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ENTRY LEVEL

Moderators' report

SCIENCE

R483

For first teaching in 2016

R483/01/02 Summer 2023 series

Version 1

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Introduction

Our moderators' reports are produced to offer constructive feedback on candidates' performance in the examinations. They provide useful guidance for future candidates.

The reports will include a general commentary on candidates' performance, identify technical aspects examined in the questions and highlight good performance and where performance could be improved. The reports will also explain aspects which caused difficulty and why the difficulties arose, whether through a lack of knowledge, poor examination technique, or any other identifiable and explainable reason.

Where overall performance on a question/question part was considered good, with no particular areas to highlight, these questions have not been included in the report.

General overview

Entry Level Science R483 is a course designed to provide candidates with realistic targets encouraging them to develop science skills. This will help some candidates to progress to GCSE Sciences.

It is assessed in three elements, Element 1: End-of-Item Tests, Element 2: Can-Do Tasks and Element 3: Practical Task.

The End-of-Item Tests consist of 36 short tests each being marked out of 15, with the marks being converted to points. Each test carries a maximum of 2 points and so the maximum total is 72 points.

The Can-Do Tasks are 16 tasks included in the specification. Each task is worth ½ point so the maximum is 8 points for this element.

The Practical Task may be one suggested by the teacher, or candidates can devise their own. This task should help the candidates to suggest an answer to a scientific query relevant to the specification. The task is marked with relation to 5 performance descriptors, each carrying a maximum of 4 marks. The maximum total for this element is 20 points. The most important feature is choosing a task that allows all the aspects to be assessed. For example, Aspect C is finding a trend or pattern, and this is possible if five or more readings are taken for a task in which dependent and independent variables are continuous.

Overall summary on the Can-Do Tasks

Each Can-Do Task should have a date added to the Candidate Record Card to indicate when it was achieved. A blanket date is not appropriate.

Overall summary on the End-of-Item Tests

Centres should be aware that there are multiple versions of each End-of-Item Test. Centres should now move to use version three or four, or a mixture of these two versions. These can be downloaded from Interchange. Earlier versions should be avoided for certification in summer 2025.

When tests are marked by the teacher in the centre, they should follow the published mark scheme. However, if the writing is not clear, the teacher can ask the candidate to explain what they have written, and then the teacher can act as scribe. In the marking of the tests, the teacher should indicate that this is what occurred. If an answer is deemed correct but is different from that on the mark scheme, the teacher can mark this correct, record this on the mark scheme used by the centre and bring to the attention of the moderator that this is what has occurred.

Overall summary on the Practical Tasks

The practical task should be one that enables the candidate to be given marks on each of five aspects. The task can be suggested by the teacher, or devised by the candidate themselves, as appropriate to the specification. The important fact is that it should not be a discrete variable that is chosen. It is not a good idea just to test liquids for their pH, or to collect eye colours.

Many centres used a practical centred around the effect of adding different masses to springs and recording the extension, which allowed the candidates to clearly discuss a well-established trend. However, simple candidate statements that 'adding more mass leads to a greater length' were not sufficient to fully identify the trend. Candidates should be encouraged to include and discuss the full range of their results and include the use of multiple masses.

Another common task was related to crater size. If different size meteors (balls of plasticine) were dropped on to trays of sand, then a trend could be found (if a minimum of five different sizes were chosen) to be able to state that 'the larger the meteor the bigger the crater'. This was also amended to

relate the height at which a meteor falls to the size of the crater and this is fine if a suitable range of heights is used.

Some centres used practicals that investigated the effect of temperature on different rates of reaction, including the effect of acid on metals and the dissolving of indigestion tablets. Rate of reaction practicals lend themselves very well to the specification requirements, as controlling and varying temperature can often be carried out using relatively simple pieces of equipment. It also lends itself to discussions of other control variables when evaluating the trends seen. As before, multiple temperatures should be included.

Repeating a practical a number of times is always best practice, but is not always necessary when trying to identify trends and patterns. General advice in this area would be to include at least five different measurements, for example, five different temperatures, five different heights and five different masses.

Overall summary

Papers were designed to reach the following thresholds

Entry Level 1 40%

Entry Level 2 60%

Entry Level 3 80%

However, the grade thresholds set for this series is as follows:

Grade Threshold	Reasons
75	They would have about 15 End-of-Item Tests (EiTs) each with 2 points, at least 6 points from the Can-do Tasks and at least three 4s from their Practical Task. Approximately 6, 15 (4,4,4,2,1), 54 (15x2.0 + 6x1.5 + 15x1)
50	These candidates would be expected to gain 1.5 points for each of the End-of-Item Tests (EiTs) and some with 2 points. They might score 4 marks on their Can-do Tasks They would also have carried out a Practical Task and gained over half marks. 4, 12 (4,3,3,2,0), 34 (12 x 2.0 + 4 x 1.5 + 4 x 1)
25	These candidates rarely score well on their Practical Task with their planning aspect very weak. In their EiTs they may not attempt a lot of them and only then reach 1 point level. They may only get 2 marks from their Can-do Tasks. These are usually candidates who do not complete all components. 2, 7 (2,3,2,0,0), 16 (4 x 1.5, 8 x 1.0 + 4 x 0.5)

Most common causes of centres not passing

All three elements need to be completed.

The End-of-Item Tests carry the most weight of 72%. Centres cannot enter candidates for a test more than once.

The Can-do Tasks only carry 8% but sometimes these are ignored, or they have not been dated and recorded accurately.

The Practical Task must be appropriate so that all the aspects can be given their relevant marks according to the descriptors and only one practical can be included within the candidate's portfolio.

Common misconceptions

The End-of-Item Tests have a rigid mark scheme. If a teacher finds a correct answer that is not included in the mark scheme, then they should mark it correctly and add it to their mark scheme and mark the other candidates accordingly. When submitting the tests, they should include a note for the moderators explaining their action.

If the answers written by the candidates are indecipherable, it is perfectly acceptable to ask the candidates to explain what they have written. In these circumstances, the teacher can write it in their words and mark it with BOD (benefit of doubt).

A single date against the Can-do Tasks covering all the tasks is not satisfactory. Each Can-do Task should be dated and recorded.

Practical tasks such as measuring the pH of solutions, or collecting eye colour, or dissolving an indigestion tablet in hot or cold water are not suitable for allowing candidates to be given marks in all aspects. Two or three measurements of a discrete variable are not appropriate.

Avoiding potential malpractice

End-of-Item Tests are available in four versions, a combination of different versions can be submitted but these should now be limited to version three and four. Candidates should not be allowed to complete different versions of the same test, for example version three and four of Biology end-of-unit test 1. In the Practical Task it is possible for candidates to collect and collate results, but they should produce their own conclusions.

Helpful resources

This report offers feedback on different aspects of your submission for R483 and can be found on Teach Cambridge following the publication of results.

Additional comments

A list of what is required in 2023 from a centre is:

1. a photocopy of the Candidate Record Card (CRC) for each of the candidates in the sample selected, correctly totalled for all the three components and with the final overall points total rounded down and transferred to the cover sheet. **This must be checked carefully** and the use of the electronic interactive candidate record card is recommended where possible to avoid any possible errors

2. **ALL** marked End-of-Item Tests for the requested candidates **arranged in test order**

3. one practical task representing each requested candidate's best total mark with the completed cover sheet attached to the front

4. the final mark should be rounded down and transferred to OCR Interchange.

It would be useful to the moderator if the following pieces of information were also supplied:

1. a headed piece of paper with the name of the teacher responsible and preferably including an email address as well as a telephone number and centre address

2. a letter stating how standardisation was carried out in the centre and this may be included on the headed paper. This is especially useful if there is more than one teacher involved or more than one set of candidates

3. it is best if the work of a single candidate is held together by a single treasury tag or in a folder.

After moderation, all the work will be returned to the centre except for the work of candidates that is retained for use by OCR in Awarding, Archiving or Training.

When the results are sent to centres in August, they will also receive:

1. A copy of the Moderator's Report and
2. Any adjustments made to the points totals.

The Entry Level Science course continues to be very successful. This must be due to the popularity of the course with both teachers and candidates. The possibility of using the course as a pre-requisite to other OCR GCSE Sciences has also not escaped the notice of centres that double enter candidates for Entry Level Science and a GCSE Science.

Moderation procedure

Internal moderation should take place in centres before submission to the moderator. A piece of headed note paper should contain information to say how this internal moderation has occurred even if it states that there is only one teacher and the marks are checked by the Head of Department and preferably the email address of the teacher responsible. Any change to the mark scheme should be recorded.

Administration

When End-of-Item tests are downloaded from the OCR Interchange some centres do not print double-sided. When candidates can take 36 EiTs and each one is single sided this results in a very large package and a waste of paper and increases the cost of postage. Part of the internal moderation within a centre should be checking that marks have been correctly added and transferred to the candidate record cards. These should be used as working documents throughout the course. Filling these in at the last minute can lead to errors. Many of these errors and omissions remain similar to those noted over previous years but annotation has become more important and much more useful for moderators.

Common errors

- The centres must send all the End-of-Item Tests as well as the Practical Task.
- Not enclosing a covering letter with the sample giving the name of the contact teacher or not saying in the covering letter how internal standardisation was carried out (if the course is taught by one teacher, then the letter should simply say this).
- Not putting candidate names or candidate numbers on tests or assessed work which causes serious problems over identification of work.
- Submitting End-of-Item Tests for moderation that have not been entered on a Candidate's Record Card or have not been marked.
- The electronic version of the candidate record card has a box on the front cover in which the number of End-of-Item Tests is included.
- Incorrect totalling of points for End-of-Item Tests on page 4 of the record card.
- Rounding-up the Final Total of End-of-Item Test marks and/or Final Total of Can-do Tasks to whole numbers rather than to one decimal place.
- Not submitting practical tasks.
- Not rounding-down the final mark.
- Not putting forward the practical task as a question or using discrete variables. It is difficult to award marks under Aspect C if there is not an identifiable trend or pattern.
- The End-of-Item Tests must be marked in red.
- **Allowing a candidate to take a test more than once. Only the original mark from the first undertaking of the test will be counted.**

End-of-Item Tests

Subject Update – End-of-item tests
Versions 1 and 2 of the End-of-item tests should no longer be used for the June 2025 series onwards. Centres are also reminded that we no longer accept tests from the previous Entry Level Certificate specification R591. Please see our subject update for more information.

It is most useful if the End-of-Item Tests are in numerical order.

Tests cannot be taken more than once by a candidate.

Moderators select and remark a sample of seven End-of-Item Tests per candidate chosen from the whole range of tests attempted by the centre, so that a balanced overview of the centre's marking is obtained.

Most centres had marked the End-of-Item Tests following the published mark schemes and had marked in accordance with the instructions on the front cover of the schemes. Centres are to be thanked for the care that they put into this part of the assessment.

The "1 tick-equals-1-mark" point still has to be made as quite a few teachers continue to circle the mark allocation. In a question that has a True/False answer then if the candidate writes something different, but it is clear what was meant then the mark can be given. An example is in the test that required a missing word from a list above, the candidate drew a line from the circled word to the sentence. The mark can be given, and BOD written alongside in annotation.

Errors that did occur with the assessment of the End-of-Item Tests included:

- marking the tests in colours other than red (especially green which the moderators use)
- marking 'sequence' type questions incorrectly
- circling totals at the end of each question (use the one tick – one mark method)
- incorrect transfer of points to the Candidate Record Card (CRC)
- failing to record the End-of-Item Test on the CRC
- recording a mark for an End-of-Item Test that is not sent as part of the portfolio.

If a teacher thinks an answer that a candidate has given is correct but is not covered by the mark scheme, the teacher should annotate the copy of the mark scheme and apply it to all the candidates from their centre.

Can-do Tasks

Some centres had candidates completing several End-of-Item Tests and Practical Activities but ticked very few Can-do Tasks; even though the Practical Activity carried out must have involved the candidate demonstrating some Can-do Tasks successfully. Can-do Tasks can be achieved within a Practical Activity.

In the specification R483 there are 16 Can-do Tasks and the total number completed is added together and divided by two giving a maximum of 8 points. The result should be to one decimal point. The low level tasks can be used for training and allowing candidates to show their progress, but opportunities need to be given to allow candidates to perform some of the higher level tasks. Can-do Tasks cannot be given part marks and each task must be individually dated and recorded.

Practical Tasks

It is advisable that centres use a continuous variable so that a trend can be identified.

Many centres used writing frames, and these can be useful to guide candidates. However, if too much guidance is given then Aspect A, **Planning to collect data**, may not be given the maximum 4 marks. The guidance may include general headings such as "What will I do?", "The equipment I will need is" and "How will I make it safe?". The safety considerations made by the candidate should relate to the actual task involved. The candidates may then go on to gain marks for Aspect B, **Processing the data**, if they put their results into a table. Here again if the table is given or the graph axes are given with the labelled axes this limits the mark they should be given. Many centres have been awarding 4 marks for just completing a table with only three results. Headings to the tables with units are also needed for the full 4 marks.

Examples of suitable and popular tasks were craters using different masses. Poor choices were often just comparisons of two or three discrete values such as pulse rate after walking and running or cooling beakers with different covers, collecting eye colours or taking the pH of different solutions.

Again, when using writing frames or help sheets for Aspect D, these should be used with care to ensure that they do not provide too much guidance. For example, some of the work sheets used were too specific such as getting a response for Aspect D – "Why did the crater increase in size when the height of the meteor changed?", and this effectively gives the trend. Work sheets often tend to produce similar work from the candidates. Centres are reminded that while the practical data may be shared, the writing up process needs to be done independently.

The planning is best done before the activity, so that it can be collected in and marked and checked for the safety aspect.

Aspect A: Quite often just a list of equipment was given. A useful indicator for marking for 3/4 marks is 'Can I do the Practical Task based on what has been written?' and that the safety aspect is specific for the task.

Aspect B: Preferably at least five values of a continuous variable should be obtained. Bar charts are acceptable for 4 marks, but if a continuous variable has been selected, a line graph is more appropriate. Candidates should be encouraged to use a continuous variable. Plotting needs to be reasonably accurate for 4 marks. Tables of results can score 2 marks. A graph on its own, without the table of results, makes it impossible to check the plotting.

Aspect C: This is an easy 4 marks if a continuous variable was chosen, and the "er....er" idea has been taught. Comparisons (best/worst) are only a match to 2 marks. Certainly, the best of two cannot get 4 marks for this aspect.

Aspect D: This is about explaining why it happened and there was often little evidence seen from centres that the candidate could draw links between the patterns seen in their results and the scientific principles underlying these. It would help the candidates if they were taught the relevant science before they carried out the Practical Task. Some centres seemed to be using trends and patterns (Aspect C) in order to claim a match. For 2 marks a simple explanation is needed and for 3 or 4 marks some simple science ideas. Examples: Craters: 2 marks for larger objects are heavier. 4 marks needs a link to larger masses have more force (or acceleration). Solubility at different temperatures: 2 marks for heat makes the water move more. For 4 marks more heat means more particle collisions.

There has been a return to investigational experiments of the type "Does the temperature of the water affect the rate at which an indigestion tablet dissolves?", "Does the rate of reaction depend on the surface area?" "Does the mass added to an elastic band affect how much the elastic band stretches?" but in a lot of the tasks, Aspect D. **Interpreting the data**, proved difficult to assess. This should not be merely a re-statement of the trend or pattern which is Aspect C; this requires the candidate to relate the trend or pattern to the relevant science. Sensible ideas for explaining the pattern could score 2 marks, but for more marks some basic science ideas are needed. Common sense ideas might be able to score 2 marks.

Aspect E: **Reviewing the method**, must refer to the actual data collected. It requires the candidate to comment on how suitable the method used was and how it affects the quality of the data collected. Some centres were awarding high marks for stating they should repeat the Practical Task when they already have a good set of results. The data must be linked to the quality of the results and could be linked to a discussion around their repeatability or reproducibility.

This aspect (Aspect E) is about the method used and the data collected. For 1 or 2 marks there needs to be a relevant comment. This could be about whether the best equipment was selected, or the most suitable measuring device with the appropriate level of precision or scale values, or any comment about how well the method worked – it's often easier to state a problem here. Something simple can match 1 or 2 marks, but for 3 or 4 marks it needs to be how this affected the data. One way to do this is by looking for results that do not fit the pattern and suggesting a reason why this might have occurred.

Whatever Practical Task is chosen, the centre should check that it is appropriate for their candidates and that they have the resources for their candidates to tackle the task. If the practical task is a collaborative effort, then centres should annotate work so that individuals' contributions are identified.

Practical Tasks that were seen in 2023 were:

- electromagnets – the number of coils on magnetic strength
- craters – still very popular either for the size of the meteor or for the height from which it is dropped
- rate of dissolving – indigestion tablets added to water at different temperatures
- rate of reaction – magnesium and different concentrations of acid
- Hooke's Law – the stretching of elastic bands or springs.

Practical tasks that have been submitted historically that were not appropriate at all included:

- collecting eye colour
- pulse rates of the class compared with teachers
- comparison of shoe size
- testing solutions for pH.

"Can Aspect C be fully answered?" i.e. is there a trend or pattern that can be found? The variables therefore should not be discrete ones, and more than three results, preferably five, should be included to obtain the pattern.

Candidate record card

Please note that there is an electronic version of the candidate record card which automatically adds up the marks and converts them to points. In 2024 please make sure you use the most up to date R483 version. Please note that if you use the electronic version and then add marks at a later stage to the sheet the totals must be checked.

The Entry Level Science specification R483 has 36 End-of-Item Tests:

- 12 Biology
- 12 Chemistry
- 12 Physics.

The Assessment Components:

- End-of-Item Tests 72 points
- Can-do Tasks 8 points
- Practical Task 20 points

All mark schemes have been written to address the following targeted thresholds:

- Entry Level 1 40 points
- Entry Level 2 60 points
- Entry Level 3 80 points

The End-of-Item Tests are converted to points as follows:

A maximum of 36 tests can be "counted" and they have 15 marks each. Each End-of-Item Test has a maximum of 2 points and the overall weighting is 72%. The marks are converted to points as follows:

Marks	Points
12-15	2.0
9-11	1.5
6-8	1.0
3-5	0.5

Note that the marks to points are different to the previous R591 tests which should not be used. R591 are no longer accepted.

The Can-do Tasks have been arranged as 16 tasks and each task is worth 0.5 point. Therefore, the maximum mark is 16 x 0.5 = 8 points.

The Practical Task is a question that the candidates are given to answer, and they will need to:

- plan a suitable procedure
- display data in a suitable format
- recognise patterns in data
- interpret data and relate to relevant science
- comment on the method used to collect data.

The Practical Task will be teacher devised and:

- teacher assessed
- include five defined performance descriptors
- each given from 0 to 4 marks
- total marked out of 20
- directly converted into points.

Some digital photographs were used which were very helpful in showing how the investigation was carried out but should not include a photograph of the candidate.

There are two options for entry R483/01 and R483/02. Please note that R483/01 is the option where all the candidates' work needs to be scanned by the centre and uploaded onto OCR repository whereas R483/02 is the option to be selected when submitting hard paper copies of candidates' work.

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