

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 Atomic Structure	Atoms, elements and compounds Chemical reactions Mixtures Development of the model of the atom Electrical charges of sub atomic particles Size of mass and atoms Relative atomic mass Electronic structure	16-33	https://www.bbc.co.uk/bitesize/topics/zxnftv4	https://www.youtube.com/watch?v=fN8kH9Vvqo0&list=PLidqqIGKox7WeOKVGHxcd69kKqtwrKI8W&index=1 https://www.youtube.com/watch?v=iyCLDHG1PCA&list=PLidqqIGKox7WeOKVGHxcd69kKqtwrKI8W&index=2 https://www.youtube.com/watch?v=jBDr0mHyc5M&list=PLidqqIGKox7WeOKVGHxcd69kKqtwrKI8W&index=3 https://www.youtube.com/watch?v=EBKwG25hRPE&list=PLidqqIGKox7WeOKVGHxcd69kKqtwrKI8W&index=4

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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 	34-46	<p>https://www.bbc.co.uk/bitesize/guides/z3sg2nb/revision/1</p> <p>https://www.bbc.co.uk/bitesize/guides/zg923k7/revision/1</p> <p>https://www.bbc.co.uk/bitesize/guides/zqwtcj6/revision/1</p>	<p>https://www.youtube.com/watch?v=IdS9roW7IzM&t=119s</p> <p>https://www.youtube.com/watch?v=uwzXfZoCP_k</p> <p>https://www.youtube.com/watch?v=dZGDUKQa_6g</p> <p>https://www.youtube.com/watch?v=HT1zAPQIBAQ</p>
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 	47-69	<p>https://www.bbc.co.uk/bitesize/guides/zyyding8/revision/1</p> <p>https://www.bbc.co.uk/bitesize/guides/zcpjfcw/revision/1</p> <p>https://www.bbc.co.uk/bitesize/guides/z8db7p3/revision/1</p>	<p>https://www.youtube.com/watch?v=6DtrrWA5nKE</p> <p>https://www.youtube.com/watch?v=lenvZEcmC60</p> <p>https://www.youtube.com/watch?v=IhEm7aAKIDg</p> <p>https://www.youtube.com/watch?v=5I_1jRGSR9E</p> <p>https://www.youtube.com/watch?v=b1y2Q6YX1bQ</p> <p>https://www.youtube.com/watch?v=A-wTpLPICd0&t=13s</p>

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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	47-69	<ul style="list-style-type: none">https://www.bbc.co.uk/bitesize/guides/zyydng8/revision/1https://www.bbc.co.uk/bitesize/guides/zcpjfcw/revision/1https://www.bbc.co.uk/bitesize/guides/z9twsrd/revision/1https://www.bbc.co.uk/bitesize/guides/z8db7p3/revision/1	<ul style="list-style-type: none">https://www.youtube.com/watch?v=leVxy7cjZMUhttps://www.youtube.com/watch?v=DECGNyC-x_shttps://www.youtube.com/watch?v=EP0zfm_FVqchttps://www.youtube.com/watch?v=A-wTpLPICd0
4.2.4 Bulk and surface properties of matter including nanoparticles	<ul style="list-style-type: none">Size of particles and their propertiesUses of nanoparticles	66-67	<ul style="list-style-type: none">https://www.bbc.co.uk/bitesize/guides/z8m8pbk/revision/1	

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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-produces 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	87-93	https://www.bbc.co.uk/bitesize/guides/zcjjfcw/revision/1	https://www.youtube.com/watch?v=ofw6oHSYGFI GCSE Science Revision Chemistry "Acids Reacting with Metals 2" - YouTube https://www.youtube.com/watch?v=QISsle_jSQ8
4.4.2.3 and Required Practical 1: preparation of a pure, dry sample of soluble salts	<ul style="list-style-type: none">-method of producing solid salt crystals from insoluble oxide or carbonate and acids-identifying errors in methods and reagents	90-92	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

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Spec point	Concepts	CGP revision guide pages	Bitesize	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	87-91	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=ycC4oKteRJJU

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Spec point	Concepts	CGP revision guide pages	Bitesize	YouTube
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 	106-110	https://www.bbc.co.uk/bitesize/guides/zwfr2nb/revision/1	https://www.youtube.com/watch?v=4HS6D0hTzdg https://www.youtube.com/watch?v=dstRL5xBOSk https://www.youtube.com/watch?v=it0HGXhxD-s https://www.youtube.com/watch?v=eExCBkp4jB4 https://www.youtube.com/watch?v=PdValXAVUOc
Required Practical 4: investigate the variables that affect temperature changes in reacting solutions such as, eg acid plus metals, carbonates, neutralisations, displacement of metals	<ul style="list-style-type: none"> -Identifying independent, dependent, control variables -Analysing results -identifying exo and endothermic reactions from experimental results 	106-107	https://www.bbc.co.uk/bitesize/guides/zwfr2nb/revision/2	https://www.youtube.com/watch?v=Bz0C9mmF2tw

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Spec point	CGP Revision Guide Pages
4.5.2 Chemical cells and fuel cells	111-115

Chemistry Paper 2 - F

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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 	117-126	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 	120-123	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 -Describe Le Chatelier's principle -Describe and explain the effect of changing the following conditions on equilibrium; concentration, temperature, pressure 	127-130	https://www.bbc.co.uk/bitesize/guides/zyhvw6f/revision/1	<p>https://www.youtube.com/watch?v=66qcNNJFy6E</p> <p>GCSE Science Revision Chemistry "Concentration and Reversible Reactions" – YouTube</p> <p>GCSE Science Revision Chemistry "Pressure and Reversible Reactions" – YouTube</p> <p>GCSE Science Revision Chemistry "Temperature and reversible reactions" – YouTube</p> <p>GCSE Chemistry - Le Chatelier's Principle #42 (Higher Tier) – YouTube</p>

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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 	132-137	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
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 	157-161	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
4.8.3 Ions	Flame tests can be used to identify some metal ions (cations).	157-160		
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.	-Describe reagents and positive results for each ion -Describe method of flame tests	157-161	https://www.bbc.co.uk/bitesize/guides/zxtvw6f/revision/1	https://www.youtube.com/watch?v=Bd0A44lv2OI&t=96s https://www.youtube.com/watch?v=4iZR54XIJOE https://www.youtube.com/watch?v=mWTgHjdea4Y https://www.youtube.com/watch?v=fCZztwJmAl0

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Spec point	Concepts	CGP revision guide pages	Bitesize	YouTube
4.10.1	distinguish between potable water and pure water • describe the differences in treatment of ground water and salty water • give reasons for the steps used to produce potable water	184-187		
Required prac 6	Investigate how paper chromatography can be used to separate and tell the difference between coloured substances. Students should calculate R _f values.	154		
Req prac 8	Analysis and purification of water samples from different sources, including pH, dissolved solids and distillation	184-186		

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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 	163, 164, 169, 170	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 	184-187	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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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 	188-193	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

Chemistry Paper 2 - F

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Spec point	CGP Revision Guide Pages
4.9.2 Carbon dioxide and methane as greenhouse gases	165-168