



Rationale document

Centre number	XX456
Centre name	YYY School
Level and title of syllabus	Cambridge International AS / A Level Chemistry
Syllabus code	9701

Why you must complete the Rationale Document for each syllabus

The Rationale Document explains how you have determined school-assessed grades for your candidates in the June 2021 series, by showing what evidence was chosen and how marks were awarded. The Rationale Document outlines the steps in considering candidate evidence and determining school-assessed grades for your candidates.

You must complete a Rationale Document for each syllabus. We will need to see the Rationale Document when we select your centre for quality assurance checks of the school-assessed grades that you send to us. Failure to complete and submit the Rationale Document correctly may result in delays to your candidates receiving grades.

Who completes the Rationale Document for each syllabus

The Rationale Document should be completed by the Head of Department for each syllabus (or by the teacher if there is no Head of Department), to explain to us how you have arrived at the school-assessed grades for your candidates for the June 2021 exam series.

When you must submit the Rationale Document for each syllabus

We will email you, explaining which syllabuses from your centre have been chosen for quality assurance checks. The email will explain how to upload the Rationale Document for these syllabuses and how to upload the relevant candidate work.

You must complete a Rationale Document for each syllabus for which you are submitting entries and keep them for your records. You only need to send us the Rationale Document for the syllabuses that we request. Do **not** send the Rationale Document or candidate work to us if you have not been asked to do so.

What your completed Rationale Document must include

The Rationale Document must provide information about the areas below as relevant to the syllabus and your centre.

- A Selection of work**
- B Coverage of syllabus content and assessment objectives**
- C Security and authenticity of work**
- D Managing your marking (standardisation)**
- E Awarding grades to your students**
- F Access arrangements and special consideration**

What happens after submitting the Rationale Document

We will use the Rationale Document and candidate evidence that you submit to check the school-assessed grades that you have submitted. Once we have reviewed the evidence that you have submitted, we will contact you by email if we require further information.

Private candidates

If you have accepted entries for private candidates, please explain how their work has been obtained, selected and authenticated, then go on to answer the rest of the questions in this Rationale Document.

We accepted an entry for one private candidate (0008) for this syllabus. She was entered as a linear route candidate. I arranged that for this single student to attend our school in person on two separate days in a Covid-safe way and in line with our local guidelines.

On those days, the student took the same exam papers as the school candidates (papers 1, 4 and 5) as I have described in Section A. I was able to invigilate the student taking the exams and so can authenticate the work as the student's own. I marked this student's papers and graded them in the same way as I did for my own students.

The following questions apply to all candidates, including private candidates.

A Selection of work

You must make sure that each candidate is aware of the evidence used to determine their grade in advance of that grade being submitted to Cambridge. This transparency should enable candidates to raise any errors or circumstances relating to particular pieces of evidence to be taken into account in advance of submitting grades to us. You should take into account any statements they make in relation to the evidence. Although you may share marks associated with individual pieces of evidence, you must not share with students the grades submitted to us before results are released.

1. Please explain what pieces of work you have used for this syllabus and why you decided to include these in the evidence.

If you have used different pieces of evidence for different candidates, explain how and why this has been done.

The evidence I have used has depended on which entry route the students have used. This is set out in the table below. This year I only had 7 students for chemistry, so I have submitted evidence for all of them, as requested by Cambridge. There was also a private candidate (0008) who sat the exams at our school.

Candidate number	Entry route	Evidence 1	Evidence 2	Evidence 3
0001	Linear	Paper 4	Paper 5	Paper 1
0002	Linear	Paper 4	School-set assignment	Paper 1
0003	June carry-forward	Paper 4	Paper 5	School-set assignment
0004	Linear	Paper 4	Paper 5	Paper 1
0005	November carry-forward	Paper 4	Paper 5	School-set assignment
0006	All routes	Paper 4	Paper 5	Paper 1
0007	All routes	Paper 4	Paper 5	Paper 1
0008*	Linear	Paper 4	Paper 5	Paper 1

*Private candidate

Here is more detail about the pieces of evidence and the reason why I used them.

- **Paper 4 and Paper 5:** These were the November 2019 Cambridge paper 9701/42 and paper

9701/51 from the School Support Hub. I marked them according to the Cambridge mark scheme and used the published grade thresholds. I used these papers as evidence because they are the same kind of exam as students would normally take at the end of their A Level course. I used the November series paper because we had already used the June 2019 papers for practice in class.

- **Paper 1:** For our linear candidates and 'All routes' candidates, I have included some AS Level evidence. I have included a multiple-choice paper because this is the same kind of exam as students would normally take as part of their A Level course. It also meant that I knew that I could mark this paper accurately.

School-set assignment: For my staged-route students, I had to find another piece of evidence at A Level standard to meet Cambridge's rules. I set students a problem-solving task which required them to draw on what they had learned during the course and present their answers as a written report. I also gave each of them a viva. Candidate 0002 was not able to complete the work required for Paper 5 because he is clinically extremely vulnerable (see Q5). I have therefore substituted in his school-set assignment, so that he has three pieces of suitable evidence.

B Coverage of syllabus content and assessment objectives

We have said that evidence should cover as broad a range as possible of the assessment objectives and syllabus content.

2. For each candidate's portfolio for this syllabus, are all the major areas of syllabus content included?

Yes

3. If you have answered No, please explain why the major area of syllabus content is not included.

Although I have answered Yes above, we were not able to teach Section 3.5 as thoroughly as usual because of the lockdown and remote teaching so candidates were less prepared for this part of Paper 1 than usual (Evidence 1).

4. For each candidate's portfolio for this syllabus, are all the assessment objectives included?

Yes

5. If you have answered No, please explain why the assessment objectives were not included.

Candidate 0002 has not provided evidence for AO3, Experimental Skills and investigations, because he was not able to complete any practical work in school. The reason is that this candidate is clinically extremely vulnerable, and it was not possible for him to attend school in person and I did not find it possible to teach him these practical skills remotely.

6. Have you informed each candidate about the choice of evidence and considered their responses?

Yes

C Security and authenticity of work

You must be able to confirm, with a reasonable degree of confidence, that the work included in every portfolio is authentic, which means that it is the candidate's own unaided work. A 'reasonable degree of confidence' does not mean absolute certainty. However, it does mean that you have taken reasonable steps to ensure that the work is authentic.

7. Please describe the conditions in which each type of piece of work was completed.

- Paper 4: This was completed in school and invigilated by me.
- Paper 1 and paper 5: These were completed at home by the students. I asked students to switch on their lap-top cameras and I monitored their behaviour remotely during the exams to check for malpractice. I gave students a strict time limit to complete the papers, to reduce the opportunities for malpractice further. For Paper 1, I asked students to submit their answer strings by email straight after the exam time directly back to me.

School-set assignment: This was completed remotely when the school was shut during lockdown. Since we only have 7 students for chemistry, I conducted a viva with each student and asked them to talk through their assignment. I asked them questions to probe their understanding and to get them to explain how they had arrived at their answers.

8. How have you authenticated each type of piece of work?

Refer to guidance on authenticity in the [Cambridge Handbook](#) and on our [website](#).

For example, have you conducted interviews with candidates, was the work done in a supervised way in school? If the work was supervised, please give details.

Paper 4 was completed in school, so that I could invigilate.

For the remote exams, I used students' laptop cameras and monitored for malpractice remotely. I also gave students tight time windows to complete the tests.

I was able to do individual vivas for the school-set assignment

D Managing your marking (standardisation)

In cases where more than one teacher has used the same mark scheme, you are required to standardise your marking.

9. Was more than one teacher involved in awarding marks to the candidates for this syllabus?

No

10. If you have answered Yes, please describe the standardisation process that you used.

Include details of how you agreed the marks awarded, how you checked that you were all marking to the same standard, how you ensured that all the subject teachers involved applied assessment criteria and standards across the syllabus consistently.

11. How did you ensure that your judgements about each candidate's level of performance were free from bias?

It is important that the marking of work is objective; when marking, teachers should only take account of the student's knowledge, skills and abilities which are evident in the piece of work. Refer to our guidance on avoiding bias.

When I marked Paper 4 and Paper 5, I blanked out the student details on the front page. I marked each paper question-by-question and used the mark scheme provided by Cambridge accurately and objectively. For Paper 1, the marking was completely objective.

For the school-set assignment, I had a pre-prepared levels-based mark scheme to use when reviewing the students' written reports so that I could mark reliably and judge the quality of the work fairly. For the vivas, I had a list of questions to ask the students which I prepared in advance, so that I could use the same approach with all students. I recorded the vivas, with the students' permission, so that I can revisit any of the dialogue, if the quality of my judgement needs to be reviewed by the school.

E Awarding grades to your students

Questions 12 and 13 are about how you awarded grades to your students. You don't need to give details of your workings for each candidate, but you do need to explain your approach.

12. Please explain how you determined the grades for each type of piece of work.

For example, you may have referred to published grade thresholds for a particular examination paper, you may have used a percentage score, you may have used the published coursework thresholds for an adapted piece of extended work, you may have considered the grades awarded to your students in previous exam series.

For the Cambridge exams (Papers 1, 2 and 4), I used the grade thresholds published by Cambridge. I had used complete question papers, so there was no need to adjust the grade thresholds.

For the school-set assignment, I reviewed the students' written work against my mark scheme and questioned the students in their viva to check their understanding. I made notes of where the students had demonstrated content, skills and knowledge against the syllabus requirements. I then had a robust holistic view of the student's knowledge and skills in chemistry.

I am an experienced chemistry teacher, so I could map this holistic overview to the level of knowledge, skills and understanding that I would expect an A Level chemistry student to have at each grade. I checked that my own qualitative rank-order of the students' school-set assignment was consistent with the order of the grades which I had given.

13. Please explain how you determined the overall grades for your candidates.

For most students (except candidates 0002, 0003 and 0005), I had three exam marks from Cambridge exams. I determined a total score for each student and I also summed the grade thresholds at each grade for each student. I compared each student's total to the summed grade thresholds to give an overall grade for each student. I checked that this made sense against the individual grades that I had given for each paper.

For the other candidates, I did the same process for the two exam papers. For candidates 0002 and 0003 this gave the same grade as the school-set assignment, so I awarded this grade. For candidate 0005, the grade from Papers 4 and 5 was C but the school-set assignment was B, in my judgement. Since both of the exam papers were very close to grade B (very high C), I gave this candidate grade B overall.

For the staged-route candidates (0003 and 0005) I also took into account their previous AS Level grade by following the guidance published by Cambridge.

F Access arrangements and special consideration

Questions 14 and 15 are about access arrangements. Refer to the Cambridge Handbook section 1.3 for guidance about access arrangements.

14. Did any of your candidates require an access arrangement?

No

15. If you answered Yes, please give details of the access arrangements that were required, and how these were delivered.

Questions 16 and 17 are about special consideration. Refer to the Cambridge Handbook section 5.5 for guidance about special consideration.

16. Did any of your candidates require special consideration?

Yes

17. If you answered Yes, please give details.

On the day before the day of the Paper 4 exam scheduled in school, candidate 0001 suffered a family bereavement which affected her performance in the exam. I marked her exam paper as normal, in line with the marking criteria that I used for other candidates. Her mark was very close to the grade threshold for a grade B, so we followed the guidance published by Cambridge and gave the candidate a grade B for this piece of evidence, to compensate for her bereavement. The result that she then achieved was then well aligned with the grades that she achieved for her other two pieces of evidence.

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I confirm that the information in this Rationale Document accurately represents how student-assessed grades were determined.

Name

Position

Date