

Online GCSE Courses

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GCSE Maths Course

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Course Overview

The GCSE Mathematics programme provides a comprehensive programme that aims to prepare students for the high frequency questions which students traditionally struggle with. The programme will build upon what students will have studied already but will further target the key content with a particular focus on how to deal with the topic in an exam situation.

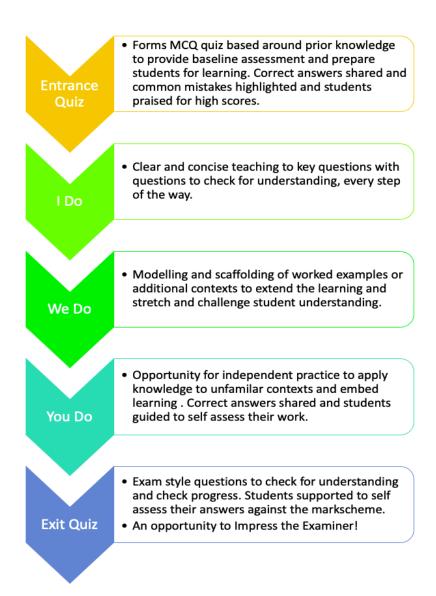
The core concepts planned within this 20 week programme ensure a successful preparation for the GCSE exam and provide students with a rich learning experience. The programme uses mastery learning practices along with targeted exam technique to give students the skills they need to better prepare for the exam.



Lesson Structure

- 1. MCQ test to check the prior knowledge of the concepts to be studied
- 2. Teacher Models to explain the fluency of the topic and incorporates variation and representation
- 3. Students will then complete a fluency task
- 4. Students self mark
- 5. 2-3 Teacher Models to explain the multi step or problem solving tasks
- 6. Students will then complete as multi step problem task
- 7. Students self mark
- 8. Lesson Ends with 5 MCQ tests and a reasoning question

There will sometimes be a deviation from the above model depending on the topic but there will always be steps 1-4 and 8.





Assessment

Baseline

- Prior to starting the GCSE Maths programme students will complete a baseline assessment that covers the key content of the next 5 weeks material.
- The test is multiple choice
- The test will assess the small steps in the content testing students ability to provide sufficient working
- The test will be marked instantly and feedback given to pupils and also centres.
- The purpose of the test is to check exactly what students do and do not know prior to starting the 5 week block. It will also help schools identify key areas that are applicable to all students.
- A baseline assessment will be completed every 5 weeks.

In lesson

At the start of every lesson there will be a multiple-choice test with 5 questions checking the baseline knowledge of that particular concept the students will be studying that day. At the end of every lesson there will be a multiple-choice test with 5 questions checking the progress made by students in each lesson. The end of lesson test will be compared with the start of lesson test and progress will be fed-back to schools.



End of Programme

The end of programme assessment will be the GCSE examination that students sit



Programme of Study

Week	Lesson Title	Initial Assessment	Learning outcomes	Exit Assessment
0	-	Baseline assessment	-	-
1	Number 1	MCQ test 1 Types of number x 5	 Foundation Recognise Types of Number, Apply 4 operations, Use Index notation, Brackets, powers and hierarchy Cross-over Understand the equivalence of FDP, Order values and use equals and inequality signs, Simplify and Collect Like terms Higher Indices and Roots including Surds 	MCQ x5 and reasoning task



2	Primes, fractions	MCQ test 1 x5	Foundation	MCQ x5 and
	and linear		Prime Factors, HCF and LCM, 4 operations to fractions and	reasoning task
	equations		decimals, A calculation to find the answer to another	
			<i>Cross-over</i> FDP of quantities, Solve simple linear equations, substitute formulae and expressions <i>Higher</i> Derive an equation and Simultaneous Equations	
3	Probability	MCQ test 1 x5	<i>Foundation</i> Use probability scale 0-1, Frequency Outcomes, Outcomes of future events	MCQ x5 and reasoning task
			<i>Cross-over</i> Frequency Outcomes, Outcomes of future events, Systematic Listing Methods	
			<i>Higher</i> Tree Diagrams of dependent and Independent events	



4	Ratio problems	MCQ test 1 x5	Foundation	MCQ x5 and
			Use Ratio Notation, A quantity in two or more parts,	reasoning task
			Express division of a quantity into ratio	
			Cross-over	
			Calculate an unknown part, Relate ratio to fractions	
			Higher	
			3 D shape problems including MDV and FPA	
5	Units and	MCQ test 1 x5	Foundation	MCQ x5 and
	measures		Use standard units, Compound measures, Conversion	reasoning task
			Cross-over	
			Use standard units, Compound measures, Conversion	
			Higher	
			Compound measures and Bearings	
6	Rounding and	MCQ test 1 x5	Foundation	MCQ x5 and
	estimating		Rounding, Estimate answers	reasoning task



			<i>Cross-over</i> Rounding, Estimate answers <i>Higher</i> Limits of accuracy and Bounds	
7	Shape1 – representations of shapes and Area	MCQ test 1 x5	 Foundation Plans and elevations, Perimeter of 2D shapes, Area of different shapes, Volume of Different shapes <i>Cross-over</i> Circumference and area of a circle <i>Higher</i> Circle Problems including Circle Theorems 	MCQ x5 and reasoning task
8	Shape 2 – Proportionality and scale factors	MCQ test 1 x5	<i>Foundation</i> Using scale factors, diagrams and maps, Use proportions as equality of ratios <i>Cross-over</i> Use proportions as equality of ratios, Direct Proportion	MCQ x5 and reasoning task



			<i>Higher</i> Proportion problems and Direct and Inverse Proportion	
9	Expand Brackets	MCQ test 1 x5	<i>Foundation</i> Simplify expressions, Expand single brackets, Factorise simple expressions	MCQ x5 and reasoning task
			Cross-over Factorise simple expressions, Expand binomials Higher	
10	Commence		Expanding Trinomials and Proof	
10	Sequences and Functions	MCQ test 1 x5	<i>Foundation</i> Nth term of linear sequences, Generate a sequence	MCQ x5 and reasoning task
			<i>Cross-over</i> Rearrange formulae for subject change	
			<i>Higher</i> Functions and iteration	



11	Percentages	MCQ test 1 x5	Foundation	MCQ x5 and
			Compare quantities as a percentage, A quantity as a	reasoning task
			percentage of another, Percentages greater than 100,	
			Percentage increase and decrease	
			Cross-over	
			Percentage to decimal to fraction, Simple compound	
			percentage increase	
			llichar	
			Higher	
			Percentage change problems involving reverse percentages	
12	Angles	MCQ test 1 x5	Foundation	MCQ x5 and
			Sum of angles in triangles, Alternate and corresponding	reasoning task
			angles, Apply various properties of angles	
			Cross-over	
			Sum of angles in triangles, Alternate and corresponding	
			angles, Apply various properties of angles	
			Higher	



			Pythagoras, Trigonometry and non-right angles triangles	
13	Charts	MCQ test 1 x5	<i>Foundation</i> Use charts and diagrams, Coordinates in the first quadrant,	MCQ x5 and reasoning task
			<i>Cross-over</i> Use and interpret Scatter Graphs, Recognise and describe correlation	
			<i>Higher</i> Histograms and interpreting Data	
14	Graphs	MCQ test 1 x5	<i>Foundation</i> Coordinates in four quadrants, Plot equations to straight line graphs and quadratics	MCQ x5 and reasoning task
			<i>Cross-over</i> Interpret gradient and intercepts, Graphs in real context, Approximate solutions using a graph, Turning points	
			Higher	



			Derive a formula of a graph, real-life graphs and equation of circles	
15	Averages Solve quadratics including with completing the square	MCQ test 1 x5	 <i>Foundation</i> Analyse distributions of data sets, Median, mean, mode and range <i>Cross-over</i> Measures for continuous data <i>Higher</i> Solve quadratic equations; factorising, formula and completing the square 	MCQ x5 and reasoning task
16	Shape 3 - transformations	MCQ test 1 x5	FoundationRotate, reflect, translate and enlarge, Describe translations as 2D vectors, extend to vector calculationsCross-overIdentify congruent and similar shapes, Geometrical problems on axes	MCQ x5 and reasoning task



			<i>Higher</i> Transformations with focus on vectors including transformations of graphs	
17-20	Exam skills	MCQ test 1 x5	Exam techniques for all!!! Mixture of Goal free problems, calculator use and walking talking Marks!	MCQ x5 and reasoning task



GCSE Science Course

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Course Overview

The GCSE science programme is focused on providing students with expert teaching on high leverage topics across biology, chemistry, and physics. Challenging concepts will be broken down into digestible, understandable knowledge which will form the foundation of excellent scientific understanding and ultimately, exam success. The programme will focus on key paper 1 content that students may have initially struggled to learn due to the many challenges of the pandemic and will explicitly show students how these key lessons fit into the wider GCSE content.

Lessons will follow a direct instruction model. Each lesson will begin with an opportunity for retrieval practice of substantive knowledge. This will be followed by a direct instruction sequence preparing students to tackle past paper questions at the end of each lesson. Lessons will provide additional interesting contexts that will leave students exceptionally well prepared for their final exams and with an enhanced curiosity in all three sciences and disciplinary knowledge that binds them.



Lesson Overview

Entrance Quiz	 Forms MCQ quiz based around prior knowledge to provide baseline assessment and prepare students for learning. Correct answers shared and common mistakes highlighted and students praised for high scores.
I Do	 Clear and concise teaching to key questions with questions to check for understanding, every step of the way.
We Do	 Modelling and scaffolding of worked examples or additional contexts to extend the learning and stretch and challenge student understanding.
You Do	 Opportunity for independent practice to apply knowledge to unfamilar contexts and embed learning. Correct answers shared and students guided to self assess their work.
Exit Quiz	 Exam style questions to check for understanding and check progress. Students supported to self assess their answers against the markscheme. An opportunity to Impress the Examiner!



Assessment

Baseline Assessment:

- Prior to starting the GCSE science programme students will complete a baseline assessment that covers the key content of the upcoming science.
- The test is multiple choice.
- The test will assess students' recall of the core questions of each science.
- The test will be marked instantly, and feedback given to pupils and centres.
- The purpose of the test is to check exactly what students do and do not know prior to starting each science.
- A baseline assessment will be completed again before the beginning of each of the other sciences.

Assessment

In lesson: At the start of every lesson there will be a multiple-choice test checking the baseline knowledge of the concept the students will be studying that day. As the course goes on there will be questions from previous lessons to ensure retention of knowledge. At the end of every lesson there will be a multiple-choice test checking the progress made by students in each lesson. The end-of-lesson test will be compared with the start-of-lesson test and progress will be feedback to schools.

End of Programme Assessment: The end of programme assessment will be the GCSE examination that students sit



Programme Overview:

Weeks 1 - 4 - Biology

Weeks 5 – 10 – Chemistry

Weeks 11 – 14 - Physics

- Week 15 Day before Biology Paper 1
- Week 16 Day before Chemistry Paper 1
- Week 17 Day before Physics Paper 1
- Week 18 Day before Biology Paper 2
- Week 19 Day before Chemistry Paper 1
- Week 20 Day before Physics Paper 1



Week	Initial Assessment	Lesson Title	Learning outcomes	Exit Assessment
1	Biology MCQ test 1	Cells Topics Covered: • cell structure/function • prokaryotic/eukaryotic cells • specialised cells • cell transport	 3-5 Be able to label animal and plant cells Recall the functions of organelles Define cells as eukaryotic and prokaryotic Define the term diffusion and give examples of where it occurs Define osmosis Define active transport Describe the cell cycle and mitosis at a basic level, and describe the cells formed by mitosis 4-6 Be able to label and describe the functions of all organelles Compare and contrast eukaryotic and prokaryotic cells To describe the process of diffusion, give examples of where it occurs, and how some cells/ surfaces are adapted for the process To describe the process of active transport with the process of diffusion To compare the process of active transport with the process of diffusion To explain how cells are produced by the cell cycle, and the features of the cells produced by the process. 5-9 To describe the structure of eukaryotic and prokaryotic cells, including the functions of their organelles To explain how the structures of some specialised cells are adapted for their function 	Cells MCQ test
			To describe the processes of diffusion, active transport and osmosis; including examples	



			 To explain how root hair cells are adapted for the absorption of water and mineral ions To describe how osmosis can be investigated in potato tissue, and interpret the results of such an investigation To describe the cell cycle in detail, and explain the role of cell differentiation in producing a range of cell types 	
2	Biology MCQ test 2	Animals Topics Covered: Digestion Enzymes Healthy lifestyle Homeostasis	 3-5 Explain what an enzyme is and how one works to break down a substrate e.g. amylase breaking down starch by lock and key Describe the roles of amylase, protease and lipase in the digestion of food Explain how enzymes are able to be specific Identify factors that affect how well an enzyme functions Identify organs in the digestive system, and explain why nutrients must be digested before absorption To describe the roles of some organs in the digestion and absorption process Define the term communicable disease Define the term pathogen Describe the features of five communicable diseases; gonorrhoea, salmonella, HIV, measles and Rose black spot fungus Describe some methods by which disease can be transferred Explain the roles of barrier defences and white blood cells in the initial immune response Explain how waccination works to give an individual immunity Describe the pros and cons of using antibiotics Define the term "non-communicable disease Define the term "non-communicable disease Describe the process of CVD occurring in an artery 	Animals MCQ test



 Identify risk factors associated with CVD Describe trends and patterns from data on risk Describe how stents and statins can help to treat/ reduce risk of CHD Describe differences between hormonal and nervous system control of the body
 Describe what an enzyme is, how they break down substrates and how they are specific To describe the roles of some digestive enzymes, and where they are produced Describe the effects of pH and temperature on enzyme activity, and explain the process of denaturing Interpret data from an investigation into the effect of pH on amylase activity Identify and describe the role of all organs in the digestive system Explain how the liver helps to facilitate rapid lipid digestion Explain the process of absorption that occurs in the small intestine, and why nutrients must be digested first Define the terms communicable disease; their symptoms, transmission methods and preventions Explain how barriers and white blood cells can protect against infection, and how white blood cells can provide long lasting immunity Explain how vaccinations can benefit an individual, applying understanding to graphical representations of initial and secondary infection



	Describe the pros and cons of using antibiotics	
	 Define the term "non-communicable" and give examples of non-communicable disease Describe the process of CVD occurring in an artery Identify risk factors associated with CVD Describe and explain trends and patterns from data on risk Describe how stents and statins can help to treat/ reduce risk of CHD Describe an investigation to assess the effectiveness of statins Understand what a test group and a control group are Explain hormonal and nervous system control of the body, using relevant examples 	
	 5-9 Explain how enzymes function, and how they achieve a level of specificity Describe and explain the effects of factors on enzyme activity, and be able to apply this to practical contexts Be able to explain what "denaturing" involves in detail, and be able to link this to the importance of bile in the digestion of lipids Be able to compare the roles of some key organs in the digestive system, including their roles in facilitating the rapid digestion and absorption of all key nutrients Apply an understanding of digestion and absorption to practical models of the process Explain how the small intestine is adapted for the absorption of nutrients into the blood 	
	 Explain the meanings of the term "communicable disease" and "pathogen", describing the features of specific examples, and drawing comparisons between them 	



			 Explain the role of barriers and white blood cells in protecting against infection, and providing long lasting immunity Explain the benefits of vaccination to the individual AND the population as a whole; analysing graphical data and linking understanding of herd immunity to explain reduced infection rates Evaluate the use of antibiotics to treat infections Explain how bacteria can become resistant to antibiotics Analyse and draw conclusions on antibiotic effectiveness by observing and measuring "zone of inhibition" 	
			 Define the term "non-communicable" and give examples of non-communicable disease Describe the process of CVD occurring in an artery Identify risk factors associated with CVD, describing trends and patterns from data on risk Evaluate the effectiveness of stents and statins in treating and preventing CHD Evaluate the validity of statements associated with trends in data Plan investigations into the effectiveness of statins, including a discussion of control variables, validity and repeatability, blind double blind, sample size etc Explain hormonal and nervous system control of the body 	
3	Biology MCQ test 3	Plants Topics covered: • Topics included:	 with examples 3-5 To be able to label the parts of a root hair cell Describe the osmosis and active transport that occurs in root hair cells Describe the roles of xylem and phloem tissue Identify similarities and differences between xylem and phloem 	Plants MCQ test



 Plant cells Respiration (aerobic/anaerobic/yeast Photosynthesis Limiting factors 	 Identify layers of tissue in a leaf Describe the function of each tissue found in the leaf Describe the exchange of gases that occurs in the leaf To be able to label the parts of a root hair cell Describe the osmosis and active transport that occurs in root hair cells Describe the roles of xylem and phloem tissue Identify similarities and differences between xylem and phloem Identify layers of tissue in a leaf Describe the function of each tissue found in the leaf Describe the term respiration and explain its importance in living things State the organelle in which respiration occurs Describe the process of photosynthesis and be able to write the word equation Explain what plants use the glucose from photosynthesis for Identify some factors that affect the rate of photosynthesis, and describe their effect on photosynthesis Describe where in the plant, and where in plant cells photosynthesis occurs Identify the gas given out by pondweed when it photosynthesises
	 4-6 To be able to label the parts of a root hair cell, and explain how it is adapted for its function Compare how root hair cells absorb minerals and water Compare the structures and functions of the xylem and phloem



	 Explain the process of transpiration in detail Identify tissues found in a leaf and explain how they assist the effective exchange of gases, and facilitate photosynthesis Describe the exchange of gases that occurs in the leaf, explaining the role of guard cells and stomata in this process To be able to label the parts of a root hair cell, and explain how it is adapted for its function Compare how root hair cells absorb minerals and water Compare the structures and functions of the xylem and phloem Explain the process of transpiration in detail Identify tissues found in a leaf and explain how they assist the effective exchange of gases, and facilitate photosynthesis Describe the exchange of gases that occurs in the leaf, explaining the role of guard cells and stomata in this process Define the term respiration and explain its importance in living things. Describe the process of photosynthesis and explain its importance to plants Represent photosynthesis with word and balanced symbol equations, identifying reactants and products Describe a method for investigating the effect of light intensity on rate of photosynthesis, and be able to describe and explain the results of the investigation Identify variables to be controlled during the light intensity practical 	
	 5-9 To be able to label the parts of a root hair cell, and explain how it is adapted for its function Compare how root hair cells absorb minerals and water 	



	 Compare the structures and functions of the xylem and phloem Explain the process of transpiration in detail, and be able to describe the effect of a range of factors on transpiration rate Apply an understanding of transpiration rate, to some practical representations/investigations Identify tissues found in a leaf and explain how they assist the effective exchange of gases, and facilitate photosynthesis To be able to label the parts of a root hair cell, and explain how it is adapted for its function Compare how root hair cells absorb minerals and water Compare the structures and functions of the xylem and phloem Explain the process of transpiration in detail, and be able to describe the effect of a range of factors on transpiration rate Apply an understanding of transpiration rate, to some 	
	 practical representations/investigations Identify tissues found in a leaf and explain how they assist the effective exchange of gases, and facilitate photosynthesis 	
	 Explain the process of respiration in detail, and compare the aerobic and anaerobic forms that can occur Describe the anaerobic respiration that can occur in yeast and compare this to that which occurs in humans 	
	 Describe the process of photosynthesis and explain its importance to plants Represent photosynthesis with word and balanced symbol equations, identifying reactants and products Describe and explain the effect of a range of factors on the rate of photosynthesis, including an understanding of the term "limiting factor" 	



			•	Describe a method for investigating the effect of light intensity on rate of photosynthesis, and be able to describe and explain the results of the investigation Identify variables to be controlled during the light intensity practical Make the link between selecting the correct equipment and the level of accuracy and precision achieved	
4	Biology MCQ test	 Inheritance and Evolution Topics covered: genetics (genes, alleles, punnett square diagrams & probability, human gene code), variation, evolution 	3-5 • • • • • • • • •	Describe sexual reproduction in animals and plants Explain the number of chromosomes in the gametes during meiosis and fertilisation. Identify why humans selectively breed plants and animals. Define the term genetic engineering. Define the terms species and mutation Describe Darwin's theory of evolution by natural selection. Describe how fossils may be formed. Define the term extinction. Explain why sexual reproduction produces variation in the offspring but asexual reproduction does not Describe the structure of chromosomes, DNA and genes. Define and use the terms: gametes, genotype, phenotype, dominant recessive, homozygous and heterozygous. Use genetic cross diagrams to explain inheritance and carriers.	Inheritance and Evolution MCQ test



			 Explain the benefits and risks of selective breeding in plants and animals. Explain how extinction may be caused. Complete a Punnett square to show the outcomes of genetic crosses. 5-9 Interpret the results of a genetic cross diagram and use direct proportion and simple ratios to express the outcomes. Make informed judgements about the economic, social and ethical issues concerning embryo screening. Evaluate the use of genetic engineering in medicine, e.g. in gene therapy and production of hormones and some vaccines. Explain some of the evidence for evolution discovered by Darwin To explain the importance of isolation in the process of speciation 	
5	Chemistry MCQ test 5	 Particle model (Chemistry & Physics) Topics covered: States of matter, Specific Latent Heat 	 3-5 Be able to identify representation of solids, liquids and gases from particle diagrams. Draw particle diagrams for the three states of matter. Be able to identify conversions between changes of state State the definition of mixtures and to identify appropriate separation techniques of mixtures based on information Use the particle model to describe states of matter Use the equation for density to solve simple problems Use the equation for pressure to solve simple problems 	Particle model MCQ test



	4-6 • •	Use the equation for specific latent heat to solve simple problems to calculate the energy change involved in a change of state. Predict the states of substances at different temperatures given appropriate data Explain the different temperatures at which changes of state occur in terms of energy transfers and types of bonding State that chemical properties of each substance in the mixture are unchanged. Describe, explain and give examples of the specified processes of separation Use the particle model to describe materials Use the equation for density to solve intermediate problems Use the equation for pressure to solve intermediate problems	
	•	Use the equation for specific latent heat to solve intermediate problems to calculate the energy change involved in a change of state.	
	•	Predict the states of substances at different temperatures given appropriate data Explain the different temperatures at which changes of state occur in terms of energy transfers and types of bonding State that chemical properties of each substance in the mixture are unchanged. Describe, explain, and give examples of the specified processes of separation Suggest suitable separation and purification techniques for mixtures when given appropriate information.	



			•	Describe distillation and chromatography in detail. Use the terms stationary phase and mobile phase to explain why certain solutes travel further in chromatography. Use the particle model to describe particle arrangement and motion Use the equation for density to solve challenging problems Use the equation for pressure to solve challenging problems Use the equation for specific latent heat to solve challenging problems to calculate the energy change involved in a change of state.	
6	Chemistry MCQ test 6	Atomic Structure (Chemistry & Physics) Topics covered: Atomic structure development of atomic model radioactivity	3-5 • • • • •	Be able to identify the location of protons, neutrons and electrons Be able to state the relative charge and mass of subatomic particles State that atoms are mostly empty space and have no net charge because they contain equal numbers of protons and electrons Describe how the atom changed over time Define isotopes Recall the properties of alpha, beta and gamma radiation State that the atomic number determines the atom identity Determine the number of neutrons from given data	Atomic Structure MCQ test



	 Appreciate that isotopes exist and mass numbers quoted in the periodic table are an average of all the isotopes Use the periodic table to draw electron configurations Describe how scientific methods and theories developed the model of an atom over time Identify alpha, beta and gamma decay from their properties Complete nuclear equations for alpha and beta decay Use graphs to determine half life
	 5-9 Determine neutron number of isotopes given information Use parenthesis notation for electron configuration Use maths skills to determine the ratio of size of nucleus to size of atom Given isotope information, determine the relative atomic mass of elements State that the group number determines valence electron count and period number determines the total number of electron shells Explain why scientific methods and theories developed the model of an atom over time Complete challenging nuclear equations for alpha and beta decay Describe the processes of fission and fusion Explain how a nuclear reactor works



7	Chemistry MCQ test 7	Bonding Topic covered: • Covalent bonds (simple, giant) • ionic bonds • metallic bonds	 3-5 State which ions are formed when electrons are lost or gained Know that ionic bonding takes place when metals react with non-metals via electron transfer Know that covalent bonding takes place when two or more nonmetals react via electron sharing 4-6 Use dot and cross diagrams to represent electron transfer in ionic bonding and covalent bonding Explain the properties of ionic compounds and covalent substances (simple and giant covalent) 5-9 State what metallic bonding is State how the properties of alloys deviate from the pure metal Represent metallic bonding as rows of positive ions surrounded by a sea of delocalised electrons Determine the type of bonding in substances from given melting point and boiling point data 	Bonding MCQ test
8	Chemistry MCQ test 8	Periodic Table Topic covered:	 3-5 state why Mendeleev left gaps in the periodic table know that elements with similar properties are in columns, known as groups 	Periodic Table MCQ test



9	Chemistry MCQ test 9	Organic Chemistry Topics include: Hydrocarbons Homologous series Alkanes	 Predict properties from given trends down Group 1 / 7 / 0 3-5 Describe what crude oil is made out of Describe what a hydrocarbon is Recognise the structure of an alkane and alkene Describe how crude oil fractions can be separated Describe the uses of alkanes 4-6 	Organic Chemistry MCQ test
			 describe these steps in the development of the periodic table and Mendeleev's role with this. explain how the position of an element in the periodic table is related to the arrangement of electrons in its atoms predict the reactivity of elements from their positions in the periodic table 5-9 Explain how testing a prediction can support or refute a new scientific idea. Explain the steps in the development of the periodic table. 	
		Mendeleev Group 1/7/0 trends Group 1/7/0 reactions	 identify the position of group 1 / 7 / 0 elements in the periodic table 4-6 explain why early periodic tables were incomplete and why some elements were placed in inappropriate groups 	



		Alkenes Bromine test	 Explain how fractional distillation in terms of evaporation and condensation Explain how boiling point, viscosity and flammability are linked to the size of a hydrocarbon Explain the differences between complete and incomplete combustion Write balanced chemical equations for the complete combustion of hydrocarbons 	
			 5-9 Explain why alkenes are more reactive than alkanes Explain what alkenes are used to produce Explain the purpose of cracking hydrocarbons Describe the reaction conditions for the cracking of hydrocarbons Write balanced equations for cracking reactions Explain the results from a bromine water test 	
10	Chemistry MCQ test 10	Quantitative Chemistry Topics include: Relative Formula Mass	 3-5 Understand the use of the multipliers in equations in normal script before a formula and in subscript within a formula. Use relative atomic masses in the calculations specified in the subject content. Be able to calculate the relative formula mass (<i>M</i>_r) of a compound from its formula, given the relative atomic masses. 	Quantitative Chemistry MCQ test



Percentage element in a compound Yield Moles Concentration Energy changes Rates of reaction calculations	 Describe the difference between an exothermic reaction and endothermic reaction Work out the rate of a chemical reaction measuring the quantity of a reactant used / product formed over time. 4-6 Calculate the mass of solute in a given volume of solution of known concentration in terms of mass per given volume of solution. Explain any observed changes in mass in non-enclosed systems during a chemical reaction given the balanced symbol equation for the reaction and explain these changes in terms of the particle model. Draw simple reaction profiles (energy level diagrams) for endothermic and exothermic reactions. Use the quantity of reactants in terms of moles (with reaction rate units measured in mols/s) Calculate the mean rate of a reaction from given information draw, and interpret, graphs showing the quantity of product
	 draw, and interpret, graphs showing the quantity of product formed or quantity of reactant used up against time 5-9 Calculate the masses of reactants and products from the balanced symbol equation and the mass of a given reactant or product. Calculate the masses of substances shown in a balanced symbol equation. Be able to use the relative formula mass of a substance to calculate the number of moles in a given mass of that substance and vice versa.



			•	Calculate the mass of solute in a given volume of solution of known concentration in terms of mass per given volume of solution. Calculate the energy transferred in chemical reactions using bond energies supplied draw tangents to the curves on these graphs and use the slope of the tangent as a measure of the rate of reaction calculate the gradient of a tangent to the curve on these graphs as a measure of rate of reaction at a specific time.	
	Physics MCQ test 11		3-5 ●	Define current, p.d. and resistance	Electricity MCQ test
			•	Describe simple circuits	
		Electricity	•	Describe the VI characteristic of a resistor, a lamp and a diode	
		Topics include:	•	Describe how to do the the VI / resistance of a wire required practical and equipment used	
		Series/parallel	•	draw the magnetic field pattern for a straight wire carrying a	
11		 current/resistance in a circuit 		current and for a solenoid (showing the direction of the field).	
		 voltage/power/charge calculations 	4-6		
		• electromagnetism	•	Identify currents, p.d., and resistance in circuits	
			•	Explain the difference between series and parallel circuits	
			•	Explain the VI characteristic of a resistor, a lamp and a diode	
			•	Explain the VI / resistance of a wire required practical, with variables and explanation of the results	



			 describe how the magnetic effect of a current can be demonstrated 5-9 Solve complex circuit problems Explain how a fuse works Explain VI and IV characteristics of a resistor, a lamp and a diode Evaluate the VI / resistance of a wire required practical and how to improve the results explain how a solenoid arrangement can increase the magnetic effect of the current. 	
12	Physics MCQ test 12	Forces Topics included: Action of forces Resultant forces Speed Acceleration	 3-5 Name examples of contact and non-contact forces Describe what the terms scalar and vector mean Calculate resultant forces that act in a straight line Calculate weight by recalling and using its equation Give examples of forces involved n stretching, bending or compressing an object Apply the elastic potential energy equation to simple calculations Find the spring constant of a spring by experiment. 	Forces MCQ test



Distance time graphs Speed time graphs	 Make measurements of distance and time to calculate speeds of objects Define work done. State the units of work. Define distance. Define speed and calculate it by using speed = distance/time Define velocity. Draw and interpret distance - time graphs. State Newton's First Law.
	 4-6 Calculate resultant forces that act in a straight line Use free body diagrams to calculate resultant forces acting on an object Define weight and mass and explain the difference between them. Describe what is meant by 'centre of mass'. Describe the difference between elastic deformation and inelastic deformation caused by stretching forces Recognise the extension of an elastic object is directly proportional to force applied (so long as limit of proportionality is not exceeded).



	 Apply the elastic potential energy equation to intermediary calculations Sketch on an existing graph the force – extension curve for a
	spring with a spring constant of greater or lesser value than the spring given.
	Define displacement.
	• Explain the difference between distance and displacement.
	 Calculate the speed of an object given the distance travelled and the time taken. Rearrange the equation to find either unknown quantity.
	Determine speed from a distance-time graph
	 Calculate the acceleration of an object from the gradient of a velocity-time graph
	 Compare the speeds of two or more objects, or from one object at different points, on a distance – time graph from the gradients of the lines.
	 Calculate the work done by a force on an object when given the magnitude of the force and the displacement of the object. Rearrange this equation to find any unknown value.
	 Describe the energy transfer involved when work is done on an object
	 Explain why an object travelling around a circular track may have a constant speed but a constantly varying velocity.
	• Calculate the speed of an object from a distance – time graph.
	 Calculate the acceleration of a vehicle when given the initial and final speed and the time taken for the change in speed to



occur. Rearrange the equation to find other unknown quantities.
 Describe the effect of having a zero resultant force on a stationary object / an object moving at a constant velocity
5-9
 Use vector diagrams to show resultant forces, equilibrium situations and scale drawings to show the forces magnitude and direction.
 Draw force diagrams to represent forces acting parallel to each other, both in the same direction or in opposite directions.
 Calculate the horizontal and vertical component of a single force that acts on an object.
 Interpret data from an investigation of the relationship between force and extension
 Apply the elastic potential energy equation to challenging calculations
• Calculate the force acting on a spring when given the spring constant and the extension of the spring. Rearrange the equation to find any missing quantity.
 Evaluate the best spring to use for a given situation when given the spring constants of the springs.
 Draw distance time graphs from measurements and extract and interpret lines and slopes of distance-time graphs,



			 translation information between graphical and numerical form. Analyse data about vehicle/animals travelling with different speeds, distances and times to find which object is travelling the fastest or will travel the greatest distance in a given time. Explain how the speed of a vehicle can be found experimentally. Calculate the speed of an object that is accelerating from a distance – time graph by finding the tangent to the curve at a given point then finding the gradient of the tangent. For velocity-time graphs that show non-uniform acceleration, measure the area under the line by counting squares. Explain how the acceleration of a vehicle can be determined experimentally. 	
13	Physics MCQ test 13	Energy Topics include: • Energy stores/systems • energy equations • SHC • National/global energy sources (pros/cons)	 3-5 Recall the 8 energy stores Recall the 4 energy pathways Describe stores and pathways in real world systems Use equations for GPE and KE Identify changes in energy from GPE to KE Apply the law of energy conservation to simple problems Recall the non renewable energy resources Recall the renewable energy resources Describe how electricity is generated 	Energy MCQ test



			 Explain energy systems using stores and pathways model Use stores and pathways model to describe systems and their surroundings Explain energy transfer diagrams Explain changes in energy from GPE to KE Solve simple conservation of energy problems Equate KE to GPE to solve problems Identify advantages and disadvantages of energy resources Explain how electricity is generated 	
			 Identify trends in energy consumption 5-9 Evaluate energy systems using the stores and pathways model Use energy transfer diagrams to describe energy systems Apply stores and pathways model to novel situations Explain changes in energy from EE to KE to GPE Solve complex conservation of energy problems Relate conservation of energy to stores and pathways model 	
			 Evaluate advantages and disadvantages of energy resources Explain how use depends on energy resource Explain trends in energy consumption 	
14	Physics MCQ test 14	Waves Topics covered:	 3-5 Identify longitudinal waves and transverse waves Describe wave motion in terms of their amplitude, wavelength, frequency and period. 4-6 	Waves MCQ test



		EM spectrum – properties / uses/ applications Properties of waves Measuring waves	• • • 5-9	Describe the differences between longitudinal and transverse waves Explain evidence to show that waves travel not air or water. Correctly apply the wave speed and period equations Describe a method to measure the speed of sound waves in air Describe a method to measure the speed of sound ripples in water Identify and amplitude and wavelength from given diagrams Make observations to identify the suitability of apparatus to measure the frequency, wavelength and speed of waves in a	
	Day before		•	ripple tank Identify the suitability of apparatus to measure the frequency, wavelength and speed of waves in a solid and take appropriate measurements. Revisit key concepts within cells, animals and plants that	Day before Biology
15	Biology Paper 1	Cells Animals		students commonly struggle with, in a bitesize manner. Walk through typical exam questions linked to these topics including mathematical calculations, required practical skills	Paper 1 MCQ test
15		Plants	3.	and data analysis. Talk students through specific exam techniques focused upon command words, graphical questions and unfamiliar contexts.	
16	Day before Chemistry Paper 1	States of matter, Specific Latent Heat Atomic structure development of atomic model radioactivity Covalent bonds (simple, giant)	1. 2.	Revisit key concepts within key Paper 1 Chemistry topics that students commonly struggle with, in a bitesize manner. Walk through typical exam questions linked to these topics including mathematical calculations, required practical skills and data analysis.	Day before Chemistry Paper 1 MCQ test



		ionic bonds metallic bonds Mendeleev Group 1/7/0 trends Group 1/7/0 reactions	 Talk students through specific exam techniques focused upon command words, graphical questions and unfamiliar contexts. 	
17	Day before Physics Paper 1	Electricity Energy Atomic Structure	 Revisit key concepts within Physics Paper 1 topics that students commonly struggle with, in a bitesize manner. Walk through typical exam questions linked to these topics including mathematical calculations, required practical skills and data analysis. Talk students through specific exam techniques focused upon command words, graphical questions and unfamiliar contexts. 	Day before Physics Paper 1 MCQ test
18	Day before Biology Paper 2	Inheritance and Evolution	 Revisit key concepts within inheritance and evolution that students commonly struggle with, in a bitesize manner. Walk through typical exam questions linked to these topics including mathematical calculations, required practical skills and data analysis. Talk students through specific exam techniques focused upon command words, graphical questions and unfamiliar contexts. 	Day before Biology Paper 2 MCQ test
19	Day before Chemistry Paper 2	Organic Chemistry Quantitative Chemistry	 Revisit key concepts that students commonly struggle with in a bitesize manner within Organic Chemistry and Quantitative Chemistry Walk through typical exam questions linked to these topics including mathematical calculations, required practical skills and data analysis. 	Day before Chemistry Paper 2 MCQ test



			3.	Talk students through specific exam techniques focused upon command words, graphical questions and unfamiliar contexts.	
20	Day before Physics Paper 2	Forces Waves		Revisit key concepts that students commonly struggle with, in a bitesize manner within Forces and Waves Walk through typical exam questions linked to these topics including mathematical calculations, required practical skills and data analysis. Talk students through specific exam techniques focused upon command words, graphical questions and unfamiliar contexts.	Day before Physics Paper 1 MCQ test



GCSE English Language Course

Impress Online

Course Overview

This course is specifically designed to cover the entirety of the AQA GCSE English Language course in 20 weeks and requires no prior knowledge beyond Key Stage 3. It is therefore entirely suitable as a recovery curriculum for those who have missed large sections of Year 10 or 11, as well as students in post 16 or students meeting the course for the first time.

This course will be developed by a highly experienced former Principal Examiner Jo Heathcote: designer of the current mark scheme and part of the development team for the course and will be live delivered by a highly experienced practitioner and Assistant Principal Examiner Caroline Davies.

The course works by focusing on the Assessment Objectives in a student friendly way and demystifying the core skills required for success. The focus throughout is on clarity and simplicity as being the key to success. It must be noted that GCSE English Language is predominantly a skills-based course with the expectation that students will demonstrate those skills against a range of complex unseen source material



drawn from novels, short stories, newspapers, journals, travel writing, diaries and letters all intended for an adult readership and covering time periods from 1801 to the present day. Students will therefore have the chance to work with a range of source material, including original texts, to build confidence towards tackling the unseen material of the final examination.

All work for GCSE English Language involves an equitable balance of reading skill and writing skill. Reading skills may be broken down into two distinct areas correlating to two Assessment Objectives AO1 and AO2: comprehension and analysis. It is here where our course begins - embedding clear knowledge and understanding of these principles as well as detailed exposition of the question types and mark schemes to ensure confident and accurate coverage.

The course makes use of simple, memorable, tried and tested, effective methodologies for success building skills of inferential reading through active involvement using polls, cloze exercise, matching games, multiple choice responses and summative practice tasks with annotated exemplars. Live presentation will explain and explore differences in responses showing progression through the mark scheme. Students will consolidate and expand their repertoire of core subject terminology through matching and multiple-choice opportunities, building their confidence. They will go on to develop skills in commenting on the effect of writers' choices – a concept students often find difficult as this is the higher order skill of the mark scheme grids – through expert advice, scaffolded activities, and modelling.

The course will then progress to the higher order reading skills: critical evaluation for Paper 1 (AO4) and comparison for Paper 2 (AO3). These skills will be demystified and simplified by showing how they are a blend of basic skills. Clear and detailed exposition of the mark scheme and scaffolded step by step tasks will enable students to build longer responses which they can match against clearly annotated model responses and success criteria.



Students will learn to apply their knowledge of how texts work to the creation of their own texts for the writing element of the examinations (AO5 and AO6). In an examination, students are expected to produce effective, purposeful, and accurate pieces of writing in 45 minutes. This course will explore ways to plan work effectively for timely and secure outcomes and will focus on teaching creative techniques to improve the structure, imagery, and vocabulary choices of creative pieces. Students will enhance their knowledge of the building blocks of effective non-fiction writing and explore more subtle aspects such as creating an appropriate tone, understanding the power of rhetorical devices, and using sentence variety for impact and effect.

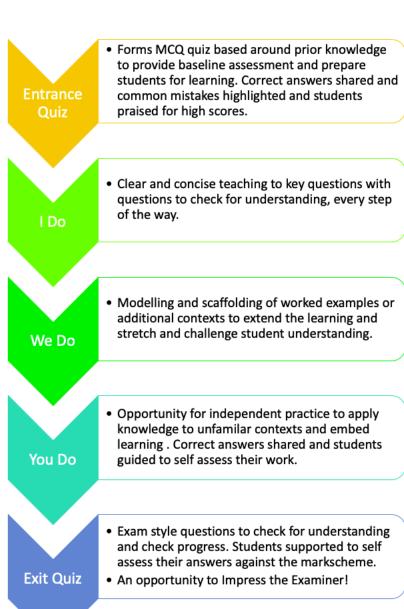
The course is organised as a logical progression to build skills and knowledge as well as preparing students to feel confident in understanding what to do for each specific question of the two papers and see the patterns of skill within the mark scheme descriptors. Assessment will take place formatively – with a range of activities designed to enable students to self-check - as well as modelled and annotated responses for longer responses with clear self-assessment guidance. Students will be encouraged to write examination responses in real time and shown how to apply the mark scheme as a tool to critique their own work and that of their peers on the course. Each block of lessons dealing with a particular paper will culminate in a supportive walk-through mock paper, delivered in real time with modelled checkpoint responses.



Lesson Structure

Each lesson of 90 minutes will consist of a three-part learning journey giving students the opportunity to acquire knowledge, develop skill and practice. Each lesson will include:

- the exposition of key subject knowledge
- a close examination of question and mark scheme ensuring students understand exactly what is required of them
- the embedding of a clear and simple methodology for each task
- continuous formative assessment and retrieval of key points and knowledge-based responses
- the chance to practice the skills with realistic scaffolded questions
- summative assessments of each question type and self-assessment against clearly explained modelled responses
- live delivery by a highly experienced practitioner and assessment expert.





Assessment

Assessment will be both formative and summative and will take place through a variety of checkpoints within the lesson using polls, multiple choice checking and matching exercises to embed key knowledge and information. More developed exercises such as cloze responses or scaffolded build and challenge activities will enable students to demonstrate more detailed and thoughtful answers. English Language obviously requires longer written responses and students will have the opportunity to match their longer written pieces against carefully annotated models – these will be presented through live discussion and clear explanation by our subject expert to enable successful self-assessment and targets for improvement.

Differentiation

It must be noted and acknowledged that English Language is different to the other core compulsory subjects at GCSE: Mathematics and Science, in that this specification is not tiered. The two examinations cover Grades 9-1. This is challenging, as there is an expectation that all students working without access requirements will be able to read and access the same source material – this is no longer differentiated in any way. As a result of this, the course will provide challenging reading material, scaffolded by audio clips, think aloud and tips for managing the reading load throughout. All students will need to be able to tackle the same set of questions.

However, the formulation of the mark scheme allows us to be able to differentiate this course by developing outcomes for students in three ways. The mark scheme grids operate on a four-level basis delineating the skill level of the same set of descriptors. For example, in the grid below you will see how the same required skills (use of subject terminology/selection of textual detail/ work on the effect of



language) appear in each level of the grid but are described with differing levels of success: some/attempts; clear/relevant; detailed /perceptive. This success criteria will be the driving force for differentiation within this skills-based course.

It must be noted that while grade boundaries are subject to change dependent on the outcomes of each particular cohort, the grade descriptors in the specification directly relate to the language of the mark scheme and it is from that we take our cue.

Level 4 - Detailed, perceptive 7-8 marks	 Shows detailed and perceptive understanding of language: Analyses the effects of language Selects a judicious range of textual detail Makes sophisticated and accurate use of subject terminology
Level 3 - Clear, relevant 5-6 marks	 Shows clear understanding of language: Explains clearly the effects of language Selects a range of relevant textual detail Makes clear and accurate use of subject terminology
Level 2 - Some attempts 3-4 marks	 Shows some understanding of language: Attempts to comment on the effect of language Selects some appropriate textual detail Makes some use of subject terminology



- Students working towards Grades 3-5 will be shown how to move their work from the simple, limited, and generic Level 1 responses with the objective of answering every question on the paper firmly in Level 2 with a focus on the 2/3 borderline.
- Students working in the 5-7 range will have a focus on developing the clarity and relevance of their work to achieve all of Level 3.
- Students working in the 7-9 range will have the chance to develop work with more depth and sophistication to match the demands of Level 4.

The basic principles and skillset remain the same in each band of the mark scheme and each student needs to be able to demonstrate those skills to fully achieve the appropriate level – this is the beauty of our tried and tested methods. However, clear modelling and explanation of sample responses will provide the backbone for differentiated outcomes in student work.



Programme of Study

Paper 1

Week	Lesson Title	Summary of Lesson Content
1	Developing basic comprehension skill	Intro and overview. Introducing the idea of 'what' and 'how' linked to AO1 and AO2. The art of the clear statement sentence. How to select and support evidence. What is an inference?
2	Developing knowledge and skill with language	Introducing AO2. What are Language Features? Building language knowledge. Developing subject terminology. Building skill with effects.
3	Applying language knowledge and skill to P1 Q2	The method for AO2. The Magic 3: language.



		How to match the mark scheme. Scaffolded practice P1 Q2 with modelled responses.
3	Applying language knowledge and skill to P1 Q2	The method for AO2. The Magic 3: language. How to match the mark scheme. Scaffolded practice P1 Q2 with modelled responses.
4	Developing knowledge and skill with structure	More about AO2. What is structure? What are structural features? Developing subject terminology. Dealing with structure without regurgitating content.
5	Applying structural knowledge and skill to P1 Q3	The method for AO2 recap. The Magic 3: structure. How to match the mark scheme. Scaffolded practice P1 Q3 with modelled responses.



6	Developing writing skills: constructing and creating an effective narrative	 What have I learned about narrative? Developing knowledge and practice in: Structure and sequence Plot Storytelling Managing character Managing setting Managing dialogue. Workshopping a narrative. Modelled responses.
7	Developing writing skills: Constructing and creating an effective description	 What have I learned about description? Developing knowledge and practice in: Sequencing Creating imagery Effective vocabulary choices Sentence variety for impact. Workshopping a description.



		Modelled responses.
8	Applying writing skills: constructing an effective examination response.	Understanding the mark scheme for writing. Understanding AO5 and AO6 Planning and writing a P1 Q5. The Magic 5: managing timing and quality.
9	Developing skills for critical evaluation	Putting the 'What' and the 'How' together. Building skills for critical evaluation using clear comprehension methods and clear analytical skills. How to plan and annotate to build a longer response: selection skill
10	Applying critical evaluation skill: creating the effective mini essay.	Understanding AO4. How to match the mark scheme with an effective method. Scaffolded approaches to the task. Practice P1 Q4 with modelled responses.
11	Mock Paper 1	A walking talking practice Paper 1 in real time with feedback and modelled responses.



Paper 2

Week	Lesson Title	Summary of Lesson Content
12	Working with two non-fiction texts	Dealing with non-fiction texts.
		Text types, purposes, form.
		Feeling confident with nineteenth century texts.
		Working with complex sentence structures and sophisticated vocabulary.
13	Developing skills for AO1 synthesis of	Recapping on the 'What'.
	ideas.	A clear comprehension method for AO1.
		How to work with two texts.
		Planning and retrieving information.
		Creating effective inferences.
		How to match the mark scheme.
		Scaffolded practice P2 Q2 with modelled responses.
14	Applying language skills to a	Recapping on the 'How'.
	non-fiction text	Recap and add to our language knowledge: specifics of non-fiction writing.



		Matching the method to the mark scheme: recap. Feeling confident with 19 th century language. Scaffolded practice P2 Q3 with modelled responses.
15	Developing skills for AO3 comparison.	Writers' perspectives, experiences, viewpoints. Introducing comparative skills. Working with two texts in a timely way. Dealing with the 'what' and the 'how' to hit the specifics of the mark scheme. Scaffolded practice P2 Q4 with modelled responses.
16	Developing writing skills in non-fiction writing: speeches	 Writing non-fiction: what is rhetoric and how does it help us to write a speech? Understanding key rhetorical devices. Purpose and audience. Effective openings and endings. The key to planning. The Magic 5: managing timing. Matching the mark scheme.
17	Developing writing skills in non-fiction writing: articles	Adapting the principles: effective journalistic writing. Purpose and audience. Topic sentences.



		Techniques for structure and organisation. Adding professional touches: sophisticated ideas and vocabulary.
18	Developing writing skills in non-fiction writing: articles	Adapting the principles: the strongly worded letter Letter writing conventions. Purpose and audience. Managing tone. Keeping it real without the rant.
19	Mock paper 2	A walking talking practice Paper 2 in real time with feedback and modelled responses.
20	Recap and Revise: a walk through both papers.	A final workshop recapping on all the key information, messaging, and checklists for success with modelled responses and Q and A walking through both mock examination papers.



END