National 4 Science: understanding the next steps for session 2017–18

This guidance note explains how candidates are assessed for free-standing units in session 2017–18.

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Outcome 1

Candidates are no longer required to show full mastery of the assessment standards to achieve outcome 1. Instead, five out of the six assessment standards for outcome 1 must be met to achieve a pass.

The following table outlines the scenarios in which candidates can achieve outcome 1.

Scenario	Assessment Standard achieved (✓or x)						Overall result
	1.1	1.2	1.3	1.4	1.5	1.6	
1	x	✓	✓	✓	✓	✓	Pass
2	✓	x	✓	✓	✓	✓	Pass
3	✓	✓	x	✓	✓	✓	Pass
4	✓	✓	✓	x	✓	✓	Pass
5	✓	✓	✓	✓	x	✓	Pass
6	✓	✓	✓	✓	✓	x	Pass

Important note: There is still the requirement for candidates to be given the opportunity to meet all assessment standards. The above threshold has been put in place to reduce the volume of re-assessment where that is required.

Re-assessment

Candidates may be given the opportunity to re-draft their original outcome 1 report or to carry out a new experiment/practical investigation.

Outcome 2

The following assessment standards have been **removed**.

2.2 Describing an application
2.3 Describing a scientific issue in terms of the effect on the environment/society

For all units at National 4, outcome 2 consists of two assessment standards:

2.1 Making accurate statements
2.2 Solving problems

Assessment standards 2.1 and 2.2 are no longer required to be passed independently. Candidates can be assessed by means of a single test that contains marks and a cut-off score. A suitable unit assessment will cover all of the key areas (AS 2.1) **and** assess each of the problem-solving skills (AS 2.2).

Where a candidate achieves 50% or more of the total marks available in a single unit assessment they will pass outcome 2 for that unit.

Note: During session 2017–18 existing unit assessment support packs 1 and 2 will be amended to create a single assessment for each unit. Unit assessment support packs will also be amended to reflect the removal of assessment standards as noted above, and to ensure that each pack has the same total number of marks. In the interim, existing unit assessment support packs can be used during session 2017–18. Guidance on the use of each unit assessment support pack is noted on the following pages.

a) Unit assessment support pack 1 (unit-by-unit approach)

As these packages contain questions on all of the key areas (AS 2.1) and questions covering each of the problem-solving skills (AS 2.4), unit assessment support pack 1 **is suitable** for use as a single assessment for its associated unit.

The number of marks available for each question should be combined to give the total number of marks available. A cut-off score of 50% should be applied to each of these unit assessments.

Where a centre is using unit assessment support pack 1 they should apply the cut-off scores shown in the following table:

Unit assessment support pack 1 (V 1.2)		**Total number of marks available (AS 2.1 + AS 2.4)**	**Cut-off score**
H267 74 Fragile Earth	Energy & Metals	15	8/15
	Energy & Food	16	8/16
	Energy & Water	15	8/15
	Metals & Water	14	7/14
	Metals & Food	15	8/15
	Water & Food	15	8/15
H268 74 Human Health		19	10/19
H269 74 Applications of Science		25	13/25

Important note: For *Fragile Earth*, candidates are required to answer a set of questions which provides them with opportunities to make accurate statements about **two** of the four key areas of this Unit (two from: Energy, Metals, Water, Food).

b) Unit assessment support pack 2 (unit-by-unit approach)

As these packages contain questions covering only Assessment Standard 2.1 they are **not suitable** for use as a single assessment for their associated Units.

If a centre wishes to use unit assessment support pack 2 as a single unit assessment, questions covering each of the three problem-solving skills would need to be added. A **minimum of 1 mark per problem-solving skill per unit** would be acceptable.

The following table indicates the total number of marks available for the key areas (AS 2.1) in each of these unit assessments. These marks should be combined with the marks added to assess the problem-solving skills (AS 2.4) before the 50% cut-off score is applied.

Unit assessment support pack 2 (V 1.2)		**Total number of marks available (AS 2.1)**
H267 74 Fragile Earth	Energy & Metals	9
	Energy & Food	10
	Energy & Water	8
	Metals & Water	9
	Metals & Food	11
	Water & Food	10
H268 74 Human Health		15
H269 74 Applications of Science		17

Important note: For *Fragile Earth*, candidates are required to answer a set of questions which provides them with opportunities to make accurate statements about **two** of the four key areas of this Unit (two from: Energy, Metals, Water, Food).

Note: During session 2017–18 centres can continue to assess AS 2.1 and 2.2 separately using the existing unit assessment support packs. If they choose to do this, 50% or more of the KU statements (AS 2.1) made by candidates must be correct in the unit assessment and at least one correct response for each problem-solving skill (AS 2.2) is required to pass Outcome 2. However, if a candidate is given more than one opportunity in a unit assessment to provide a response for a problem-solving skill, then they must answer 50% or more correctly. Guidance on re-assessment is provided on page 6.

c) Unit assessment support pack 3 (portfolio approach)

It is still acceptable for centres to use this method of assessment.

Candidates should be given the opportunity to make accurate statements for all of the key areas of each unit (AS 2.1). They must also be given opportunities throughout the course to answer questions on each of the three problem-solving skills (AS 2.4).

Evidence should be collected as candidates' progress through the course. For assessment standard 2.1, candidates must achieve 50% or more of the total KU marks available for **each** Unit. For assessment standard 2.4, candidates must achieve 50% or more of the **total** marks available for all three problem-solving skills. Examples are given below:

Example A

This candidate has passed Outcome 2 for all three Units as they have achieved 50% or more of the total KU marks available for each Unit **and** 50% or more of the total marks available for all three problem-solving skills across the three Units.

Unit	**Assessment Standard (marks achieved)**	
	2.1	**2.4**
H267 74 Fragile Earth	9/11	4/6
H268 74 Human Health	13/15	
H269 74 Applications of Science	10/17	

Example B

This candidate has not passed Outcome 2 for all three Units, as although they have achieved 50% or more of the total KU marks available, they have not achieved 50% or more of the total marks available for all three problem-solving skills across the three Units.

Unit	**Assessment Standard (marks achieved)**	
	2.1	**2.4**
H267 74 Fragile Earth	6/11	1/6
H268 74 Human Health	8/15	
H269 74 Applications of Science	10/17	

Important note: For *Fragile Earth*, candidates are required to answer a set of questions which provides them with opportunities to make accurate statements about **two** of the four key areas of this Unit (two from: Energy, Metals, Water, Food).

Re-assessment

SQA's guidance on re-assessment is that there should be one or, in exceptional circumstances, two re-assessment opportunities. Re-assessment should be carried out under the same conditions as the original assessment. It is at a centre's discretion as to how they re-assess their candidates. Candidates may be given a full re-assessment opportunity, or be re-assessed on individual key areas and/or problem-solving skills. Regardless of which KU option is chosen, candidates must achieve 50% or more of each re-assessment opportunity.

If assessment standards 2.1 and 2.2 are combined then candidates must achieve 50% of the overall marks available in the re-assessment.

If assessment standard 2.1 is assessed separately then candidates must achieve 50% of the 2.1 marks available in the re-assessment.

If assessment standard 2.2 is assessed separately then candidates must achieve 50% of the marks available for each problem-solving skill in the re-assessment.

Science Assignment (National 4) Added Value Unit

Marks and a cut-off score have been introduced to the Science Assignment (National 4) Added Value Unit. Centres must use the criteria exemplified in the following table to assess the Science Assignment (National 4) Added Value Unit during session 2017–18. A cut-off score of 50% should be applied. Candidates must achieve 7 marks or more to pass.

Assessment Standard	Expected response	Max mark	Making assessment judgements	Additional guidance
1.1 Choosing, with justification, a relevant issue in science	State clearly the issue to be investigated. State briefly in what way the issue is relevant to the environment/society.	2	1 **mark** for clearly stating what is to be investigated. **1 mark** for stating why the issue being investigated is relevant to the environment/society.	Evidence for this Assessment Standard is likely to be produced during Stage 1: the research stage of the assignment, and may be found in a candidate's log or journal. Supplementary evidence may be gathered through observation and/or supplementary questioning.
1.2 Researching the issue	Select information/data from at least two relevant sources for inclusion in the report/presentation/poster/ leaflet.	2	**2 marks** for inclusion of relevant information/data selected from two or more sources. This could include raw data from an experiment/practical activity, extracted tables, graphs, diagrams and text, from two or more sources. Only one of the sources of information/data may be from an experiment/practical activity carried out by the candidate. **1 mark** for inclusion of relevant information/data selected from **only one** source.	Evidence for this Assessment Standard is likely to be produced during Stage 1: the research stage of the assignment and may be found in a candidate's log or journal. The information selected must be appropriate and sufficient to progress to Stage 2: the communication stage of the assignment and must be included within the report/presentation/ poster/leaflet. Information/data could be selected from the internet, books, newspapers, journals, publications, experiment/practical activity or any other appropriate source.

				Supplementary evidence may be gathered through observation and/or supplementary questioning.
	Record at least two relevant sources of information/data in such a way that they could be retrieved by a third party.	1	**1 mark** for recording at least two relevant sources of information/data in such a way that they could be retrieved by a third party (there is no need to follow a formal referencing system).	Sources may be identified anywhere in the report/presentation/poster/ leaflet. If one of the sources is an experiment/practical activity, then the title and the aim should be recorded. The candidate may have more than two sources, but only two of these sources need to have sufficient detail to allow them to be retrieved by a third party. References of websites must be a **complete** URL address. Wikipedia/www.bbc.co.uk etc is **not** acceptable.
1.3 Processing and presenting appropriate information/data	Present information/data from **one** of their selected sources in a different way. The presentation of this information/data must use a diagram, flow chart, table, graph, chart, key, or other appropriate format with all appropriate labelling.	3	**1 mark** for presenting their information/data in an appropriate format to convey the information/data sufficiently. **1 mark** for including the correct headings, labels and units where appropriate.	Evidence for this Assessment Standard is likely to be produced during Stage 2: the communication stage of the assignment. **All** appropriate headings, labels and units for the presented information/data must be included.

	Process their presented piece of information/data accurately. The processing can include: plotting graphs/charts from tables, populating tables from other sources.		**1 mark** for processing the presented piece of information/data accurately. Processing can include, for example: plotting graphs/charts from tables, populating tables from other sources.	Graphs must have appropriate scales. Almost all (90%) of processing is correct, ie points plotted on line graphs, bar tops on bar graphs, segments in pie charts, values entered in tables etc.
1.4 Apply knowledge and understanding of science	Explains/describes the underlying science as it relates to the issue.	2	**2 marks** for explaining/describing two points which are relevant to the issue, showing that the candidate understands some of the underlying science. **1 mark** for explaining/describing one point which is relevant to the issue, showing that the candidate understands a little of the underlying science.	Evidence for this Assessment Standard is likely to be produced during Stage 2: the communication stage of the assignment. Two relevant points have been explained/described at a depth appropriate to National 4 Science. One relevant point has been explained/described at a depth appropriate to National 4 Science. Where some of the science given is incomplete, wrong or contradictory, these marks can still be awarded.
	Explains/describes at least one impact of the issue on the environment/society, using some knowledge of the underlying science.	1	**1 mark** for explaining/describing one impact of the issue on the environment/society using some knowledge of the underlying science.	The impact(s) may be positive and/or negative.

1.5 Communicating the findings of the investigation	Communicate the findings in a way that is clear, concise, relevant and appropriately structured.	3	**1 mark** for summing up/drawing a conclusion of the findings of the investigation. **1 mark** for communicating the findings clearly and concisely. **1 mark** for an appropriate structure.	A short statement summarising/ concluding the findings of the investigation. This must be backed up by the evidence included in the investigation. Evidence for the assignment could be found in one of the following: ♦ a report ♦ a presentation, with supplementary/supporting material such as PowerPoint slides with notes ♦ a conference/annotated information poster (a document that can communicate the research findings, and should have a short title, an introduction, an overview of the issue being researched, results in appropriate format, summary of findings, and a listing of the two relevant sources — someone could fully read the poster in less than five minutes) ♦ an information leaflet
	Total	**14**	Candidates must achieve 7 marks or more to pass.	

Understanding Standards packs

Existing Understanding Standards packs are still current and will be updated in due course.