



Lifeskills Mathematics Test (National 4)

SCQF: level 4 (6 SCQF credit points)

Unit code: H228 74

Unit outline

This is the Added Value Unit in the National 4 Lifeskills Mathematics Course. The general aim of this Unit is to enable the learner to provide evidence of added value for the National 4 Lifeskills Mathematics Course through the 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.

Learners who complete this Unit will be able to:

- 1 Apply mathematical skills in straightforward real-life contexts

This Unit is a mandatory Unit of the National 4 Lifeskills Mathematics Course, and is also available as a free standing Unit. The Unit Specification should be read in conjunction with the *Course Support Notes*, which provide advice and guidance on delivery and assessment approaches. Exemplification of the standards in this Unit is given in *Unit Assessment Support*.

Recommended entry

Entry to this Unit is at the discretion of the centre. It is recommended that the learner should be in the process of completing, or have completed, the following Units in the National 4 Lifeskills Mathematics Course:

- ◆ Lifeskills Mathematics: Managing Finance and Statistics (National 4)
- ◆ Lifeskills Mathematics: Geometry and Measures (National 4)
- ◆ Numeracy (National 4)

Equality and inclusion

This Unit 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*.

Standards

Outcomes and assessment standards

Outcome 1

The learner will:

- 1 **Apply mathematical skills in straightforward real-life contexts by:**
 - 1.1 Using operational and reasoning skills to determine solutions to real-life situations involving mathematics

Evidence Requirements for the Unit

This Unit will be assessed through controlled assessment which meets the Evidence Requirements below.

The assessment method for this Unit will be a test in which the learner will draw on, apply and integrate the skills they have developed during the Course. The test will offer opportunities to demonstrate the breadth of knowledge and skills acquired from across the Course in situations which are likely to be both routine and new to the learner. As an aid to meeting these aims, skills in using a calculator will be developed and a calculator will be permitted in one part of the test.

The test is:

- ◆ set by centres within the SQA guidelines described below
- ◆ conducted under a high degree of supervision and control

Evidence will be internally marked by centre staff in line with SQA guidelines.

All assessment is subject to quality assurance by SQA.

Setting the assessment

The test will be set by centres within the following guidelines.

The test will:

- ◆ consist of two parts, in one of which a calculator may be used
- ◆ assess a selection of knowledge and skills acquired in the Course, as detailed in the section of this document entitled 'Further mandatory information on Course coverage for the National 4 Lifeskills Mathematics Course'
- ◆ offer opportunities to use mathematical operational and reasoning skills in a range of real-life situations, some of which may be new to the learners

Part 1 will consist of short response questions, based on a selection of knowledge and skills developed in the Course, each of which require the use of number processes in contextualised situations. In this part **a calculator must not be used**, and it should be able to be completed in 20 minutes.

The questions should use appropriate real-life contexts, some of which may be new to the learner and cover the following:

- ◆ use of whole number percentages to compare the effect of interest rates on a given amount
- ◆ calculating the mean to two decimal places from a given set of data
- ◆ using a scale factor which is a non-unitary fraction (eg $\frac{3}{5}$) to determine a related measurement
- ◆ calculating the limits of a measurement to one decimal place, using tolerance
- ◆ working with addition and subtraction in a financial problem

Part 2 will consist of short and extended response questions based on a selection of knowledge and skills developed in the Course. In this part **a calculator can be used**, and it should be able to be completed in 40 minutes.

The questions should use appropriate real-life contexts, some of which may be new to the learner and cover the following:

- ◆ using area or volume combined with costs
- ◆ analysing the income and expenditure of an event to determine its financial position
- ◆ converting between currencies
- ◆ determining net pay given at least four components, one of which requires calculation
- ◆ providing a solution to a basic problem in time management
- ◆ plotting a scattergraph, drawing and using a line of best fit
- ◆ interpreting graphs or charts to compare information and calculate differences
- ◆ calculating a quantity based on a related measurement and a table of information

Conducting the assessment

The test will be conducted under a high degree of supervision and control. This will take the form of supervised, closed book conditions.

Judging the evidence

Evidence will be internally marked and verified by centre staff in line with SQA guidelines.

- ◆ All assessment is subject to quality assurance by SQA.
- ◆ To be awarded this Unit, the learner must demonstrate competence across the test as a whole.

Re-assessment

In relation to Unit assessment, SQA's guidance on re-assessment for Units applies.

In this case, for re-assessment purposes, learners would be required to re-sit another version of the whole test.

Further information is provided in the exemplification of assessment in *Unit Assessment Support*. Advice and guidance on possible approaches to assessment is provided in the *Course Support Notes*.

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

Please refer to the *Course Specification* for information about skills for learning, skills for life and skills for work.

Further mandatory information on Course coverage for the National 4 Lifeskills Mathematics Course

The following gives details of mandatory skills, knowledge and understanding for the National 4 Lifeskills Mathematics Course. Assessment of this Added Value Unit will involve selecting appropriate skills, knowledge and understanding from those listed below, in line with the Evidence Requirements above. This list of skills, knowledge and understanding also provides the basis for the assessment of all the Units in the Course.

Section A: Mandatory content for Added Value Unit

1.1 Using operational and reasoning skills to determine solutions to real-life situations involving mathematics	
Skills	Explanation
Interpreting and solving real-life situations without the aid of a calculator	<ul style="list-style-type: none"> ◆ use of whole number percentages (single digit percentages, multiples of 10%, multiples of 20%, multiples of 25%, 50%) ◆ calculating the mean to a given number of decimal places from a given set of data ◆ using a scale factor which is a straightforward common fraction to determine a related measurement ◆ calculating the limits of a measurement to a given number of decimal places, using tolerance ◆ using addition and subtraction of decimal numbers in a financial problem
Interpreting and solving situations involving finance, geometry and measurement	<ul style="list-style-type: none"> ◆ using area or volume combined with costs: options include area (circle, parallelogram, kite, trapezium), surface area (prism) or volume (prism) ◆ analysing the income and expenditure of an event to determine its financial position as in whether it made a profit or loss; some elements of the income and expenditure should require calculation ◆ converting between currencies in either direction ◆ determining net pay given at least four components, one of which requires calculation. These should be selected from: <ul style="list-style-type: none"> — basic pay — overtime — bonus — commission — gross/net pay — benefits and allowances — National Insurance — income tax ◆ providing solutions to problems in time management, using time intervals to make plans including across midnight

Using number skills and statistics to process and compare data	<ul style="list-style-type: none"> ◆ plotting scattergraphs, drawing a line of best fit; using the line of best fit to calculate one variable given the other ◆ interpreting graphs or charts to compare information and calculate differences; graphs and charts should include line graphs, pie charts, bar graphs ◆ calculating a quantity based on a related measurement and a table of information
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Section B: Mandatory content for component Units

Lifeskills Mathematics: Managing Finance and Statistics (National 4)	
Financial Outcome <i>The learner will use reasoning skills and financial skills linked to straightforward real-life contexts</i>	
Skills	Explanation
Determining a financial position, given budget information	Budgeting and planning for personal use or planning a straightforward event Balancing straightforward incomings and outgoings from a range of sources
Investigating factors affecting income	Investigate and interpret income and deductions for different personal circumstances and career choices. These should include: <ul style="list-style-type: none"> ◆ basic pay ◆ overtime ◆ bonus ◆ commission ◆ gross/net pay ◆ benefits and allowances ◆ National Insurance ◆ income tax
Determining the best deal, given two pieces of information	Compare at least three products, given two pieces of information on each
Converting between currencies	Comparing costs between two different currencies in either direction
Investigating the impact of interest rates for savings and borrowing in a basic situation	These should include: <ul style="list-style-type: none"> ◆ loans ◆ saving rates ◆ bank accounts ◆ credit agreements

Statistical Outcome <i>The learner will use reasoning skills and statistical skills linked to straightforward real-life contexts</i>	
Skills	Explanation
Using statistics to investigate risk	Investigate the meaning of lifestyle statistics
Using and presenting statistical information in diagrams	Using and presenting straightforward statistical diagrams (technology may be used). These should include: <ul style="list-style-type: none"> ◆ bar graphs ◆ line graphs ◆ pie charts ◆ frequency tables without class intervals
Using diagrams to illustrate data	Bar graphs, line graphs, pie charts, stem and leaf diagrams
Comparing data sets, using mean and range	Using ungrouped data
Constructing a frequency table	With class intervals
Constructing a scattergraph	From given or gathered data
Drawing a best fitting straight line on a scattergraph	Drawing a best fitting straight line by eye-estimating one variable, given the other

Lifeskills Mathematics: Geometry and Measures (National 4)	
Measures Outcome <i>The learner will use reasoning skills and measurement skills linked to straightforward real-life contexts</i>	
Skills	Explanation
Solving a basic problem in time management	Use time intervals to make plans including across midnight
Calculating a quantity based on a related measurement	Any required formula or relationship will be given
Constructing a scale drawing with a given scale	
Planning a basic navigation course	Use measurement of angles and length to interpret and to plan a straightforward navigation course
Carrying out container packing, using a first-fit algorithm	Filling containers in the order of arrival
Investigating the need for tolerance in a measurement	Accuracy up to two decimal places

Geometric Outcome <i>The learner will use reasoning skills and geometric skills linked to straightforward real-life contexts</i>	
Skills	Explanation
Determining the gradient of a slope	Using 'vertical height' and 'horizontal distance'
Investigating a situation involving perimeter	<ul style="list-style-type: none"> ◆ rectilinear ◆ circular ◆ composite shape
Investigating a situation involving area	<ul style="list-style-type: none"> ◆ triangles ◆ kite, rhombus, parallelogram ◆ circle ◆ composite shape
Investigating a situation involving volume	◆ prism (including cuboid, cylinder)
Solving a problem involving the use of Pythagoras' theorem	
Using a scale factor on the dimensions of a shape	Problems involving increase/decrease in an amount or measurement according to a scale factor

Numeracy (National 4)	
Numerical Outcome <i>The learner will use numerical skills to solve straightforward, real-life problems involving money/time/measurement</i>	
Skills	Explanation
1.1 Selecting and using appropriate numerical notation and units	Numerical notation should include: =, +, −, ×, /, ÷, <, >, (), %, colon and decimal point Units should include: <ul style="list-style-type: none"> — money (pounds and pence) — time (months, weeks, days, hours, minutes, seconds) — measurement of length (millimetre, centimetre, metre, kilometre, mile); weight (gram, kilogram); volume (millilitre, litre) and temperature (Celsius or Fahrenheit)
1.2 Selecting and carrying out calculations	<ul style="list-style-type: none"> ◆ add and subtract whole numbers including negative numbers ◆ multiply whole numbers of any size, with up to four-digit whole numbers ◆ divide whole numbers of any size, by a single digit whole number or by 10 or 100 ◆ find whole number remainders ◆ round answers to the nearest significant figure or two decimal places ◆ find simple percentages and fractions of shapes and quantities, eg 50%, 10%, 20% and 25%, 33$\frac{1}{3}$%; $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{10}$, $\frac{1}{5}$ ◆ calculate percentage increase and decrease ◆ convert equivalences between common fractions, decimals and percentages

	<ul style="list-style-type: none"> ◆ calculate rate: eg miles per hour or number of texts per month ◆ calculate distance given speed and time ◆ calculate time intervals using the 12-hour and 24-hour clock ◆ calculate volume (cube and cuboid), area (rectangle and square) and perimeter (shapes with straight lines) ◆ calculate ratio and direct proportion
1.3 Recording measurements using a straightforward scale on an instrument	<ul style="list-style-type: none"> ◆ use measuring instruments with straightforward scales to measure length, weight, volume and temperature ◆ read scales to the nearest marked, unnumbered division with a functional degree of accuracy
1.4 Interpreting measurements and the results of calculations to make decisions	<ul style="list-style-type: none"> ◆ use appropriate checking methods, eg check sums and estimation ◆ interpret results of measurements involving time, length, weight, volume and temperature ◆ recognise the inter-relationship between units in the same family, eg mm/cm, cm/m, g/kg, and ml/l ◆ use vocabulary associated with measurement to make comparisons for length, weight, volume and temperature
1.5 Explaining decisions based on the results of measurements or calculations	<ul style="list-style-type: none"> ◆ give reasons for decisions based on the results of calculations
Graphical data and probability Outcome <i>The learner will interpret graphical data and situations involving probability to solve straightforward, real-life problems involving money/time/measurement</i>	
Skills	Explanation
2.1 Extracting and interpretation data from at least two different straightforward graphical forms	Straightforward graphical forms should include: <ul style="list-style-type: none"> ◆ a table with at least four categories of information ◆ a chart where the values are given or where the scale is obvious, eg pie ◆ a graph where the scale is obvious, eg bar, pie, scatter or line graph ◆ a diagram, eg stem and leaf, map or plan
2.2 Making and explaining decisions based on the interpretation of data	<ul style="list-style-type: none"> ◆ make decisions based on observations of patterns and trends in data ◆ make decisions based on calculations involving data ◆ make decisions based on reading scales in straightforward graphical forms ◆ offer reasons for the decisions made based on the interpretation of data
2.3 Making and explaining decisions based on probability	<ul style="list-style-type: none"> ◆ recognise patterns and trends and use these to state the probability of an event happening ◆ make predictions and use these predictions to make decisions

Administrative information

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Superclass: RB

History of changes to National Unit Specification

Version	Description of change	Authorised by	Date
1.1	Example added to 3rd bullet on page 4 to clarify meaning; Correction to wording in page 6 Explanation column.	Qualifications Development Manager	June 2013

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