National 4 Course Specification

National 4 Applications of Mathematics Course Specification (C844 74)

First edition: April 2012
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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).

Course outline

Course title: National 4 Applications of Mathematics

SCQF: level 4 (24 SCQF credit points)

Course code: C844 74

Mandatory Units

HV7V 74	**Applications of Mathematics: Managing Finance and Statistics (National 4)**	**6 SCQF credit points**
HV7W 74	**Applications of Mathematics: Geometry and Measures (National 4)**	**6 SCQF credit points**
H225 74	**Numeracy (National 4)**	**6 SCQF credit points**

Added Value Unit

HV7X 74	**Applications of Mathematics Test (National 4)**	**6 SCQF credit points**

This Course includes six SCQF credit points for the assessment of added value in the Added Value Unit. Further information on this Unit 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:

- National 3 Applications of Mathematics 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 is given in the *Course Support Notes*.

Core Skills

Achievement of this Course gives automatic certification of the following:

Complete Core Skill Numeracy at SCQF level 4

Progression

This Course or its Units may provide progression to:

- other qualifications in Applications of Mathematics or related areas
- 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.*

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

The National 4 Applications of Mathematics Course builds on the principles and practice and experiences and outcomes of mathematics and numeracy.

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 skills for learning, skills for life and skills for work, as well as the attributes and capabilities of the four capacities. For example: success in mathematical learning leads to increased confidence as an individual in everyday situations; being numerically capable, especially in financial

matters, helps towards becoming a responsible citizen; and being able to plan and organise will help in becoming an effective contributor.

The skills, knowledge and understanding developed in this Course support learning in other curriculum areas such as technology, health and wellbeing, science, and social studies.

Purpose and aims of the Course

The purpose of the National 4 Applications of Mathematics Course is to motivate and challenge learners by enabling them to think through real-life situations involving mathematics and to form a plan of action based on logic.

The Course develops confidence in being able to handle mathematical processes and information in a range of real-life contexts. The Course also enables learners to make informed decisions based on data presented in a variety of forms.

The mathematical skills within this Course are underpinned by numeracy and are designed to develop learners' skills in mathematical reasoning relevant to learning, life and work.

The Course aims to:

- motivate and challenge learners by enabling them to select and apply mathematical skills to tackle straightforward real-life problems or situations
- develop the ability to interpret straightforward real-life problems or situations involving mathematics
- develop confidence in the subject and a positive attitude towards the use of mathematics in straightforward real-life situations
- apply mathematical operational skills with an appropriate degree of accuracy
- use mathematical reasoning skills to assess risk, draw conclusions and explain decisions
- communicate mathematical information in an appropriate way

Information about typical learners who might do the Course

The Course would be suitable for learners who have experienced breadth and depth of learning across the Mathematics experiences and outcomes, or who have attained the National 3 Applications of Mathematics Course or have an equivalent qualification or experience.

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

- National 5 Applications of Mathematics Course
- Numeracy (National 5) Unit
- Core Skills Numeracy Unit (SCQF level 5)

Applications of Mathematics has applications in many subject areas, and skills developed in this Course could 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 skills for learning, life and work, through context and application-led learning. Through real-life contexts, learners will acquire the ability to apply mathematical operational skills relevant to life and work. In addition, learners will develop mathematical reasoning skills and will gain experience in problem solving and in using mathematics to draw conclusions and make informed decisions. The Course includes the freestanding Unit in Numeracy at SCQF level 4.

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

The Course has four Units, totalling 24 SCQF credit points.

Applications of Mathematics: Managing Finance and Statistics (National 4)
The general aim of this Unit is to develop skills that focus on the use of mathematical ideas and strategies that can be applied to managing finance and statistics in straightforward real-life contexts. This includes using skills in budgeting as well as skills in organising and presenting data, to explain solutions and/or draw conclusions. The Outcomes cover aspects of finance and statistics in real-life situations requiring mathematical reasoning.

Applications of Mathematics: Geometry and Measures (National 4)
The general aim of this Unit is to develop skills that focus on the use of mathematical ideas and strategies that can be applied to geometry and measurement in straightforward real-life contexts. This includes using skills in interpreting and in using shape, space and measures to determine and explain solutions. The Outcomes cover aspects of geometry and measurement in real-life situations requiring mathematical reasoning.

Numeracy (National 4)
The general aim of this Unit is to develop learners' numerical and information handling skills to solve straightforward, real-life problems involving number, money, time and measurement. As learners tackle real-life problems, they will decide what numeracy skills to use and how to apply these skills to an appropriate level of accuracy. Learners will also interpret graphical data and use their knowledge and understanding of probability to identify solutions to straightforward real-life problems involving money, time and measurement. Learners will use their solutions to make and explain decisions.

Added Value Unit: Applications of Mathematics Test (National 4)
The general aim of this Unit is to enable the learner to provide evidence of added value for the National 4 Applications of Mathematics Course through successful completion of a test which will allow the learner to demonstrate breadth and application. Breadth and application will be demonstrated through the use of mathematical ideas and strategies that can be applied to organising and planning straightforward aspects in personal life, the workplace and the wider world. This will include the application and integration of financial, measurement, geometric and statistical skills in real-life contexts involving reasoning. Numerical skills underpin all aspects of the Unit and the ability to use these without the aid of a calculator will also be assessed.

Conditions of award

To achieve the National 4 Applications of Mathematics Course, learners must pass all of the required Units, including the *Added Value Unit*. The required Units are shown in the Course outline section.

National 4 Courses are not graded.

Skills, knowledge and understanding

Full skills, knowledge and understanding for the Course are given in the *Added Value Unit 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 develop learners' ability to:

- interpret straightforward real-life situations and problems involving mathematics
- identify appropriate mathematical operational skills to tackle straightforward real-life situations or problems
- use mathematical operational skills to an appropriate degree of accuracy
- use mathematical reasoning skills to assess risk, draw conclusions or explain decisions
- communicate mathematical information in an appropriate way

Skills, knowledge and understanding to be included in the Course will be appropriate to the SCQF level of the Course. The SCQF level descriptors give further information on characteristics and expected performance at each SCQF level (www.sqa.org.uk/scqf).

Assessment

Further information about assessment for the Course is included in the *Course Support Notes* and the *Added Value Unit Specification.*

Unit assessment

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

They can be assessed on an individual Unit basis or by using other approaches which combine the assessment for more than one Unit.

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

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

Applications of Mathematics: Managing Finance and Statistics (National 4)
Learners who complete the Unit will be able to:

- use reasoning skills and financial skills linked to straightforward real-life contexts
- use reasoning skills and statistical skills linked to straightforward real-life contexts

Applications of Mathematics: Geometry and Measures (National 4)
Learners who complete the Unit will be able to:

- use reasoning skills and measurement skills linked to straightforward real-life contexts
- use reasoning skills and geometric skills linked to straightforward real-life contexts

Numeracy (National 4)
Learners who complete the Unit will be able to:

- use numerical skills to solve straightforward, real-life problems involving money/time/measurement
- interpret graphical data and situations involving probability to solve straightforward real-life problems involving money/time/measurement

Added Value Unit

Courses from National 4 to Advanced Higher include assessment of added value[1]. At National 4, added value will be assessed in an Added Value Unit. The Added Value Unit will 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 National 4 Applications of Mathematics Course, the Added Value Unit will focus on

- breadth

[1] Definitions can be found here: www.sqa.org.uk/sqa/58409.html

- application

The learner will draw on and apply the skills they have learned during the Course. This will be assessed through a test[2], which will offer opportunities to demonstrate the breadth of knowledge and skills acquired from across the component Units of the Course in new real-life situations. As an aid to meeting these aims, skills in using a calculator will be developed and a calculator will be permitted in part of the test.

[2] Definitions can be found here: http://www.sqa.org.uk/sqa/58409.html

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

It is expected that learners will develop broad, generic skills through this Course. The skills that learners will be expected to improve on and develop through the 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*.

Numeracy skills shown in this National Course provide automatic certification of the Core Skill: Numeracy at SCQF level 4.

Administrative information

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History of changes to National Course Specification

Course details	Version	Description of change	Authorised by	Date
C744 74	1.1	Core skills information added	Qualifications Development Manager	June 2013
C844 74	2.0	Lifeskills Mathematics changed to Applications of Mathematics	Qualifications Manager	October 2017