

National Unit Specification: general information

UNIT Mathematics 3 (Intermediate 1)

NUMBER D323 10

COURSE Mathematics (Intermediate 1)

SUMMARY

This unit seeks to extend the candidate's mathematical experience in the areas of algebra, including graphical relationships and calculation, and of elementary trigonometry. It is an optional unit of the Mathematics Intermediate 1 course.

OUTCOMES

- 1 Perform simple algebraic operations.
- 2 Use graphical relationships.
- 3 Use trigonometry in a right-angled triangle.
- 4 Use standard form.

RECOMMENDED ENTRY

While entry is at the discretion of the centre, candidates will normally be expected to have attained one of the following:

- *Mathematics 1 (Int 1)*
- *Mathematics 2 (Int 1)*
- equivalent

Administrative Information

Superclass: RB

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National Unit Specification: general information (cont)

UNIT Mathematics 3 (Intermediate 1)

CREDIT VALUE

1 credit at Intermediate 1.

CORE SKILLS

There is no automatic certification of core skills or core skills components in this unit.

Additional information about core skills is published in *Automatic Certification of Core Skills in National Qualifications* (SQA, 1999).

National Unit Specification: statement of standards

UNIT Mathematics 3 (Intermediate 1)

Acceptable performance in this unit will be the satisfactory achievement of the standards set out in this part of the unit specification. All sections of the statement of standards are mandatory and cannot be altered without reference to the Scottish Qualifications Authority.

OUTCOME

Perform simple algebraic operations.

Performance criteria

- (a) Evaluate a formula expressed in symbols.
- (b) Manipulate an algebraic expression involving brackets.
- (c) Factorise an expression using a common factor.
- (d) Solve simple linear equations.
- (e) Solve simple inequalities.

OUTCOME 2

Use graphical relationships.

Performance criteria

- (a) Draw a straight line given its equation in the form $y = ax + b$ by drawing up a table of values.

OUTCOME 3

Use trigonometry in a right-angled triangle.

Performance criteria

- (a) Solve right-angled triangles using trigonometry.

National Unit Specification: statement of standards (cont)

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OUTCOME 4

Use standard form (scientific notation).

Performance criteria

- (a) Interpret numbers expressed in standard form.
- (b) Convert a large and a small number into standard form.
- (c) Use standard form in a simple calculation.

Evidence requirements

Although there are various ways of demonstrating achievement of the outcomes, evidence would normally be presented in the form of a closed book test under controlled conditions. Examples of such tests are contained in the National Assessment Bank.

In assessments, candidates are required to show their working in carrying out algorithms and processes.

National Unit Specification: support notes

UNIT Mathematics 3 (Intermediate 1)

This part of the unit specification is offered as guidance. The support notes are not mandatory.

While the time allocated to this unit is at the discretion of the centre, the notional design length is 40 hours.

GUIDANCE ON THE CONTENT AND CONTEXT FOR THIS UNIT

Each mathematics unit at Intermediate 1 level aims to build upon and extend candidates' mathematical knowledge and skills. The use of formulae and integers in *Mathematics 1* and 2 (*Int 1*) is extended to a more formal treatment of algebra in Outcome 1. The use of algebra within a simple geometrical context is illustrated through the straight line in Outcome 2. It should be noted that candidates are required to draw the straight line from a table of values only and that this outcome is extended within *Mathematics 1 (Int 2)* to a more formal treatment of the straight line. The properties of right-angled triangles are extended further by the introduction of elementary trigonometry in Outcome 3, and the use of standard form and the calculator are explored in Outcome 4.

The recommended content for this unit can be found in the course specification. The *detailed content* section provides illustrative examples to indicate the depth of treatment required to achieve a unit pass and advice on teaching approaches.

GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

Candidates should be encouraged to make use of their skills in mental calculation, to make efficient use of calculators, and to apply the strategy of checking. Numerical checking or checking a result against the context in which it is set is an integral part of every mathematical process. In many instances, the checking can be done mentally, but on occasions, to stress its importance, there should be evidence of a checking procedure within the calculation. There are various checking procedures which could be used:

- relating to a context - 'How sensible is my answer?'
- estimate followed by a repeated calculation
- calculation in a different order

Further advice on learning and teaching approaches is contained within the Subject Guide for Mathematics.

National Unit Specification: support notes (cont)

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GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

The assessment for this unit will normally be in the form of a closed book test. Such tests should be carried out under supervision and it is recommended that candidates attempt an assessment designed to assess all the outcomes within the unit. Successful achievement of the unit is demonstrated by candidates achieving the thresholds of attainment specified for all the outcomes in the unit.

Candidates who fail to achieve the threshold(s) of attainment need only be retested on the outcome(s) where the outcome threshold score has not been attained. Further advice on assessment and retesting is contained within the National Assessment Bank.

It is expected that candidates will be able to achieve the algebraic and trigonometric performance criteria in the unit without the use of computer software or sophisticated calculators.

In assessments, candidates are required to show their working in carrying out algorithms and processes.

SPECIAL NEEDS

This unit specification is intended to ensure that there are no artificial barriers to learning or assessment. Special needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments or considering alternative outcomes for units. For information on these, please refer to the SQA document *Guidance on Special Assessment and Certification Arrangements for Candidates with Special Needs/Candidates whose First Language is not English* (SQA, 1998).