

GCSE CHEMISTRY

Insight report: 2018 results at a glance

Published: October 2018



Responsible for multiple sciences?

Results insights are available for all our GCSE specifications:

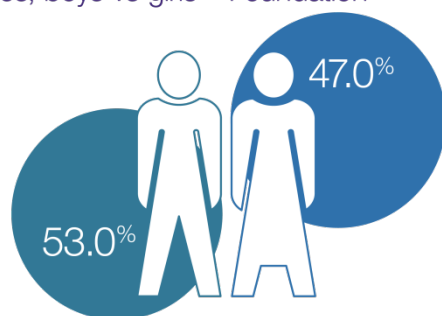
- [Biology](#)
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Foundation tier analysis

Conduct your own analysis using data relevant to you. Watch short [tutorials](#) on using Enhanced Results Analysis (ERA) for school, subject, group or student performance; or log straight in through aqa.org.uk/log-in

Entry volumes, boys vs girls – Foundation
14,244 entries



AQA GCSE Chemistry

Entry volumes, boys vs girls

7,556 boys
6,688 girls.

Grade summary – Foundation

This shows the percentage of students achieving each grade.



AQA GCSE Chemistry

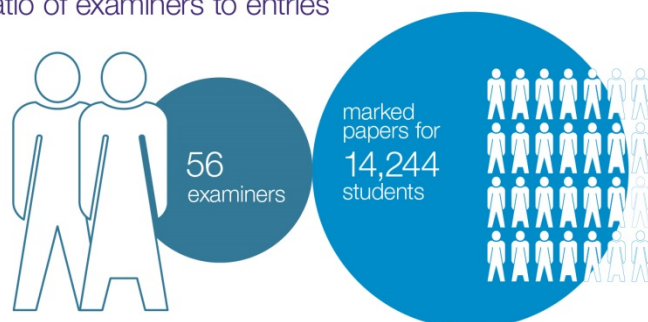
Grade summary –
Foundation

[Watch tutorials](#) on using ERA for results analysis, or log straight in via [e-AQA](#).

Foundation tier analysis cont.

Conduct your own analysis using data relevant to you. Watch short [tutorials](#) on using Enhanced Results Analysis (ERA) for school, subject, group or student performance; or log straight in through aqa.org.uk/log-in

Ratio of examiners to entries

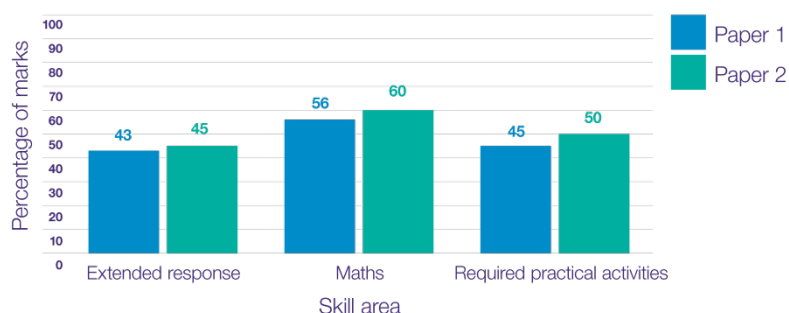


AQA GCSE Chemistry

Ratio of examiners to entries

56 examiners marked papers for 14,244 students.

Performance of students by skill area – Foundation



AQA GCSE Chemistry

Performance of students by skill area – Foundation

On each paper, a number of marks are allocated to test the following skill areas: extended response, maths, and practical skills.

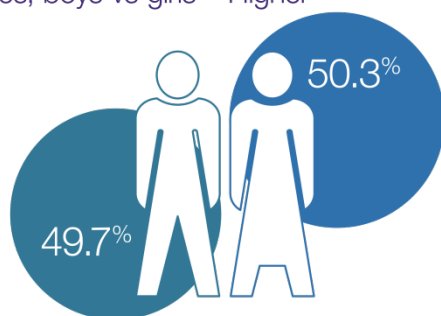
This graphic shows the mean percentage of marks achieved for each skill area.

[Watch tutorials](#) on using ERA for results analysis, or log straight in via [e-AQA](#).

Higher tier analysis

Conduct your own analysis using data relevant to you. Watch short [tutorials](#) on using Enhanced Results Analysis (ERA) for school, subject, group or student performance; or log straight in through aqa.org.uk/log-in

Entry volumes, boys vs girls – Higher
110,340 entries



AQA GCSE Chemistry

Entry volumes, boys vs girls
– Higher

54,824 boys
55,516 girls.

Grade summary – Higher

This shows the percentage of students achieving each grade.



AQA GCSE Chemistry

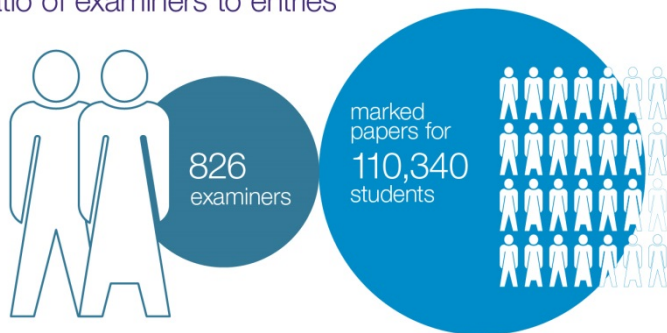
Grades summary – Higher

[Watch tutorials](#) on using ERA for results analysis, or log straight in via [e-AQA](#).

Higher tier analysis cont.

Conduct your own analysis using data relevant to you. Watch short [tutorials](#) on using Enhanced Results Analysis (ERA) for school, subject, group or student performance; or log straight in through aqa.org.uk/log-in

Ratio of examiners to entries

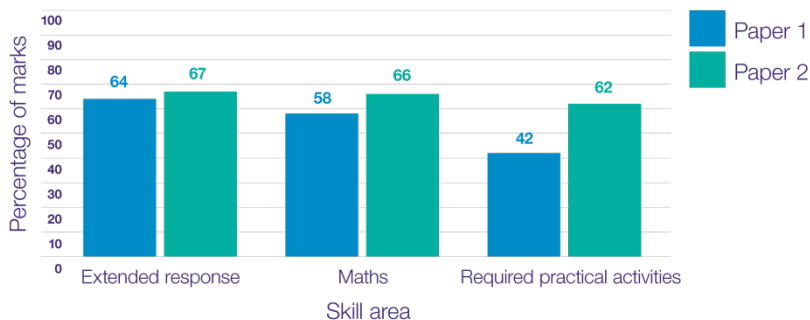


AQA GCSE Chemistry

Ratio of examiners to entries

826 examiners marked papers for 110,340 students.

Performance of students by skill area – Higher



AQA GCSE Chemistry

Performance of students by skill area - Higher

On each paper, a number of marks are allocated to test the following skill areas: extended response, maths, and practical skills.

This graphic shows the mean percentage of marks achieved for each skill area.

[Watch tutorials](#) on using ERA for results analysis, or log straight in via [e-AQA](#).

Grade boundaries

Subject or paper	Max mark	Summer 2018 grade boundaries (raw mark)								
		9	8	7	6	5	4	3	2	1
Chemistry, 8462 (Higher)	200	150	131	112	92	72	52	32	-	-

Subject or paper	Max mark	Summer 2018 grade boundaries (raw mark)								
		9	8	7	6	5	4	3	2	1
Chemistry, 8462 (Foundation)	200	-	-	-	-	127	109	80	52	24

How to interpret grade boundaries

For 2018, Ofqual agreed that all exam boards should widen the allowed grade 3 boundary for the Higher tier of GCSEs Biology, Chemistry and Physics. This means that the distance between the allowed grade 3 and 4 is the same as the distance between 4 and 5. Ofqual acknowledged that, with the structural changes like the removal of untiered controlled assessment, tiering decisions were more complex this year. This decision ensured that Higher tier students who would have been better suited to the Foundation tier were not disadvantaged. Ofqual have indicated this won't be repeated in future, so schools should consider their entry policy carefully for summer 2019. You can [read more on Ofqual's blog](#).

Grade boundaries are set using a mix of statistics and expert judgement

Our Centre for Education Research and Practice (CERP) uses a range of statistics to make predictions that suggest the most appropriate grade boundaries. The statistical evidence considers the prior attainment of the given cohort as well as the distribution of marks. Senior examiners then review a script sample to confirm the statistically recommended marks are sensible for the grade.

Boundary setting is overseen by Ofqual. To find more grade boundaries and learn how they are set, visit aqa.org.uk/exams-administration/results-days/grade-boundaries-and-ums

Qualification summary

This was the first year of the reformed specification. Students appear to have been well prepared, and compared to legacy specifications coped well with:

- the increased length of the paper
- the larger number of extended response questions
- the greater number of calculations.

Some answers to multiple choice questions caused problems because students were not ticking one box. Some students put a line through the options they are discarding. This isn't advised as a line can be confused for a tick.

Imprecise language caused issues for some students. For example the word 'amount' is never specific enough and should be avoided. Students should refer to volume, mass, and amount in moles, as appropriate.

Levels of demand

Questions are set at four levels of demand for this specification with different levels of demand within each of the tiers:

Foundation tier

- Low demand questions are targeted at students working at grades 1–3.
- Standard demand questions are targeted at students working at grades 4–5.

Higher tier

- Standard demand questions are targeted at students working at grades 4–5.
- Standard/high demand questions are targeted at students working at grades 6–7.
- High demand questions are targeted at students working at grades 8–9.

A student's final grade is based on their attainment across the qualification as a whole, not just on questions that may have been targeted at the level they are working to.

Feedback on the exam courses use student responses to explore what happened in each exam series. Visit [aqa.org.uk/chemistry-cpd](https://www.aqa.org.uk/chemistry-cpd)

Paper 1, Foundation (8462/1F)

This is a snapshot. Learn more about every question from the summer 2018 series in our reports on the exam. Visit aqa.org.uk/log-in and follow:

e-AQA > Secure Key Materials > GCSE > Science/PE > Chemistry (new specification) > Reports on the exam

Highlights from summer 2018

Practical based questions

Students struggled to suggest an improvement to a simple filtration apparatus, missing the absence of a plastic funnel, or struggling to name it correctly.

Despite electrolysis being a required practical, some students seemed to be unfamiliar with the apparatus used to collect the gas produced during the process.

Responses to the question on the thermal decomposition of copper carbonate suggested that students had not carried out reactions of this type, reflected on what the experiment was trying to achieve or how it could be improved.

Use of Scientific terminology

There were many questions where students struggled to use or apply correct scientific terminology so as to demonstrate their understanding; these ranged from confusion between 'alloy' and 'compound' and between 'endothermic' and 'exothermic' to difficulty articulating their reasoning in terms of displacement and misuse of the terms 'halide' and 'halogen'. When talking about experimental methods, 'leave it longer' does not mean the same as 'heat it for longer'.

Mathematical skills

Whilst students answered many of the calculation questions well, many students found the calculation of the radius of the centre of an atom of element X difficult, despite being given all the information required. Answers were limited by students' understanding of powers of ten and their ability to convert a fraction into standard form.

Students demonstrated variable graph plotting and reading skills; students should be reminded that graphs should be plotted and drawn carefully, using a long enough ruler and it is wise to double check the scale of the axis when reading values.

Reports on the exam are written by senior examiners who see more responses than anyone else. Access full reports via aqa.org.uk/log-in

Paper 1, Higher (8462/1H)

This is a snapshot. Learn more about every question from the summer 2018 series in our reports on the exam. Visit aqa.org.uk/log-in and follow:

e-AQA > Secure Key Materials > GCSE > Science/PE > Chemistry (new specification) > Reports on the exam

Highlights from summer 2018

Extended answers

When asked to evaluate the use of hydrogen fuel cells compared with rechargeable lithium-ion batteries to power electric cars, many students limited themselves to the use of the information provided in the table and failed to 'use your own knowledge' as required by the question. Other students failed to provide a judgement on which method is better; a judgement is an essential part of a response to a question where the command word is 'evaluate'.

Calculations and use of calculators

Although most students answered the calculation questions well, some had difficulty interpreting their calculator displays. The recording of values such as 67.8 (insert dot above 8) was an erroneous result of the calculation; some students then went on to correctly round this incorrect answer to the equally incorrect 67.9.

Practical based questions

When asked to describe a method to find the position of an unknown metal in the given reactivity series, many students gave vague answers which, if followed, would not give valid results. Many students missed the need to control variables so as to give a fair test and valid results, whilst describing how to cut down energy exchange with the surroundings, which would give an accurate result.

The question based on the electrolysis required practical was badly answered, with most students failing to make a link between the intended outcome of the investigation (volume of gases produced) and the apparatus setup as illustrated in the diagram. Answers suggested that students had missed or forgotten that the bubbles of chlorine take longer to form than the hydrogen, when they carried out the required practical.

Structure and bonding

Many students struggled to answer questions relating to structure and bonding, whether this was referring to graphite or hydrogen chloride gas.

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Paper 2, Foundation (8462/2F)

This is a snapshot. Learn more about every question from the summer 2018 series in our reports on the exam. Visit aga.org.uk/log-in and follow:

e-AQA > Secure Key Materials > GCSE > Science/PE > Chemistry (new specification) > Reports on the exam

Highlights from summer 2018

Extended response questions

The extended response questions caused problems for students, with many failing to 'compare' the advantages and disadvantages of different materials from which to make disposable cups, or to 'explain' how changes in the Earth's atmosphere came about.

Read and use the information provided

It is essential that students read and analyse the information provided and then read and understand the question that has been asked before writing their response; a common fault was to simply repeat what they have read or to fail to make use of data provided in tables when constructing their answer.

Practical based questions

Despite chromatography being a required practical, many students were unable to identify two mistakes made when the student set up the apparatus. Most were able to select the conclusions that could be drawn from the chromatogram produced when the apparatus was set up correctly. Students struggled to identify control variables in an investigation based on the rates of reaction required practical.

Calculations

Although most calculation based questions were well answered, some students demonstrated a lack of understanding of the concept of ratios, finding it difficult to calculate the mass of gold in a 22 carat gold ring. When instructed to give answers to 2 significant figures, many students did not do so.

Multiple choice questions

Students need to read the instructions for multiple choice questions carefully – in some questions students ticked too many boxes, in others they ticked too few. Some students put a line through the options they are discarding from consideration; they should not do this, as it can look very much like a tick.

Reports on the exam are written by senior examiners who see more responses than anyone else. Access full reports via aga.org.uk/log-in

Paper 2, Higher (8462/2H)

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Highlights from summer 2018

Extended response questions

The mark scheme was designed to allow students to achieve marks for showing knowledge, understanding and application of chemistry. The standard demand extended response questions caused few problems for students, with many achieving full marks. The final extended response question asked students to 'evaluate' the use of different materials to make disposable cups and proved more challenging. Whilst most students considered the relevant stages of the Life Cycle Assessment for both types of cup, many failed to consider the environmental impact of the factors they discussed, for example they might say that paper cups are heavier to transport, but then did not go on to say what the environmental impact this might have in terms of more pollution from lorries, or a greater energy requirement burning more fossil fuels.

Read and use the information provided

Basic knowledge and understanding of how science works in everyday situations, including the laboratory, were tested throughout this paper. This means that it is essential that students read and analyse the information provided and then read and understand the question that has been asked before writing their response; a common fault was to simply repeat what they have read or to answer a completely different question.

Practical based questions

Despite chromatography being a required practical, many students were unable to identify two errors in the apparatus setup described and to describe the problems these would cause. Many also found difficulty in drawing conclusions from the chromatogram produced when the apparatus was set up correctly.

When asked to 'plan' an investigation into how concentration affects the rate of a reaction, a common error was to omit mentioning any variables that needed to be controlled; some students only carried out the experiment at one concentration, despite this question being based on another required practical.

Reports on the exam are written by senior examiners who see more responses than anyone else. Access full reports via aqa.org.uk/log-in

Notes

‘No school should be without Teachit!’

Vivienne Neale, Teacher

teachitscience
RESOURCES YOU CAN TRUST

Teachit Science offers a wide range of resources to support the teaching and learning of the AQA 9-1 GCSE Science curriculum. The range includes resources to help students revise the required practicals in the wider context of the specification and those which support the teaching maths skills in science.

Resources are published as free PDFs or adaptable Word documents and PowerPoints.

teachitscience.co.uk

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Sonja Dolloway, Leader of Science

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Responsible for multiple sciences?

Results insights are available for all our GCSE specifications:

- [Biology](#)
- [Physics](#)
- [Combined Science: Synergy](#)
- [Combined Science: Trilogy](#)