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The logo for Ofqual, featuring the word 'ofqual' in a bold, lowercase, sans-serif font. The letters 'o' and 'a' are underlined with a thick green bar.

Consultation outcome

Decisions: Proposed changes to the assessment of mathematics, physics and combined science GCSEs in 2024

Updated 19 December 2023

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Introduction

On 16 November 2023, the [Department for Education \(DfE\) announced](#) that it is not necessary for students taking exams in 2024 to memorise formulae for GCSE mathematics and most equations for GCSE physics and combined science, as they must in a normal year. This reflects DfE's responsibility for GCSE subject content and was a change that was also made for exams that took place in 2022 and 2023.

In order to implement DfE's policy decision in 2022 and 2023, Ofqual amended the Conditions and Requirements for GCSE qualifications. The amendments required exam boards to provide a formulae sheet in the exams for GCSE mathematics and a revised equation sheet in the exams for GCSE physics and combined science. Exam boards provided copies of the formulae and equation sheets for use in teaching and to ensure that students were familiar with them prior to the exams. Exam boards provided clean copies of the formulae and equations sheets in the exams.

DfE asked Ofqual to carry forward these arrangements from 2022 and 2023 for one further year, for 2024 only, in view of the disruption this cohort of students may have experienced.

[Ofqual consulted on the proposal](#) that students should be given support materials in the exam room that set out the formulae and equations they would usually have to

memorise. In line with DfE's responsibility for the subject content that students must study at GCSE and its request, Ofqual consulted on the proposal for grades awarded in 2024 only. (For GCSE mathematics, the proposed arrangements also applied to the November 2024 exams.)

The consultation was open from Thursday 16 November to Thursday 30 November 2023 and received 21,181 responses. A [full summary and analysis of the responses](#) has been published at the same time as this decision document.

Summary of decisions

Ofqual has decided to implement the proposals set out in the consultation document. The majority of respondents were in favour of students being given formulae sheets for GCSE mathematics (95% agreement) and revised equation sheets for physics and combined science (96% agreement). No issues were raised by those responding to the consultation that have made it necessary to revise the proposals.

Ofqual has changed its rules to require exam boards to provide students with support materials in the form of formulae and revised equations sheets for GCSE mathematics, physics and combined science exams **in 2024 only**. The support materials will set out the formulae and equations that students must memorise in a normal year, as set out in DfE's subject content and as presented on the sheets provided for 2022 and 2023. Ofqual's updated conditions require exam boards to:

- publish the formulae and equation sheets in January 2024 so that students may become familiar with them before the exams
- provide clean copies with their 2024 exam papers

This means the formulae and equation sheets to be used in 2024 exams will be the same as those used for exams in 2023. As such, before the exam boards republish the sheets in January 2024, students and teachers may access exam boards' 2023 sheets for practice purposes, if they wish.

The decision relates to GCSE mathematics, physics and combined science exams being taken in 2024 only. For GCSE mathematics this will apply to exams taken in November 2024.

DfE has confirmed that 2024 will be the final year for these changes to its subject

content requirements. There will be a return to normal exam arrangements for these subjects in 2025. This means that formulae and revised equation sheets will not be available after 2024. Students preparing for GCSE mathematics, physics and combined science exams in 2025 and beyond will be expected to know and recall all the usual formulae and equations set out in DfE's subject content.

Details

[Ofqual proposed](#) that students should be provided with formulae sheets and revised equations sheets in the GCSE mathematics, physics and combined science exams for 2024. There were 21,181 responses to the consultation overall.

There were 21,079 responses to the proposal that a formulae sheet should be provided in the exam room for GCSE mathematics in 2024. The majority, 95%, supported the proposal, while 3% did not. The remaining 2% neither agreed nor disagreed.

There were 21,093 responses to the proposal that a revised equation sheet covering all equations should be provided in the exam room for GCSE physics and combined science in 2024. The majority, 96%, supported the proposal while just under 4% did not. The remaining 1% neither agreed nor disagreed.

Respondents who supported the proposal said that this was appropriate considering the disruption to education experienced by this cohort of students. Respondents thought that providing this support would be fair when comparing these students to previous cohorts and that it would make the experience of taking exams less stressful for students and increase their confidence. They also said it was more important that students could understand, apply and rearrange formulae and equations rather than memorise them. Some of these respondents suggested that the proposals should be extended further, and that formulae and equation sheets should be provided permanently or that similar support should be provided for other subjects.

Several respondents, including those who agreed and disagreed with the proposal, said that students had already learned the formulae and equations. Others suggested presenting the formulae or equations differently to reflect how these are used during teaching and learning.

Respondents who disagreed with the proposal said that these students had been

less affected by disruption from the COVID-19 pandemic or commented on the importance of knowing formulae and equations to support progression.

As explained in the consultation, DfE's subject content for GCSEs in mathematics, physics and combined science explicitly sets out specific formulae and equations that students are required to memorise and recall in the exams. This is not the case for other GCSE subjects, including GCSEs in biology and chemistry, where DfE's subject content does not require students to recall specific formulae or equations.

The content and presentation of the formulae and equations used in 2022 and 2023 also reflects DfE's subject content. Exam boards worked together to produce support materials that would be consistent with DfE's requirements and the same for all students, whichever exam board's specification they were studying.

Ofqual notes there was overwhelming support for the proposals. The proposals align with what government, which is responsible for subject content in GCSEs, expects students to cover in these qualifications being awarded in 2024. No issues were raised by respondents, including in the equalities and regulatory impact assessments as set out below, that made it necessary to reconsider the proposals.

Ofqual has therefore decided to implement the proposals set out in the consultation document. Ofqual has changed its Conditions to require exam boards to:

- publish the formulae and equation sheets in January 2024 so that students may become familiar with them before the exams
- provide clean copies with their 2024 exam papers

The support materials will set out the formulae and equations that students must memorise in a normal year, as set out in DfE's subject content, and as presented on the sheets provided for 2022 and 2023.

The changes apply to GCSE mathematics, physics and combined science exams taken in 2024 only. This is in line with DfE's policy decisions about the subject content that students must study. DfE is responsible for the subject content in all GCSE subjects.

Equality impact assessment

Ofqual considered the potential impact of the proposals on students with particular protected characteristics. The consultation explained that Ofqual did not consider

the proposals would have a negative impact on students who share particular protected characteristics. Ofqual did not identify any such issues that made it necessary to change the proposals.

Respondents who raised issues tended to focus on students with special educational needs and disabilities (SEND) and those who have been disadvantaged in some way due to disruptions to their education. These comments most frequently reflected the ways in which students had already been impacted, rather than identifying issues resulting from the consultation proposals.

A few respondents suggested that the formulae and revised equation sheets should be edited or printed in different formats to be accessible to SEND students or those with English as an additional language. Whilst GCSE assessment materials cannot be reproduced in different languages, exam boards can and do provide modified papers as part of their [access arrangements and reasonable adjustments](#).

Regulatory impact assessment

In the consultation, Ofqual identified that schools and colleges would likely have limited or no burden from these proposals. It noted that the changes are intended to reduce burden to enable more time for teaching. The consultation acknowledged that exam boards would incur costs, while noting they are familiar with the arrangements having produced formulae and revised equation sheets for exams in 2022 and 2023.

The consultation sought views on the initial regulatory impact assessment. It asked about any other potential costs or burdens that had not been identified, and what steps could be taken to reduce them.

Many respondents referred to the cost for schools of printing the formulae and revised equation sheets, although these frequently suggested the costs would be minimal. Exam boards that offer the GCSE qualifications also set out the cost and burden implications in updating their assessment materials, however, all four supported the proposals.

Respondents commented on the time needed for teachers to familiarise students with the formulae and equation sheets prior to the exams. One representative group raised the issue of guidance for schools and colleges that had already completed 'mock' exams, which they intended to retain the evidence from, in line with [Ofqual's resilience arrangements guidance](#). They queried whether these schools and

colleges would need to complete new assessments.

Ofqual's guidance outlines how to gather evidence of student performance that could be used to determine a grade in the unlikely event that exams and assessment are not able to go ahead as planned. The guidance recommends that school assessments should be as useful as possible for students preparing to take summer exams. It also recommends that school and colleges should plan in line with their usual assessment approaches and guard against over-assessment. This guidance still applies, and Ofqual acknowledges that schools and colleges will have collected evidence of their students' performance based on their expectations for the summer exams to date. In collecting this evidence, teachers are not asked to determine a final qualification grade, and would only be given guidance on how to do so in the unlikely event that exams are not be able to go ahead as planned. Such guidance would include information on how the use of formulae and revised equation sheets when gathering evidence should be considered when determining grades. As such, where schools and colleges have carried out assessments where students have not been provided with formulae or equation sheets, there is no need for those assessments to be repeated for the purpose of providing evidence as part of the resilience arrangements.

While acknowledging the feedback and concerns raised by respondents, Ofqual believes these are outweighed by the overwhelming support for the proposals and the benefits for students that respondents identified. As such, Ofqual has not identified any such issues that made it necessary to change the proposals.

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