
GCSE COMBINED SCIENCE: SYNERGY

Insight report: 2018 results at a glance

Published: October 2018



Responsible for multiple sciences?

Results insights are available for all our GCSE specifications:

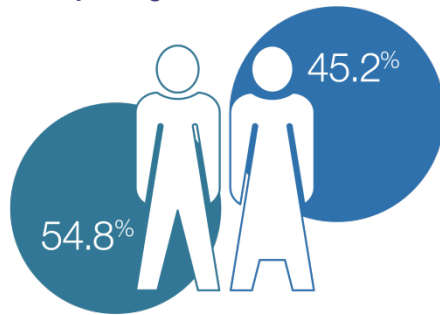
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Foundation tier analysis

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
4,210 entries



Entry volumes, boys vs girls
– Foundation

2,305 boys
1,905 girls.

AQA GCSE Combined Science: Synergy

Grade summary – Foundation

This shows the percentage of students achieving each grade.



Grade summary –
Foundation

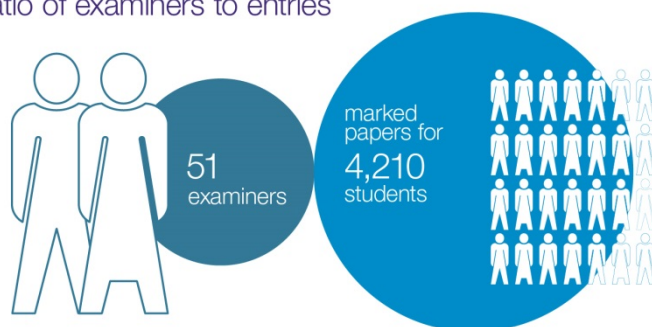
AQA GCSE Combined Science: Synergy

[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

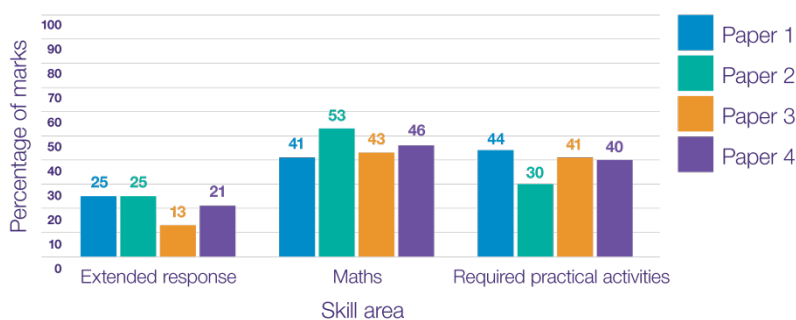


Number of examiners

51 examiners marked papers for 4,210 students.

AQA GCSE Combined Science: Synergy

Performance of students by skill area – Foundation



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.

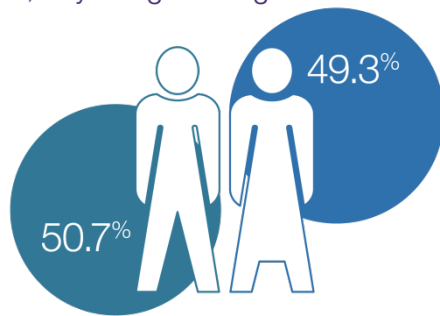
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Watch tutorials on using ERA for results analysis, or log straight in via **e-AQA**.

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
1,604 entries



Entry volumes, boys vs girls
– Higher

814 boys
790 girls.

AQA GCSE Combined Science: Synergy

Grade summary – Higher

This shows the percentage of students achieving each grade.



Grade summary – Higher

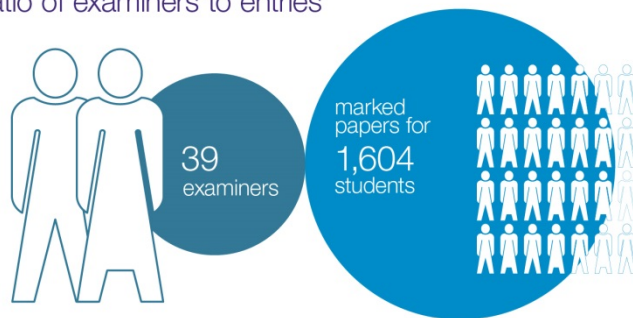
AQA GCSE Combined Science: Synergy

[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

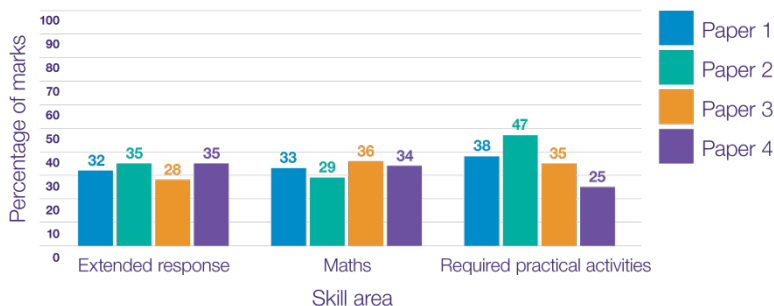


AQA GCSE Combined Science: Synergy

Ratio of examiners to entries

39 examiners marked papers for 1,604 students.

Performance of students by skill area – Higher



AQA GCSE Combined Science: Synergy

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)								
Synergy, 8465 (Higher)	400	9-9	9-8	8-8	8-7	7-7	7-6	6-6	6-5	5-5*
		248	230	212	194	177	160	143	126	109
		5-5*	5-4	4-4	4-3	3-3	3-2	2-2	2-1	1-1
		109	93	77	61	45	-	-	-	-

*Note the Higher Tier 5-5 grade boundary is deliberately shown in all rows of the above table.

Subject or paper	Max mark	Summer 2018 grade boundaries (raw mark)								
Synergy, 8465 (Foundation)	400	5-5*	5-4	4-4	4-3	3-3	3-2	2-2	2-1	1-1
		229	211	194	169	144	120	96	72	48

How to interpret grade boundaries

This is the first year this reformed specification has been awarded. For 2018, Ofqual agreed that all exam boards should award an allowed grade 3-3 on the Higher tier of GCSE Synergy and Trilogy. In addition, the grade 4-3 boundary was widened, making the distance between a 4-4 and an allowed grade 4-3 the same as the distance between a 4-4 and a 4-5.

Ofqual acknowledged that with the structural changes to the sciences – including the removal of untiered controlled assessment, and moving to a double award GCSE – 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) use 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

Feedback on the exam courses use student responses to explore what happened in each exam series. Visit aqa.org.uk/trilogy-cpd

Qualification summary

The question papers and mark schemes were designed to allow students to gain marks for showing their knowledge, understanding and ability to apply these in each of the areas of science. Students should be prepared to expect unfamiliar contexts and information that assess the Assessment Objectives (AOs). Familiar contexts are those mentioned in the specification and assess recall, selection and communication of students' knowledge and understanding. Basic knowledge and understanding in familiar and in unfamiliar situations, including in the laboratory, are tested – so it's essential that students read and analyse the information provided, then read and understand the question before writing their response. Students should then check their answers, especially those that are descriptions or explanations. Many students use 'it' or 'they' without any clear indication of what they were referring to.

There were some common misinterpretations of questions either due to lack of familiarity with common scientific terms or misalignment with key words like 'describe' and 'explain'. Other problems in interpretation seemed to stem from not reading the question carefully enough to grasp what was being asked.

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.

Paper 1, Foundation

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 > Combined Science: Synergy (new specification) > Reports on the exam

Highlights from summer 2018

Application of knowledge in unfamiliar contexts

Many struggled with questions that assessed ability to apply knowledge to an unfamiliar situation.

Reading instructions carefully

Students should read the instructions in the question carefully and take note of the marks available. Often students ticked only one box when asked for two: the number of ticks needed is given in bold.

Understanding command words

Many gave descriptions when answering an 'explain' question, suggesting a lack of understanding of exam command words. Students would benefit from exercises to highlight important commands in questions. A [list of exam command words](#), and what is required for each, is available online.

Calculation questions

Multi-step calculations proved problematic, with many students stopping part way through a calculation. Many did show their working, which meant that even if they got the wrong answer they may have received some credit for method. It was apparent that many students did not have a calculator with them, which disadvantaged them.

Knowledge of conversion between units

Few students understood and were able to demonstrate their application of the concept of conversion between units, such as millimetres and micrometres, joules and kilojoules.

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

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Highlights from summer 2018

Application of knowledge in unfamiliar contexts

Many students found it difficult to apply their knowledge in a context that was not directly from the specification.

Understanding of command words

Students should recognise and respond appropriately to the command word in the question. Many were giving descriptions when answering an 'explain' question, and vice versa, demonstrating lack of understanding. A [list of exam command words](#), and what is required for each, is available online

Calculation questions

Many appeared to find the multi-step calculations problematic and stopped part way through a calculation. Students should be encouraged to write down all stages of their calculations to enable examiners to award marks for correct working even if the final answer is incorrect.

Correct use of significant figures was seen only infrequently, and much incorrect rounding of numbers in calculations was evident.

Unit conversions

Few students attempted the required unit conversions in calculation questions. However, those that did attempt unit conversions generally were able to do so.

Practical based questions

Questions requiring direct knowledge of required practicals were generally answered well, showing that students were well prepared. However, students need to apply their knowledge of safety issues to the specific method described, as generic answers are unlikely to gain credit.

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Paper 2, Foundation

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Highlights from summer 2018

Application of practical knowledge

Many did not do well on aspects of required practical questions that relied on application of knowledge and logical thinking. These students didn't seem to be able to link what they had done in their practical work to the situations described in the questions. Many didn't know the names of appropriate apparatus to use and were unable to clearly describe a method.

Data handling

The calculation questions in this paper were generally answered well. Many were able to plot points accurately on a graph, even on less straightforward axes. However, a large proportion were not able to extrapolate a line correctly to obtain an answer, and there were many students who misinterpreted the axes in the graphs and so read off incorrect values.

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Paper 2, Higher

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Highlights from summer 2018

Appropriate level of entry

A significant number of students may have been more able to demonstrate their knowledge and understanding in the Foundation tier.

Clarity of writing

Many were hampered by inability to express themselves clearly. All prose answers, not just those for the extended response questions, were generally poorly structured and difficult to interpret. Many students gave accounts that were vague, rambling and used unscientific language.

Ecology

Ecology as an area of study was generally poorly understood, and very few students appeared able to apply their knowledge and understanding of sampling techniques in a novel context. Many students struggled to express themselves clearly and name equipment correctly, limiting the marks achieved.

Calculation questions

The maths questions were generally not well answered in this paper. Common errors included incorrect rounding and not quoting to the required number of significant figures.

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Paper 3, Foundation

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Highlights from summer 2018

Reading instructions carefully

Students should read the question instructions carefully and take note of the marks available. Often students ticked only one box when asked for two, or gave word equations when asked to complete a balanced chemical equation. Students should also be reminded that even though there are no answer lines, an answer is still required and they will be directed by the question wording.

Calculation questions

On the whole, students demonstrated competence in questions involving mathematical skills, which reflects positively on the efforts schools have gone to, to address the demands of the new GCSEs. Many students wrote down their working, so could gain marks for correct substitution even if they made a mistake evaluating their answer. Some tried to convert units where they didn't need to, or didn't notice where unit conversion was needed and therefore missed out on a mark.

Equation recall

While equations should be recalled in alphabetical order, the equation doesn't need to be written in this way. So a question asking for an equation linking acceleration, force and mass does not need to be given as $\text{acceleration} = \text{force}/\text{mass}$. Equation triangles are not credited.

Checking working

Students should be encouraged to sense-check their answers. For example in question 4.2, often the values obtained were above the total mass of the alloy.

Required practical questions

Students should be careful to look at what a practical question is asking for. For example, in descriptions of preparation of magnesium chloride crystals, a significant number of students started with the product itself, which made it difficult to award marks. When a question asks for a procedure, students don't need to write about observations – these won't be credited.

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Paper 3, Higher

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Highlights from summer 2018

Calculation questions

A significant number of students showed good practice by giving their answer to the same number of significant figures as used in the question in all calculation questions.

Graphing skills

Students were generally able to plot points accurately but were often then unable to draw a correct line of best fit, drawing a straight line in spite of the curved trend. Students need practice in drawing lines on graphs as many were poorly drawn, using multiple or very thick lines. A line of best fit should not generally be drawn dot-to-dot.

Extended response questions

Students found it difficult to achieve the top levels in the extended response questions. Many:

- didn't always include sufficient creditworthy information in their responses
- showed a general lack of precision with language
- weren't able to organise their ideas coherently.

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Paper 4, Foundation

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Highlights from summer 2018

Working to the end of the paper

There were a number of questions which significant numbers of students did not attempt. Students should be encouraged to have a go at all the questions throughout the paper as they may pick up marks for demonstrating knowledge.

Recall and application of equations

Students were generally able to apply the given equations to carry out a calculation. However, in questions that required students to recall an equation, a large proportion left the answer blank or wrote an equation disconnected to the quantities listed. This meant they were generally unable to access marks for the subsequent calculation.

Reading the instructions

Students should read the question instructions carefully and take note of the marks available for each. Where a question number and allocation of marks is presented, an answer is required, even when no answer lines are given.

When students are told to include information from a diagram or table in their answer they should understand that marks are available for doing so.

Understanding the command word

Answers were not always prompted by the command word in a question. Explanations were often attempted when descriptions were required, or features listed when a comparison was asked for. Students may benefit from exercises around the requirements of each command word. Some students like to highlight the important command in a question.

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Paper 4, Higher

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Highlights from summer 2018

Working through the paper

Many questions were not attempted by a significant proportion of students. This indicates that some students would have been more appropriately entered for the Foundation tier paper.

Reading the instructions

If a question asks for information from a diagram or table, there are marks available for doing so. Students would also benefit from greater familiarity with the meanings of command words, as many examples were seen of descriptions being given when explanations were asked for, or of students attempting an explanation when a description was required.

Calculation questions

Although responses often included working, which helped to award marks if the final answer was incorrect, it was often difficult to follow the line of reasoning. Strings of figures, apparently randomly multiplied or divided, were often seen, with no attempt to explain what was being worked out. Students may want to identify briefly what they are calculating, or what equation they are using, to allow examiners to award working marks. Some students attempted to deal with all stages of a multi-stage calculation in one equation – such answers seldom scored any marks.

Applying practical skills and knowledge

Many students are aware of basic laboratory safety procedures. However, when asked for safety aspects of a procedure, responses specific to the experiment being described are stronger. Generic responses such as 'wearing gloves' and 'tying hair back' are unlikely to gain credit.

A large number of students were unclear on the types of variables in a practical, and confused independent, dependent and control variables.

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

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be without Teachit!’

Vivienne Neale, Teacher

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