Questions & Answers

Changes to assessment in National 5 Physics

1 Revised National Qualification course assessment

Where can I find information on the National 5 Physics assignment?

The assignment assessment task document can be found in the Assessment section of the National 5 Physics page under the Coursework tab.
View the National 5 Physics coursework assessment task
The document contains three sections: information for teachers and lecturers; marking instructions; and instructions for candidates.

Are candidates still required to achieve outcome 1 in the National 5 course?

No. The National 5 Physics course no longer contains any units or unit assessments, therefore outcome 1, which was part of the unit assessments for the previous course, is no longer a requirement.

Candidates will only be required to achieve outcome 1 if they are being presented for any free-standing SCQF level 5 units that were previously part of the National 5 course.

In the new question paper, will the proportion of 'A' grade questions and the balance between questions assessing knowledge/understanding, and questions assessing inquiry/analytical thinking skills, remain the same as in previous question papers?

The new question paper will be designed to sample more of the knowledge from across the course. The level of demand, however, will remain the same as in previous papers, with approximately the same proportion of 'A' type marks. Similarly, the paper will have approximately the same balance between items assessing knowledge/understanding and those assessing inquiry/analytical thinking skills.

Why does the course now have six units rather than three as previously?

The National 5 course no longer contains any units. The mandatory course content has been organised under six topic headings, which appropriately describe the areas of physics to which they relate. Teachers and lecturers can cover the mandatory knowledge in whatever order they see fit.

Will SQA produce new tests for candidates sitting the three units from the previous course as free-standing units?

Where centres choose to enter candidates for any of the three, free-standing units that used to be part of the course, they should be aware that there have been no changes to these units and so the available unit assessment support packs can be used.

2 Assignment — research stage

Can candidates choose a topic for the assignment that is outwith the course content? How much direction can teachers and lecturers give candidates in their choice?

Candidates should have as wide a choice of topics as possible, and topics outwith the content of the course are suitable as long as they give the candidates the opportunity to:

- discuss the underlying physics at an appropriate level
- produce numerical experimental data
- find comparative internet/literature data

Teachers and lecturers should agree with each candidate the aim of any investigation chosen, and take into account any health and safety implications, and availability of suitable apparatus.

Does the assignment experiment need to be 'extended' beyond an experiment that would be done as part of the course?

No. As described above, an experimental aim that gives the opportunity to discuss the underlying physics at an appropriate level, produce numerical experimental data, and find comparative internet/literature data would be suitable.

Can any research be done at home?

Yes. During the research stage candidates do not need to be directly supervised and candidates may gather information on the underlying physics and internet/literature data outwith the school setting.

For experimental data to be considered sufficient, is it necessary for repeat measurements to be taken, and if so, how many would be appropriate?

There's no hard and fast rule, but a candidate's experimental data would not be considered sufficient if repeated measurements were not made when appropriate to do so (in terms of time and equipment). Similarly, the number of repeats are not specified, but would be determined by the nature of the experiment.

The sufficiency of the range of the dependent variable, like the number of repeats, is dependent on the candidate's experiment.

Must teachers and lecturers provide candidates with a resource list?

Candidates are free to consult whatever sources are available to them. While it is not a requirement, teachers and lecturers may provide a resource list if they wish to increase the efficiency of their candidates' research. Where a resource list is provided, it must contain at least six possible sources of data. It is important, however, that the data candidates select is their own choice, therefore the resource list provided should be of variable relevance to the aim.

In situations where access to the internet is difficult, teachers and lecturers may provide paper copies of the sources on the resource list (by printing or photocopying). In such cases, it is important that candidates are provided with a copy of the full webpage or article, so that they can make a genuine choice of source data. Excerpts, or selected graphs or tables would be insufficient and should not be provided.

Can the data candidates choose to compare with their experimental data be taken from a virtual experiment?

Yes. The purpose of the internet/literature research is to let candidates come to a decision with respect to whether the results they have obtained 'make sense' in the light of what others have reported in literature, and comparing their results with a simulation on the internet is a way of doing this.

However, data from a virtual experiment cannot be presented as the results from the candidate's experiment.

If a candidate's results are not very good, will they lose marks?

A mark is awarded to candidates who have collected sufficient raw data. The number of values recorded must be appropriate to the aim and, where appropriate, should include repeated measurements. This mark is not dependent on whether the values obtained by the candidate match what might be expected.

If the candidate's experimental data does not show the same trend as the internet/literature data, or if the values they have obtained are significantly different from the internet/literature values, the candidate can still access the analysis mark by describing the difference(s) between their experimental results and the internet/literature data.

If a candidate's results show no clear pattern or trend, they can still access the conclusion mark if they clearly state that their experimental data does not demonstrate a clear pattern or trend.

When the measurements obtained in the experiment are of disappointing quality, the candidate can still access the evaluation marks by:

- identifying a factor which may have had a significant effect on the reliability, accuracy or precision of the experiment
- explaining what could have been, or was done, to minimise the effect of the identified factor, or the evidence supporting the identification of the factor

3 Assignment — report stage

Exactly what resources can candidates have access to during the report stage?

During the report stage, candidates may only have access to the following resources:

- instructions for candidates
- their unprocessed experimental data
- the internet data they are using for comparison, together with its reference
- any excerpts they have chosen to support the writing of their underlying physics
- their experimental method

Candidates should not have access to the marking instructions for the assignment during the report stage.

Teachers and lecturers should check that candidates do not have access to any part of their reports, including any plans, supporting notes or draft content. This would include any bullet points written in advance to support the writing of the report.

What is meant by 'underlying physics'?

Candidates undertaking the assignment should be encouraged to read the instructions for candidates extracted from the assignment assessment task. This gives clear guidelines on the structure and content of their report.

In the underlying physics section, candidates must explain the physics relevant to the aim of the assignment, using their own words as much as possible to demonstrate their understanding of the topic.

The underlying physics will be marked holistically with a candidate given credit for relevant physics demonstrating an understanding at a depth appropriate to National 5.

In preparation for writing the report, candidates can gather information from websites, books or journals and can take copies of this information into the report stage. However candidates should not prepare a draft of this section. It is the responsibility of the teacher or lecturer to ensure that candidates do not take pre-prepared drafts into the report stage.

Exemplar assignment reports will be available with commentaries illustrating where marks are awarded.

Can candidates use values obtained by other groups?

No. The assignment assesses candidates' skills of scientific inquiry. To ensure that all candidates undertake a certain minimum level of experimental work, the maximum number of candidates allowed to work together is four. Any pooling of results between different groups is not allowed as this would effectively create a team of more than four candidates and would diminish the relative contribution of each candidate.

Candidates must include their results which they can bring into the report stage. Is there a requirement for candidates to re-write this data into their report or can they attach their raw data and only tabulate the processed data?

Candidates must show all of the measurements recorded in the experiment in the form of a table, with clear headings on every column and with units correctly stated.

Where a candidate has recorded their measurements in the form of a correctly drawn table during the research stage, this can be included in the report without needing to be re-written.

Do candidates need to process data from their chosen internet/literature source?

No. Candidates should process the data from their experiment by carrying out calculations and producing graphs.

They will use data from their chosen source to compare with their experimental data. This does not mean that both data have to be in the same format, but the internet/literature data should be in a format that allows the comparison to be made.

If, however, a candidate chooses to process the data from the internet/literature source, the processing must be correct.

If repeats are not appropriate, and a candidate's experimental data does not require further calculations, what happens to the mark for calculations?

In the marking instructions, 1 mark is assigned for the calculation of mean and/or derived values.

To access this mark, the aim of the investigation should be chosen so that either repeated measurements are appropriate and a mean can be calculated, or a derived value can be calculated from the experimental measurements, or both of these.

If a candidate does not include calculations as part of the processing of their raw data, this mark cannot be awarded.

Is it advantageous for a detailed experimental procedure to be included in the report so that the candidate's evaluation can be judged?

No. Candidates can access both evaluation marks without providing a detailed experimental method.

In addition, it is important to note that for the National 5 assignment, the procedure mark is only awarded when a candidate has demonstrated the ability to summarise their experimental method. The full procedure should not be included.

Do references need to be at the end of the report for candidates to access the mark for references and the mark for structure?

No. The reference to the source of internet/literature data should be sufficiently detailed to allow retrieval by a third party, and does not have to be listed at the end of the report. A logical location may be just below the data to which it refers.

In the marking instructions, 2 marks are assigned to the structure of the report. The first for the inclusion of an informative title, and the second for a report that is clear and concise.

Is it okay if candidates do some of the calculations during the research stage, and work out averages in the report stage for the calculation mark?

Candidates can carry out calculations during the research stage but they cannot take any of these calculated values into the report stage. The use of previously calculated values or specimen calculations is not permitted.