

National Unit Specification: general information

UNIT Mathematics 1 (Intermediate 2)

NUMBER D321 11

COURSE Mathematics (Intermediate 2)

SUMMARY

This unit seeks to extend the mathematical skills learned at General level of Standard Grade or Intermediate 1, including percentage calculations, volumes of solids, linear relationships, algebraic operations and properties of the circle. It is a mandatory unit of the Mathematics Intermediate 2 course.

OUTCOMES

- 1 Perform calculations involving percentages.
- 2 Use formulae to find volumes of solids.
- 3 Use linear relationships.
- 4 Perform algebraic operations.
- 5 Use properties of the circle.

RECOMMENDED ENTRY

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

- Standard Grade Mathematics General award, or Intermediate 1 Mathematics award or its component units including *Mathematics 3 (Int 1)*
- equivalent

Administrative Information

Superclass: RB

Publication date: November 1999

Source: Scottish Qualifications Authority

Version: 03

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National Unit Specification: statement of standards

UNIT Mathematics 1 (Intermediate 2)

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 1

Perform calculations involving percentages.

Performance criteria

- (a) Solve problems involving appreciation/depreciation.

OUTCOME 2

Use formulae to find volumes of solids.

Performance criteria

- (a) Find the volume of a sphere, a cone and a cylinder.
- (b) Round calculations to a required number of significant figures.

OUTCOME 3

Use linear relationships.

Performance criteria

- (a) Determine the gradient of a straight line.
- (b) Sketch a straight line given its equation in the form $y = ax + b$.
- (c) Determine the equation of a straight line in the form $y = ax + b$ from its graph.

OUTCOME 4

Perform algebraic operations.

Performance criteria

- (a) Multiply algebraic expressions involving brackets.
- (b) Factorise algebraic expressions: common factor, difference of two squares.
- (c) Factorise a trinomial expression.

National Unit Specification: statement of standards (cont)

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OUTCOME 5

Use properties of the circle.

Performance criteria

- (a) Find the length of an arc of a circle.
- (b) Calculate the area of a sector of a circle.
- (c) Solve problems using properties of a circle.

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 1 (Intermediate 2)

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 2 level aims to build upon and extend candidates' mathematical knowledge and skills. Within this unit, the percentage calculations in number and money at Intermediate 1 level are extended within Outcome 1 to calculations involving appreciation and depreciation. In particular, the concept of interest is extended from simple to compound interest.

Outcome 2 builds upon the work on area at Intermediate 1 level and introduces the formulae for the volumes of spheres, cones and cylinders. Significant figures are also introduced here. The geometry of Intermediate 1 level is further extended in Outcome 5 where properties of the circle are studied.

The work on straight line in *Mathematics 3 (Int 1)* is extended in Outcome 3 with a more formal treatment of the equation of a straight line.

Algebraic skills are an important part of the mathematician's toolkit. Outcome 4 begins to extend the basic algebraic operations introduced at Intermediate 1 level by introducing factorisation and extending the work in *Mathematics 3 (Int 1)* on multiplication of expressions involving brackets.

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 throughout the unit 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

National Unit Specification: support notes (cont)

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

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 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).