



Common questions about National 3, National 4 and National 5 Physics

Outcome 1 — National 3, 4 and 5	2
Outcome 2 — National 3, 4 and 5	3
Assessment Standard 2.1	4
Assessment Standards 2.2 & 2.3	8
Assessment Standard 2.4	10
National 4 Added Value Unit	11
National 5 Assignment	12

Outcome 1 — National 3, 4 and 5

Can we assess Assessment Standards 1.1 to 1.6 over a number of experiments/practical investigations rather than having a one-off investigation?

Yes. Evidence for Outcome 1 may be gathered from a series of experiments/practical investigations from individual Units or across the Course. The Assessment Standards can be achieved via a number of pieces of evidence covering work done on different occasions.

What level of guidance can candidates be given before and during the write-up of Outcome 1?

Assessors can clarify with candidates how to produce evidence and the candidate guide should be issued to candidates. They can advise candidates on how to approach an activity or assessment and guide them in producing their response. Assessors may also prompt candidates, where appropriate, to clarify that they have met the requirements of the assessment. However, they should not direct them to any specific response. For example, assessors should not provide specific advice on how to improve responses or provide model answers. Candidates, or groups of candidates, are expected to work with minimal teacher support.

Are repeated measurements a requirement in the write-up?

Measurements should be repeated and averages calculated, where appropriate.

Can you confirm that in Assessment Standards 1.1 to 1.6 we need to record how variables are controlled?

The method should be given in sufficient detail to allow another candidate to repeat the experiment by following the method in the write-up. This includes how the variables are altered and measured. For those variables being kept constant, the evidence requirements are that the candidate 'includes the variables to be kept constant' and not how they are kept constant, although it would be good practice for candidates to indicate this.

Do candidates have to include both an equipment list and a diagram of the experimental set up?

The candidate should include enough detail to allow another candidate to repeat the experiment. It is quite possible that a candidate could include all of the necessary apparatus in a labelled diagram without the need for a separate equipment list or it may be a mixture of both.

Assessment Standard 1.2 states: 'Following procedures safely', but the evidence requirements talk about 'correctly and safely'. Which is correct?

The evidence requirements should match the Assessment Standard, which is about following procedures safely. It may be that by not doing things correctly the candidate is being unsafe; however the key thing to concentrate on is safety. For example, a method may require a candidate to time ten oscillations and the candidate measures the time for five. The

candidate hasn't, strictly speaking, followed the procedure correctly but they also haven't done anything that is unsafe, so they would not be penalised for this.

This will be updated in the documents at a later date.

Can an experiment from National 4 be used for Outcome 1 at National 5?

The experiment/practical investigation chosen for Outcome 1 must be from a key area of the Course at that level.

Can I give candidates an experimental instruction sheet to follow as well as the candidate guide?

Centres have to follow health and safety rules with candidates, so while a candidate can plan an experiment/investigation and be assessed on their plan for 1.1, it may well be appropriate to issue an experimental instruction sheet to ensure that candidates have a safe and appropriate procedure to follow. In this case, candidates should be encouraged to write up the method in their own words rather than copying verbatim.

If a candidate fails an Assessment Standard, do they have to do another activity as re-assessment or can they redraft the part of their write-up that didn't meet the standards?

In all cases of re-assessment, assessors must take care that reasonable remediation opportunities do not become overly supportive. It is essential that any re-assessment makes the same demands as the original assessment and so assessors should consider the use of a different context or a fresh activity. However, if a centre feels that redrafting the evidence for an Assessment Standard is the most appropriate method then that is acceptable.

Outcome 2 — National 3, 4 and 5

Assessment Standard 2.1

Do candidates have to get 50% across the key areas or 50% for each key area to pass 2.1?

Candidates are given opportunities to make accurate statements; the number of opportunities to make these accurate statements should be appropriate to the size of the key area. Package 3 – the Portfolio approach Unit assessment support pack gives clear guidance on an appropriate number of questions for each key area for the level.

At least 50% of the Knowledge and Understanding (KU) statements made by candidates must be correct in the Unit assessment; **not** 50% of each individual key area.

We're following the portfolio approach, assessing key area by key area, and I've heard from colleagues that in this approach candidates have to get 50% (or more) in each key area.

This is not the case. As with the last question, candidates need to get 50% or more **across** the key areas. In the portfolio approach, you would collect the evidence as candidates progressed through the Course and when a Unit was complete you would then check whether each candidate had 50% or more of all of the 2.1 questions assessed in the Unit.

What constitutes an opportunity to make an accurate statement?

The grids contained in each Unit assessment support pack identify which questions are making accurate statements. In most cases, each part of the question is classed as an accurate statement, for example National 5 Waves and Radiation Unit assessment support pack package 1 Questions 1(a) and 1(b) are each an opportunity to make an accurate statement. In some cases a question may require more than one piece of information to be correct, for example National 5 Waves and Radiation Unit assessment support pack package 1 Question 3 requires both of the angles to be labelled correctly.

Can we allocate marks to Unit assessments?

Our advice so far has been to avoid allocating marks. Marks could be allocated to represent a response. For example, in the questions identified in the previous common question, Waves and Radiation Q1(a) could be worth one mark and 1(b) could be worth one mark, but Q3 would also be worth 1 mark. Centres should not subdivide a response into separate marks where it is not appropriate (eg W&R Q3 should not be counted as 2 marks) and under no circumstances should ½ marks be allocated. The use of ½ marks has been discontinued in the Curriculum for Excellence qualifications.

If a candidate scores less than 50% in a Unit assessment for 2.1 do I need to reassess all of 2.1 again or only those key areas that the candidate didn't get correct?

It is at a centre's discretion how they re-assess their candidates. Candidates may be re-assessed only in the key areas of a Unit that they have failed or they could sit a new test covering all of the key areas.

For each assessment and re-assessment you apply the 50% threshold. You don't add the assessment and the re-assessment together and see if they got 50% overall.

If a candidate is following the portfolio approach and reaches the 50% threshold of all the questions I planned to give them across the Unit before we have finished testing, do I need to give them the tests on the remaining key areas?

Yes, even if a candidate has reached your 50% threshold before you have given all of the tests covering the key areas of a Unit, you still need to give them the remaining tests, as candidates should have the opportunity to answer questions on all of the key areas.

We have started assessing 2.1 using the portfolio approach. Do we have to re-assess using the portfolio approach or can we change our approach?

This is a centre decision and there is nothing to stop a centre changing their approach, as they may feel an alternative approach would suit their candidates better.

The assessment grid in the Unit assessment support packs have crosses that indicate whether the question is Knowledge and Understanding (KU) or Problem Solving (PS). Can we add all of these up and apply 50% for a pass?

No. 2.1 and 2.4 are individual Assessment Standards and are achieved independently.

Can we annotate or change the marking instructions as there are other answers to 2.1 questions we think should be accepted?

Centres are free to annotate marking instructions with alternative, acceptable responses but should be careful not to accept answers that wouldn't be acceptable in the national exam. If selected for verification, the centre should include the annotated marking instructions with the verification sample.

How many times can a candidate be re-assessed on a Unit assessment?

The rules on re-assessment have not changed, candidates should be allowed one, or in exceptional circumstances two, re-assessment opportunities. What constitutes an exceptional circumstance is a centre decision.

Can we use homework and classwork as evidence for a student passing 2.1?

No. The conditions of assessment for 2.1 clearly state the conditions under which the evidence can be generated; homework and classwork do not satisfy those conditions.

Can a centre use its own tests (Knowledge and Understanding and Problem Solving) to assess Units without these tests being prior verified by SQA?

Yes they can. If a centre is taking the SQA Unit assessment support packs and adapting them slightly — eg replacing a few questions with ones that are of the same level of demand, while still ensuring all key areas are appropriately covered — then there's no need to follow the prior verification route. Where centres are generating their own assessments they can choose whether to seek prior verification before using the tests. The downside to not having these tests prior verified is that the centre may be using an invalid assessment instrument and would have to reassess all candidates if this was identified at verification.

A potential mistake is to cut and paste from past papers and assume that, because they are SQA questions, the test will be valid for Unit assessment. The test may not cover all of the key areas appropriately and may include A grade questions. Unit assessments should be basic level competence — a centre using A grade questions may actually fail candidates who would have passed an appropriately levelled Unit assessment.

Is there a maximum and minimum number of questions that have to be asked in each key area of a Unit assessment?

The documents recommend no more than five per key area. Package 3 — the portfolio approach — contains a table that gives the recommended ranges for the number of questions for each key area.

If a centre has used an SQA Unit assessment published prior to August 2014, do they have to re-assess?

No, SQA will accept evidence from centres using the published draft assessment materials for this session. However, centres should use the most up-to-date one where possible and in future years should ensure they are using the most up-to-date version.

The Course and Unit Support Notes include the transistor but don't state which of the many types of transistor candidates should be familiar with. Which ones should we be covering?

Candidates should be familiar with the symbols for an npn transistor and an n-channel enhancement mode MOSFET. They should know that they act as a switch and be able to describe their operation in a transistor switching circuit.

Note that candidates may learn specific switching voltages but credit has always been given in questions where candidates have talked about transistors switching on at a 'certain voltage', 'set voltage' etc.

Do we have to teach potential dividers?

Potential dividers are **not** part of the mandatory content until Higher, ie they are not listed in the left-hand column of the Course and Unit Support Notes. However, teachers may choose to cover them as they provide a useful shortcut in series circuits. Such circuits can also be solved by applying Ohm's Law.

Assessment Standards 2.2 & 2.3

Do 2.2 and 2.3 have to be assessed as one piece of work?

No, a centre could choose to assess each Assessment Standard separately. However, it may be more straightforward for a candidate to include appropriate physics, at the right level, if the two are assessed holistically.

What information should be included in the write-up? How will we know if they have passed or met the Standard?

Each Assessment Standard must be met. The appropriate physics should be included to describe the application and impact. It is important that candidates include physics that is at the correct level. At National 5, candidates should be encouraged to include appropriate relationships. The updated *Course and Unit Support Notes* contain exemplification of standards.

Should candidates be penalised for exceeding the word count?

No. The word count is only a guide.

Can candidates do the same research topic?

Yes. However, assessors must exercise their professional responsibility in ensuring that evidence submitted by a candidate is the candidate's own work.

Can candidates do the assessment for 2.2 and 2.3 at home?

No. They can do research at home but the short report should be done in class under controlled conditions. Assessors should put in place mechanisms to ensure it is the candidates own work, eg they haven't brought in a prepared report as part of their research materials.

Can I assess 2.2 and 2.3 as a question in a test with 2.1?

In theory this is possible. However, the conditions of assessment for 2.1 are closed-book whereas the conditions for assessing 2.2 and 2.3 are open book, so assessors would have to put in place mechanisms to ensure that candidates only had access to their research materials for the appropriate part of the test. Also, a question for 2.2 and 2.3 would have to be worded so that it elicited the appropriate response (ie that it includes appropriate physics) without giving too much support (ie effectively looking like a pro-forma).

Can you clarify the extent to which assessment activity 2 in the Unit-by-Unit approach Unit assessment support pack is intended to overlap with the Added Value Unit?

Assessment Standards 2.2 and 2.3 relate to Unit assessment. They are not part of the Course assessment. A candidate may choose to research an issue for Assessment Standards 2.2 and 2.3 and then research it further and to a greater depth for the Added Value Unit, but they are assessed separately.

Do we have to use the topics suggested in the documentation for 2.2 and 2.3?

No — centres/candidates are free to choose the topic provided it relates to a key area of the Unit/Course and allows the candidate to demonstrate sufficient physics, at the correct level, to satisfy the evidence requirements.

Assessment Standard 2.4

Can you clarify the assessment of Problem Solving?

Candidates need evidence that they have passed **each** problem solving skill in order to pass Assessment Standard 2.4. Problem solving skills are transferable, so once a candidate has evidence that they have passed a skill it does not need to be assessed again for Unit assessment purposes (although a centre may wish to assess these in subsequent tests for formative/development purposes).

If you are following a Unit-by-Unit approach, the test may contain a number of questions assessing each problem solving skill — so to pass a particular skill the candidate needs to get at least 50% of the questions testing that skill correct. For example, a test may contain five questions testing Selecting Information and three questions testing Processing Information. In order for a candidate to pass these skills in this test, they would need to get three Selecting Information and two Processing questions correct.

For the portfolio approach, and where you are splitting the problem solving questions across different tests, then you should do the same as for the key areas by adding up the number of each type of problem solving question given across the Units and applying a 50% or more threshold.

For re-assessment of problem solving skills, you apply the 50% threshold to the reassessment of each skill. You do not add the assessment and re-assessment opportunities together and apply a 50% threshold.

Once a candidate has achieved a problem solving skill it is considered to be 'banked'. If you give further opportunities in later tests to further develop or consolidate the problem solving skills and the candidate gets them wrong, it does not 'cancel out' their earlier pass.

If a candidate has achieved a particular problem solving skill in test one but further questions are included in test two and three, can they score out those questions in these tests as this problem solving skill has already been achieved?

Yes, but given that the candidate has already achieved the problem solving skill (and it can't be taken away) you could give them the additional opportunities in test two and three to further develop them.

Assessment Standard 2.4 is covered in the three Unit assessment support packs for the Unit-by-Unit approach. Can candidates be re-assessed on 2.4 on three occasions?

If a candidate fails to achieve a problem solving skill in test one they could be re-assessed via test two and/or three.

National 4 Added Value Unit

What aspect of the National 4 Added Value Unit is mandatory this year and next?

Centres must use the SQA-developed assignment on the secure site to assess the National 4 Added Value Unit in Sessions 2013/14 and 2014/5.

The Resource Packs in the *Course and Unit Support Notes* for National 4 are only intended to exemplify material that might be given to candidates as a starting point for their research. **It is not mandatory to use any of the exemplars**; centres are free to select other appropriate investigations.

Can we develop our own assessments for the National 4 Added Value Unit?

No, centres must use the SQA-developed assignment on the secure site to assess the National 4 Added Value Unit in Sessions 2013/14 and 2014/5, ie the assessment conditions, the evidence requirements and the judging evidence tables. Suggested topics for investigation are included on page 24 of the *Course and Unit Support Notes* document, which also states that 'Centres are free to select other appropriate investigations'.

Can candidates research the same topic for Assessment Standards 2.2, 2.3 and their Added Value Unit?

Assessment Standards 2.2 and 2.3 should be viewed as preparation for the National 4 Added Value Unit, so the topic could be extended and further research carried out. However, separate reports are required.

Are candidates allowed to re-draft their report after teachers have marked it?

Yes, candidates are allowed to re-draft their report but this would count as a re-assessment opportunity.

What can candidates have access to during the write-up?

During Stage 2: the communication stage, candidates should have access to the material that they have generated in Stage 1: the research stage. During this stage the candidate selects, processes and presents the information/data that they generated in Stage 1: the research stage. Prepared drafts should not be used.

Can the research work and report that candidates have completed for the National 5 assignment be submitted as a National 4 Added Value piece of work?

Yes, providing it relates to one or more key areas of the National 4 course. Assessors would need to retain a copy of the National 5 report that is submitted to SQA for marking, and assess this against the National 4 Added Value Criteria. The report would have to meet all of the Assessment Standards for the National 4 Added Value Unit to pass.

National 5 Assignment

What should candidates have access to when completing the communication stage?

During the communication stage of the assignment, candidates should have access to material that they collected during the research stage. This may include, for example, statistical, graphical, numerical or experimental data; data/information from the internet; published articles or extracts; notes taken from a visit or talk; notes taken from a written or audio-visual source.

The assessor should check that the material used by the candidate in this communication stage conforms to the criteria above. It must not include a prepared report.

Are candidates allowed to re-draft their National 5 assignment?

No, there should be no re-drafting. Reasonable assistance does not include: providing model answers/providing feedback on drafts.

Is it possible to provide clarification regarding a potential National 5 assignment task?

SQA does not approve investigation topics for the assignment; centres are free to develop their own investigations that are related to a key area of the Course.

Is there a support pack in terms of specific research topics?

The updated *Course and Unit Support Notes* contain suggested investigation topics and a resource pack. The resource pack contains background information on car safety features. It exemplifies one approach to Stage 1 (research stage) of the investigation.

Is it acceptable to give candidates a list of sources to choose from?

Centres can provide a bank of data which candidates can then use to select appropriate information/data for their reports. Resources could be provided by a teacher; this could include books/articles/web links etc.

Can candidates use any material that they have found by doing independent research outwith class?

Yes, candidates can do some independent research outwith class, however centres need to ensure that it is the candidate's own work.

During the research stage, can candidates gather evidence as a group and share it before writing the report?

Yes.

Can candidates write up their reports at home?

No, the communication assessment activity must be carried out under supervised conditions. Assessors must exercise their professional responsibility in ensuring that evidence submitted by a candidate is the candidate's own work.

Can candidates choose any topic to research for the assignment as long as it is relevant to the National 5 Course?

Candidates are free to select appropriate investigation topics that draw on one or more of the key areas of the Course.

Is it mandatory to include practical work in the National 5 assignment?

No. An appropriate experiment/practical activity may be used as one of the data sources but is not mandatory.

Will there be penalties for going over the word count in the National 5 assignment?

The word count of 500–800 words is an indication as to the level of detail required for the assignment. Candidates will not be penalised for going over this limit. Appendices should be kept to a minimum.

Are candidates still allowed only one hour in exam conditions to write up their report?

No, the rules on time allocation were relaxed; it is recommended that the assignment as a whole should take no longer than eight hours. Additionally, the conditions of assessment state:

This stage will be conducted under a high degree of supervision. This means that:

- ◆ Candidates should be in direct sight of the assessor during the period of the assessment
- ◆ Candidates must not discuss their work with other candidates.

How these conditions are administered is a centre decision, and some centres may wish to adopt 'exam conditions'. However, these conditions can also be met in a classroom environment.

Does the write-up have to be completed in one session or can it be split over a few periods?

Candidates may produce their report over a period of time. If the report is completed over a number of sessions, then the assessor must retain the candidate's work between sessions. Following completion of the report there should be no redrafting.

General Curriculum for Excellence questions and answers can be found on the [frequently asked questions section](#) of SQA's website.