

AQA GCSE Chemistry: Foundation

Advance Information of Assessed Content 2022

Link to specification: [GCSE Chemistry Specification Specification for first teaching in 2016 \(aqa.org.uk\)](#)

Link to advance information document: [Advanced information June 2022 - GCSE Chemistry \(8462\) \(aqa.org.uk\)](#)

Chemistry Paper 1 - F

These specification points will be the **major focus** of this paper.

Exam date: 27th May

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Spec point	Concepts	CGP revision guide pages	Bitesize	YouTube
4.1.1 A simple model of the atom, symbols, relative atomic mass, electronic charge and isotopes	<ul style="list-style-type: none"> - Atoms, elements and compounds - Mixtures - The development of the model of the atom - Relative charges of subatomic particles - Size and mass of atoms - Relative atomic mass - Electronic structure 	12-20	https://www.bbc.co.uk/bitesize/guides/zg2h4qt/revision/1 https://www.bbc.co.uk/bitesize/guides/zpbkh39/revision/1 https://www.bbc.co.uk/bitesize/guides/z3sg2nb/revision/1	https://www.youtube.com/watch?v=fN8kH9Vvqo0&t=6s https://www.youtube.com/watch?v=iyCLDHG1PCA https://www.youtube.com/watch?v=jBDr0mHyc5M https://www.youtube.com/watch?v=vi_SJBnxmHo https://www.youtube.com/watch?v=sG6QoLxwlw4
4.1.2 The Periodic Table	<ul style="list-style-type: none"> -The Periodic Table is arranged in order of proton number -What atoms of elements in the same group have in common -What atoms of elements in the same period have in common -development in the Periodic Table -ions formed from metals and non-metals -trends in physical and chemical properties of group 1,7 and 0 elements - Reactions of group 1 and 7 elements 	21-26	https://www.bbc.co.uk/bitesize/guides/z3sg2nb/revision/1 https://www.bbc.co.uk/bitesize/guides/zg923k7/revision/1 https://www.bbc.co.uk/bitesize/guides/zqwtcj6/revision/1	https://www.youtube.com/watch?v=IdS9roW7IzM&t=119s https://www.youtube.com/watch?v=uwzXfZoCP_k https://www.youtube.com/watch?v=dZGDUKQa_6g https://www.youtube.com/watch?v=HT1zAPQIBAQ

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4.2.1 Chemical bonds, ionic, covalent and metallic	<ul style="list-style-type: none"> -Describe the process of ionic bonding -Describe the process of covalent bonding -Describe the process of metallic bonding -explain chemical bonding in terms of electrostatic forces and the transfer or sharing of electrons. -work out the charge on the ions of metals and non-metals from the group number of the element, limited to the metals in Groups 1 and 2, and non-metals in Groups 6 and 7 -Describe the structure of ionic compounds -draw dot and cross diagrams for the molecules of hydrogen, chlorine, oxygen, nitrogen, hydrogen chloride, water, ammonia and methane -Describe the structure of metals 	28-32	https://www.bbc.co.uk/bitesize/guides/zyydn8/revision/1 https://www.bbc.co.uk/bitesize/guides/zcpjfcw/revision/1 https://www.bbc.co.uk/bitesize/guides/z8db7p3/revision/1	https://www.youtube.com/watch?v=6DtrrWA5nkE https://www.youtube.com/watch?v=lenvZEcMc60 https://www.youtube.com/watch?v=lhEm7aAKIDg https://www.youtube.com/watch?v=5I_1jRGS9E https://www.youtube.com/watch?v=b1y2Q6YX1bQ https://www.youtube.com/watch?v=A-wTpLPICd0&t=13s
4.2.2 How bonding and structure are related to the properties of a substance	<ul style="list-style-type: none"> -interpreting melting and boiling point data to determine state at a certain temp -link energy needed to change state to strength of forces between particles -state symbols -describe & explain properties of ionic compounds -describe & explain properties of simple covalent molecules -describe & explain properties of polymers -describe & explain properties of metals and alloys 	28-33,35-37	https://www.bbc.co.uk/bitesize/guides/zyydn8/revision/1 https://www.bbc.co.uk/bitesize/guides/zcpjfcw/revision/1 https://www.bbc.co.uk/bitesize/guides/z9twsrd/revision/1 https://www.bbc.co.uk/bitesize/guides/z8db7p3/revision/1	https://www.youtube.com/watch?v=leVxy7ciZMU https://www.youtube.com/watch?v=DECGNyC-x_s https://www.youtube.com/watch?v=EP0zfm_FVqc https://www.youtube.com/watch?v=A-wTpLPICd0

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4.2.4 Bulk and surface properties of matter including nanoparticles	<ul style="list-style-type: none">- Sizes of particles and their properties- Uses of nanoparticles	38-39	https://www.bbc.co.uk/bitesize/guides/z8m8pbk/revision/1	https://www.youtube.com/watch?v=70dOzvhn-8M

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4.4.2 Reactions of Acids	<ul style="list-style-type: none"> -Naming Salts -products of the reactions of acids and metals -explain the reactions of metals and acids in terms of loss and gain of electrons -products of the reactions of acids and alkalis and insoluble bases -products of the reactions of acids and metal carbonates -pH scale and neutralisation -difference between strong and weak acids 	51-57	https://www.bbc.co.uk/bitesize/guides/zcjfcw/revision/1	<p>https://www.youtube.com/watch?v=ofw6oHSYGF1</p> <p>GCSE Science Revision Chemistry "Acids Reacting with Metals 2" - YouTube</p> <p>https://www.youtube.com/watch?v=QISsle_jSQ8</p>
4.5.1 Exothermic and endothermic reactions	<ul style="list-style-type: none"> -describe the law of the conservation of energy -define exo and endothermic reactions and describe their features -give examples of exo and endothermic reactions -define activation energy -represent exo and endothermic reactions with reaction profiles -describe bond breaking in the reactants as an endothermic process -describe bond formation in the products as an exothermic process -calculate the energy transferred in chemical reactions using bond energies supplied -Use energy change values to identify if a reaction is exo/endothermic 	61-62	https://www.bbc.co.uk/bitesize/guides/zwfr2nb/revision/1	<p>https://www.youtube.com/watch?v=4HS6D0hTzdg</p> <p>https://www.youtube.com/watch?v=dstRL5xB0Sk</p> <p>https://www.youtube.com/watch?v=it0HGXhxD-s</p> <p>https://www.youtube.com/watch?v=eExCBkp4jB4</p> <p>https://www.youtube.com/watch?v=PdValXAVUOc</p>

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4.4.2.3 and Required Practical 1: preparation of a pure, dry sample of soluble salts	-method of producing solid salt crystals from insoluble oxide or carbonate and acids -identifying errors in methods and reagents	54 bottom half	https://www.bbc.co.uk/bitesize/guides/zcjjfcw/revision/6	https://www.youtube.com/watch?v=9GH95172Js8&t=16s GCSE Science Revision Chemistry "Strong and Weak Acids" – YouTube
4.4.2.5 and Required practical 2: determination of the reacting volumes of solutions of a strong acid and a strong alkali by titration.	-Method -control variables and how to monitor them -quantitative analysis of results	52 top half	https://www.bbc.co.uk/bitesize/guides/zx98pbk/revision/1	https://www.youtube.com/watch?v=saRBT5oZfh8 https://www.youtube.com/watch?v=vn3Rx3g1VPk https://www.youtube.com/watch?v=x8DLLCNMKAs https://www.youtube.com/watch?v=ycC4oKteRJu
Required Practical 4: investigate the variables that affect temperature changes in reacting solutions such as, eg acid plus metals, carbonates, neutralisations, displacement of metals	-Identifying independent, dependent, control variables -Analysing results -identifying exo and endothermic reactions from experimental results	62 top half	https://www.bbc.co.uk/bitesize/guides/zwfr2nb/revision/2	https://www.youtube.com/watch?v=Bz0C9mmF2tw

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Chemistry Paper 1 - F

Exam date: 20th June

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Spec point	CGP Revision Guide Pages
4.5.2 Chemical cells and fuel cells	64-65

Chemistry Paper 2 - F

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Exam date: 20th June

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Spec point	Concepts	CGP revision guide pages	Bitesize	YouTube
4.6.1 Rate of Reaction	<ul style="list-style-type: none"> -Calculating the rate of a reaction -Calculate the gradient of a tangent to the curve on these graphs as a measure of rate of reaction at a specific time. -Describe collision theory -Define activation energy -Describe and explain the factors that increase the rate of reaction -Describe and explain the effect of catalysts on rate of reaction 	67-69, 71	https://www.bbc.co.uk/bitesize/guides/z3nbqhv/revision/1	https://www.youtube.com/watch?v=UkrBJ6-uGFA https://www.youtube.com/watch?v=GCR5xeduq2o https://www.youtube.com/watch?v=-4HXaUBbv04 https://www.youtube.com/watch?v=hel8fQjxcO8
Required Practical 5: investigate how concentration affects the rates of reaction by a method involving measuring the volume of a gas produced/change in colour	<ul style="list-style-type: none"> -identify independent, dependent and control variables -describe how to measure the dependent variable -analyse results and draw conclusions from graphed data -calculate rate of reaction from data 	69-70	Required practical - measure the production of a gas - Rates of reaction - AQA - GCSE Chemistry (Single Science) Revision - AQA - BBC Bitesize	https://www.youtube.com/watch?v=N5p06i9ilmo https://www.youtube.com/watch?v=GI6LVI7oAIU

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Spec point	Concepts	CGP revision guide pages	Bitesize	YouTube
4.6.2 Reversible reactions and dynamic equilibrium	<ul style="list-style-type: none">-Identify and give examples of reversible reactions-Apply the conservation of energy to reversible reactions-Define dynamic equilibrium	72	https://www.bbc.co.uk/bitesize/guides/zyhvw6f/revision/1	https://www.youtube.com/watch?v=66qcNNJFy6E GCSE Science Revision Chemistry "Concentration and Reversible Reactions" – YouTube GCSE Science Revision Chemistry "Pressure and Reversible Reactions" – YouTube GCSE Science Revision Chemistry "Temperature and reversible reactions" – YouTube GCSE Chemistry - Le Chatelier's Principle #42 (Higher Tier) – YouTube

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Spec point	Concepts	CGP revision guide pages	Bitesize	YouTube
4.7.1 Carbon compounds as fuels and feedstock	<ul style="list-style-type: none"> -describe crude oil as a mixture of different length hydrocarbons -define the term hydrocarbon -identify the first 4 alkanes from their chemical formula and name them -Describe the trend in properties as hydrocarbon chain length increases -Describe and explain the process of fractional distillation -describe the process of cracking -describe the use of alkenes 	75-78, test for alkenes 79 bottom	https://www.bbc.co.uk/bitesize/guides/zshvw6f/revision/1	https://www.youtube.com/watch?v=CX2IYWggEBc https://www.youtube.com/watch?v=3I7yCkSXPos https://www.youtube.com/watch?v=7AWwjKbRa_o
4.8.3 The identification of ions by chemical and spectroscopic means	<ul style="list-style-type: none"> - Flame tests - Metal hydroxides, testing for metal ions in solution - Testing for carbonates - Testing for halides - Testing for sulfates - Instrumental methods - Flame emission spectroscopy 	88-90	https://www.bbc.co.uk/bitesize/topics/z2tpmsg	https://www.youtube.com/watch?v=mWTgHjdea4Y https://www.youtube.com/watch?v=dBvpd9RhX8E https://www.youtube.com/watch?v=Bd0A44lv2O!

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Spec point	Concepts	CGP revision guide pages	Bitesize	YouTube
Required practical 6: Investigate how paper chromatography can be used to separate and tell the difference between coloured substances. Students should calculate R_f values	<ul style="list-style-type: none"> - Describe the method of chromatography - Identify the mobile phase, stationary phase, solute - Calculate R_f value 	87	https://www.bbc.co.uk/bitesize/guides/zqqrwx/revision/3 https://www.bbc.co.uk/bitesize/guides/zqqrwx/revision/4	https://www.youtube.com/watch?v=P8i4QYncQxI
Required practical 7: use of chemical tests to identify the ions in unknown single ionic compounds covering the ions from sections Flame tests through to Sulfates.	<ul style="list-style-type: none"> -Describe reagents and positive results for each ion -Describe method of flame tests 	88-89	https://www.bbc.co.uk/bitesize/guides/zxtvw6f/revision/1	https://www.youtube.com/watch?v=Bd0A44Iv2OI&t=96s https://www.youtube.com/watch?v=4iZRs4XIJOE https://www.youtube.com/watch?v=mWTgHjdea4Y https://www.youtube.com/watch?v=fCZztwJmAlO

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Spec point	Concepts	CGP revision guide pages	Bitesize	YouTube
4.9.1 The composition and evolution of the Earth's Atmosphere	<ul style="list-style-type: none"> -describe the composition of the current atmosphere -describe the composition of the early atmosphere and explain theories of how the early atmosphere formed -explain how the early atmosphere changed to that of the present atmosphere 	91	https://www.bbc.co.uk/bitesize/guides/zg4qfcw/revision/1	https://www.youtube.com/watch?v=t1Z3GINldLA https://www.youtube.com/watch?v=l0h-3MOPso
4.10.1 Using the Earth's resources and obtaining potable water	<ul style="list-style-type: none"> -Describe the renewable and non-renewable resources that we get from the Earth and its atmosphere -Define the term potable water -Describe how potable water can be produced. -Describe the differences in the treatment of waste water, salt water and ground water -Describe and evaluate alternative methods of extracting metals e.g. phytomining and bioleaching 	99, 102,100	https://www.bbc.co.uk/bitesize/guides/zgqhcj6/revision/1 https://www.bbc.co.uk/bitesize/guides/zpcjsrd/revision/1 Biological methods of metal extraction - Higher - Ways of reducing the use of resources - AQA - GCSE Chemistry (Single Science) Revision - AQA - BBC Bitesize	https://www.youtube.com/watch?v=-XczTGavTZU https://www.youtube.com/watch?v=n7pYRQs20bl https://www.youtube.com/watch?v=b5RVPauf4oM

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Spec point	Concepts	CGP revision guide pages	Bitesize	YouTube
4.10.2 Life cycle assessment and recycling	<ul style="list-style-type: none">- Life cycle assessments, identifying the stages and comparing LCAs for shopping bags and paper bags- Ways of reducing the use of resources	101	https://www.bbc.co.uk/bitesize/guides/z96ydxs/revision/1	https://www.youtube.com/watch?v=Znnhe4BJH14 https://www.youtube.com/watch?v=ScY_Yb1V8AY

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4.10.4 The Haber process and the use of NPK fertilisers	<ul style="list-style-type: none"> -Describe the purpose of the Haber process, the reaction and raw materials involved -interpret graphs of reaction conditions versus rate -apply the principles of dynamic equilibrium in Reversible reactions and dynamic equilibrium (4.6.2) to the Haber process -explain the trade-off between rate of production and position of equilibrium -explain how the commercially used conditions for the Haber process are related to the availability and cost of raw materials and energy supplies, control of equilibrium position and rate -Describe NPK fertilisers as formulations of various salts containing appropriate percentages of the elements. -Describe the composition of NPK fertilisers and how they are made -recall the names of the salts produced when phosphate rock is treated with nitric acid, sulfuric acid and phosphoric acid 	104-105	https://www.bbc.co.uk/bitesize/guides/z9tvw6f/revision/1	https://www.youtube.com/watch?v=1_HoWz5Kxfk https://www.youtube.com/watch?v=HAKaD6-7fgQ https://www.youtube.com/watch?v=rKzt9BvvEeQ

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Spec point	CGP Revision Guide Pages
4.8.2 Identification of common gases	88 top half