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 $> \frac{Proposed \ changes \ to \ the \ assessment \ of \ mathematics, \ physics \ and \ combined \ science \ GCSEs \ in \ \underline{2024}$



Consultation outcome

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

Updated 19 December 2023

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Summary

Ofqual consulted on the assessment arrangements for GCSEs in mathematics, physics and combined science in England in 2024. Ofqual's consultation sought views on whether the use of formulae and revised equation sheets, as used in 2022 and 2023 for GCSE mathematics, physics and combined science, should be continued for students taking these exams in 2024.

Ofqual received 21,181 responses to the consultation.

The majority of respondents strongly agreed or agreed that:

- a formulae sheet should be provided in the exam room for GCSE mathematics in 2024
- a revised equation sheet should be provided in the exam room for GCSE physics and combined science in 2024

Ofqual's proposal was in response to <u>an announcement by the Department for</u> <u>Education</u> that it is not necessary for students taking exams in 2024 to memorise all the formulae for GCSE mathematics or equations for GCSE physics and combined science, as they must in a normal year.

Background

On 16 November 2023, the <u>Department for Education (DfE) announced</u> that it is not necessary for students taking exams in 2024 to memorise the formulae for GCSE mathematics and most equations for GCSE physics and combined science that they must in a normal year.

DfE asked Ofqual to carry forward arrangements from 2022 and 2023 requiring exam boards to provide students with support materials in their GCSE mathematics, physics and combined science exams. DfE asked Ofqual to make these arrangements for one further year, for 2024 only, in view of the disruption this cohort of students may have experienced.

Ofqual <u>consulted on the proposal</u> 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 study at GCSE and its request, Ofqual consulted on the proposal for grades awarded in 2024 only.

The consultation was open for responses between 16 November and 30 November 2023. It received 21,181 responses.

Approach to analysis

The consultation on the assessment arrangements for GCSEs in mathematics, physics and combined science in England in 2024 was published on Ofqual's website. It was available online and consisted of closed and open questions.

Two of the closed questions allowed respondents to indicate the extent to which they agreed or disagreed with the proposals. These questions used a 5-point scale (strongly agree, agree, neither agree nor disagree, disagree and strongly disagree). There were also open questions inviting comments. The Equality Impact Assessment and Regulatory Impact Assessment sections each included a closed question asking respondents if there were any impacts of the proposals that Ofqual had not identified. Respondents were asked to respond with 'yes' or 'no'. These were followed by open questions where respondents could identify any impacts on equalities or regulatory considerations as a result of the proposals. Respondents were also invited to offer suggestions on ways to reduce or mitigate any impacts.

Respondents could choose to respond to questions in the consultation. They did not have to respond to them all. This analysis provides the number of responses received for each question. It also provides tables of the responses to the closed questions. There are some instances where percentages total more than 100. This is due to the rounding of the individual percentages.

Respondents were asked to identify which group they belonged to, for example: teacher or student. The total numbers for each respondent group are set out in the table below, based on these descriptions. The tables use these unverified self-descriptions.

All responses to the open questions have been read in full. The key themes that emerged are presented in the detailed analysis below.

A selection of comments from respondents have been included as quotes in the report to illustrate the main themes identified. Some quotes have been edited for clarity, brevity and to preserve anonymity but care has been taken not to change their meaning.

Who responded?

There were 21,181 responses to this consultation.

The following tables present the number of respondents by type.

Official organisational responses	Number of respondents
Academy chain Note 1	418
Awarding body or exam board	20

Employer	34
Local authority	62
Other representative or interest group	23
Private training provider	18
School or college	1,976
University or higher education institution	9
Total	2,560

Individual responses	Number of respondents
Awarding organisation employee	15
Consultant	20
Examiner	58
Exams officer or manager	94
Governor	40
Parent or carer	4,538
SLT (senior leadership team)	476
Student	9,451
Student – private, home-educated of any age	301
Teacher (responding in a personal capacity)	3,100
Other	521
Not answered	7
Total	18,621

Notes

1. "Academy chain" is used in this analysis document as it was the description offered to respondents completing the online survey. It covers those responding on behalf of individual academies and groups of academies, where these form part of an Academy Trust.

Detailed analysis

This section reports the views of those who responded to the consultation proposals.

Question 1

To what extent do you agree or disagree that a formulae sheet should be provided in the exam room for GCSE mathematics in 2024?

Question 1 response	Count	Percentage
Strongly agree	18,967	90%
Agree	1,005	5%
Neither agree nor disagree	398	2%
Disagree	191	1%
Strongly disagree	518	2%

Total number of responses Count

Question 1: response provided	21,079
Question 1: no response	102

Total

There was strong support for this proposal, with 95% of respondents to this question strongly agreeing or agreeing.

Question 2

Do you have any comments on the proposal to provide a formulae sheet in the exam room for GCSE mathematics in 2024?

There were 8,775 responses to question 2. Approximately half of these related to the view that the education of students taking exams in 2024 had been disrupted by the COVID-19 pandemic. Many of these respondents noted that COVID-19 lockdowns affected students' learning of mathematics in key stage 3, with a residual effect still being felt on students now in year 11. Respondents said the provision of a formulae sheet would provide welcome support.

"It is an indisputable fact that GCSE students are still suffering from the disruption to their learning caused by the pandemic. Provision of a formula sheet in GCSE mathematics examinations is a small but welcome mitigation." (Other representative or interest group)

"...Due to the Covid 19 pandemic, I, as well as everyone else in my year, missed a great deal of the foundation education that would help to support us in our GCSEs. Further, this disruption not only affected our first and second years of secondary school, but also our third, due to requirement to isolate if under suspicion of having covid or it being confirmed, and the high levels of absences of students and teachers from immediate sickness and long-term effects..." (Student)

"I strongly agree that 2024 students should be given equation sheets. Due to Covid class 2024 have missed the crucial foundation of their learning (year 7 and 8), so because of this I strongly believe this should be the last year to receive equations sheets before things finally return back to normal." (School or college)

Respondents also commented on disruption beyond the COVID-19 pandemic which had impacted learning. This included teacher industrial action, teacher shortages and disruption due to the presence of reinforced autoclaved aerated concrete (RAAC) in school buildings.

"Students sitting exams in 2024 have also been affected by COVID-19, strikes and some have even been forced to remote learning due to RAAC. I believe it is selfish to say that these students' education has not been affected." (Student)

"Students in this cohort had broken year 7, broken year 8, year 9 behind masks, year 10 teacher strikes and have to sit exams despite all of this." (Teacher – responding in a personal capacity)

Some respondents commented that provision of formulae sheets for 2024 would maintain parity with previous cohorts who were impacted by the COVID-19 pandemic. A few suggested formulae sheets would be needed for future years because of the longer-term impact of the disruption.

"The students sitting exams in 2024 are no different to those in 2022 or 2023 sittings, Covid has had an impact on all their learning. As an Examinations Manager my role is to ensure each student has a fair and equal chance at sitting each exam, be it through Access Arrangements, Special Consideration. Surely for the 2024 cohort the use of equation sheets means they will have a fair and equal chance, as JCQ and Ofqual themselves dictate centres must ensure happens."

(Exams officer or manager)

"As a student taking part in the 2024 exams, I don't see it fair that we shouldn't have the same opportunity as last year since we missed the same amount of high

school learning." (Student)

"This should be provided for the next 3 years as those in Year 9 and 10 have also been adversely affected by COVID, especially the current year 10 students who didn't finish primary school." (Parent or carer)

Some respondents suggested that a formulae sheet would make the exam less stressful for students or give them greater confidence when answering questions.

"This has been proven to work well, reduce stress to students and increase confidence for [the] exam without impacting on the assessment. Therefore, there seems to be little evidence to remove this support." (Teacher – responding in a personal capacity)

"It takes a lot of stress off us and our teachers as we don't have enough time to get through all the content in lessons this would make it easier to revise as well." (Student)

Many respondents commented that students should not have to memorise formulae because the skills of understanding, applying and rearranging the formulae are more meaningful. These respondents noted that it is possible to look up formulae, which some suggested is the approach taken in further and higher education and in employment. Several said that formulae sheets should be provided permanently.

"Pupils should be tested on the correct use of a formula, not if they can remember this. There is a lot of content already to recall. I believe that ALL formulae should be provided with the question throughout the paper." (Teacher – responding in a personal capacity)

"We support this decision for 2024. In addition, we believe that the formulae sheets for GCSE mathematics should be kept in place for future exam series.

For students to identify the right formula to use, apply it to the information given and work out an answer is a valid assessment of their knowledge and understanding; there is no need for an additional test of memory." (Other representative or interest group)

"I welcome this and believe it should be carried forward for all future exams ... I do not think memorisation is ... a skill that should be assessed at this level in these subjects. We should be assessing the ability to select and use formulae appropriately not giving a memory test. Particularly as these are not in general things that need to be memorised for the future education and the career paths of many of these learners."

(Teacher - responding in a personal capacity)

Several respondents commented that the way that the formulae were presented in 2022 and 2023 did not match how they were used to seeing or teaching them in the classroom. They suggested the presentation should be improved to provide more useful support to students in the 2024 cohort.

"I think they should supply a formula sheet but should consult with students, parents and teachers about the layout and the version of formulas used as some of the formulas are convoluted and are not representative of the ones we use in lesson."

(Teacher – responding in a personal capacity)

"I think it would help alleviate some worries for pupils, but this is very late in the year to train pupils up in how to use the formula sheet. I would appreciate the language being more student friendly on the formula sheet to make it more accessible in such little time." (Examiner)

Respondents who agreed and some who disagreed commented on the timing of the announcement to include formulae sheets for the 2024 exams. They noted that, for many students, an earlier decision would have been more helpful, or that formulae may already have been learnt or taught in preparation for mock exams.

"I welcome this overdue proposal - it is another change to manage with students and parents, when we have to give them changing guidance. However, the benefits of giving the formulae sheet outweigh the costs of needing to communicate this change."

(SLT – senior leadership team)

"This is too late in the day. This should have been decided upon at the start of the academic year. We are just about to start our mocks on Monday - if we knew that we could have a formula sheet we would have looked at lessons to incorporate the formula sheet."

(Teacher - responding in a personal capacity)

The small proportion of respondents who disagreed with the proposal made a number of different points. Some respondents expressed concern that students will have learned the formulae already or that the inclusion of a formulae sheet may increase grade boundaries. A few suggested that learning the formulae would better prepare students for further study. Others said that the 2024 cohort have not had their education disrupted significantly by the pandemic, so do not need formulae sheets.

"I think providing a formulae sheet is unnecessary and unfair on those children who have already put considerable effort into learning all equations. The 2024 GCSE cohort have been preparing under the guidance that they will not be provided with formulae and therefore are expected to memorise all equations. As a parent of a child who has already learnt all required equations in preparation for mock exams, I think it is unfair to then change the arrangements at this late stage."

(Parent or carer)

"The provision of an equations sheet undermines the calculations done by students on the Higher Tier papers. It makes calculation questions simpler and raises the mean mark, so the grade boundaries are higher as a result. This makes it harder for examiners to differentiate between students of different abilities."

(Examiner)

"You need to think about the knock on to A level as students need to know these for the A level course and it's much harder for them to grasp A level without instant recall of these."

(Teacher - responding in a personal capacity)

"Pupils sitting GCSEs in 2024 have had lots of disruption during secondary school however, there has not been much disruption due to Covid during years where GCSE content is taught. I believe that people sitting the maths GCSE exam in 2024 can easily memorise all the equations as there is still a long time left until the exams." (Student)

There were comments from respondents on other areas unrelated to the topic of the consultation. These comments included concerns around some wider negative effects of the COVID-19 pandemic, such as on the mental health of children and teachers.

Question 3

To what extent do you agree or disagree that a revised equation sheet covering all equations should be provided in the exam room for GCSE physics and combined science in 2024?

Question 3 response	Count	Percentage
Strongly agree	19,301	92%
Agree	747	4%
Neither agree nor disagree	267	1%
Disagree	182	1%
Strongly disagree	596	3%

Total number of responses	Count
Question 3: response provided	21,093
Question 3: no response	88
Total	21,181

There was strong support for this proposal, with 96% of respondents to this question strongly agreeing or agreeing.

Question 4

Do you have any comments on the proposal to provide a revised equation sheet covering all equations in the exam room for GCSE physics and combined science in 2024?

There were 7,672 responses to question 4. Comments frequently reflected those made in response to question 2 about formulae sheets for GCSE mathematics.

Many respondents said the education of students taking exams in 2024 had been disrupted by the COVID-19 pandemic as this took place while students were in year 7 and year 8, foundational years for science. Respondents suggested revised equation sheets would provide necessary support.

"In view of the disruption that this cohort of students suffered due to Covid19 in their key stage 3 education which provides the foundation for their studies at key stage 4, I feel it is essential that they are provided with equation sheets in their physics and combined science GCSEs." (Parent or carer)

"During the COVID-19 pandemic, we were placed into lockdown, missing important physics lessons." (Student) Industrial action by teachers, a shortage of specialist physics teachers in some schools and the impact of the identification of reinforced autoclaved aerated concrete (RAAC) were mentioned as additional sources of disruption.

"The students have had a disrupted education due to COVID and teachers' industrial action." (School or college)

"Science teachers are in short supply nationally. This has meant huge disruption to learning, on top of the Covid crisis." (Parent or carer)

"Not only is there a lasting impact from COVID, but students in some areas have had large disruption due to RAAC as well." (Teacher – responding in a personal capacity)

Some respondents noted that the provision of revised equation sheets would make the exams less stressful for students and increase their confidence in the subject and in the exams.

"This removes a large amount of anxiety and stress for students. They can then focus on applying the equations." (Local authority)

"A lot of these equations are not used outside of the examination and should be provided to ease stress on individual learners." (Teacher – responding in a personal capacity)

"This will increase student confidence." (Parent or carer) Many comments raised common themes such as that rote learning of equations is unnecessary when it is possible to look them up. Respondents noted that this is the approach in further and higher education and employment. Some respondents pointed out that a data book is available in the exam for use by A level physics students. There were many comments that the skills of understanding, application and manipulation of the equation are more meaningful and should be the focus of the assessment of equations.

"Reduces cognitive load on students, allows us to assess understanding of equations rather than recall of equations. Also prepares students for further education and employment where they will not be expected to remember equations but will be expected to apply them." (School or college)

"Pupils should be measured on mathematical skills relevant to life and work. In real life, we have access to data sheets and internet. The skill is in being able to apply the correct equation to the correct application." (Parent or carer)

"Use of GCSE equation sheets brings the examination into line with A level, where sheets are provided, and enables a greater opportunity to assess physics explanation and understanding rather than equation recall." (Teacher – responding in a personal capacity)

Some respondents requested that equations also be added to the sheet to support students in GCSE chemistry and biology.

"I would like to see all equations covered including those from the chemistry and biology papers. If we are testing student's scientific skills, we should provide all mathematical equations. Students should use their knowledge to pick the correct equations and manipulate it as required." (School or college)

Some respondents said that revised equation sheets should always be provided to

students in their exams for GCSE physics and combined science.

"Our organisation believes that the equation sheet should always be provided so that we can assess students' understanding of physics and application rather than memory."

(School or college)

"The full equation sheet should be provided as standard from now on. The pupils are being tested on their application of theory and correct use of equations. The periodic table is provided in chemistry exams and is used as a tool by the students, as should the equation list in physics and maths." (Teacher – responding in a personal capacity)

As noted above, respondents who disagreed with the proposal made similar points to those that disagreed with the need for formulae sheets in GCSE mathematics. Respondents said that students in this cohort had not had their GCSE years disrupted by the pandemic and some had already spent valuable time learning the equations. There was also concern about the impact of this support on grade boundaries and that progression to A level physics might be hindered if learning equations is not required. Respondents mentioned that a consultation on this issue was too late in the academic year and that students had sat mock exams without the use of the equation sheet.

"I, like many of my colleagues in the absence of a decision, have spent 14 months preparing students to sit these exams without the equation sheet." (Teacher – responding in a personal capacity)

"This is very unfair on all the students that revise and learn the equations, making all the work redundant. Also, GCSE physics in most schools is introduced in year 9 which was not affected by Covid shutting down schools. Introducing the equation sheet will only increase the grade boundaries." (Student)

"Continuing to remove the need to learn the equations is impacting students'

ability to progress quickly at A level and other post-16 study of the subject." (Teacher – responding in a personal capacity)

"This decision is being taken too late. Students have been learning these equations for over a year already and could have focused their time elsewhere." (Teacher – responding in a personal capacity)

Equality impact

As a public body, Ofqual is subject to the public sector equality duty. The consultation considered whether these proposals might impact (positively or negatively) on students who share particular protected characteristics.

The protected characteristics under the Equality Act 2010 are age, disability, gender reassignment, marriage and civil partnerships, pregnancy and maternity, race, religion or belief, sex, and sexual orientation.

Question 5

Are there other potential equality impacts that we have not explored?

Question 5 response	Count	Percentage
Yes	1,877	9%
No	19,294	91%

Total number of responses Count

Question 5: Response provided 21,171

Survey total responses	21,181
Question 5: No response	10

Almost all respondents answered this question with most respondents, 91%, answering 'no'.

Question 6

If yes, what are they?

There were 1,818 responses to this question, with some respondents who had answered 'no' to the previous question also providing comments. Many of the comments identified wider impacts that go beyond protected characteristics.

Some respondents expressed concerns that students with special educational needs and disabilities (SEND) would be disadvantaged by the proposals. A few respondents also expressed concerns that students for whom English is an additional language (EAL) or foreign language (EFL) could be disadvantaged by the proposals.

"The number of pages that make up the data sheet (for science) becomes significant for enlarged modified papers which risk becoming unwieldy/too time consuming for candidates who require such modifications. This may also be the case for Braille data."

(Awarding body or exam board)

"The formula sheet may shift emphasis away from mathematical requirements and more towards application and extended writing. These are the style of questions that EFL and SEN students find more challenging and may lead to further polarisation of results for these students."

(Teacher - responding in a personal capacity)

"The presentation of the formulae is confusing and does not allow all candidates equal access to the information provided. Each formula needs to be placed inside a box with its statement. This would separate the formulae out and make them more accessible to SEND and EAL students." (Academy chain)

"At present, the way some of the maths equations are written are extremely confusing for EAL students. Using words such as "perpendicular separation" for the area of a trapezium is not accessible language, and is unnecessarily complicated."

(Teacher - responding in a personal capacity)

Whilst agreeing with the proposals, a few respondents commented on impacts on students with other protected characteristics, including, age, gender, race, religion and sexual orientation.

"Age is a protected characteristic. Younger cohorts taking exams from summer 2025 will be negatively impacted if a decision is made not to provide enhanced exam materials in future series ... We were pleased to see Ofqual and DfE taking a broader view of equalities impact in this consultation, which included students whose homes are not conducive to study and students who don't have access to technology. The impact of these proposals on disadvantaged students is only positive."

(Other representative or interest group)

"Gender stereotyping affects both maths and physics, where girls grow up in a society that tells them they are worse at maths than boys, even if this is demonstrably false. Thus, increasing difficulty of mathematical components of courses (for example, by adding a barrier of memorisation) is more off-putting for girls than boys. So adding mathematical difficulty is potentially discriminatory against girls."

(Other)

"There is an increasing proportion of teenagers who are living with emotional

turmoil in relation to their sexual identity and also heightened levels of teenage depression. These students are finding it difficult to devote the mind-space to memorising needless facts, although they are able to practice using such formulae."

(Teacher – responding in a personal capacity)

Most comments related more generally to the ways in which students have been affected by the COVID-19 pandemic or wider disruption to education rather than identifying potential impacts resulting from the consultation proposals. For example, SEND students who, due to the pandemic or other disruption, have not been able to access their normal learning support, or students whose homes, during the pandemic, were not conducive to study.

"Pupils with dyslexia and dyspraxia who need the additional support in the classroom. Some of these pupils were left to work alone during lockdown due to parents being key workers and were not able to fully access the curriculum to the best of their ability putting them at a disadvantage later on." (Parent or carer)

"The exam results of disadvantaged students have already been negatively impacted following the pandemic. Mainly due to a lack of resources, such as enough devices in the family and adequate WiFi provision during lockdowns. These pupils have more gaps in their knowledge and practical skills as a result and although are working hard, the content is broad in both maths and science and they are finding it hard to catch-up, particularly where an earlier concept is built upon."

(Local authority)

Some respondents expressed concerns that some students had been more affected by the COVID-19 pandemic or other disruptions than others. This included students that had spent more time off school than others, or that had developed mental health problems that now might impact their ability to engage with schooling.

"Children who lost a family member or friend in the pandemic who were in a mentally bad place over lockdown and unable to participate in virtual schooling." (Student – private, home-educated of any age)

"Those who missed more school as they were clinically vulnerable or living with someone that was."

(SLT – senior leadership team)

"Students are still struggling with the mental health impacts of COVID, and with the long-lasting impact this has had on development, for example of social skills. Evidence suggests that this has a measurable impact on their ability to access teaching in mainstream schools." (Parent or carer)

"The impact lockdown had on the mental health of students puts a lot of students particularly maybe those who already had some underlying conditions to begin with in an even worse position." (Student)

Many respondents referred generally to students with mental health needs and those who are unable to retain information, including formulae and equations.

"Students that can't study effectively due to medical issues or mental health reasons." (Student)

"The students who need the equations sheets have a low processing speed or cognitive load or do not have the support from home to help them remember all of the equations."

(Teacher - responding in a personal capacity)

"Students who struggle with moving knowledge from short to long term memory but are perfectly capable of using an equation if provided." (Teacher – responding in a personal capacity) Respondents raised the issue of disruption to learning and quality of educational provision during the pandemic for all year groups. These concerns were sometimes attached to comments about the mental health of students, but frequently reflected comments made in response to questions 2 and 4 above.

Many responses to this question were beyond or out of scope of the consultation. For example, some respondents expressed views about how examinations and assessments could be modified to support students, including through the provision of reasonable adjustments for students with SEND.

Question 7

Do you have any suggestions for how any potential negative impacts on particular groups of students could be mitigated?

There were 2,434 responses to this question.

Most respondents said that, while the proposals were welcome for providing additional support, further steps should be taken to maximise their effectiveness.

A few respondents suggested that the formulae and equations should be attached to specific questions that require the use of formulae and equations. Other respondents suggested the formulae and equation sheets should be amended to support SEND students.

"Students with organisational issues need the formula with the question not on a separate sheet."

(Teacher - responding in a personal capacity)

"Have a formula sheet for EHCP [education, health and care plan] and severe SEND students that labels in more depth than a basic full formula sheet for all other students." (Student) "Highlighted sheets for SEN students with specific formulas made accessible." (Local authority)

"A larger, dyslexia friendly font would also benefit less able, SEND and EAL students ... Teachers of mathematics tend to use the expression 'perpendicular height'. Changing to 'height' would make the formula for the area of a trapezium more accessible to SEND and EAL students." (Academy chain)

A few respondents suggested that the formulae and revised equation sheets should be edited or translated to be more accessible for EAL students. (It is important to note that this would be contrary to Ofqual's General Conditions of Recognition (G2.1), which require assessments to be in English, unless they are assessing students' use of another language. As such, changing the language used in examination materials such as the formulae and equation sheets is not something that exam boards could consider.)

"To have equation sheets (and papers) in Arabic, Gujarati, Polish, Romanian and Urdu available to be ordered by schools for students that they can show have recently entered the country."

(Teacher - responding in a personal capacity)

"Please provide those students who have language barriers with test papers in their own languages as it would benefit them better. Also, students who have no computer to do their work should have one provided by their schools so that they can achieve an equal opportunity in education just like any other student." (Student)

A few respondents suggested changes to exam arrangements (such as allowing extra time for students to read the formulae and revised equation sheets) or that the formulae and revised equation sheets should be edited or printed in different formats to be more accessible for some SEND students.

"Continue to provide the access arrangements for relevant students:

- 1. Larger print formula sheets
- 2. Readers/scribes
- 3. Extra time."
- (Teacher responding in a personal capacity)

"Students who have SEND or other issues should have sufficient compensation through having the usual extra time." (Student)

"Students with SEND face additional issues to their peers ... The levels of anxiety in these students, already high, has increased significantly around exams. I would suggest that additional time limits are increased to allow for this to give these students more security that they may be able to finish exams in the time available, thus helping them to focus on their work. Thus, a rise from 15% to 20% would be seen as a benefit for these students."

(Teacher - responding in a personal capacity)

Most responses fell outside of the scope of the consultation, rather than addressing possible negative impacts of the introduction of the proposals and mitigations for groups of students. Often these focussed on a range of wider changes that respondents suggested would benefit all students. For example, the use of a modular exam system, lowering grade boundaries, giving advanced information, removing the need for formulae in exams and returning to the use of coursework to reduce pressure from exams.

Regulatory impact

Question 8

Are there additional activities associated with providing students with formulae and revised equation sheets in their GCSE mathematics, physics and combined

Question 8 response	Count	Percentage
Yes	1,005	5%
No	20,166	95%

Total number of responses	Count
Question 8: Response provided	21,171
Question 8: No response	10
Survey total responses	21,181

Almost all respondents answered this question with the majority, 95%, answering 'no'.

Question 9

If yes, what are they?

There were 856 responses to this question. Many of those who answered 'no' to the previous question also provided comments.

Some respondents said that time had been wasted. They said this was because schools had taught the formulae and equations that may now be given on the sheets, or had prepared mock exams that did not incorporate the sheets.

"Some schools have already modified mocks to allow for equations not being given. This data is now potentially invalid or requires more staff work to rectify." (Teacher – responding in a personal capacity)

"Schools and students have already spent time preparing for the exams thinking

that no formulae sheets will be given. This means that the time will have been wasted." (Student)

"The way trigonometry is presented [in the formulae sheet] is unusual and can hinder students. It increases teaching load as students need to be taught in a different way and much of this teaching has already been done." (SLT – senior leadership team)

A few respondents commented that students would need to be taught how to use the formulae and equation sheets.

"Students will require upskilling in the use of a formula sheet. In certain questions, students are given the formulas needed on the same page as the question - some students may struggle with having to go to a different location to find the formula they need to use."

(SLT – senior leadership team)

"The inclusion of the formulae sheet will help the student, but the interpretation of the formulae and understanding of how to use each equation is still paramount. Adequate teaching to use the formulae (and understand the theory behind it) in the class and through self-study are still essential to gain a pass mark." (Parent or carer)

Question 10

What, if any, additional costs do you expect you would incur if students are provided with formulae and revised equation sheets in their GCSE mathematics, physics and combined science exams for 2024?

There were 3,711 responses to this question. The majority of these responses expressed the view that there would be no or minimal costs. Some respondents also asserted that the proposal should be implemented regardless of the expense; a few

were unsure of the costs.

"None to the school or students." (Teacher – responding in a personal capacity)

"Any additional costs are negligible and significantly outweighed by the potential benefit of this provision."

(Other representative or interest group)

Many of those who commented stated that there would be costs involved in producing the formulae and equation sheets and administering them during exams and mock exams.

"The production, insertion and print costs of formulae sheets will cost approximately £23,000 for June 2024. This is an increase in estimated costs quoted for the previous year (£10,000) and reflects inflationary costs which impact on production. There will be minor costs associated with the additional checks needed to ensure additions to question papers are made accurately and consistently."

(Awarding body or exam board)

"Very limited printing costs as I will provide all students with copies of the formula sheets to ensure they are familiar with them prior to their exams." (Teacher – responding in a personal capacity)

"The cost implication is on the use of paper/printing materials for the production of modified papers as well as needing to employ an additional staff member to provide on the ground assistance to the set-up of venues while the exams officer is busy downloading, printing and collating these modified versions.

We are also asked by awarding bodies not to submit the inserts. This means additional time/staffing implications pulling out all inserts from exam papers before submitting to the awarding body for marking; the safe storage of these inserts in case of queries from awarding bodies, then the confidential destruction of the inserts once the deadline for enquiries and appeals has passed. When you have a few hundred students sitting each paper, this amounts to a lot of additional cost."

(Exams officer or manager)

Question 11

Do you have any suggestions for alternative approaches that could reduce burden and costs?

There were 2,334 responses to this question.

Many respondents suggested ways to reduce the number of printed copies of the formulae and equation sheets. These suggestions included laminating the sheets so they could be reused, displaying the relevant formulae or equations on a screen in exam halls, or incorporating them into the exam papers.

"Print the formula sheet as the last page of the exam booklet, perforate it so it can be torn off. It then doesn't need to be packaged and distributed separately." (Parent or carer)

"Having equation sheets laminated and belonging to the exam board so they can be reused and returned at the end of the exams." (Student)

"Access to formulae could be on overhead projector or digital screen visible to the entire exam room so not paper copies likely to one use only – or laminates?" (Parent or carer)

"Include the sheet at the start of the paper instead of it being a separate sheet. Or include the equations with the questions." Some respondents suggested alternative sources for meeting the costs of the proposal, such as fundraising or relying on parental contributions.

"Would be happy to make a small voluntary contribution to the school for the provision of sheets." (Parent or carer)

"School fund raisers, or option to flexi pay over certain months to parents." (Parent or carer)

Several respondents mentioned the importance of clarifying the position on formulae and equation sheets promptly, to reduce the burden on all stakeholders. Some respondents also indicated that this change should be made permanent.

"Make the decision quickly and keep in place permanently." (Academy chain)

"This consultation deals with a short-term proposal for 2024. It would be helpful to consult on and implement a longer-term position. This would help with providing teachers with sufficient notice for their future teaching plans; it would also enable exam boards to make the necessary changes to their teacher support, to specifications, and to integrate changes within the design of their assessment materials."

(Awarding body or exam board)

"To make the decision to continue with providing equation sheets going forward. This will help support teaching and learning in the classroom and ensure more time can go into supporting students to select the right equation and apply knowledge. The uncertainty around this issue has had an impact on teachers' practice."

(School or college)

A representative group raised the issue of guidance for schools who had already held mock exams.

"Ofqual and JCQ should release guidance for schools and colleges which have already completed mock assessments in line with Ofqual's resilience arrangements, on whether they should complete new mock assessments. If not, Ofqual and JCQ need to provide assurance that these centres and their students won't be disadvantaged in the unlikely event that exams are cancelled." (Other representative or interest group)

A number of respondents made comments that extended beyond the scope of the consultation. These included making significant changes to the examination system, providing extra support for other subjects, and more general references to exam boards and disruption to education through strikes and the pandemic. Some respondents also commented on the potential impact on grade boundaries.

Annex A: List of organisational respondents

When completing the consultation questionnaire, respondents were asked to indicate whether they were responding as an individual or on behalf of an organisation. These are the organisations that submitted a non-confidential response:

Abbey College

- Abbey Gate College
- Abbeyfield School
- Abbot Beyne School
- Ackworth school
- Afifah School
- Airedale Academy
- Ak Tutor Me
- Al-Aqsa Schools Trust

- Albany Academy
- Alcester Academy
- Alder Community High School
- Alderbrook School
- Aldersley High School
- Aldridge School
- Aldworth School
- Alec Reed Academy
- All Saints Catholic College
- All Saints Catholic High School
- Allerton High School
- Alleyn's School
- Alperton Community School
- Ansford Academy
- AQA
- Archbishop Beck Catholic College
- Ark Globe Academy
- Ark Schools
- Ark Victoria Academy
- Armfield Academy
- ASCL
- Ashfield School
- Ashington Academy
- Ashton Park School
- Aspirations Academies Trust
- Association of Colleges
- Aston Manor Academy
- Audenshaw School
- Aylesbury High School
- Aylward Academy
- Ballakermeen High School
- Banovallum School
- Barnwell School
- Barton Peveril Sixth Form College

- Bassingbourn Village College
- Bay House School and Sixth Form
- BBG Academy
- Beacon High School
- Beauchamps High School
- Beaumont Leys School
- Beckfoot School
- Beckfoot Thornton
- Bedford Free School
- Bedford High School
- Beech Hall School
- Bensham Manor School
- Bentley Wood High School for Girls
- Bents Green School
- Birchwood High School
- Birkenhead High School Academy
- Bishop Ullathorne Catholic School
- Bitterne Park School
- Blatchington Mill School
- Blessed George Napier School & Sixth Form
- Blessed Thomas Holford Catholic College
- Blue Coat Church of England Academy
- Blue Skies School
- Blundell's School
- Bohunt School
- Bolton Muslim Girls School
- Boston Spa Academy
- Bosworth Academy
- Bramcote College
- Brampton College
- Brayton Academy
- Brentwood School
- Bridlington High School
- Brighouse High School

- Brighton Waldorf School
- Brimsham Green School
- Bristnall Hall Academy
- British Association of Teachers of Deaf Children and Young People (BATOD)
- British International School Riyadh
- British School of Kampala
- Broadland High Ormiston Academy
- Broadlands Academy
- Broadoak Academy
- Brookfield Community School
- Broughton Hall Catholic High School
- Broughton High School
- Bruntcliffe Academy
- Bullers Wood School for Girls
- Burgess Hill School for Girls
- Cabot Learning Federation
- Camborne Science & International Academy
- Cardiff University
- Cardinal Heenan Catholic High School
- Cardinal Newman Catholic School
- Cardinal Pole Catholic School
- Carlton Bolling College
- Caroline Chisholm School
- Carshalton High School for Girls
- Carterton Community College
- Castle Manor Academy
- Castle Newnham School
- Catholic High School Chester
- Chace Community School
- Chailey School
- Charles Read Academy
- Chaselea Alternative Provision Academy
- Chatham and Clarendon Grammar School
- Chauncy School

- Cheam High School
- Chelmsford County High School
- Cheltenham Ladies' College
- Chenderit School
- Cherwell School
- Chesterton Community Sports College
- Chilton Trinity School
- Chilwell School
- Chipping Norton School
- Chosen Hill School
- Christ the King Catholic Voluntary Academy
- Church Stretton School
- Churchill Academy
- City of Leicester College
- City of London Academy Islington
- City of Stoke on Trent Sixth Form College
- Clapton Girls Academy
- Cleeve School
- Clifton College
- Clitheroe Royal Grammar School
- Codsall Community High School
- Colchester Academy
- Colfe's School
- Colne Community School
- Colne Park High School
- Confederation of School Trusts
- Coop Academy Failsworth
- Coppice Performing Arts School
- Copthall School
- Corpus Christi Catholic High School
- Corsham School
- Coulsdon Sixth Form College
- Court Moor School
- Cox Green School

- Creating Tomorrow MAT
- Crofton School
- Crompton House School
- Culcheth High School
- Cullompton Community College
- Dame Alice Owens' School
- Dauntsey's School
- De la Salle School
- Dean Close School
- Dean Trust Rose Bridge
- Dean Trust Rose
- Denmark Road High School
- Dinnington High School
- Diocese of Westminster Academy Trust
- Discover Learning Trust
- Ditcham Park School
- Dixons Fazakerley Academy
- DN Colleges Group
- Downlands Community School
- Downs View School
- Dr Challoners High School
- Driffield School
- Dubai English Speaking College
- Duke Of Kent School
- Dukes Education Trust
- Dulwich College
- Dunottar School
- Dyson Perrins C of E Academy
- E-Act School
- Easington Academy
- East Barnet School
- East Leake Academy
- Eastbourne College
- Eden Boys' School Birmingham

- Eden Girl's Leadership Academy
- Edgbaston High School for Girls
- Eggars School
- Elizabeth Woodville School
- Eltham Hill School
- Elveden Academy
- Emerson Park Academy
- Epping St John's school
- Epsom and Ewell High School
- ESF Schools
- Ethos College
- Everest Community Academy
- Exmouth Community College
- Fairfax Academy
- Fairfield High School
- Fakenham Academy
- Farnham Heath End School
- Farringtons School
- Felixstowe School
- Felsted School
- Ferryhill School
- Finham Park 2
- Finham Park School
- FitzWimarc School
- Forest Gate Community School
- Forest Hill School
- Fortismere School
- Foxford Community School
- Francis Barber PRU
- Francis Holland School
- Frederick Gent
- Freman College
- Fulford School
- Fullbrook School

- Gateway College
- Gillotts School
- Glenmoor & Winton Academies
- Goldington Academy
- Gordano School
- Gorse Academies Trust
- Gray's Convent High School
- Great Torrington School
- Green Tutors
- Greensand Federation
- Grove Academy Slough
- Guilsborough Academy
- Haberdashers Crayford Academy
- Hadleigh High School
- Haggerston school
- Hagley Catholic High School
- Hampshire County Council
- Hampton Court House School
- Hampton School
- Handsworth Wood Girls Academy
- Hanley Castle High School
- Harris Academy Merton
- Harris City Academy
- Harris Federation
- Harris Girls Academy East Dulwich
- Harris Lose Academy
- Harrogate Grammar School
- Harrow Way Community School
- Hartland International
- Harton Academy
- Harvey Grammar School
- Harwich and Dovercourt High School
- Hastings High School
- Hautlieu School

- Heath School
- Heathside School
- Hemel Hempstead School
- Hendon School
- Henlow Academy
- Hermitage Academy
- Hertfordshire and Essex High School
- Highbury Fields School
- Highfields School
- Highworth Grammar School for Girls
- Hillview School for Girls
- Hockerill Anglo European College
- Hodge Hill Girls School
- Holmer Green Senior School
- Holy Family Catholic High School
- Houlton School
- Ilkley Grammar School
- Imberhorne School
- Institute of Mathematics and its Applications
- Islington LA
- Jewish Community Secondary School
- Jersey College for Girls
- John F Kennedy Catholic School
- John Flamsteed Community School
- John Madejski Academy
- John Smeaton Academy
- John Taylor High School
- Jumeirah College
- Katharine Lady Berkeley's School
- Katherine Warrington School
- Kesteven Grantham Girl's School
- Kibworth Mead Academy
- Kidsgrove Secondary School
- King Edward VI Handsworth School for Girls

- King Edward VI High School
- King Edward VI School Southampton
- King Edward VI Sheldon Heath Academy
- King James Academy Royston
- King's School Hove
- King's Academy Prospect
- King's Leadership Academy Warrington
- Kings Priory School
- King's School Macclesfield
- Kingsbridge Community College
- Kingsdown School
- Kingsmead Academy
- Kingsmeadow Community School
- Koyani Education
- Lampton Academy
- Lancashire County Council
- Langley Park School for Boys
- Laurel Park School
- Lavington School
- Lawn Manor Academy
- Le Rocquier School
- Lea Manor High School
- Lealands High School
- Leicester Children's Hospital School
- Les Quennevais School
- Leventhorpe School
- Lichfield Cathedral School
- Life MAT
- Linton Village College
- Liskeard School and Community College
- Little Heath School
- Littleover Community School
- London Design and Engineering UTC
- London Mathematical Society

- London Vocational Ballet School
- Long Field Spencer Academy
- Longridge Towers School
- Longsands Academy
- Loreto High School
- Lostock Hall Academy
- Loxford school
- Madeley School
- Maghull High School
- Malcolm Arnold Academy
- Malmesbury School
- Manchester Academy
- Manchester Enterprise Academy Central
- Manor Croft Academy
- Manor Green College
- Manor High School
- Maple Medical PRU
- Marden High School
- Maricourt Catholic High School
- Mark Rutherford School
- Marshland High School
- Mayflower
- McAuley Catholic High School
- MEA Central
- Meadowhead School
- Meole Brace School
- Meols Cop High School
- Meoncross School
- Meridian High School
- Mill Hill School
- Millais School
- Millom School
- Milton Keynes Academy
- Monkseaton High School

- Montgomery Academy
- More House School
- Moreton Hall
- Morpeth Secondary School
- Moseley Park School
- Mossbourne Community Academy
- Moulsham High School
- Moulton School & Science College
- Mount Carmel High School
- Mount Grace School
- Mount St Mary's Catholic High School
- Mulberry Academy Shoreditch
- Mulberry Woodside Academy
- NAHT
- Neatherd High School
- Nelson and Colne College Group
- Neston High School
- New Mills School
- Newcastle Sixth Form College
- Newfield Secondary School
- Newman Catholic Collegiate St Margaret Ward
- Newstead Wood School
- Nicholas Breakspear school
- Nobel School
- North Durham Academy
- North East Futures UTC
- North Huddersfield Trust School
- North Kesteven Academy
- Northfield School & Sports College
- Northfleet School for Girls
- Northgate High School
- North London Collegiate School
- Northstowe Secondary College
- Northwood School

- Norton Canes High School
- Notting Hill and Ealing High School
- Nottingham City Council
- Nottingham Girls Academy
- Nunnery Wood High School
- Oakbank Secondary School
- Oakmoor School
- Oasis Southbank Academy
- OCR
- Oriel High School
- Ormiston Academy
- Ormiston Endeavour Academy
- Ormiston Sir Stanley Matthews Academy
- Oswestry School
- Oundle School
- Outwood Academies City & Hasland Hall
- Outwood Academy Adwick
- Outwood Academy Freeston
- Outwood Academy Hasland Hall
- Outwood Academy Valley
- Oxclose Community Academy
- Park Community School
- Parklands Academy
- Parklands High School
- Parkside Academy
- Parliament Hill School
- Parmiter's School
- Patcham High School
- Paxman Academy
- Pearson Education
- Penair School
- Pendle Vale College
- Penistone Grammar School
- Penk Valley Academy Trust

- Perins School
- Petchey Academy
- Philips High School
- Phoenix Collegiate
- Pinderfields Hospital PRU
- Pittville School
- Plymouth College
- Plympton Academy
- Plymstock School
- Pool Hayes Academy
- Portsmouth High School GDST
- Prenton High School for Girls
- Presdales School
- Prince William School
- Princes Risborough School
- Prior's Field School
- Priory Community School
- Priory Ruskin Academy
- Priory School
- Prospect school
- Princes Risborough School
- Putteridge High School
- Q3 Academy Great Barr
- Quantock Education Trust
- Queen Elizabeth High School
- Queen Ethelburga's Collegiate
- Queen Margaret's School for Girls
- Queens' School
- Queensbury Academy
- Radley College
- Radley College Physics Department
- Rainhill High School
- Rawlins Academy
- Rawmarsh Community School

- Redmoor Academy
- Rhyddings School
- Richard Challoner School
- Richard Lander School
- Richmond Park Academy
- Ridgewood School
- Ripley St Thomas Church of England Academy
- Ripon Grammar School
- Rivington and Blackrod High School
- Robert Barclay Academy
- Robert Blake School
- Robert Mays School
- Robertsbridge Community College
- Roedean School
- Rosedale College
- Rossall School
- Roundhay School
- Royal Grammar School Worcester
- Royal Harbour Academy
- Royal Hospital School
- Royal Russell School
- Rugby School
- Russell Education Trust
- Ryde Academy
- Rye College
- Sacred Heart of Mary Girl's School
- Saint Paul's Catholic School
- Sale Grammar School
- Salford City College
- Sammi Hollins-Owen Science Tutoring
- Sandon School
- Sandringham School
- Sandy Secondary School
- Saracens High School

- Sherborne Area Schools' Trust
- Sawtry Village Academy
- School of St Helen and St Katharine
- Scott College
- Scott Medical and Healthcare College
- Sedgefield Community College
- Selston High School
- Shaftesbury School
- Sharples School
- Sheffield Park Academy
- Sheldon School
- Sheridan School
- Shevington High School
- Shire Oak Academy
- Shrewsbury School
- Sir John Colfox Academy
- Sir John Lawes School
- Sir William Borlase's Grammar School
- Sirius Academy North
- Sirius Academy West
- Slough and Eton School
- Smithdon High School
- Smithills School
- Social Arts for Education
- South Hampstead High School
- Southborough High School
- Spalding Grammar School
- Sparsholt College
- Springwood High School
- St Aloysius College
- St Annes Catholic High School for Girls
- St Augustines Catholic High School and Sixth Form
- St Bede's College
- St Bernards Catholic High School

- St Brendan's Sixth Form College
- St Columbas Catholic Boys School
- St Crispin's school
- St Cuthbert's High School
- St Edmund's College
- St Gabriel's School
- St George's School
- St Helen's School
- St Hilda's Church of England School
- St Ignatius College
- St John Fisher Catholic High School
- St John's Catholic School
- St Joseph's Catholic College
- St Margaret's School
- St Marys Catholic High School
- St Michaels Catholic School
- St Monica's RC High School
- St Nicholas' School
- St Paul's Catholic School
- St Peter's RC High School and Sixth Form Centre
- St Peter's Collegiate Academy
- St Thomas Aquinas Catholic School & Sixth Form
- St Thomas More Catholic High School
- St Thomas More Language College
- St Wilfrid's RC College
- Stamford School
- Standish High School
- Stanley High School
- Star Academies
- Stonehenge School
- Stonyhurst College
- Stourport High School
- Stowe School
- Stowmarket High School

- Stradbroke High School
- Stratford Girls Grammar School
- Streatham and Clapham High School
- Stretford High School
- Stroud High School
- Studley High School
- Sutton Valence School
- SV Academy
- Swakeleys School
- Sydenham School
- Sydney Russell School
- Tapton School
- Tarleton Academy
- Taunton School
- Temple Moor High School
- Tewkesbury Academy
- The Academy at Shotton Hall
- The Albion Academy
- The Appleton School
- The Archer Academy
- The Arthur Terry School
- The Bay CE School
- The Bourne Academy
- The Bulmershe School
- The Cardinal Wiseman Catholic School
- The Cedars Academy
- The Clere School
- The Community College Bishop's Castle
- The Cooper School
- The Cosplay Shed
- The de Ferrers Academy
- The Derby High School
- The Dormston School
- The Downs School

- The Earls High School
- The Eastwood Academy
- The Futures Trust
- The Gilberd School
- The Grange School
- The Grove School
- The Gryphon School
- The Hazeley Academy
- The Holgate Academy
- The Holy Family School Keighley
- The Hope Academy
- The John of Gaunt School
- The Joseph Whitaker School
- The Khalsa Academy
- The King's School Grantham
- The Latimer Arts College
- The London Oratory School
- The Maplesden Noakes School
- The Marsh Academy
- The Marvell College
- The Mathematical Association
- The Minster School
- The Mirfield Free Grammar
- The Morley Academy
- The Mount School York
- The Orme Academy
- The Polesworth School
- The Priory City of Lincoln Academy
- The Quest Academy
- The Romsey School
- The Roseland Academy
- The Sittingbourne School
- The Skipton Academy
- The Spires College

- The Sutton Trust
- The Tiffin Girls' School
- The Urswick School
- The Vyne School
- The West Bridgford School
- The Westgate School
- The Westwood Academy
- Therfield School
- Thomas Estley Community College
- Thomas Tallis School
- Thomas Telford UTC
- Thomas's Putney Vale Senior School
- Thornden School
- Thorp Academy
- Thorpe St Andrew School and Sixth Form
- Thurstable School
- Todmorden High School
- Tomlinscote School
- Trafford College Group
- Trentham Academy
- Tring School
- Trinity Academy
- Trinity Academy Bradford
- Trinity Academy Cathedral
- Trinity Academy Halifax
- Trinity CofE High
- Trinity MAT
- Tunbridge Wells Girls' Grammar School
- Tupton Hall School
- Tute Education Ltd
- Twynham School
- Uckfield College
- Unity College
- Unity Schools Partnership

- Urmston Grammar
- Ursuline College
- Vale of York Academy
- Waddesdon School
- Wadebridge School
- Walker Riverside Academy
- Walton Academy
- Walton High School
- Wapping High School
- Warden Park
- Waseley Hills High School
- Weaverham High School
- Wellington School
- Wells Cathedral School
- West Buckland school
- West Country Schools Trust
- West Coventry Academy
- West Hill School Tameside
- Westfield School
- Westholme School
- Weston Favell Academy
- Whalley Range High School
- Whitworth Community High School
- Wildern Multi Academy Trust
- William Brookes School
- William Howard Secondary
- Willow Bank School
- Wilmington Grammar School for Girls
- Wilsthorpe School
- Winifred Holtby Academy
- Withernsea High School
- Withington Girls' School
- Wixams Academy
- WJEC-CBAC

- Woking College
- Wood Green Academy
- Woodbrook Vale School
- Woodchurch High School
- Woodford County High School for Girls
- Woolton High School
- Worle Community School
- Whalley Range High School
- Wright Robinson College
- Wrotham School
- XP Trust
- Yavneh College
- Zephyr Global Limited

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