



# **NQ Verification 2015–16 Key Message Reports**

<b>Verification group name:</b>	<b>Biology</b>
<b>Levels</b>	<b>N3 – Advanced Higher</b>
<b>Date published:</b>	<b>October 2016</b>

**This Report combines all Verification Key Messages for the academic session 2015-2016.**

# NQ Verification 2015–16

## Key Messages Round 1

01

### Section 1: Verification group information

Verification group name:	Biology
Verification event/visiting information	Event
Date published:	March 2016

#### National Courses/Units verified:

H207 73/74/75	Cell Biology
H208 73/74/75	Biology: Multicellular Organisms
H209 73/74/75	Biology: Life on Earth
H4KD 76	Biology: DNA and the Genome
H4KE 76	Biology: Metabolism and Survival
H4L8 76	Human Biology: Human Cells
H4L9 76	Human Biology: Physiology and Health
H4LA 76	Human Biology: Neurobiology and Communication
H7W5 77	Biology: Cells and Proteins
H7W6 77	Biology: Organisms and Evolution

02

### Section 2: Comments on assessment

#### Assessment approaches

Most centres used the published Unit assessment support packs. However, there were several instances where centres had used older versions of the packs. Centres are reminded to use the most up-to-date Unit assessment support packs and corresponding marking instructions.

The Unit-by-Unit approach was the one most used. Some centres used the portfolio approach. Centres using the portfolio approach had split the Unit assessment support packs into sections covering just one or two of the key areas of the Unit. When using the portfolio approach the re-assessment should include the key areas of the Unit where a candidate has failed to show success. Alternatively, candidates could be re-assessed via a new test that covers all of the key areas of the Unit.

Centres are reminded that they should make use of SQA's prior verification service where significant changes are made to the Unit assessment support packs, or if they choose to use centre-devised assessments.

[Further information on SQA's Prior Verification service](#)

**Outcome 1: The candidate will apply skills of scientific inquiry and draw on knowledge and understanding of the key areas of the Unit to carry out an experiment/practical investigation.**

*Assessment Standard 1.1 Planning an experiment/practical investigation*

Centres are reminded that National 3 candidates are not expected to devise a procedure to meet Assessment Standard 1.1. Centres should provide candidates with the procedures and observe them following these correctly.

At all other levels there was evidence of centres not providing opportunities for candidates to meet the planning aspect of Assessment Standard 1.1. Many Outcome 1 reports suggested that all candidates from a class had been provided with both the protocol and materials to carry out an experiment/practical investigation with no evidence to suggest that they had been individually involved in the planning of the experiment/practical investigation. Centres are reminded that they should ensure that contexts that allow active planning by all candidates are chosen for Outcome 1 experiments/practical investigations to ensure that candidates can meet the planning aspect of Assessment Standard 1.1.

Centres are reminded that it may be possible to reduce the assessment burden on candidates by achieving some aspects of Assessment Standard 2.4 (solving problems) via a carefully designed experiment/practical investigation.

**Outcome 2: The candidate will draw on knowledge and understanding of the key areas of the Unit and apply scientific skills by:**

*Assessment Standard 2.1 Making accurate statements*

Most centres used the published Unit assessment support packs. Centres are reminded to use the most up-to-date versions.

When using the portfolio approach, centres are reminded they should collect evidence as candidates' progress through the Course. When a Unit is complete, centres should decide whether each candidate has achieved 50% or more of all of the questions used to assess Assessment Standard 2.1. There is no need for a candidate to achieve 50% of each key area.

*Assessment Standard 2.2/2.4 Solving problems*

Most centres used the published Unit assessment support packs. Centres are reminded to use the most up-to-date versions.

Some centres failed to assess the problem solving skills independently of each other. Centres are reminded that at least one correct response for each problem solving skill is required to meet Assessment Standard 2.2/2.4

## Assessment judgements

Centres must ensure that their assessment decisions and internal verification decisions are clear.

Centres are reminded that the Unit assessment support packs contain additional information in the judging evidence tables to assist with the judging of evidence of all Assessment Standards. Most centres used and applied these tables. Some centres seemed only to be using summary checklists; for example, candidate assessment records, as exemplified in the appendices of the Unit assessment support packs. Such checklists are useful for administrative purposes; however, they must be used in conjunction with the full list of judging criteria contained in the judging evidence tables.

Many candidates used the terms 'precise', 'accurate', 'valid' and 'reliable' incorrectly. Centres should ensure that candidates are only given credit for using these terms when they do so correctly.

Marking guidance provided in the Unit assessment support packs is not intended to be exhaustive of all possibilities and can be modified. However, centres must ensure that any modifications are of an equivalent standard to the existing guidance. A number of centres applied this rule effectively, annotating their marking guidance, detailing acceptable alternative answers and also unacceptable answers. Where this rule was not applied effectively, centres showed inconsistencies in their assessment judgements. Centres are reminded to discuss the marking guidance prior to the use of an assessment in order to improve consistency in the application of the marking guidance.

Some centres' assessment judgements were not in line with the national standards. The most common issue was leniency in the application of the marking guidance. Centres are reminded that a rigorous, accurate and consistent application of assessment judgements is essential. This can be facilitated by effective internal verification procedures within a centre.

The published Understanding Standards exemplar material contains examples of candidate evidence and commentaries explaining why the evidence does or does not meet national standards for assessment. Further exemplification is provided on the Biology Understanding Standards pages on SQA's secure site: [www.sqa.org.uk/sqasecure](http://www.sqa.org.uk/sqasecure).

03

## Section 3: General comments

A number of centres selected for verification failed to provide the required sample of candidates. Guidance on generating the required sample of candidates is provided on the following web page: [Generating the evidence sample](#).

Centres must ensure that accurate details are entered on the verification sample form and candidate evidence flyleaf, and on the centre's candidate assessment record or equivalent. Before submitting evidence for external verification, centres should ensure that they have referred to the guidance documents. Guidance on

evidence required for external verification of Units is provided on our quality assurance web page ([www.sqa.org.uk/cfeqa](http://www.sqa.org.uk/cfeqa)).

Centres are reminded that they can choose which Unit to select for each level of verification. Centres must choose the same Unit for all candidates at any one level. Centres can choose different Units for different levels.

Centre staff are reminded that all centres offering SQA qualifications must have an effective internal quality assurance system that ensures that all candidates are assessed accurately, fairly and consistently to national standards. Centres selected for external verification are expected to provide details of their quality assurance policies and processes.

Most centres provided evidence of their internal verification processes and some of these showed good practice by including notes from the internal verifier and demonstrated how assessment judgements were made. This often included some evidence of internal verification having taken place, specifically cross-marking. However, this did not always lead to consistent, reliable assessment judgements being made. Centres should review their internal verification processes to ensure that they are in fact effective.

Centres are advised to record any decisions taken during their internal verification process with appropriate statements on the candidate's work or an attached pro forma. Some internal verification processes were overly complicated with no information on how the final assessment judgements were made. Centres are advised to refer to the internal verification toolkit for further guidance.

#### [Internal Verification Toolkit](#)

Most centres made good use of assessment records and grids to record Outcomes, track progress and provide feedback to candidates.

# NQ Verification 2015–16

## Key Messages Round 2

01

### Section 1: Verification group information

Verification group name:	Biology
Verification event/visiting information	Event: H20A 74; visiting: H7W7 77
Date published:	June 2016

#### National Courses/Units verified:

H20A 74 National 4 Biology Assignment (Added Value Unit)

H7W7 77 Investigative Biology Unit

02

### Section 2: Comments on assessment

#### Assessment approaches

##### H20A 74 National 4 Biology Assignment (Added Value Unit)

All centres used the SQA Biology Assignment (National 4) Added Value Unit assessment.

Much of the evidence submitted for verification was in the form of a written report, and in many instances it was clear that this had been produced to meet the requirements of a National 5 Coursework Assignment. This approach can be adopted at the discretion of the centre, but centres must realise that in such cases there will inevitably be a different emphasis in the Assignment at each level. For example, it is not a requirement for candidates to compare the data from two sources at National 4. Centres must ensure that candidates are not disadvantaged by being expected to complete tasks that are not relevant to their level. It is important that the activity used to generate evidence is at the appropriate level, and care should be taken to ensure that it is not too demanding for unit assessment.

Some centres encouraged their candidates to complete a research log as they undertook the research stage of the Assignment. The evidence contained in each

log varied widely in terms of extent and detail, but it was clearly very useful preparation for many candidates. The material contained in candidate logs often provided appropriate evidence to meet specific Assessment Standards, especially Assessment Standards 1.1 and 1.2. In most instances candidates used their research log to produce a poster of their findings, and many good examples were submitted for verification. There were some instances in which candidates gave an oral presentation, and evidence of this was usually provided in the form of a printout of the talk or PowerPoint slides.

It should be noted that it is not necessary for candidates to redraft their entire report or presentation, should they fail to achieve all Assessment Standards at their first assessment opportunity. All that is required is a redrafting of the relevant part(s), or some supplementary evidence to demonstrate that an appropriate Assessment Standard has been achieved. Evidence produced to meet the requirements of a National 5 Assignment will not necessarily meet all of the Assessment Standards for the National 4 Added Value Unit, and in many instances some redrafting will be required.

### **H7W7 77 Investigative Biology Unit**

All centres used one of the SQA Unit Assessment Support Packages for Investigative Biology to assess Outcomes 1 and 2 for this Unit. In some instances, however, an older version was used. Centres are reminded to use the most up-to-date version of any SQA Unit Assessment Support Package to give candidates the opportunity meet all of the Assessment Standards.

#### **Outcome 1**

Centres are reminded that the achievement of Outcome 1 in the *Biology: Cells and Proteins* or the *Biology: Organisms and Evolution* Units **cannot** be used as evidence of the achievement of Outcome 1 in the Investigative Biology Unit of the Advanced Higher Biology Course.

Most centres used a pilot study to meet the Assessment Standards for this Outcome, whereas others used the initial stages of their Advanced Higher Project. This was in the form of either a written report or a daybook. In some instances these were used together as a means of providing the evidence to meet all of the Assessment Standards.

#### **Outcome 2**

There was evidence of the SQA Unit Assessment Support Packages 1 and 2 being used by centres to meet the Assessment Standards for this Outcome.

Where candidates failed to meet one or more of the Assessment Standards in their initial assessment, the appropriate questions from the other package were used for re-assessment.

## Assessment judgements

### H20A 74 National 4 Biology Assignment (Added Value Unit)

Although centres were using the detail in the judging evidence tables to support them in their assessment judgements for each of the Assessment Standards, some were using out-of-date versions of these. Centres are reminded to use the most up-to-date judging evidence tables, as these show the criteria against which their judgements should be made. Many centres further subdivided the individual requirements for each Assessment Standard into a checklist, detailing the sub-points within each Assessment Standard. This is good practice, assisting candidates and assessors in ensuring that all aspects of the Assessment Standard have been addressed.

The following specific points relate to issues from the individual Assessment Standards.

#### **Assessment Standard 1.1 — Choosing, with justification, a relevant issue in biology**

The most common problem that caused difficulty for some candidates to achieve this Assessment Standard was the requirement to 'state briefly in what way the issue is relevant to the environment/society'. The justification for choosing the issue must include a statement explaining the relevance of the issue to the environment/society. There is no need for the issue to be an application of biology.

Since there is also a requirement to explain the impact of the issue on the environment/society in Assessment Standard 1.4, it is critical for this to be considered carefully at the outset when candidates are selecting their topics for research.

#### **Assessment Standard 1.2 — Researching the issue**

The majority of candidates included relevant information/data from two sources in their evidence.

Some candidates used an experiment/practical activity as one of the two sources of data. If this approach is adopted, it is important to ensure that it is clearly linked to an issue that satisfies the criteria for Assessment Standard 1.1, ie it has an impact on the environment/society.

Centres are reminded of the advice provided previously that candidates must provide full URLs when citing their source of reference. A generic reference, such as [www.bbc.co.uk](http://www.bbc.co.uk) does not give enough direction for the source to be retrieved by a third party. If one of the sources is an experiment/practical activity, the title and aim should be recorded as the reference.

### **Assessment Standard 1.3 — Presenting appropriate information/data**

Most candidates provided evidence of presenting one of their pieces of information/data in a different way to that found in the published source. In many instances this was in the form of a graph or table, but these were not always completed with the accuracy required at this level. Centres are reminded that where a candidate chooses to present information/data in one of these formats, the correct headings, labels, scales and units are required to meet this Assessment Standard. If a graph is used as a source of information/data to be processed into another form, or if information/data is being presented as a graph, major and minor gridlines should be present to allow the accuracy to be checked. If a candidate chooses to summarise a piece of information/data, the key ideas and main points should still be obvious, and values/units from the original information/data should be included where appropriate.

### **Assessment Standard 1.4 — Explaining the impact, in terms of the biology involved**

A recurrent issue with this Assessment Standard was the lack of relevant biology being used to explain at least one impact of the issue being investigated on the environment/society. In many instances, the underlying biology did not relate to the impact on the environment or society. For example, where candidates chose to investigate the use of biological detergents, the biology provided focused on enzymes rather than the impact of these detergents on the environment/society. In some instances, candidates focused on the socioeconomic impact of the issue, which made it difficult for them to include any relevant biology.

Guidance should be given to candidates in the initial stages of choosing a topic to ensure that this is an Assessment Standard they can meet. There is no requirement for this to include an application of biology.

### **Assessment Standard 1.5 — Communicating the findings of the investigation**

Issues arose with this Assessment Standard where centres used a previous version of the judging evidence table. Candidates are not required to draw a conclusion or to summarise their findings. The evidence needs to be clear, concise, relevant and appropriately structured to meet this Assessment Standard.

## **H7W7 77 Investigative Biology Unit**

Overall centres made good assessment judgements using the detail provided in the judging evidence tables within the SQA Unit Assessments.

### **Outcome 1**

The following specific points relate to the individual Assessment Standards.

### **Assessment Standard 1.1 — Designing investigative procedures appropriate to the aim**

Most centres indicated that candidates had met this Assessment Standard when there was a lack of evidence for all of the evidence requirements. Centres should note that there are several evidence requirements needed to meet this Assessment Standard.

Issues arose where candidates devised an inappropriate aim. Centres should help candidates identify suitable topics for investigation and devise an aim that will allow them to meet the other Assessment Standards. Candidates must also formulate a hypothesis or question based on the aim.

The procedures should be described in enough detail to show that they are appropriate to the aim of the investigation. These should indicate that the candidates have at least considered:

- ◆ the use of suitable controls
- ◆ the control of confounding variables.
- ◆ the need for repeated measurements, ie replicate treatments or samples.
- ◆ the need for repeated experiments, ie independent replication.

It should be clear in the evidence provided that the main confounding variables have been considered. Some candidates chose to list these separately, which allowed them, the assessor, and the verifier to see whether they had been considered appropriately.

The most common issue in failing to meet this Assessment Standard was a lack of independent replication. This was often neither carried out nor considered. Candidates must either carry out the entire experiment again, using fresh materials and chemicals, or make it clear that they understand that this should be done and explain how they would/will do it. Where candidates are doing an environmental study, eg investigating species diversity in deciduous woodland, they would be required to sample in a different but similar woodland to carry out independent replication; sampling in another area of the same forest would simply be increasing the sample size. Once again, if this has not been done, the candidate must make it clear that they understand that it should be, and explain how they would/will do it.

### **Assessment Standard 1.2 — Taking account of ethical considerations**

Most candidates met this Assessment Standard. Where an investigation had particular ethical considerations, candidates had addressed these appropriately. However, candidates should be advised that where there are no ethical considerations, they should include a statement indicating that they have considered this.

### **Assessment Standard 1.3 — Identifying potential hazards, assessing associated risks and applying appropriate control measures**

Most candidates met this Assessment Standard. Some centres used a risk assessment form, which allowed candidates to show that as well as being aware of the hazards, they had controlled these appropriately when carrying out their investigation. Both of these elements are required to meet this Assessment Standard.

### **Assessment Standard 1.4 — Collecting data with precision and accuracy**

Most centres indicated that candidates had met this Assessment Standard when there was there was a lack of evidence for all of the evidence requirements. Centres should note that there are several evidence requirements needed to meet this Assessment Standard.

Most candidates recorded their measurements/observations in a planned and organised way. The most common format used was a table of results, which was appropriate for their data. However these tables were often not completed with the accuracy required at this level. Centres should ensure that candidates use appropriate headings and units in tables.

There should be information within the evidence of the instruments/methods used to make measurements; these should be appropriate to generate data that is within a suitable range, and of suitable accuracy and precision. For example, it would be inappropriate to use a measuring cylinder to measure volumes with precision and accuracy.

Centres should advise candidates to consider the results generated from their investigation. Some candidates had results which showed a wide variation yet they failed to consider what this meant, ie was there an issue with their procedure that led to this variation.

### **Assessment Standard 1.5 — Using initial results to develop or confirm procedures in the experimental design**

Most candidates met this Assessment Standard. The focus of this Assessment Standard is the initial results. Candidates should review these and decide whether further steps are needed, eg modifying the procedure. The reasons for any modifications should be explained and described. Where candidates are confirming that a procedure is appropriate for future work, they should state what this work will be.

## **Outcome 2**

Some centres showed good practice by discussing and amending the marking guidance before the assessments for this Outcome were used. However, where this is the case, care should be taken to ensure that alternative questions/answers are of a similar standard to those in the original SQA Unit Assessment Support Packs. Underlining and/or bracketing words in an answer often changes the level of difficulty, and these should be used with caution.

Most centres showed some degree of leniency in their application of the marking guidance. Centres are advised to apply the agreed marking guidance and use internal verification to ensure that all candidates are assessed accurately, fairly and consistently to national standards.

03

## **Section 3: General comments**

Centres are advised to ensure that it is clear where candidates have met an Assessment Standard. Clear annotation by assessors on the candidate evidence, indicating where aspects of each Assessment Standard have, or have not, been met is very helpful for candidates, other assessors, and verifiers. This makes it clear to all what has been achieved and what has yet to be achieved. Assessor comments on particular assessment judgements are also useful in helping to make it clear why these judgments have been made.