

Draft National Unit Specification



Unit title: Mathematics: Relationships and Calculus (Higher)

SCQF: level 6 (6 SCQF credit points)

Unit code: to be advised

Unit outline

The general aim of this Unit is to develop knowledge and skills that involve solving equations and to introduce both differential calculus, developing the concept of rate of change, and integral calculus, developing the concept of area by summation. The Unit covers aspects of algebra, trigonometry and calculus, and also develops skills in mathematical reasoning and modelling.

Learners who complete this Unit will be able to:

- 1 Use algebraic and trigonometric skills related to equations
- 2 Use differential calculus skills
- 3 Use integral calculus skills

This Unit is a mandatory Unit of the Higher 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 the *National Assessment Resource*.

The Course Assessment Specification for the Higher Mathematics Course gives further mandatory information on Course coverage for learners taking this Unit as part of the Higher 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:

- ◆ Mathematics (National 5) Course or relevant 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 algebraic and trigonometric skills related to equations by:

- 1.1 Solving algebraic equations
- 1.2 Solving trigonometric equations

Outcome 2

The learner will:

2 Use differential calculus skills by:

- 2.1 Differentiating functions
- 2.2 Investigating the nature and properties of functions

Outcome 3

The learner will:

3 Use integral calculus skills by:

- 3.1 Integrating functions
- 3.2 Calculating definite integrals

Reasoning and modelling skills should be evidenced in this Unit.

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.

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

The evidence for reasoning and modelling skills can come from a single Outcome.

A calculator or equivalent technologies may be used.

Exemplification of assessment will be provided in the *National Assessment Resource*. 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

(Note: The information given below reflects the initial thinking on significant opportunities for development of skills for learning, skills for life and skills for work. These may be subject to change as the development process progresses.)

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 of 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



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Superclass: to be advised

History of changes

Version	Description of change	Authorised by	Date

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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.