

Route map through learning, teaching and assessment

Course: Mathematics

Level: Higher

This route map is intended to assist staff in planning and delivering the overall vision for Curriculum for Excellence. It has been developed to signpost the relevant support materials available to assist staff in the planning of learning, teaching and assessment of Higher Mathematics.

The vision for the new qualifications is to create assessment opportunities that follow and support learning and teaching. This follows the principles laid out in *Building the Curriculum 5* and makes assessment a natural part of learning and teaching.

Education Scotland has published support materials to help staff develop programmes of learning drawn from three sources: course materials commissioned by Education Scotland, other support materials produced by staff seconded to Education Scotland and course materials provided by staff through their education authorities. Further materials will be added as they become available.

These support materials are not intended to constrain staff, hence they are neither prescriptive nor exhaustive. They provide suggestions on approaches to learning and teaching that will promote development of the necessary knowledge, understanding and skills for Higher Mathematics. Staff are encouraged to draw on these materials, and existing materials, to develop their own programmes of learning which are appropriate to the needs of learners within their own context.

The link to Education Scotland's support materials can be found below together with a number of other subject-specific links you may find helpful as you develop **programmes of learning** for Higher Mathematics. These links are followed by a sequential list of the key guidelines, advice and support for Higher Mathematics **qualifications**. This information is intended to support staff in deciding the most appropriate ways to generate evidence and assess learners.

Useful links for learning and teaching Higher Mathematics

Education Scotland NQ Course Materials on GLOW (login and password required)

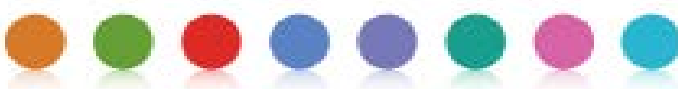
<http://www.educationscotland.gov.uk/nqcoursematerials/subjects/mathematics/index.asp> (copy and paste this link into your browser)

Education Scotland NNQs support

<http://www.educationscotland.gov.uk/learningteachingandassessment/curriculumareas/mathematics/nqs/index.asp>

National Assessment Resource (GLOW login and password required)

<https://www.narscotland.org.uk/>



SQA Course and Unit Support notes providing advice and guidance on learning and teaching.

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

Education Scotland – Key Curriculum Support

A quick guide to finding vital information about Curriculum for Excellence

<http://www.educationscotland.gov.uk/keycfesupport/index.asp>

This appears under three headings:

- the latest guidance, updates and plans for embedding Curriculum for Excellence
- information on assessment
- information on the new qualifications

BBC content

The BBC have pulled together all their learning content in a new Knowledge and Learning beta site, which includes Class Clips:

www.bbc.co.uk/education

The Bitesize websites have also been updated for Higher.

<http://www.bbc.co.uk/education/subjects/z6nygk7>

Higher Mathematics course content

The main SQA mathematics pages are found at <http://www.sqa.org.uk/sqa/45750.html>. Pages specifically relating to Higher are at <http://www.sqa.org.uk/sqa/47910.html>. Staff should also regularly check the updates and announcements section of this page.

The course specification can be found at

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

There are three units: Expressions and Functions, Relationships and Calculus, and Applications.

More detail on course coverage can be found in the course support notes.

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

Further mandatory information on course coverage is found on page 7 of the course assessment specification.

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

A course comparison between National 5 and Higher can be found at:

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

Unit assessment

Units are mandatory when taken as part of the Higher Mathematics course but they can be taken independently.

Unit support notes follow on from the course support notes.

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

Each individual unit also has a Higher unit specification.

Each unit specification gives details of the outcomes and assessment standards. There are *two* outcomes per unit – one based on operational skills and one based on reasoning skills.

Mathematics: Expressions and Functions

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

Mathematics: Relationships and Calculus

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

Mathematics: Applications

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

Learners must meet all the outcomes and assessment standards, and staff should read the documentation carefully. Evidence should be generated through learning and teaching. Assessment evidence can be drawn from a variety of activities and presented in a variety of formats. All of the evidence does not have to be generated from one activity but can be from several tasks and assessments carried out throughout the course. Learners should have access to resources to complete the assessment task and no time restrictions should be imposed. Staff should use their professional judgment when looking at the assessment evidence and ensure that minimum competency is met. They should undertake quality assurance regularly.

Three different ways of gathering evidence have been suggested by SQA. The most traditional approach is unit by unit. A combined approach links knowledge and understanding from two or more units together. Many staff will move towards the portfolio approach as their confidence grows. Here evidence is gathered from everyday learning using key classroom tasks. Unit assessment support is kept on the SQA Secure website.

Course assessment

At Higher, added value will be assessed in a course assessment, which consists of two question papers. The course will be graded A–D.

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

Question papers

Paper 1: This is a non-calculator question paper which lasts for 1 hour, 10 minutes and is worth 60 marks. This no longer contains an objective test section. It will be carried out under exam conditions and marked by the SQA.

Paper 2: This is a calculator question paper which lasts for 1 hour, 30 minutes and is worth 70 marks. It will be carried out under exam conditions and marked by the SQA.

In the course assessment, added value focuses on breadth, challenge and application and integrates mathematical operational skills developed across units.

Specimen question papers and marking schemes are available at:

Paper 1: http://www.sqa.org.uk/files_ccc/MathematicsPaper1SQPH.pdf

Paper 2: http://www.sqa.org.uk/files_ccc/MathematicsPaper2SQPH.pdf.

Verification

The verification process is meant to be supportive and not onerous. Internal verification is the process of ensuring standards are applied uniformly and consistently within a school, in line with national standards. External verification is the process of ensuring that national standards are maintained consistently across all schools and carried out by SQA.

Quality assurance: <http://www.sqa.org.uk/sqa/58448.html>.

Prior verification

http://www.sqa.org.uk/files_ccc/Prior%20Verification%20Centre%20Guidance%20FINAL.pdf

Staff who devise their own assessments can send them to SQA for prior verification, free of charge. This is only necessary where significant changes have been made to the unit assessment provided by SQA. It gives staff confidence that their proposed assessment is fit for purpose and meets national standards.

Internal verification

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

As a matter of course staff should be quality assuring their assessments by carrying out activities that they have used previously, for example double marking and blind marking. A sample of learners' work should be marked by more than one staff member in a department, and in single-person departments an arrangement should be made with another local authority school.

External verification

In mathematics, schools will submit a sample of learners' evidence for scrutiny by subject-specialist qualification verifiers. SQA intend that every school will be verified over the first few years. Verification will take place in November, February and May. Twelve samples will be asked for.

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

Schools must retain the evidence until 31 July of each academic year.

http://www.sqa.org.uk/sqa/files_ccc/SQA_Evidence_retention_requirements_A3_table.pdf

Key messages from verification will be put up on the SQA website.

Results services

http://www.sqa.org.uk/sqa/files_ccc/FA6669_SQA_Results_Services_A5_8pp_brochure_web.pdf

<http://www.sqa.org.uk/sqa/65427.html>

SQA offer two services to replace the appeals service:

- Exceptional Circumstances Consideration Service (details to be provided to SQA within ten days of the learner sitting the external assessment)
- Post-results Service – this consists of a clerical check and/or a marking review if the centre has concerns about the results of an individual or group.