



Mathematics: Expressions and Formulae (National 5)

SCQF: level 5 (6 SCQF credit points)

Unit code: H22F 75

Unit outline

The general aim of this Unit is to develop skills linked to mathematical expressions and formulae. These include the manipulation of abstract terms, the simplification of expressions and the evaluation of formulae. The Outcomes cover aspects of number, algebra, geometry and reasoning.

Learners who complete this Unit will be able to:

- 1 Use mathematical operational skills linked to expressions and formulae
- 2 Use mathematical reasoning skills linked to expressions and formulae

This Unit is a mandatory Unit of the National 5 Mathematics Course and is also available as a free-standing Unit. The Unit Specification should be read in conjunction with the *Unit Support Notes*, which provide advice and guidance on delivery, assessment approaches and development of skills for learning, skills for life and skills for work. Exemplification of the standards in this Unit is given in *Unit Assessment Support*.

The *Course Assessment Specification* for the National 5 Mathematics Course gives further mandatory information on Course coverage for learners taking this Unit as part of the National 5 Mathematics Course.

Recommended entry

Entry to this Unit is at the discretion of the centre. However, learners would normally be expected to have attained the skills, knowledge and understanding required by one or more of the following or equivalent qualifications and/or experience:

- ◆ National 4 Mathematics Course or its component Units

Equality and inclusion

This Unit Specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners should be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence. For further information, please refer to the *Unit Support Notes*.

Standards

Outcomes and assessment standards

Outcome 1

The learner will:

1 Use mathematical operational skills linked to expressions and formulae by:

- 1.1 Applying numerical skills to simplify surds/expressions using the laws of indices
- 1.2 Applying algebraic skills to manipulate expressions
- 1.3 Applying algebraic skills to algebraic fractions
- 1.4 Applying geometric skills linked to the use of formulae

Outcome 2

The learner will:

2 Use mathematical reasoning skills linked to expressions and formulae by:

- 2.1 Interpreting a situation where mathematics can be used and identifying a valid strategy
- 2.2 Explaining a solution and/or relating it to context

Evidence Requirements for the Unit

Assessors should use their professional judgement, subject knowledge and experience, and understanding of their learners, to determine the most appropriate ways to generate evidence and the conditions and contexts in which they are used. They should ensure there is sufficient evidence of competence in numerical, algebraic, geometric and reasoning skills from the Outcomes and Assessment Standards to allow a judgement to be made that the learner has achieved the Unit.

Assessors should use their professional judgement when giving learners credit for an appropriate degree of accuracy. This may mean giving credit for incomplete solutions or numerically incorrect solutions which show correct methodology, therefore demonstrating required knowledge and understanding of the algebraic and geometric processes involved.

Evidence may be presented for individual Outcomes or it may be gathered for the Unit as a whole through integrating assessment in a single activity. If the latter approach is used, it must be clear how the evidence covers each Outcome.

A calculator or equivalent technologies may be used.

For this Unit, learners will be required to produce evidence as follows:

For Outcome 1: Learners will be required to provide evidence for each of the Assessment Standards linked to expressions and formulae by drawing on the following sub-skills:

Numerical skills — simplifying surds; simplifying expressions using the laws of indices

Algebraic skills — working with algebraic expressions involving expansion of brackets; factorising an algebraic expression; completing the square in a quadratic expression with unitary x^2 coefficient; reducing an algebraic fraction to its simplest form; applying one of the four operations to algebraic fractions

Geometric skills — determining the gradient of a straight line, given two points; calculating the length of arc or the area of a sector of a circle; calculating the volume of a standard solid with rounding to a given number of significant figures

For Outcome 2: Evidence of reasoning skills can be collected separately or combined with evidence for Outcome 1.

Exemplification of assessment is provided in *Unit Assessment Support*. Advice and guidance on possible approaches to assessment is provided in the *Unit Support Notes*.

Development of skills for learning, skills for life and skills for work

It is expected that learners will develop broad, generic skills through this Unit. The skills that learners will be expected to improve on and develop through the Unit are based on SQA's *Skills Framework: Skills for Learning, Skills for Life and Skills for Work* and drawn from the main skills areas listed below. These must be built into the Unit where there are appropriate opportunities.

2 Numeracy

- 2.1 Number processes
- 2.2 Money, time and measurement
- 2.3 Information handling

5 Thinking skills

- 5.3 Applying
- 5.4 Analysing and evaluating

Amplification of these is given in SQA's *Skills Framework: Skills for Learning, Skills for Life and Skills for Work*. The level of these skills should be at the same SCQF level as the Unit and be consistent with the SCQF level descriptor. Further information on building in skills for learning, skills for life and skills for work is given in the *Unit Support Notes*.

Administrative information

Published: June 2013 (version 1.1)

Superclass: RB

History of changes to National Unit Specification

Version	Description of change	Authorised by	Date
1.1	Phrase added to clarify evidence requirements.	Qualifications Development Manager	June 2013

This specification may be reproduced in whole or in part for educational purposes provided that no profit is derived from reproduction and that, if reproduced in part, the source is acknowledged. Additional copies of this Unit can be downloaded from SQA's website at www.sqa.org.uk.

Note: readers are advised to check SQA's website: www.sqa.org.uk to ensure they are using the most up-to-date version of the Unit Specification.

© Scottish Qualifications Authority 2013