



NQ Verification 2013–14

Key Message Reports

Verification group name:	Mathematics
Levels	N3 to N5
Date published:	July 2014

This Report combines all Verification Key Messages for the academic session 2013-14.



NQ Verification 2013–14 Key Messages Round 1

01

Section 1: Verification group information

Verification group name:	Mathematics
Verification event/visiting information	Event
Date published:	January 2014

National Courses/Units/Awards verified:

Mathematics and Lifeskills Mathematics all levels

02

Section 2: Comments on assessment

Assessment approaches

The majority of centres used SQA Unit assessment support packs. Some used questions from Unit assessment support pack 1 and combined these to make assessments covering Assessment Standards from more than one Unit. In the vast majority of cases, this produced a valid approach to assessment.

Some centres produced assessments with appropriate questions that were either from SQA Unit assessment support packs or devised by the centre but which went on to make judgements based on threshold marks for the whole assessment. This was not a valid approach as candidates must demonstrate success in each Assessment Standard, eg in Numeracy, 15/30 was recorded as a pass although Assessment Standard 1.4 was not achieved.

Mathematics

Approaches were valid when one of the following methods was used to assess Outcome 1 Assessment Standards:

Approach 1: Judging across the Assessment Standards

All sub-skills from an Assessment Standard are assessed and the candidate demonstrates success by achieving at least half of the points of process and accuracy for the Assessment Standard. To assist making assessment judgements, each point of process and accuracy can be regarded as a process and accuracy mark. Refer to Section 3 for further information.

Approach 2: Judging the sub-skills

At least half of the sub-skills from an Assessment Standard are assessed and the candidate demonstrates success by achieving at least half of the sub-skills. To demonstrate success in a sub-skill the candidate must achieve more than half of the points of process and accuracy. To assist making assessment judgements, each point of process and accuracy can be regarded as a process and accuracy mark. Refer to Section 3 for further information. At least two sub-skills must be included in any assessment opportunity.

Lifeskills Mathematics

Although Strategy and Processing Assessment Standards have been combined in Unit assessment support packs, centres may judge these separately if wished.

Numeracy

Assessment Standard 1.2 should be judged holistically. It is not necessary for candidates to demonstrate success in each of whole numbers, fractions, etc.

To be successful in Numeracy Assessment Standard 1.4, candidates must make one decision based on the result of a measurement and one on the result of a calculation.

The requirements for Numeracy can be seen in the Record of Achievement such as the one in the guidance document at this link

http://www.sqa.org.uk/sqa/files_ccc/MathsGuidancedocument.pdf

Some centres submitted expanded marking guidance for National 3 Numeracy. H225 73 Package 1: Unit-by-Unit approach using a social enterprise context — a marking scheme will be made available for this Unit by mid-February 2014 to assist centres.

Re-assessments

Mathematics

Outcome 1

For Outcome 1 questions, contexts are not always applicable so 'changing the numbers' may be the only option (eg factorising a sum of terms with a numerical common factor). However, if the original question was, for example, a sine rule question where the angle was asked for then, in the re-assessment, ask for the side instead. Where a context exists, then for any re-assessment the context should be changed.

Outcome 2

For this Outcome, re-assessment of either Assessment Standard should be attached to a different sub-skill from that used in the original assessment or use a different strategy/context.

A bank of questions that centres can use for assessment/re-assessment for Outcome 2 will be available by mid-February 2014.

Lifeskills Mathematics

Where possible the contexts should be changed, eg if initial assessment is time management in the context of cooking then the re-assessment could be time management in the context of planning a journey.

Assessment judgements

- ◆ The majority of centres made reliable decisions across the assessments submitted.
- ◆ Some centres did not give credit for follow-through working. In Mathematics and Lifeskills Mathematics, the answer to one part of a question, even if incorrect, must be accepted as a basis for subsequent dependent parts of the question. Full points in the dependent part(s) may be awarded provided the question has not been simplified, eg if the formula for a sector of a circle is wrongly written as

$$\frac{30}{60} \times 2r$$

the subsequent calculation cannot be awarded full marks as it does not involve π and so the calculation is simplified.

If a candidate correctly uses

$$\frac{30}{360} \times 2 \times \pi \times r$$

but substitutes an incorrect value of r , the calculation mark is available as follow through.

- ◆ Most candidates showed appropriate working and were therefore often able to access partial credit in cases where an arithmetical error had been made. In some cases, answers only (without appropriate working) were awarded full credit. Where candidates have not shown working and the solution has several steps, full credit should not normally be given. If a specific method is asked for then other methods will not be given any credit, eg if a question requires simultaneous equations to be solved algebraically then a graphical solution will not receive any credit.

- ◆ Where there is a point of process and accuracy specifically given for rounding, the unrounded answer should be given first, so the assessor can be confident that correct rounding has taken place.
- ◆ Where the candidate must choose which units to give in the answer, the final point/mark should only be given if the answer includes the correct units — eg where lengths are given in cm and the answer is a volume; or in a speed, distance, time question where the candidate must demonstrate they know the answer is a distance and it is in kilometres.
- ◆ Where a candidate writes coordinates or vectors without brackets, the candidate will lose the opportunity to be awarded a process/accuracy point the first time this occurs within the assessment opportunity, eg if there are three questions about coordinates or vectors and the candidate has not used any brackets but done the algebra/geometry correctly, they would lose one mark/point rather than several as it is the same mistake.
- ◆ Where a comparison is required, such as in making a decision about whether something will fit/meet regulations, candidates should not be given credit for an answer of 'Yes' or 'No' without an explanation. The explanation should preferably include a numerical comparison of the value found against the value specified to fit/meet the regulations.
- ◆ Lifeskills — if the first point in a question is a strategy/process point (eg know to use) then this cannot be lost due to a transcription or arithmetical error.
- ◆ Transcription errors — candidates will normally lose the opportunity to gain the first process point/mark that is available.

03

Section 3: General comments

- ◆ Spreadsheets — these have been used effectively by many centres to track candidate progress. However, care must be taken when transcribing points from candidates' scripts to the spreadsheet itself.
- ◆ Angles — please note the accuracy for measuring angles is $\pm 2^\circ$.
- ◆ Please note, all Mathematics/Lifeskills Unit assessments are closed-book.

If a centre prefers to use marks rather than points of process and accuracy and reasoning, this is acceptable, eg Unit Assessment Support for National 4 Mathematics: Expressions and Formulae (H22F 74) — package 1: Unit-by-Unit approach.

Question number	Marks for process and accuracy and for reasoning in assessment for candidates. Each • illustrates one mark for process and accuracy. Each # illustrates one mark for reasoning.	
5	(a) <ul style="list-style-type: none"> • extend sequence • complete table (b) <ul style="list-style-type: none"> • begin to find formula • correct formula (c) <ul style="list-style-type: none"> # 2.1 valid strategy • correct solution 	

In the example above, 5 marks are available for process and accuracy and 1 mark is available for reasoning. Using approach 1 as outlined in section 2 above, across an Assessment Standard the pass mark would be at least 50% of the available process and accuracy marks. It would not be appropriate to combine the available marks for process and accuracy with the marks available for reasoning and apply a 50% overall pass mark.



NQ Verification 2013–14

Key Messages Round 2

01

Section 1: Verification group information

Verification group name:	Mathematics
Verification event/visiting information	Event
Date published:	March 2014

National Courses/Units/Awards verified:

Mathematics and Lifeskills Mathematics all levels

02

Section 2: Comments on assessment

Assessment approaches

Mathematics

Added Value Unit

As a result of feedback, the Mathematics Added Value Unit Test was amended in February 2014 to include the option for assessors to apply an overall threshold of 26 out of 43 marks when making a judgement on candidate performance. The existing guidance on judging operational and reasoning skills separately is also still a valid approach. The National 4 Lifeskills Mathematics Added Value Unit Test remains unchanged.

Additional support materials

Additional support materials were published in February 2014 for Outcome 2. A set of questions to assess/re-assess Outcome 2 (reasoning) in both National 4 Mathematics Units: *Expressions and Formulae* and *Relationships* has been produced as well as a set of questions to assess/re-assess Outcome 2 in the three National 5 Mathematics Units: *Applications; Expressions and Formulae;* and *Relationships*. These additional materials are available on the Mathematics

Unit assessment support section of SQA's secure site. They have been designed so that reasoning skills are attached to different operational skills or use a different context or strategy from Unit assessment support package 1.

Lifeskills Mathematics

Using SOLAR, SQA's online assessment tool

Centres may use a combination of paper-based assessments such as SQA Unit Assessment support packs and online assessment via SOLAR to assess Lifeskills Mathematics or Numeracy Units. It is not necessary for a whole cohort to be assessed using the same material or in the same medium and individual candidates need not have all Assessment Standards assessed using the same medium.

SOLAR summative assessments should be administered in the same manner as other instruments of assessment. SQA's guidance on re-assessment is that normally 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. This applies to all methods of assessment, including the use of SOLAR. It may be the case that a candidate has started an online assessment using SOLAR and not been able to complete it in the allotted time, then completed the assessment of that Outcome or Assessment Standard using another version of the test at a later date. This would still count as a first attempt. If situations like this have occurred, and it may appear that candidates have had more than the usual number of assessment attempts, it would be helpful if centres included an explanation of this with any material submitted for external verification.

Numeracy

Assessment of Assessment Standard 1.1

This Assessment Standard assesses the use of units. A candidate can pass this Assessment Standard irrespective of whether or not they correctly perform the calculation.

For example: $£6 + £5 = £10$ — this could be awarded credit under Assessment Standard 1.1 although the candidate has miscalculated the total.

Numeracy bridging pack

Candidates who have passed the three Units of National 5 Mathematics, need only successfully complete the two questions covering Assessment Standards 1.3 and 2.3 in the bridging pack (or equivalent) for the centre to be able to enter them as a pass in the *Numeracy* (National 5) Unit (H225 75). It is not necessary for the centre to include a tracking grid to show where the rest of the numeracy evidence occurs within the assessment of the three Mathematics Units.

Assessment judgements

The vast majority of centres closely followed the commentary on making assessment judgements and made correct decisions.

If there is a difference of opinion between the original marker and an internal verifier, the centre should make the final assessment judgement clear. At times, this has not been the case. If the script is submitted for verification, then a short note explaining the reason for the final decision would assist greatly.

Re-assessment

In order for the level of demand to be equivalent in a re-assessment, centres are advised to change the context and the nature of the question so that candidates are not required to carry out identical steps to those in the original assessment. For example, if the original question tests percentage increase, then the re-assessment could test percentage decrease.

03

Section 3: General comments

Internal verification

In many cases, there was evidence of robust internal verification systems. Some centres included an explanation of their internal verification process. Some centres had set up a system to enable them to share expertise and assist each other with internal verification. Some authorities have also set up groups to support internal verification and help to achieve consistency in cases where unusual responses were encountered or assessment judgements were not straightforward.



NQ Verification 2013–14 Key Messages Round 3

01

Section 1: Verification group information

Verification group name:	Mathematics
Verification event/visiting information	Event
Date published:	June 2014

National Courses/Units verified:

National 4 Mathematics Added Value Unit (H22H 74)

National 4 Lifeskills Mathematics Added Value Unit (H228 74)

02

Section 2: Comments on assessment

Assessment approaches

The SQA Added Value Unit assessments were used by all centres but one.

Assessment judgements

The vast majority of centres closely followed the marking instructions and made correct decisions based either on the threshold or half of the individual parts.

If a linear formula is required then it should be given in the form $f = ag + h$. It is not acceptable to award the mark for $ag + h$.

Rounding: if a question asks for the answer rounded to, for example, two decimal places then the unrounded value should be given first. If no rounding is required, then provided there is evidence, disregard errors due to premature rounding or truncation.

If candidates adopt alternative strategies not mentioned in the marking guidelines, then the marks should be re-allocated to fit with this strategy.

Where the candidate must choose which units to give in the answer, the final mark should only be given if the answer includes the correct units. For example, (a) where lengths are given in cm and the answer is a volume, or (b) a speed, distance, time question where the candidate must demonstrate they know the answer is a distance in kilometres.

03

Section 3: General comments

At present, the Added Value Unit test for Mathematics is being revised. The Unit Specification and therefore the test have been amended following feedback that it was somewhat predictable and straightforward for the added value part of the Course. The amended test will be available for centres to use in August 2014. All centres must use the new assessment from then onwards. Any Added Value Unit assessment completed by candidates before August 2014, will be valid in session 2014–15, but not thereafter. The bank of additional questions will be amended to reflect the alterations, to enable centres to construct re-assessments in keeping with the amended Unit Specifications. There have been no major changes to the Lifeskills Mathematics Added Value Unit test.

All Unit assessment support packs are being revised at present. The revision includes changes to marking instructions, records of achievements and, in some cases, questions.



NQ Verification 2013–14 Key Messages Round 3

01

Section 1: Verification group information

Verification group name:	Mathematics
Verification event/visiting information	Event
Date published:	June 2014

National Courses/Units verified:

National 4 Mathematics Added Value Unit (H22H 74)

National 4 Lifeskills Mathematics Added Value Unit (H228 74)

02

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