Exam Board:	AQA
Subject:	Chemistry
Topics:	**Paper 1 - 70 marks (1hr 15min)** Atomic structure and the periodic table; Bonding, structure, and properties of matter; Quantitative chemistry; Chemical changes; Energy changes **Paper 2 - 70 marks (1hr 15min)** Rate and extent of chemical change, organic chemistry, chemical analysis, the atmosphere, using resources and skills

Exam Information, guidance and hints

Command words:

- Complete - Fill in gaps/add labels
- Balance - Add large numbers only in front of chemical formula
- Give - Recall a simple fact
- Draw - Draw a symbol, diagram or graph
- Describe - Give details about an event, idea or a process
- Explain - Give reasons for an event, idea or process (use because/so)
- Define - write the meaning of a word or term
- Compare - Identify how things are similar/different
- Suggest - Use your own knowledge in an unfamiliar context
- Plan - Write a method for carrying out a practical
- Calculate - Use numbers in a formula
- Name - Recall the name of a piece of equipment or person
- Estimate - Use data and evidence to predict a value

Hints/tips:

- Use a ruler for straight lines of best fit but not curved lines.
- For calculation questions, use the equations provided
- Ensure you give to answers to the stated number of significant figures or decimal places
- When asked about observations, refer to what you can see happening, not what you know is happening at a molecular level
- When comparing, use comparative language such as whereas, larg**er**, small**er etc**
- Ensure you refer to data in graphs and tables when asked to in order to support your explanations
- Uncertainty is calculated by dividing the range of the data by 2.

Online Resources

- Cognito past papers
- Required Practical Videos from Malmsbury Science - Youtube

Paper 1 - Foundation Example Papers and Markschemes			**Paper 1 - Higher Example Papers and Markschemes**		
2018 F Paper	Annotated P1	2018 MS	2018 H paper	Annotated P1	2018 MS
2019 F Paper	Annotated P1	2019 MS	2019 H Paper	Annotated P1	2019 MS
2020 F Paper	Annotated P1	2020 MS	2020 H Paper	Annotated P1	2020 MS
Paper 2 - Foundation Example Papers and Markschemes			**Paper 2 - Higher Example Papers and Markschemes**		
2018 F Paper	Annotated P2	2018 MS	2018 H paper	Annotated P2	2018 MS
2019 F Paper	Annotated P2	2019 MS	2019 H Paper	Annotated P2	2019 MS
2020 F Paper	Annotated P2	2020 MS	2020 H Paper	Annotated P2	2020 MS

PLC Chemistry Paper 1

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
				Red	Amber	Green
Atoms	Identify compounds, elements and mixtures	R447	https://cognitoedu.org/coursesubtopic/c2-gcse-aqa-h-t_1.03			
Atoms	Identify the correct equipment to separate mixtures	R550	https://cognitoedu.org/coursesubtopic/c2-gcse-aqa-h-t_1.06			
Atoms	Identify the difference between metals and nonmetals, including their properties	R444	https://cognitoedu.org/coursesubtopic/c2-gcse-aqa-h-t_1.12			
Atoms	Identify the numbers of protons, neutrons and electrons in an atom including completing the electronic structure and explain what the mass and atomic numbers mean.	R945	https://cognitoedu.org/coursesubtopic/c2-gcse-aqa-h-t_1.01			
Atoms	Describe the size and mass of atoms and the subatomic particles they are made from	R646	https://www.youtube.com/watch?v=-FBk8cNvJds			
Atoms	Describe the models of the atom and how models of the atom have changed over time	R793	https://cognitoedu.org/coursesubtopic/c2-gcse-aqa-h-t_1.08			
Atoms	Describe how elements have isotopes and why isotopes are different to atoms	R365 R330	https://cognitoedu.org/coursesubtopic/c2-gcse-aqa-h-t_1.02			
Atoms	Describe the reactions of the group 1 elements	R406	https://cognitoedu.org/coursesubtopic/c2-gcse-aqa-h-t_1.14			
Atoms	Describe the reactions of the group 7 elements	R580	https://cognitoedu.org/coursesubtopic/c2-gcse-aqa-h-t_1.15			
Atoms	Explain the properties of the Group 0 elements	R572	https://www.youtube.com/watch?v=EReyx5QoUSs			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
				Red	Amber	Green
Bonding	Describe the differences in the states of matter, solid, liquid and gas	R252	https://cognitoedu.org/coursesubtopic/c2-gcse-aqa-h-t_2.12			
Bonding	Identify the state symbols associated with chemical equations	R272	https://www.youtube.com/watch?v=h7ErVAZbeu0			
Bonding	Identify the three different types of bond that can form	R868	https://www.youtube.com/watch?v=vUbUoyR6Log			
Bonding	Describe what happens during ionic bonding and represent it on a dot and cross diagram	R868 R557	https://www.youtube.com/watch?v=MdU44WeiLps&t=90s			
Bonding	Explain the properties of ionic compounds	R581	https://www.youtube.com/watch?v=ybi6kQHKVws			
Bonding	Describe how ions are formed	R199	https://cognitoedu.org/coursesubtopic/c2-gcse-aqa-h-t_2.01			
Bonding	Describe metallic bonding and describe the properties of alloys.	R928	https://cognitoedu.org/coursesubtopic/c2-gcse-aqa-h-t_2.1			
Bonding	Draw dot and cross diagrams to show covalent bonding and describe what covalent bonding is.	R467	https://www.youtube.com/watch?v=7IkYm7ZgiAw			
Bonding	Explain the properties of simple covalent molecules	R283	https://www.youtube.com/watch?v=u_KR0UaZFkY			
Bonding	Identify a selection of giant covalent structures and describe their structure and properties	R916	https://www.youtube.com/watch?v=SxuldWdqFB0			
Bonding	Describe the structure of fullerenes and graphene	R916	https://cognitoedu.org/coursesubtopic/c2-gcse-aqa-h-t_2.09			
Bonding	Describe the structure of diamond and	R916	https://cognitoedu.org/coursesubtopic/c2-gcse-aq			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
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	graphite		a-h-t_2.08			
Bonding	Describe what polymers are and how they form as well as representing them in diagrams	R371	https://www.youtube.com/watch?v=EP0zfm_FVqc&t=65s			
Quantitative chemistry	Calculate relative formula mass and percentage by mass	R195	https://cognitoedu.org/coursesubtopic/c2-gcse-aqa-h-t_3.01			
Quantitative chemistry	Calculate the concentration of solutions	R807 R262	https://cognitoedu.org/coursesubtopic/c2-gcse-aqa-h-t_3.08			
Quantitative chemistry	Explain the law of conservation of mass	R533	https://www.youtube.com/watch?v=YZi5DnMX0XM			
Quantitative chemistry	Explain mass changes when a product or reactant is a gas	R533	https://www.youtube.com/watch?v=YZi5DnMX0XM			
Quantitative chemistry	Define what a mole is and calculate moles using the moles = mass / molecular mass equation	R223	https://www.youtube.com/watch?v=kBImEfS_P00			
Quantitative chemistry	**Higher tier only: Calculate the amounts of substances in equations**	R624	https://www.youtube.com/watch?v=TV6n5MFH6IU https://www.youtube.com/watch?v=5zOpoeN0dV0&t=7s			
Quantitative chemistry	**Higher tier only: Balance equations using mole calculations and ratios**	R143	https://www.youtube.com/watch?v=4wTSLBBBMo0			
Quantitative chemistry	**Higher tier only: Calculate the limiting reactant masses in equations**	R380	https://www.youtube.com/watch?v=LTnhZvyOvFU			
Chemical	Describe metal oxides and how they form as	R681	https://www.youtube.com/watch?v=Lk1V0buHEFs			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
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changes	well as writing word equations for their formation					
Chemical changes	Place metals in order of reactivity in the reactivity series and determine other metal positions based on known reactions	R981	https://www.youtube.com/watch?v=NBw5s7cuwMc			
Chemical changes	Identify displacement reactions	R640	https://cognitoedu.org/coursesubtopic/c2-gcse-aqa-h-t_4.06			
Chemical changes	**Higher tier only: Identify oxidation and reduction in terms of electrons**	R245	https://www.youtube.com/watch?v=gnbuTI2arIl			
Chemical changes	Describe how metals react with acids and write word equations for it,	R681	https://www.youtube.com/watch?v=NBw5s7cuwMc&t=13s			
Chemical changes	Write word equations for the formation of soluble salts from metal oxides, hydroxides and carbonates	R828 R142	https://www.youtube.com/watch?v=vcxlISVJ6Os			
Chemical changes	Plan a method to make a soluble salt	R885 R412	https://cognitoedu.org/coursesubtopic/c2-gcse-aqa-h-t_11.01			
Chemical changes	Acids and alkali properties and reactions and neutralisation reactions	R529	https://cognitoedu.org/coursesubtopic/c2-gcse-aqa-h-t_4.01			
Chemical changes	**Higher tier only: explaining neutralisation reactions and calculate the concentration of an acid after a titration**	R892 R297	vhttps://cognitoedu.org/coursesubtopic/c2-gcse-aqa-h-t_4.04			
Chemical changes	**Higher Tier only: Explain the difference between strong and weak acids**	R629	https://cognitoedu.org/coursesubtopic/c2-gcse-aqa-h-t_4.03			
Chemical changes	Describe how molten electrolysis works	R672	https://cognitoedu.org/coursesubtopic/c2-gcse-aqa-h-t_4.1			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
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Chemical changes	Describe how aqueous electrolysis works	R279	https://cognitoedu.org/coursesubtopic/c2-gcse-aqa-h-t_4.12			
Chemical changes	Explain how to separate metals from oxides	R483	https://cognitoedu.org/coursesubtopic/c2-gcse-aqa-h-t_4.08			
Chemical changes	**Higher tier only: describe and explain redox reactions including half equations**	R245	https://cognitoedu.org/coursesubtopic/c2-gcse-aqa-h-t_4.09			
Energy changes	Describe what endothermic and exothermic reactions are	R833	https://cognitoedu.org/coursesubtopic/c2-gcse-aqa-h-t_5.01			
Energy changes	Draw and explain the shape of reaction profile graphs	R675	https://www.youtube.com/watch?v=hNNvIsQLSV8			
Energy changes	Investigate how temperature changes in different practical situations	R466	https://cognitoedu.org/coursesubtopic/c2-gcse-aqa-h-t_11.04			
Energy changes	**Higher: Calculate bond energies to determine if a reaction is endothermic or exothermic**	R769	https://cognitoedu.org/coursesubtopic/c2-gcse-aqa-h-t_5.02			
Skills	Calculate the uncertainty in a set of results	R756	https://www.youtube.com/watch?v=sXeUIGW3nRY			
Skills	Convert chemical units such as dm^3 and cm^3	R322	https://www.youtube.com/watch?v=rluAIfmi7x8&t=107s			

PLC Chemistry Paper 2

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
				Red	Amber	Green
Rates of Reaction	Describe what collision theory is	R895	https://www.youtube.com/watch?v=wbGgIfHsx-I			
Rates of Reaction	Describe how to investigate rates of reaction by collecting gas	R280	https://www.youtube.com/watch?v=ssa3wh3RNt0&t=34s			
Rates of Reaction	Explain the effect of factors such as temperature, surface area, concentration and pressure on the rate of a reaction	R895	https://www.youtube.com/watch?v=-4HXaUBbv04			
Rates of Reaction	Explain the effect of adding a catalyst to a reaction	R601	https://www.youtube.com/watch?v=-4HXaUBbv04			
Rates of Reaction	Describe what a reversible reaction and equilibrium are	R768	https://www.youtube.com/watch?v=ty9TczsW5ew			
Rates of Reaction	Explain how energy changes occur in reversible reactions	R768	https://www.youtube.com/watch?v=5rC6f_P_A48			
Rates of Reaction	**HT Only:** Draw tangents to curves to allow for rates of reaction to be calculated	R771	https://www.youtube.com/watch?v=6LV63WtuvJg			
Rates of Reaction	**HT Only:** Calculate the rate of a reaction using quantities in terms of moles	R771	https://www.youtube.com/watch?v=UkrBJ6-uGFA&list=PL9IouNCPbCxW8AN0t0py7LaKdKSwfL3fP			
Rates of Reaction	**HT ONLY:** Use Le Chatelier's principles to explain changes in reaction yields	R115	https://www.youtube.com/watch?v=IYyoncESnmQ			
Organic Chemistry	Draw the displayed structure of hydrocarbons	R837	https://www.youtube.com/watch?v=CX2IYWggEBc			
Organic Chemistry	Describe the structure of hydrocarbons	R837	https://www.youtube.com/watch?v=CX2IYWggEBc			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
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Organic Chemistry	Compare alkanes and alkenes	R837 R418	https://www.youtube.com/watch?v=Sfm3eHe57PU			
Organic Chemistry	Describe how fractional distillation is used to produce different fractions	R205	https://www.youtube.com/watch?v=CjmriZq5xRo			
Organic Chemistry	Describe the process of cracking	R240	https://www.youtube.com/watch?v=7AWwjKbRa_o			
Organic Chemistry	Describe the process of fractional distillation	R205	https://www.youtube.com/watch?v=CjmriZq5xRo&t=13s			
Organic Chemistry	Describe the structure and formation of the alkenes	R418	https://www.youtube.com/watch?v=CmANMHeeZgw			
Organic Chemistry	Explain why hydrocarbons are useful as fuels	R837	https://www.youtube.com/watch?v=8PM_tWNFbGY			
Chemical Analysis	Describe what is meant by a pure substance	R281	https://www.youtube.com/watch?v=3oJxWwcnfJY			
Chemical Analysis	Describe how to test for different gases	R443	https://www.youtube.com/watch?v=bcRGfSIMIMw			
Chemical Analysis	Define and give examples of formulations	R256	https://www.youtube.com/watch?v=-OtJI-R-4rU			
Chemical Analysis	Describe how to carry our paper chromatography	R638	https://www.youtube.com/watch?v=TdJ57SQ6GAQ			
Chemical Analysis	Interpret chromatograms from a chromatography investigation	R720	https://www.youtube.com/watch?v=sCvKP_NFG4c			
Chemical Analysis	Analyse and calculate Rf values from chromatograms	R720	https://www.youtube.com/watch?v=TdJ57SQ6GAQ			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
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Atmosphere	Describe how the percentages of different gases in the atmosphere have changed over time	R225	https://www.youtube.com/watch?v=l0h_-3M0Pso			
Atmosphere	Explain why the composition of the atmosphere has changed over time	R225	https://www.youtube.com/watch?v=DnFcyhsSVGg			
Atmosphere	Identify and explain the effects of greenhouse gases	R728	https://www.youtube.com/watch?v=Z_b2A-d5hGY			
Atmosphere	Explain how humans are contributing to global climate change	R728	https://www.youtube.com/watch?v=rqWzK_DehcY			
Atmosphere	Explain the impact of carbon footprints and how they can be reduced	R873	https://www.youtube.com/watch?v=A74Sf8U3v_E			
Atmosphere	Explain the effects of atmospheric pollutants	R119	https://www.youtube.com/watch?v=2ri95j0cShg&t=140s			
Resources	Explain the importance of sustainable development	R912	https://www.youtube.com/watch?v=pKOf6WvYgMQ			
Resources	Describe the processes involved in producing potable water from groundwater, salt water and sewage	R898	https://www.youtube.com/watch?v=PDeiRlQvWnM			
Resources	Describe how to calculate the mass of salt found in a salt solution	R759	https://www.youtube.com/watch?v=DikcEq2wg8g&t=167s			
Resources	Evaluate the use of different materials and their impact on the environment	R228	https://www.youtube.com/watch?v=obb-ZHqBw10			
Resources	Explain the importance of life cycle assessments and how to carry one out	R826	https://www.youtube.com/watch?v=-i_Eug83uzo			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
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Resources	Explain how to reduce the use of resources	R228	https://www.youtube.com/watch?v=BrMcHPwHat8			
Resources	**HT Only:** Explain how to extract metals from their low grade ores	R403	https://www.youtube.com/watch?v=b5RVPauf4oM			
Skills	Calculate relative formula mass	R195	vhttps://www.youtube.com/watch?v=it_fMQu5ivg			
Skills	Identify variables in an investigation	N/A	https://www.youtube.com/watch?v=nKbUbfadxRU			
Skills	Draw a variety of different types of graph (bar, scatter)	R703 R148	https://www.youtube.com/watch?v=VM3i6-gvKSA			