features of the British electoral system in the eighteenth century which facilitated corruption.	There was no secret ballot and rotten boroughs enabled the rich to 'buy' elections
37	What impact did the French Revolution have on the campaign for electoral reform in Britain?	It inspired some people to campaign for reform (as it led to a significant increase in the number of people who could vote in France), but for others, especially in government, the French Revolution intensified fear of reform, as it led to terrible violence
38	Who were the Radicals?	People who wanted to reform the electorate
39	Who was elected in 1830 and oversaw the passing of the Great Reform Act?	The Whig Party, led by Earl Grey
40	How was the Great Reform Act passed through the House of Lords?	Earl Grey created more Whig lords so that it could pass
41	Why might the 1832 Reform Act be described as a 'stepping stone'?	Although only 18% of men could now vote, it was the first significant reform to the electoral system, proving that change was possible
42	What did the Chartists campaign for?	Universal male suffrage, no property qualification to become an MP, equal representation for constituencies, and the secret ballot
43	What did the 1867 Reform Act change?	Electorate rose from 20% of men to 40%. All men who rented a house in a borough could vote.
44	What did the 1884 Reform Act change?	Electorate rose from 3 million to 5 million. It redistributed seats more fairly based on population.
45	Who made up the majority of the membership of the Independent Labour Party (ILP)?	Working men, driven by the New Unions
46	What was the effect of the Parliament Act of 1911?	It stopped the House of Lords blocking measures that the House of Commons had approved
47	How did government control increase during the First World War?	Conscription, rationing and censorship
48	How did the relationship between people and government change with the First World War?	People grew used to the involvement of the state in their everyday lives
49	What was the result of the 1945 general election?	The Labour Party won a landslide victory
50	What significant reforms did the Labour government introduce from 1945?	National Insurance, the NHS and nationalisation
51	How did Thatcher challenge the post-war consensus?	She argued that the government should play a smaller part in solving social and economic problems
52	Why did Thatcher fall from power?	Thatcher fell from power following controversy over the Poll Tax, and clashes with her advisors on foreign affairs
53	How did 'New Labour' change the Labour Party?	It followed Thatcher in challenging the post-war consensus
54	What does CND stand for?	Campaign for Nuclear Disarmament
55	What led to the Miners' Strike in 1984?	The closure of mines that were not profitable at the instruction of Thatcher's government
56	Why did Greenpeace campaign against British Nuclear Fuels Limited (BNFL)?	They believed that the Sellafield plant was releasing radioactive water into the sea
57	Why did pressure groups become so influential?	They organised campaigns about particular issues and held parliament to account
58	How did the regions begin to pose a challenge to the British parliament?	Regions began to demand devolved power and/or independence
59	What impact did professional politicians have on engagement with politics?	Some people became more disillusioned with politics as they did not believe that their politicians would really stand up for them
60	What was the result of the 2010 general election?	No party won more than 50% of the votes, leading to a hung parliament. The Conservatives and Liberal Democrats formed a coalition government.

SPANISH 1

Vocabulary 1 – WHAT YOU DO IN THE PRESENT

01 ¿Qué haces en verano?	01 What do you do in summer?	21 escucho música	21 I listen to music
02 Cuando hace calor	02 When it is hot	22 escucho la radio	22 I listen to the radio
03 Cuando hace frío	03 When it is cold	23 monto a caballo	23 I go horseriding
04 Cuando hace sol	04 When it is sunny	24 monto en bici	24 I go cycling
05 Cuando hace viento	05 When it is windy	25 toco la guitarra	25 I play the guitar
06 Cuando hace buen tiempo	06 When it is good weather	26 toco el piano	26 I play the piano
07 Cuando hace mal tiempo	07 When it is bad weather	27 juego a los videojuegos	27 I play videogames
08 Cuando llueve	08 When it rains	28 juego al baloncesto	28 I play basketball
09 Cuando nieva	09 When it snows	29 hago deporte	29 I do sport
10 Cuando hay niebla	10 When it is foggy	30 hago los deberes	30 I do homework
11 Cuando hay tormenta	11 When it is stormy	31 hago esquí	31 I go skiing
12 siempre	12 always	32 hago una barbacoa	32 I have a barbecue
13 a menudo	13 often	33 salgo con mis amigos	33 I go out with my friends
14 todos los días	14 every day	34 salgo con mi hermano	34 I go out with my brother
15 a veces	15 sometimes	35 veo la tele	35 I watch TV
16 una vez a la semana	16 once a week	36 veo un partido de fútbol	36 I watch a football match
17 dos veces a la semana	17 twice a week	37 voy al parque	37 I go to the park
18 de vez en cuando	18 from time to time	38 voy a la playa	38 I go to the beach
19 casi nunca	19 almost never	39 compro un montón de revistas	39 I buy loads of magazines
20 nunca	20 never	40 nado en el mar	40 I swim in the sea

Vocabulary 2 – WHAT YOU PREFER TO DO ON HOLIDAY

01 Me encanta	01 I love	21 estar al aire libre	21 to be outdoors
02 Me gusta mucho	02 I really like	22 leer	22 to read
03 Me gusta	03 I like	23 comprar libros	23 to buy books
04 No me gusta	04 I don't like	24 tomar el sol	24 to sunbathe
05 No me gusta nada	05 I don't like at all	25 usar el ordenador	25 to use the computer
06 Odio	06 I hate	26 ver películas	26 to watch films
07 Prefiero	07 I prefer	27 no hacer nada	27 to do nothing
08 A mi padre le encanta	08 My father loves	28 ir de vacaciones en verano	28 to go on holiday in summer
09 A mi padre le gusta mucho	09 My father really likes	29 ir de vacaciones en otoño	29 to go on holiday in autumn
10 A mi madre le gusta	10 My mother likes	30 ir de vacaciones en invierno	30 to go on holiday in winter
11 A mi madre no le gusta	11 My mother doesn't like	31 ir de vacaciones en primavera	31 to go on holiday in spring
12 hacer deportes acuáticos	12 to do water sports	32 a la costa	32 to the coast
13 hacer artes marciales	13 to do martial arts	33 a la montaña	33 to the mountains
14 hacer submarinismo	14 to do diving	34 a la ciudad	34 to the city
15 ir de compras	15 to go shopping	35 al campo	35 to the countryside
16 ir de excursión	16 to go on an excursion	36 a un hotel	36 to a hotel
17 ir al parque	17 to go to the park	37 porque es divertido	37 because it is fun
18 ir al centro comercial	18 to go to the mall	38 porque es barato	38 because it is cheap
19 ir a la playa	19 to go to the beach	39 porque es interesante	39 because it is interesting
20 jugar al voleibol	20 to play volleyball	40 porque es relajante	40 because it is realaxing

Vocabulary 3 – WHAT YOU DID ON HOLIDAY IN THE PAST

01 ¿Adónde fuiste de vacaciones?	01 Where did you go on holiday?	21 ¿Qué hiciste de vacaciones?	21 What did you do on holiday?
02 Hace una semana	02 A week ago	22 Primero	22 First
03 Hace un mes	03 A month ago	23 Lo mejor fue cuando	23 The best thing was when
04 Hace dos semanas	04 Two weeks ago	24 Lo peor fue cuando	24 The worst thing was when
05 Hace cuatro años	05 Four years ago	25 aprendí a hacer vela	25 I learned to sail
06 El año pasado	06 Last year	26 comí muchos helados	26 I ate lots of ice creams
07 El verano pasado	07 Last summer	27 compré recuerdos	27 I bought souvenirs
08 fui de vacaciones a Francia	08 I went on holiday to France	28 descansé	28 I rested
09 fui de vacaciones a Italia	09 I went on holiday to Italy	29 hice esquí	29 I went skiing
10 fui de vacaciones a Turquía	10 I went on holiday to Turkey	30 hice turismo	30 I went sightseeing
11 con mi familia	11 with my family	31 perdí mi móvil	31 I lost my mobile phone
12 con mi insti	12 with my school	32 saqué fotos	32 I took photos
13 con mi mejor amiga	13 with my best friend	33 vi un partido	33 I saw a match
14 solo	14 alone	34 vi los barcos en el puerto	34 I saw the boats in the port
15 y	15 and	35 tuve un accidente en la playa	35 I had an accident on the beach
16 viajé en autocar	16 I travelled by coach	36 vomité en una montaña rusa	36 I was sick on a rollercoaster
17 viajé en avión	17 I travelled by plane	37 Luego	37 Then
18 viajé en barco	18 I travelled by boat	38 Después	38 After
19 viajé en coche	19 I travelled by car	39 Más tarde	39 Later
20 viajé en tren	20 I travelled by train	40 Finalmente	40 Finally

SPANISH 2

Vocabulary 4 – WHERE YOU STAYED ON HOLIDAY

01 Me alojé en un hotel	01 I stayed in a hotel	21 cómodo	21 comfortable
02 Me alojé en un camping	02 I stayed on a campsite	22 lujoso	22 luxurious
03 Me alojé en una pensión	03 I stayed in a guest house	23 moderno	23 modern
04 Nos alojamos	04 We stayed	24 pequeño	24 small
05 en un albergue juvenil	05 in a youth hostel	25 ruidoso	25 noisy
06 en un apartamento	06 in an apartment	26 tranquilo	26 quiet
07 en un parador	07 in a state-run luxury hotel	27 grande	27 big
08 en una casa rural	08 in a house in the country	28 acogedor	28 welcoming
09 Estaba cerca de la playa	09 It was near the beach	29 Tenía un bar	29 It had a bar
10 Estaba en el centro de la ciudad	10 It was in the city centre	30 Tenía un gimnasio	30 It had a gym
11 Estaba en el campo	11 It was in the country	31 Tenía una piscina climatizada	31 It had a heated pool
12 Estaba en las afueras	12 It was on the outskirts	32 No tenía una cafetería	32 It didn't have a café
13 Era un poco	13 It was a little bit	33 No tenía una discoteca	33 It didn't have a disco
14 Era bastante	14 It was quite	34 No tenía un restaurante	34 It didn't have a restaurant
15 Era muy	15 It was very	35 Había una sauna	35 There was a sauna
16 Era demasiado	16 It was too	36 Había mucho espacio	36 There was lots of space
17 antiguo	17 old	37 pero	37 but
18 animado	18 lively	38 no había ni una lavandería	38 it had neither a launderette
19 barato	19 cheap	39 ni un aparcamiento	39 nor a car park
20 caro	20 expensive	40 ¿Dónde te alojaste?	40 Where did you stay?

Vocabulary 5 – WHAT HAPPENED ON YOUR HOLIDAYS

01 El primer día	01 On the first day	21 perdí la cartera	21 I lost the wallet
02 El último día	02 On the last day	22 perdí las llaves	22 I lost the keys
03 Por un lado	03 On one hand	23 perdimos el equipaje	23 we lost the luggage
04 Por otro lado	04 On the other hand	24 Cuando llegamos	24 When we arrived
05 alquilé una bicicleta	05 I hired a bicycle	25 era muy tarde	25 it was very late
06 conocí a mucha gente	06 I met lots of people	26 estaba cansada	26 I was tired
07 fui a una fiesta	07 I went to a party	27 la recepción ya estaba cerrada	27 the reception was already closed
08 perdí mis gafas de sol	08 I lost my sunglasses	28 Lo pasé fenomenal	28 I had a great time
09 cogimos el teleférico	09 we took the cable car	29 Lo pasé fatal	29 I had a horrible time
10 decidimos acampar	10 we decided to camp	30 Lo pasé bien	30 I had a good time
11 fuimos de excursión	11 we went on an excursion	31 Lo pasé mal	31 I had a bad time
12 sin embargo	12 however	32 En mi opinión fue flipante	32 In my opinion it was awesome
13 tuve un retraso	13 I had a delay	33 Creo que fue interesante	33 I think it was interesting
14 tuve un accidente	14 I had an accident	34 Creo que fue horroroso	34 I think it was horrible
15 tuve que llamar a un mecánico	15 I had to call a mechanic	35 ¡Qué aburrido!	35 How boring!
16 tuve que esperar mucho tiempo	16 I had to wait a long time	36 ¡Qué guay!	36 How cool!
17 tuvimos una avería	17 we had a breakdown	37 ¡Qué miedo!	37 How scary!
18 tuvimos un pinchazo	18 we had a puncture	38 ¡Qué desastre!	38 What a disaster!
19 tuvimos que ir a la comisaría	19 we had to go to the police station	39 Hizo buen tiempo	39 It was good weather
20 tuvimos que ir al hospital	20 we had to go to the hospital	40 Hizo mal tiempo	40 It was bad weather

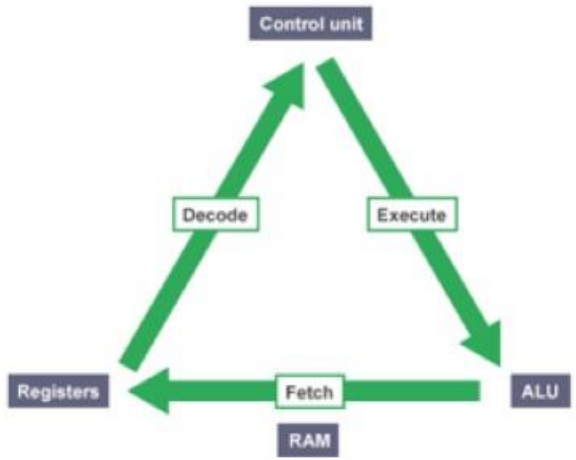
Vocabulary 6 – IN THE HOTEL

01 Quisiera reservar	01 I would like to book	21 ¿Se admiten mascotas?	21 Are pets allowed?
02 una habitación individual	02 a single room	22 ¿A qué hora se sirve el desayuno?	22 What time is breakfast served?
03 una habitación doble	03 a double room	23 ¿Cuál es el problema?	23 What is the problem?
04 sin balcón	04 without balcony	24 Quiero hablar con el director	24 I want to speak to the manager
05 con balcón	05 with balcony	25 Quiero cambiar de habitación	25 I want to change room
06 con bañera	06 with a bath	26 Quiero un descuento	26 I want a discount
07 con ducha	07 with shower	27 porque	27 because
08 con vistas al mar	08 with sea view	28 el aire acondicionado no funciona	28 the air conditioning doesn't work
09 con cama de matrimonio	09 with double bed	29 el ascensor no funciona	29 the lift doesn't work
10 con desayuno	10 with breakfast	30 la ducha está sucia	30 the shower is dirty
11 con media pensión	11 with half board	31 la habitación está sucia	31 the room is dirty
12 con pensión completa	12 with full board	32 la luz no funciona	32 the light doesn't work
13 para dos noches	13 for two nights	33 no hay papel higiénico	33 there is no toilet paper
14 del tres al cinco de agosto	14 from the 3rd to the 5th of August	34 no hay jabón	34 there is no soap
15 ¿Hay aire acondicionado?	15 Is there air conditioning?	35 no hay champú	35 there is no shampoo
16 ¿Hay aparcamiento?	16 Is there parking?	36 necesito toallas	36 I need towels
17 ¿Hay wifi gratis?	17 Is there free wifi?	37 necesito un secador	37 I need a hairdryer
18 ¿Hay tienda de recuerdos?	18 Is there a gift shop?	38 hay ratas en la cama	38 there are rats in the bed
19 ¿Cuánto cuesta?	19 How much is it?	39 hay ratas en la ducha	39 there are rats in the shower
20 ¿Cuándo está abierto el bar?	20 When is the bar open?	40 hay ratas en la habitación	40 there are rats in the room

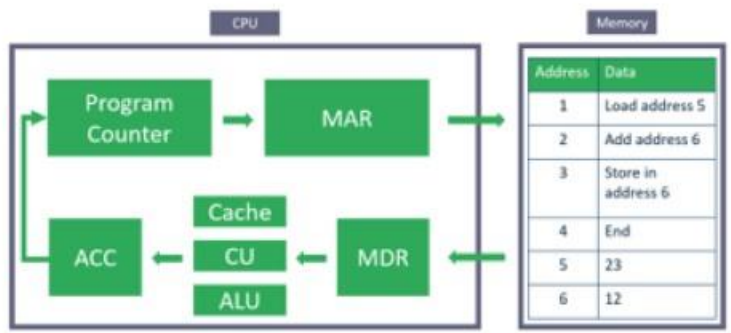
COMPUTER SCIENCE 1

Key vocabulary	
CPU	**Central Processing Unit.** Fetches – Decodes – Executes instructions.
CU	**Control Unit.** Manages the components of the CPU.
ALU	**Arithmetic and Logic Unit.** Carries out basic mathematics and comparisons.
Cache	Super fast memory located next to the CPU. Stores commonly used data & instructions.
Registers	Small memory containers inside the CPU.
MAR	**Memory Address Register**. Stores the address of the next instruction.
MDR	**Memory Data Register.** Stores the data fetched from the main memory (RAM).
Program Counter	A register that records the current instruction being executed.
Accumulator	A register used by the (ALU) to store the results of calculations.
Clock Speed	The speed of a computer's CPU, measured in hertz. This indicates the number of fetch-decode-execute cycles that can run per second.
Cores	A processing unit within a CPU. CPUs can have multiple cores.
Embedded System	A special purpose computer built into another device.

Fetch – Execute Cycle



Von Neumann Architecture



COMPUTER SCIENCE 2

Key vocabulary

Algorithm	A sequence of logical instructions for carrying out a task. In computing, algorithms are needed to design computer programs.
Computational Thinking	A problem-solving method using computer science techniques, where possible solutions are developed and presented in a way that can be understood by humans and computers.
Abstraction	The process of extracting or withdrawing something.
Decomposition	Breaking down a complex problem or system into smaller parts that are more manageable and easier to understand.
Pseudocode	Also written as pseudo-code. A method of writing up a set of instructions for a computer program using plain English. This is a good way of planning a program before coding.
Trace table	Trace tables are used to allow programmers to trace the value of variables as each line of code is executed. The values of the variables are displayed in a table and assist the programmer in identifying any potential errors.

Flowcharts

	Line		Input/output
	Process		Decision
	Sub Program		Terminal

Searching Algorithms

Linear Search

A linear search is the simplest method of searching a **data** set.
Starting at the beginning of the data set, each item of data is examined until a match is made. Once the item is found, the search ends.

1. A way to describe a linear search would be:
2. Find out the length of the data set.
3. Set counter to 0.
4. Examine value held in the list at the counter position.
5. Check to see if the value at that position matches the value searched for.
6. If it matches, the value is found. End the search.
7. If not, increment the counter by 1 and go back to step 3 until there are no more items to search.

A linear search, although simple, can be quite inefficient. Suppose the data set contained 100 items of data, and the item searched for happens to be the last item in the set? All of the previous 99 items would have to be searched through first.
However, linear searches have the advantage that they will work on any data set, whether it is ordered or unordered.

Binary Search

A binary search is an efficient method of searching an ordered list.
A binary search works like this:

1. Start by setting the counter to the middle position in the list.
2. If the value held there is a match, the search ends.
3. If the value at the midpoint is less than the value to be found, the list is divided in half. The lower half of the list is ignored and the search keeps to the upper half of the list.
4. Otherwise, if the value at the midpoint is greater than the value to be found, the upper half of the list is ignored and the search keeps to the lower half of the list.
5. The search moves to the midpoint of the remaining items. Steps 2 through 4 continue until a match is made or there are no more items to be found.

PE

GCSE PE Knowledge Organiser - Physical, emotional and social health, fitness and well-being

Key terms and definitions

1.	**Health**	A state of complete emotional, physical and social wellbeing, and not merely the absence of disease and infirmity
2.	**Fitness**	Our ability to meet the demands of the environment
3.	**Wellbeing**	A state of being comfortable, healthy and happy
4.	**Sedentary lifestyle**	Where there is little, irregular or no physical activity
5.	**Serotonin:**	A feel-good chemical in your body released during exercise. When we exercise our brains produce endorphins, like serotonin, to make us feel good.
6.	**Aesthetic appreciation**	Enjoying something because it is pleasing to look at: for example, as an observer rather than a participant. Sporting examples gymnastics and dance
7.	**Social health**	Ability to interact with others, adapt to social situations and form relationships
8.	**Osteoporosis**	A condition causing the bones to become brittle and fragile. Strength training and weight-bearing exercise have been shown to prevent loss of bone density

Effects of fitness of welling

Positives		Negatives	
9	Helps cope with the physical side of life	20	Puts at risk of sports injury
10	Impact on how long you live	21	Injury can lead to psychological issues
11	Lowers risk of psychological illness	22	Competition pressure can lead to psychological issues
12	Lower risk of eating problems	23	Early specialisation in one sport can reduce other activities
13	Less likely to use drugs or smoke	24	Can lead to obsessive interest in body shape
14	Less likely to be of work with sickness		
15	Lower resting HR and blood pressure		
16	Help weight control		
17	Stronger bones		
18	Improves body composition		

Lifestyle choices

25	**DRAW** **D** – Diet **R**- Recreational drugs **A-** Activity level **W**- Work/Rest/Sleep balance
26	**Activity levels:** Can vary depending on location, travel requirements, facilities, cost, equipment, involvement of friends and time
27	**Smoking** - Shortens breath, reduces lung capacity, heart disease, Increased blood pressure, bronchitis and lung disease.
28	**Alcohol** - Changes behaviour, damage to heart and circulatory system, liver damage, increased risk of cancer, weakens immune system.
29	**Risks of a sedentary lifestyle** - Weight issues, depression, coronary heart disease, high blood pressure, diabetes, risk of osteoporosis, loss of muscle

Benefits of Physical Activity

Physical		Emotional		Social	
30	Stronger bones/ reduced chance of developing osteoporosis	34	Competition - The challenge and success make you feel good	39	Meeting new people and making new friends
31	Reduced chance of coronary heart disease	35	Improve self esteem	40	Increased social activities
32	Reduced chance of a stroke	36	Stress relief - The body releases serotonin	41	Improving co-operation skills
33	Reduced chance of obesity	37	Reduced boredom - Gives you something to do.	42	Opportunities to get together with existing friends
		38	Aesthetic appreciation - This is recognising the beauty or skill of a movement.		