



Mathematics (National 5)

Draft National Course Specification



Valid from August 2013

This edition: April 2011, draft version 1.0

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Please refer to the note of changes at the end of this Course Specification for details of changes from previous version (where applicable).

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Course outline

Course title:	Mathematics (National 5)
SCQF:	level 5 (24 SCQF credit points)
Course code:	to be advised

Mandatory Units

Mathematics: Expressions and Formulae (National 5)	6 SCQF credit points
Mathematics: Relationships (National 5)	6 SCQF credit points
Mathematics: Applications (National 5)	6 SCQF credit points
Course assessment	6 SCQF credit points

This Course includes six SCQF credit points for 40 additional programmed hours to allow preparation for Course assessment. The Course assessment covers the added value of the Course. Further information on the Course assessment is provided in the Assessment section.

Recommended entry

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

- ◆ Mathematics (National 4) Course or relevant component Units

In terms of prior learning and experience, relevant experiences and outcomes may also provide an appropriate basis for doing this Course. Further information on relevant experiences and outcomes will be given in the *Course Support Notes*.

Progression

This Course or its components may provide progression to:

- ◆ other SQA qualifications in Mathematics
- ◆ further study, employment or training

Further details are provided in the Rationale section.

Equality and inclusion

This Course 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 *Course Support Notes* and the *Course Assessment Specification*.

Rationale

All new and revised National Courses reflect Curriculum for Excellence values, purposes and principles. They offer flexibility, provide more time for learning, more focus on skills and applying learning, and scope for personalisation and choice.

In this Course, and its component Units, there will be an emphasis on skills development and the application of those skills. Assessment approaches will be proportionate, fit for purpose and will promote best practice, enabling learners to achieve the highest standards they can.

This Course provides learners with opportunities to continue to acquire and develop the attributes and capabilities of the four capacities as well as skills for learning, skills for life and skills for work.

All Courses provide opportunities for learners to develop breadth, challenge and application, but the focus and balance of the assessment will be appropriate for the subject area.

Relationship between the Course and Curriculum for Excellence values, purposes and principles

Mathematics is important in everyday life, allowing us to make sense of the world around us and to manage our lives. Using mathematics enables us to model real-life situations and make connections and informed predictions. It equips us with the skills we need to interpret and analyse information, simplify and solve problems, assess risk and make informed decisions.

Because mathematics is rich and stimulating, it engages and fascinates learners of all ages, interests and abilities. Learning mathematics develops logical reasoning, analysis, problem-solving skills, creativity, and the ability to think in abstract ways. It uses a universal language of numbers and symbols, which allows us to communicate ideas in a concise, unambiguous and rigorous way.

Mathematics equips us with many of the skills required for life, learning and work. Understanding the part that mathematics plays in almost all aspects of life is crucial. This reinforces the need for mathematics to play an integral part in lifelong learning and be appreciated for the richness it brings.

This Course allows learners to acquire and develop the attributes and capabilities of the four capacities. For example: success in mathematical learning and activity leads to increased confidence as an individual; being able to think logically helps towards being a responsible citizen; and being able to understand, use and communicate mathematical ideas will help in becoming an effective contributor.

Purpose and aims of the Course

The Course will motivate and challenge learners by enabling them to select and apply mathematical techniques in a variety of mathematical and real-life situations. The Course develops confidence in the subject and a positive attitude towards further study in mathematics. It develops skills in manipulation of abstract terms in order to solve problems and to generalise. The Course allows learners to interpret, communicate and manage information in mathematical form, skills which are vital to scientific and technological research and development.

This Course is designed to develop the learner's skills in using mathematical language, to explore mathematical ideas, and to develop skills relevant to learning, life and work in an engaging and enjoyable way. It will build on prior learning and develop:

- ◆ operational skills in algebra, geometry, trigonometry and statistics
- ◆ reasoning skills of investigation, problem solving, analysis and modelling
- ◆ some numeracy skills in number processes and information handling

Information about typical learners who might do the Course

This would be a suitable Course for all learners who have experienced breadth and depth of learning across Fourth level Mathematics experiences and outcomes, or who have attained Mathematics (National 4), or who have an equivalent mathematical qualification. It would be suitable for learners who can respond to a level of challenge and who can apply what they have learned in new and unfamiliar situations.

On successful completion of this Course, the learner could progress to:

- ◆ Higher Mathematics
- ◆ Lifeskills Mathematics (National 5)
- ◆ National Certificate Group Awards
- ◆ employment

Elements of this Course can contribute to the Numeracy Unit available at SCQF level 5.

Mathematics has applications in many subject areas, and skills developed in this Course support progression in this and other curriculum areas. These skills can also support progression into Skills for Work Courses, National Progression Awards, National Certificate Group Awards, and employment.

Course structure and conditions of award

Course structure

This Course will develop and extend skills for further learning, as well as skills for life and work.

Learners will acquire and apply operational skills necessary for developing mathematical ideas through symbolic representation and diagrams. They will select and apply mathematical techniques and will develop their understanding of the interdependencies within mathematics. Learners will develop mathematical reasoning skills and will gain experience in making informed decisions.

Units are statements of standards for assessment and not programmes of learning and teaching. They can be delivered in a number of ways.

In addition to the Course assessment, the Course includes three mandatory Units.

Mathematics: Expressions and Formulae (National 5)

In this Unit, learners will develop the knowledge and skills, appropriate to this level, that involve the representation of ideas in symbolic form and the manipulation of abstract terms. This will include simplification of expressions and evaluation of formula covering aspects of algebra and geometry. Learners will apply operational and reasoning skills in contexts including those taken from life and work.

Mathematics: Relationships (National 5)

In this Unit, learners will develop knowledge and skills, appropriate to this level, which involve relationships in Mathematics. Learners will work with relationships in algebra, geometry, trigonometry and statistics. They will develop their skills in solving equations, analysing graphs, making reasoned deductions and predictions. Learners will apply operational and reasoning skills in contexts including those taken from life and work.

Mathematics: Applications (National 5)

In this Unit, learners will develop knowledge and skills in geometry, trigonometry and statistics, appropriate to this level, which can readily be applied to solving real-life problems to make informed decisions. Learners will develop the ability to interpret information, use diagrams, and select appropriate techniques to produce a solution.

Conditions of award

To gain the award of the Course, the learner must pass all the Units as well as the Course assessment. The required Units are shown in the Course outline section. Course assessment will provide the basis for grading attainment in the Course award.

Skills and knowledge

Full skills and knowledge for the Course will be given in the *Course Assessment Specification*. A broad overview of the mandatory subject skills, knowledge and understanding that will be assessed in the Course is given in this section.

This Course will build on prior learning to develop:

Operational skills:

- ◆ algebraic — working with patterns, expressions, equations and graphs
- ◆ geometric — using properties of shapes, calculating angles and lengths
- ◆ trigonometric — using trigonometric ratios and relationships
- ◆ statistical— calculation of statistics, presenting information, assessing risk

Reasoning skills:

- ◆ investigative — researching and extracting information
- ◆ problem solving — formulating an approach to reach a conclusion
- ◆ analytical — interpreting information, using logic, providing justification and proof
- ◆ modelling — applying a suitable mathematical model

And further skills in numeracy.

The added value of the Course develops these mathematical skills for use in more challenging problems, to enable the learner to apply them in unfamiliar situations and sometimes integrated ways. Learners will also be required to demonstrate breadth of learning across the Units. As an aid to meeting these aims, skills in using a calculator will be developed.

Assessment

Information about assessment for the Course will be included in the *Course Assessment Specification*, which will provide full details including advice on how a learner's overall attainment for the Course will be determined.

Unit assessment

All Units are internally assessed against the requirements shown in the Unit Specification.

They can be assessed on a Unit-by-Unit basis or by combined assessment.

They will be assessed on a pass/fail basis within centres. SQA will provide rigorous external quality assurance, including external verification, to ensure assessment judgements are consistent and meet national standards.

The assessment of the Units in this Course will be as follows:

Mathematics: Expressions and Formulae (National 5)

Learners who complete this Unit will be able to:

- ◆ use mathematical reasoning skills related to expressions and formulae
- ◆ use mathematical operational skills related to expressions and formulae

Mathematics: Relationships (National 5)

Learners who complete this Unit will be able to:

- ◆ use mathematical reasoning skills related to relationships
- ◆ use mathematical operational skills related to relationships

Mathematics: Applications (National 5)

Learners who complete this Unit will be able to:

- ◆ use mathematical reasoning skills related to applications
- ◆ use mathematical operational skills related to applications

Exemplification of possible assessment approaches for these Units will be provided in the *National Assessment Resource*.

Course assessment

Courses from National 4 to Advanced Higher include assessment of [added value](#)¹. At National 5, Higher and Advanced Higher, the added value will be assessed in the Course assessment. The added value for the Course must address the key purposes and aims of the Course as defined in the Course Rationale. It will do this by addressing one or more of breadth, challenge or application.

In this Course, added value will focus on breadth, challenge and application.

¹ Definitions can be found here: www.sqa.org.uk/sqa/45528.html

Learners will draw on and extend the skills they have learned during the Course. This will be assessed within a [question paper](#)², requiring application of the breadth of knowledge and skills acquired from across the Units in unfamiliar situations and sometimes integrated ways. As an aid to meeting these aims, skills in using a calculator will be developed and a calculator will be permitted to be used in part of the assessment strategy.

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² Definitions can be found here: www.sqa.org.uk/sqa/45528.html

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 also develop broad, generic skills through this Course. The skills that are likely to be appropriate for this Course 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 Course 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 skills is given in SQA's *Skills Framework: Skills for Learning, Skills for Life and Skills for Work*. The level of these skills will be appropriate to the level of the Course. Further information on building in skills for learning, skills for life and skills for work for the Course is given in the *Course Support Notes*.

Administrative information

Published: April 2011 (version 1.0)

Superclass: to be advised

History of changes to National Course Specification

Course details	Version	Description of change	Authorised by	Date

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