

National 5 Lifeskills Mathematics Course Support Notes



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Please refer to the note of changes at the end of this template for details of changes from previous version (where applicable).

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Introduction

These support notes are not mandatory. They provide advice and guidance on approaches to delivering and assessing the National 5 Lifeskills Mathematics Course. They are intended for teachers and lecturers who are delivering the Course and its Units. They should be read in conjunction with the *Course Specification*, the *Course Assessment Specification* and the Unit Specifications for the Units in the Course.

The National 5 Lifeskills Mathematics Course has been benchmarked against the Scottish Credit and Qualifications Framework (SCQF) at level 5. The Course is made up of three mandatory Units and a Course assessment.

Mandatory Units

Managing Finance and Statistics (National 5)	(6 SCQF credit points)
Geometry and Measures (National 5)	(6 SCQF credit points)
Numeracy (National 5) ¹	(6 SCQF credit points)
Course Assessment (National 5)	(6 SCQF credit points)

¹ The Numeracy (National 5) *Unit Support Notes* are published separately.

General guidance on the Course

Aims

The purpose of the National 5 Lifeskills 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 and independence in being able to handle mathematical processes and information in a range of real-life contexts. The Course also enables learners to draw conclusions, assess risk and 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' mathematical reasoning skills relevant to learning, life and work in an engaging and enjoyable way.

The Course aims to:

- ◆ motivate and challenge learners by enabling them to select and apply mathematical techniques to tackle a range of real-life problems and situations
- ◆ develop the ability to analyse a range of real-life problems or situations with some complex features involving mathematics
- ◆ develop confidence and independence in the subject and a positive attitude towards the use of mathematics in real-life situations
- ◆ develop the ability to select, apply, combine and adapt mathematical operational skills to new and unfamiliar situations in life and work to an appropriate degree of accuracy
- ◆ develop the ability to use mathematical reasoning skills to generalise, build arguments, draw logical conclusions, assess risk, make informed decisions
- ◆ develop the ability to use a range of mathematical skills to analyse, interpret and present a range of information
- ◆ communicate mathematical information in a variety of forms
- ◆ develop the ability to think creatively and in abstract ways

In addition, learners will have the opportunity to develop generic and transferable skills for learning, skills for life and skills for work. These include numeracy, thinking skills, literacy and employability.

Progression into this Course

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 one or more of the following or by equivalent qualifications and/or experience:

- ◆ National 4 Lifeskills Mathematics Course

Experiences and outcomes

Learners who have completed relevant Curriculum for Excellence experiences and outcomes will find these an appropriate basis for doing the Course.

Skills, knowledge and understanding covered in the Course

This section provides further advice and guidance about skills, knowledge and understanding that could be included in the Course.

Note: teachers and lecturers should refer to the *Course Assessment Specification* for mandatory information about the skills, knowledge and understanding to be covered in this Course.

The following skills, knowledge and understanding will be developed throughout the Units in the Course. However, some Units may offer more opportunities than others for the development of skills, knowledge and understanding as suggested in the table below:

- ✓✓✓ Significant opportunities to develop within the Unit
- ✓✓ Some opportunities to develop within the Unit

Skills knowledge and understanding	Managing Finance and Statistics	Geometry and Measures	Numeracy
analyse real-life situations and problems involving mathematics	✓✓	✓✓	✓✓✓
identify valid mathematical operational skills to tackle real-life situations or problems	✓✓	✓✓	✓✓
use a range of mathematical operational skills to an appropriate degree of accuracy	✓✓✓	✓✓✓	✓✓✓
use mathematical reasoning skills to draw conclusions or justify decisions	✓✓	✓✓	✓✓
communicate mathematical information in an appropriate way	✓✓	✓✓	✓✓

Suggested learning and teaching approaches for the development of the skills, knowledge and understanding across the Course can be found in Appendix 1.

Progression from this Course

This Course or its component Units may provide progression to:

- ◆ other qualifications in mathematics or related areas
- ◆ further study, employment and/or training

Hierarchies

Hierarchy is the term used to describe Courses and Units which form a structured sequence involving two or more SCQF levels.

It is important that any content in a Course and/or Unit at one particular SCQF level is not repeated if a learner progresses to the next level of the hierarchy. The skills and knowledge should be able to be applied to new content and contexts to enrich the learning experience. This is for centres to manage.

The National 5 Lifeskills Mathematics Course and its component Units are in a hierarchy with the National 4 Lifeskills Mathematics Course and the National 3 Lifeskills Mathematics Course. This hierarchical relationship is shown in the table below:

Lifeskills Mathematics National 3	Lifeskills Mathematics National 4	Lifeskills Mathematics National 5
Manage Money and Data	Managing Finance and Statistics	Managing Finance and Statistics
Shape, Space and Measures	Geometry and Measures	Geometry and Measures
Numeracy	Numeracy	Numeracy
	Added Value Unit	Course assessment

This hierarchical structure aims to provide a mechanism for progression and enables learners to be given recognition for their best achievement. For example, the National 5 Lifeskills Mathematics Units can substitute for the National 4 Lifeskills Mathematics Units and so contribute to the National 4 award.

Approaches to learning and teaching

The purpose of this section is to provide general advice and guidance on approaches to learning and teaching which can be used for any of the component Units within the Course.

Effective learning and teaching will draw on a variety of approaches to enrich the experience of learners. In particular, a mix of approaches which provide opportunities for personalisation and choice will help motivate and challenge learners.

The skills-based focus of the Course readily lends itself to a variety of approaches to learning and teaching such as interdisciplinary learning, cross-curricular opportunities, investigative and problem solving approaches; individual/collaborative working, resource-based learning and e-learning. Examples of how each of these approaches could be used within learning and teaching are described below:

Interdisciplinary learning could be used to develop learners' mathematical skills through scheduled or special events planned throughout the year, for example:

- ◆ Trade fairs or sponsored events could involve managing finance and statistics. Learners could collect and record data such as income and expenditure, and results from sponsored events including the amount of money pledged and collected. Financial data could be represented in graphical form and then analysed to establish the amount of profit and/or loss or the amount of money pledged compared to money collected. Learners could also be involved in the measurement of achievement in sponsored events within the centre.
- ◆ Shows, exhibitions and plays could be used as contexts to manage finance collected from ticket sales and to manage the costs of production, ie working within budget and working out the affordability of props, equipment or refreshments. Learners could also be involved in the planning and management of the stage/display stands by organising the position and size of props, furniture or equipment. Scale drawings could be created and used for this purpose. Learners could also be asked to contribute to the planning of these events through the use of precedence tables.
- ◆ Sports days could provide opportunities to manage statistics by taking measurements and recording the results of events. These results could be represented in a range of different graphical forms and the effects of tolerance discussed. Learners could also use the data to calculate mean scores or calculate the range of results for a particular event and interpret these results as part of a write up following the event. The results of sporting events could be used to predict the probability of a team or individual winning an event. Learners could also develop their geometric and measurement skills by planning the use of space and the positioning of equipment for events.
- ◆ Visiting speakers, external visits or work experience could highlight when and how finance, statistics, geometry and measurements are used in the workplace. This could include for example: nursing, the police, army, sports coaching, engineers, architects or the building industry and accountancy firms.

- ◆ School trips or excursions could be used to apply mathematical and numerical skills in a variety of contexts such as outdoor education centres, field trips, visits to museums or visits to local companies. Learners planning to go on school trips abroad could be asked to work out the timing of the trips across time zones and convert between several currencies using different companies to work out the best deal.

Cross-curricular opportunities topics or themes could be used to build on the relationship between mathematics and other curriculum areas such as technology, geography, science and physical education. Examples of possible cross-curricular learning and teaching opportunities are described in the following table:

Curriculum area	Possible cross-curricular learning and teaching opportunities
Technology	<ul style="list-style-type: none"> ◆ using knowledge of shape, space and measurement to design and make items ◆ working with a range of measuring tools and equipment ◆ budgeting for the production of a range of items using different materials ◆ calculating the quantity of materials required based on a related measurement, eg area or volume ◆ creating scale drawings of items to be constructed including choosing the scale ◆ understanding the need for tolerance and accuracy in measurement when designing and making items
Art	<ul style="list-style-type: none"> ◆ using knowledge of shape and space to create models, pictures or patterns ◆ using scale factors on the dimensions of patterns, pictures or models ◆ calculating the quantity of materials, eg the amount of oil paint or watercolours required based on the area of a picture to be painted
Geography	<ul style="list-style-type: none"> ◆ taking and recording a range of measurements during field trips, eg soil samples and weather readings ◆ planning a navigation course between various points ◆ investigating a situation involving gradient within physical geography and when interpreting contour lines on maps ◆ using scale when working with maps or plans ◆ collecting, organising, presenting and comparing data collected during field trips ◆ data from field trips could be analysed to recognise patterns and relationships, the effects of bias and sample size could be discussed
Health and wellbeing	<ul style="list-style-type: none"> ◆ using a range of measuring instruments during cooking or when preparing food ◆ carrying out calculations associated with dietary requirements and food labelling ◆ calculating a quantity for a recipe given two

	<p>related pieces of information, eg calculating the amount of butter needed when given the quantity of flour and sugar</p> <ul style="list-style-type: none"> ◆ preparing a dish based on a given budget ◆ understanding the need for tolerance of measurements in cooking and the effects of too much or too little ingredients ◆ working out the best deal on pre-prepared foods based on cost, health data and portion size ◆ analysing health statistics and investigating risk associated with diet and exercise
Science	<ul style="list-style-type: none"> ◆ recording data collected during experiments ◆ presenting data in different graphical forms, manipulating and comparing data and interpreting the results ◆ calculating the quantity of substance based on a related quantity for an experiment ◆ investigating the impact of renewable energy system by using statistics ◆ planning a scientific experiment by using precedence tables ◆ science experiments could be used to explore the probability of combined events
Physical education	<ul style="list-style-type: none"> ◆ measuring physical achievements, recording, comparing and reporting results to others in graphical form ◆ taking fitness measurements such as heart rate and breathing rates and using statistics to compare and contrast results ◆ combining knowledge of maths, geography and physical education in orienteering activities ◆ analysing fitness data and justifying changes over time ◆ drawing a line of best fit on a scattergraph to compare variables ◆ using boxplots to illustrate range, median and quartiles for data associated with health statistics, eg weight, BMI, and resting heart rates

Investigative/problem solving approaches may provide the opportunity for learners to observe, explore, experiment and debate mathematical approaches to solve real-life problems. For example, by asking ‘what would happen if...?’, learners could explore the concepts of probability, analyse risk and determine best value, or investigating the impact of interest rates on savings and borrowing. This approach has the potential to stimulate mathematical thinking, especially when supported by questioning and/or discussion. Prompt questions could be used to establish learners’ understanding for example: ‘What did you do to work that out? Could this problem have been solved in a different way? If yes, what would you have done differently?’

Individual and/or collaborative working could provide learners with the opportunity to ‘think, pair, share’ mathematical strategies for tackling real-life tasks. For example:

- ◆ Learners could independently identify a valid strategy for a problem involving time management. Learners could then be asked to share their ideas with others and to negotiate which strategy is the most appropriate and effective for solving the problem.
- ◆ Online tests, textbook exercises, quizzes or competitions could also be used to practise mathematical and numerical skills and strategies, sharpen recall of number facts and develop efficient calculation strategies. Examples could include police online tests or online tests used for the civil service.
- ◆ Exposition is an important technique. However, learners should be engaged as much as possible. The engagement of learners working on their own could be enhanced by teachers/lecturers providing opportunities for personalisation and choice where possible. Learners could be asked to relate the mathematics to their own circumstances or be asked to collect their own data to manipulate.

Collaborative approaches can be used within Units and across Courses where it is helpful to simulate real life situations, share tasks and promote team working skills. However, there must be clear evidence to show that the learner has met the required assessment standards for the Unit or Course.

Resource-based learning could include for example:

- ◆ Using technologies to collect, organise, represent and manipulate data and information.
- ◆ Using real-life or simulated environments to develop skills in managing money or time and in analysing statistics.
- ◆ Using calculators, computers, tablets, mobile phones and other electronic devices to explore numbers, manage time, or check answers to complex or lengthy calculations. The use of technology is particularly appropriate when this is a naturally occurring feature of the context in which learning is taking place. Calculators often help learners to process numbers, freeing up time for them to analyse situations, draw conclusions and make informed decisions. However, learners should, where possible, be encouraged to develop and improve their skills in completing both written and mental calculations to develop numerical fluency and efficiency.
- ◆ Using real-life materials such as budgets, invoices, publications, bills and advertisements
- ◆ Learners could be given the opportunity to work with online conversion tables for measurements such as British and European shoe and clothes sizes, distance and weight measurements, the moment magnitude scale, and electronic and non-electronic blood pressure machines. The *Guinness Book of Records* could also be used as stimulus material.

Where resources permit, centres could use technology to support learning and teaching. For the National 5 Lifeskills Mathematics Course this could include:

- ◆ Using ICT and other technologies such as calculators and computers for handling data and performing more complex calculations.
- ◆ Using multi-media packages to work with geometry
- ◆ Using online tests and interactive programmes
- ◆ Using spreadsheets and other data handling programmes to collect, record and manipulate data
- ◆ Using web-based resources such as financial or health related statistics as stimulus material

Examples of learning and teaching contexts that could be used for the Units within this Course can be found in Appendix 1.

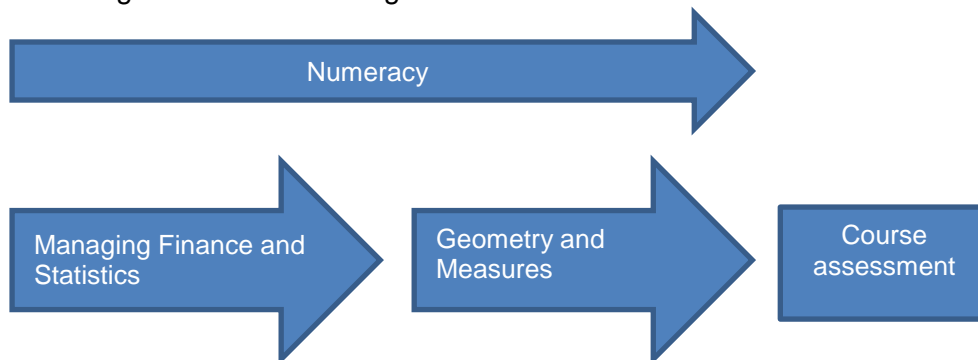
Examples of suggested learning and teaching resources can be found in Appendix 2.

Sequencing and integration of Units within the Course

Sequencing and integration of the delivery and assessment of the Units within the Course is at the discretion of the centre. The models which follow exemplify possible approaches which may be adopted. Please note that other combinations are also possible.

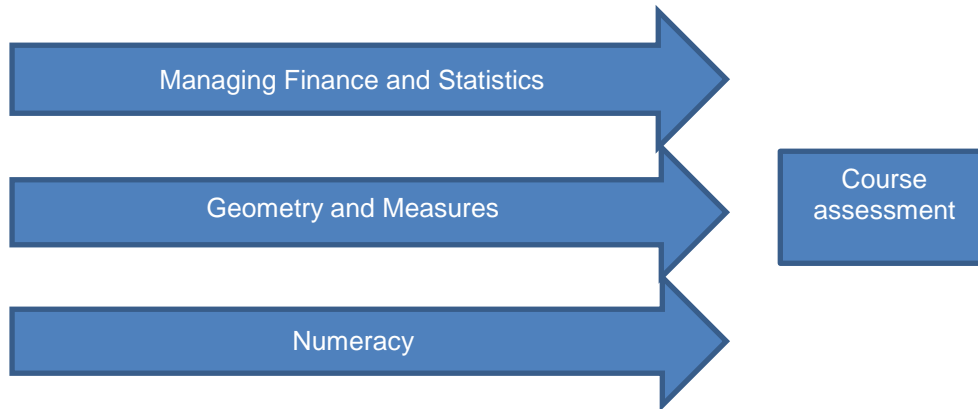
Example 1:

This example shows the possibility of delivering the *Managing Finance and Statistics* Unit and *Geometry and Measures* Unit sequentially, with the Numeracy Unit being delivered throughout. This sequence would allow more time for learning and teaching and provide the opportunity to reinforce and consolidate numerical skills through the Course. The *Managing Finance and Statistics* and *Geometry and Measures* Units can be delivered in any order. Completion of all three Units would lead on to the Course assessment which draws on the skills, knowledge and understanding from across the Course.



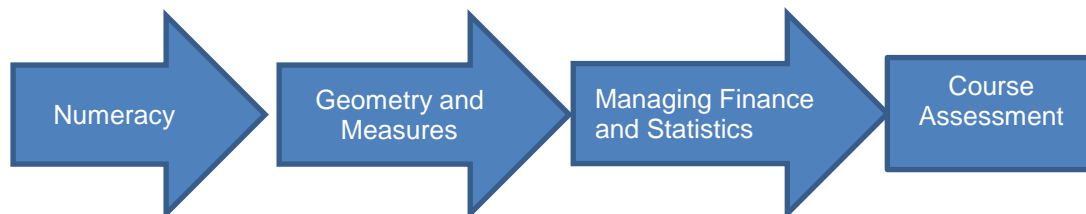
Example 2:

This example shows the possibility of delivering all three Units: *Managing Finance and Statistics*, *Geometry and Measures* and the *Numeracy* Unit, concurrently. This approach would be particularly useful if Lifeskills Mathematics is delivered using topics or themes which cut across all three Units. Completion of all three Units at the same time would lead to the Course assessment which draws on the skills, knowledge and understanding from across the Course.



Example 3:

This example shows the possibility of delivering the *Numeracy* Unit, *Managing Finance and Statistics* Unit and the *Geometry and Measures* Unit, sequentially. This example could be beneficial for learners needing to reinforce and consolidate their numerical skills at the start of the Course. *Managing Finance and Statistics* and *Geometry and Measures* can be delivered in any order. Completion of all three Units would lead on to the Course assessment.



Developing skills for learning, skills for life and skills for work

The *Course Specification* lists the skills for learning, skills for life and skills for work that learners should develop through this Course. These are based on SQA's *Skills Framework: Skills for Learning, Skills for Life and Skills for Work* and should be built into the Course where there are appropriate opportunities.

Throughout the Course there are significant opportunities to develop the following skills for learning, skills for life and skills for work:

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

Applying — the ability to use existing information to solve a problem in a different context, and to plan, organise and complete a task.

Analysing and evaluating — the ability to identify and weigh-up the features of a situation or issue and to use your judgement of them in coming to a conclusion. It includes reviewing and considering any potential solutions.

Numeracy — the ability to select and apply number processes, money, time and measurement, and information handling skills in real-life contexts.

In addition, there may also be opportunities for learners to develop their literacy and employability skills.

Literacy — the ability to access, engage in and understand their learning and to communicate their thoughts, ideas and opinions. This Course will provide learners with the opportunity to analyse real-life contexts and communicate their thinking by presenting mathematical information using numbers, diagrams, symbols and words.

Employability skills — the ability to apply personal qualities, skills, knowledge, understanding, and attitudes in changing economic environments. The mathematical operational and reasoning skills in this Course aim to develop learners' ability to respond to mathematical situations that could arise in the workplace by analysing a situation, deciding which mathematical strategies to use, work through those strategies effectively, and make informed decisions.

Further guidance on the development of skills for life, skills for learning and skills for work can be found in the *Unit Support Notes*.

Approaches to assessment

Learners will benefit from receiving accurate and regular feedback regarding their learning. This helps to ensure they are actively involved in the assessment process. It is also important that different approaches to assessment are adopted to suit the varying needs of learners.

Combining assessment across Units

When the Units are delivered as part of a Course, the assessment of Units can be combined.

The pattern of combined assessment can mirror that for integrated delivery as suggested in the examples shown in the section on 'Approaches to learning and teaching'.

A combined approach to assessment has the advantage of:

- ◆ bringing together elements of different Units and encouraging the transfer of skills, knowledge and understanding
- ◆ making learning and assessment more coherent and relevant for learners

Assessment strategies and methods

The skills-based focus of the Course readily lends itself to a variety of approaches to assessment. Whichever approach is used, assessments must be valid, reliable and fit for purpose. Each assessment should therefore:

- ◆ be designed to allow learners to produce sufficient evidence to show they have achieved the required Outcomes and Assessment Standards for the Unit
- ◆ allow consistent judgements to be made
- ◆ be appropriate for the aims and purposes of the Course

The following table gives some suggested approaches to assessment and examples of how they could be used to combine assessment opportunities across the Course.

Suggested assessment approach	Units	An example of how this approach could be used across the Course
Problem solving tasks or activities	<ul style="list-style-type: none">◆ Managing Finance and Statistics Unit◆ Numeracy Unit	A financial problem could be given to learners which would draw on the 'Managing Finance and Statistics' Unit as well as the 'Numeracy' Unit. For example, learners could be asked to analyse a financial position using given budget information. This could include analysing factors affecting income and expenditure over the period of a month. Learners could be asked to produce a budget which takes into account both income and expenditure. Learners

		could be asked to calculate interest gained on savings and to investigate the impact of interest rates on borrowing.
Projects or investigations	<ul style="list-style-type: none"> ◆ Managing Finance and Statistics Unit ◆ Geometry and Measures Unit ◆ Numeracy Unit 	A project/investigation could be used to combine the assessment of numeracy, statistics, and geometry. For example, learners could be asked to construct a scale drawing to plan the redecoration of a room. Learners could be asked to calculate required quantities and costs of materials based on related information for the job, eg paint, wallpaper and/or tiles. The job could include working out the amount of paint required, the number of tiles or rolls of wallpaper needed. Learners could be asked to produce a precedence table to plan the job.
Short/extended response tests	<ul style="list-style-type: none"> ◆ Managing Finance and Statistics Unit ◆ Geometry and Measures Unit ◆ Numeracy Unit 	Learners could be given short or extended response tests online or on paper which covers the Outcomes and Assessment Standards for each Unit. Where possible all questions should be set within realistic and relevant contexts for the learners and could include a mix of short and extended response questions.

When designing internal assessments, teachers/lecturers are encouraged to be as inclusive as possible taking into account the needs and experiences of their learners. In particular, internal assessment should:

- ◆ use content, resources and materials that recognise different groups and avoid bias or stereotyping
- ◆ provide a balance of assessment methods and adopt alternative approaches to gathering evidence which build in opportunities for personalisation and choice where appropriate

Exemplification of assessment is provided in the *National Assessment Resource*.

Gathering evidence

Evidence for assessment purposes could take a variety of forms such as:

- ◆ written evidence including calculations and graphics generated during supervised class work or discrete mathematical tests
- ◆ oral evidence which shows learners' understanding of mathematical processes
- ◆ computer-generated assessment records or printouts from simulations, eg SQA Solar or online tests
- ◆ photographs of project or investigative work
- ◆ a product such as a spreadsheet or computer-generated graphic

Please note, this list is not exhaustive and other types of evidence are also possible.

When evidence for the Course is collected using a combined approach, the use of the combined skills list provided in Appendix 3 may be helpful.

Evidence must be generated for all Outcomes and Assessment Standards.

Achievement is on a pass/fail basis for the Outcomes. Learners who fail to achieve all of the Assessment Standards within the Outcomes will only need to be re-assessed on those Assessment Standards not achieved.

Centres may consider it appropriate to delay re-assessment until further learning has taken place. Re-assessment opportunities could be built into other assessment opportunities within other Units.

Authentication

For guidance on authentication of evidence which is gathered outwith the direct supervision of the teacher/lecturer responsible for the learner, eg outside the school or classroom, refer to SQA's Guide to Assessment.

Preparation for Course assessment

Each Course has additional time which may be used at the discretion of the teacher or lecturer to enable learners to prepare for Course assessment. This time may be used near the start of the Course and at various points throughout the Course for consolidation and support. It may also be used for preparation for Unit assessment, and towards the end of the Course, for further integration, revision and preparation and/or gathering evidence for Course assessment.

Information given in the *Course Specification* and the *Course Assessment Specification* about the assessment of added value is mandatory. The *Course Assessment Specification* addresses the key purposes and aims of the Course as defined in the Course rationale.

In this Course, the Course assessment will focus on breadth, challenge and application. The learner will draw on and extend the skills they have learned during the Course. This will be assessed through two question papers which will offer opportunities to demonstrate the breadth and depth of knowledge and skills acquired from across the Units. 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 Course assessment.

In preparation for the Course assessment, it is recommended that learners are given the opportunity to:

- ◆ analyse and interpret real-life situations and problems involving mathematics in new and previously unseen situations
- ◆ select and integrate mathematical operational skills from across the Course to tackle real-life situations or problems
- ◆ apply a range of mathematical operational skills to an appropriate degree of accuracy with and without the aid of a calculator
- ◆ use mathematical reasoning skills to draw conclusions or justify decisions
- ◆ communicate mathematical information appropriately

The question paper will sample knowledge and skills acquired in the Course and will provide opportunities to apply skills in a wider range of situations, some of which may be new to the learner. Prior to the Course assessment, learners may benefit from having the opportunity to respond to short answer questions, multiple choice questions and extended multi-step case study questions.

Exemplification of the added value assessment is given in the *National Assessment Resource*.

Equality and inclusion

The additional support needs of learners should be taken into account when planning learning experiences or when considering any reasonable adjustments. Assessment methods should offer learners an equal opportunity to demonstrate their achievement. This should be reflected in the language used, the use of different assessment methods and the use of appropriate illustrative materials which reflect an inclusive view.

Any additional support provided to learners to help them access assessment tasks should maintain the integrity of the Outcomes and Assessment Standards.

Examples of support which may be appropriate for this Course are as follows:

- ◆ allowing extra time to complete tasks
- ◆ practical helpers under direct learner instruction could assist with practical activities (this could also include a reader or scribe as appropriate)
- ◆ adapted equipment would also be appropriate for measuring tasks
- ◆ the use of a calculator or similar aid
- ◆ ICT and other assistive technologies

Other types of support are also possible and would be determined by the teacher/lecturer in response to the specific needs of the learner.

Further details about equality and inclusion relevant to each Unit can be found in the *Unit Support Notes*.

It is recognised that centres have their own duties under equality and other legislation and policy initiatives. The guidance given in these Course Support Notes is designed to sit alongside these duties but is specific to the delivery and assessment of the Course.

It is important that centres are aware of and understand SQA's assessment arrangements for disabled learners, and those with additional support needs, when making requests for adjustments to published assessment arrangements. Centres will find more guidance on this in the series of publications on Assessment Arrangements on SQA's website: www.sqa.org.uk/sqa/14977.html.

Appendix 1: Skills, knowledge and understanding with suggested learning and teaching contexts

Lifeskills Mathematics: Managing Finance and Statistics (National 5)		
<i>The learner will use reasoning skills and financial skills linked to real-life contexts by:</i>		
1.1 Analysing a situation involving finance and identifying a valid strategy 1.2 Using appropriate mathematical processes and/or calculations to determine a solution 1.3 Justifying a solution in relation to the context		
Sub-skills	Explanation	Suggested learning and teaching contexts
Analysing a financial position using budget information	<p>Budgeting and planning for personal use or planning an event</p> <p>Balancing incomings and outgoings from a range of sources</p>	<p>Learners could try building a budget by engaging them in an extended simulation. Learners could select a job and determine how much they would earn. Learners could explore house ads and calculate the mortgage, or select a car to purchase and use catalogues to buy goods.</p> <p>Learners could use a budget (paper or digital) when simulating earning and spending money. Throughout the simulation, chance cards can be used for credits and debits.</p>
Analysing and interpreting factors affecting income	<p>Investigate and interpret income and deductions for different personal circumstances and career choices. These should include:</p> <ul style="list-style-type: none"> ◆ basic pay, gross/net pay ◆ overtime ◆ incentive payments, eg bonus and commission ◆ benefits and allowances 	<p>An investigative approach could be used to find out pay, and pay deductions for a chosen job or career.</p> <p>Real-life materials could be used such as job advertisements and simplified employment contracts.</p> <p>Calculations could involve: basic pay, overtime, gross/net pay, allowances, National Insurance, income tax and pension contributions.</p>

	<ul style="list-style-type: none"> ◆ National Insurance ◆ income tax ◆ pension contributions 	
Determining the best deal, given three pieces of information	Compare at least three products, given three pieces of information on each	Learners carry out an investigation or project which involves the use of the internet to source information about a chosen product such as a mobile phone contract or computer gaming product. Given three pieces of information, learners could compare at least three products, such as amount of data download allowed per month, unit costs and additional features.
Converting between several currencies	Convert between currencies in either direction; this is to involve the use of at least three currencies in a multi-stage task	Travel scenarios and information used from investigations about different online or travel agency currency converters could be used. Learners could discuss the impact of different rates and the effect of commission. Learners could be engaged in a simulated travel itinerary and convert given amounts of money for different countries. Learners could also test scenarios for the best deal with such as banks, exchange bureaux; ATM cash machines; high street travel agents.
Investigating the impact of interest rates on savings and borrowing	<p>These include:</p> <ul style="list-style-type: none"> ◆ loans ◆ savings ◆ credit cards ◆ store cards ◆ credit agreements 	Learners could be given a variety of real-life loan and interest rate tables. Learners could calculate and discuss which savings scheme would give the best return and which borrowing schemes would be the most expensive over a given period of time. The concept of APR could be discussed. Learners could also participate in a 'needs and wants' problem solving activity where they would be given the opportunity to cost items they would like to have and compare this against income.

The learner will use reasoning skills and statistical skills linked to real-life contexts by:

2.1 Analysing a situation involving data and identifying a valid strategy
2.2 Representing data appropriately
2.3 Using statistics to interpret data, compare data and draw conclusions

Sub-skills	Explanation	Suggested learning and teaching contexts
Using a combination of statistics to investigate risk and its impact on life	This aims to develop the link between simple probability and expected frequency.	<p>Simulations could provide possible contexts for the discussion of probability. Learners could draw on a range of statistics about one topic such as greenhouse emissions and global warming, diet and the risk of cancer. There are many opportunities for topical links to be made with Physical Education, Home Economics and Modern Studies.</p> <p>Learners could also investigate and discuss the meaning of health and safety statistics for accidents at work, speed limits, safe loads to carry and transport. Learners could be encouraged to make statements about implications and draw conclusions from statistical data presented in diagrammatic form — eg crime rates in specific post codes; house insurance; relate health statistics and life expectancy to life insurance and annuities; use promotional materials from insurance companies and newspapers.</p>
Using a combination of statistical information presented in different diagrams		
Using statistics to analyse and compare data sets	Constructing, interpreting and comparing boxplots, scatter graphs and constructing a pie chart. Calculating mean, median, range, interquartile or semi-interquartile range, and standard deviation	<p>Learners could use other subject areas such as sport and Geography as contexts for analysing and comparing data sets. For example, learners could analyse the time taken to run 100m and to show the times getting faster and faster they could draw a best-fit graph to determine what times may be achieved in the future.</p> <p>Computer programs and advanced calculators could also be used to construct and manipulate graphical forms.</p>
Drawing a line of best fit from given data	In tabular form	

Lifeskills Mathematics: Geometry and Measures (National 5)

The learner will use reasoning skills and measurement skills linked to real-life contexts by:

1.1 Analysing a situation involving measurement and identifying a valid strategy

1.2 Using appropriate mathematical processes and/or calculations to determine a solution

1.3 Justifying a solution in relation to the context

Sub-skills	Explanation	Suggested learning and teaching contexts
Calculating a quantity based on two related pieces of information		Learners could investigate measures and the relationships between them such as pressure, temperature and volume; speed, distance and time; density, mass and volume.
Constructing a scale drawing, including choosing a scale	From verbal information and/or sketch	From verbal information and/or a sketch, learners could be asked to design and use scale representations of everyday situations, for example, sewing patterns or house plans. Enlarge/reduce simple shapes on grid paper to a specified scale.
Planning a navigation course	By using a given map or plan using bearings and length	From a given starting point, learners could use a protractor to plot a navigation course using the bearings and distance. Then, using a given millimetre scale, learners could present this course in graphical form and calculate the distance and possible time it would take to complete it from the starting point.
Carrying out efficient container packing	By assigning items to uniform containers to minimise the amount of containers used	Learners could explore ways in which packing is used in the home, eg how many books/DVD/CD cases can be packed onto a shelf.
Using precedence tables to plan tasks	Some activities can be done simultaneously whereas others must be done in sequence	Learners could work collaboratively to plan an event such as a school fair or concert in which some activities can be done simultaneously whereas others must be done in sequence.
Solving a problem involving time management	Solving a problem in time management by planning timing of activities with some complex features including working across time zones	Learners could use a problem solving approach for given scenarios which involve the calculation of time intervals such as international travel arrangements, event/task management. For example, learners could estimate the

		arrival time at an international destination given the actual flight time and the time zone difference. Or organise a video/phone call to international destinations at a given UK time.
Considering the effects of tolerance	Given the tolerance, calculate the limits. Given the accuracy of the methods of production of two fitting components, consider the implications for compatibility. Include the use of millimetres.	Using prefixes such as millimetres and microns, consider types of components that would use the different tolerance levels, for example a fence post and a car engine component. Groups could discuss possible limits and the need for compatibility.

The learner will use reasoning skills and geometric skills linked to real-life contexts by:

2.1 Analysing a situation involving geometry and identifying a valid strategy

2.2 Using appropriate mathematical processes and/or calculations to determine a solution

2.3 Justifying a solution in relation to the context

Sub-skills	Explanation	Suggested learning and teaching contexts
Investigating a situation involving gradient	Using vertical over horizontal distance, including co-ordinates	A problem solving approach could be used to apply Pythagoras' theorem in simple architecture such as the pitch of a roof and its relation to the footprint of a house on a plot of land. This could be extended by calculating the cost of roof tiles as the pitch and area of footprint vary.
Solving a problem involving a composite shape which includes part of a circle		
Solving a problem involving the volume of a composite solid	Including simple fractional parts of solids	Learners could use a problem solving approach to design a cuboid shaped-container to hold 500ml of liquid. Learners could be asked to calculate the dimensions to ensure that it uses the least amount of material.
Using Pythagoras' theorem within a two-stage calculation		See example above for investigating a situation involving a gradient.

Lifeskills Mathematics: Numeracy (National 5)		
The learner will use numerical skills to solve real-life problems involving money/time/measurement		
Assessment Standard	Explanation	Suggested learning and teaching contexts
1.1 Selecting and using appropriate numerical notation and units	<p>Including: =, +, -, x, /, ÷, <, >, (), %, colon and decimal point and simple formulae</p> <p>Selecting and using appropriate units for money, time and measurement (length, weight, volume and temperature)</p>	<p>A wide range of approaches could be used for learning and teaching numeracy skills. These may include:</p> <ul style="list-style-type: none"> ◆ discrete numerical exercises using textbooks and worksheets ◆ contextualised short and extended response questions ◆ investigative work requiring the selection and application of numerical skills ◆ interdisciplinary activities which involve the selection and use of a range of numerical processes such as Art, craft subjects, Technology, Home Economics, Physical Education and Geography
1.2 Selecting and carrying out calculations	<ul style="list-style-type: none"> ◆ add and subtract numbers given to two decimal places ◆ multiply or divide a number given to two decimal places by a single-digit whole number ◆ multiply or divide a number given to two decimal places by multiples of 10, 100 and 1000 ◆ round answers to the nearest significant figure or three decimal places ◆ find percentages and fractions of shapes and quantities ◆ recognise and use mixed fractions, eg $3\frac{1}{2}$, $\frac{1}{3}$, $4\frac{1}{4}$, $\frac{1}{8}$, $\frac{2}{6}$ ◆ add and subtract simple fractions, eg $\frac{1}{2} + \frac{1}{4}$ and $\frac{2}{3} - \frac{1}{3}$ ◆ find the number of fractional parts in a mixed number, eg $2\frac{1}{2} = 5$ halves ◆ calculate compound percentage increase and decrease ◆ express a quantity as a percentage of another quantity ◆ convert equivalences between fractions, decimal fractions and 	<p>To enrich the delivery of the Numeracy Unit, it is recommended that learners develop the ability to:</p> <ul style="list-style-type: none"> ◆ use knowledge of rounding and estimation to check or decide if an answer is appropriately accurate ◆ use mental strategies such as number facts, doubling, halving, place value, adding-on, times tables, approximation and factors to carry out calculations efficiently ◆ understand the interrelationships between fractions, decimal fractions and percentages to choose an efficient route to a solution. For example, when asked to evaluate a discount of 75% on an item costing £100, an elegant solution would involve understanding that 75% is the same as a $\frac{3}{4}$, and that calculating $\frac{3}{4}$ of £100 will give the same answer as 75% of £100.

	<p>percentages</p> <ul style="list-style-type: none"> ◆ calculate speed, time and distance ◆ calculate volume (cylinder, triangular prism), area (triangles and composite shapes) and perimeter (circumference) ◆ calculate ratio including dimensions from scale drawings, eg scale of 1:10 ◆ calculate direct and indirect proportion 	<p>Examples of contexts in which these skills can be applied are given in the Numeracy <i>Unit Support Notes</i>.</p>
1.3 Recording measurements using a scale on an instrument	To the nearest marked, minor unnumbered division on an instrument for length, weight, volume and temperature	Learners should be aware that exact measurements are not always possible and that the level of accuracy is often dependent on the measuring instrument and the nature of the task. At National 5, a suitable scale is one where the major divisions are marked. Learners must be able to measure to the nearest marked minor unnumbered division. Digital readouts are not acceptable.
1.4 Interpreting measurements and the results of calculations to make decisions	Identifying relevant measurements and results of calculations to make a decision.	
1.5 Justifying decisions by using the results of measurements or calculations	Using evidence from the results of measurements or calculations to justify decisions	Learners could be encouraged to discuss and produce arguments for a particular task or situation by using the results of calculations or measurements. This could be done as group work or as a class presentation.

The learner will interpret graphical data and situations involving probability to solve real-life problems involving money/time/measurement by:		
Assessment Standard	Explanation	Suggested learning and teaching contexts
2.1 Extracting and interpretation data from at least three different graphical forms	<ul style="list-style-type: none"> ◆ a table with at least five categories of information ◆ a chart where all the values are not given or where the scale is not obvious, eg comparative/compound bar chart ◆ a graph where part of the axis is missing or the scale is not obvious, eg conversion line graph ◆ a diagram, eg stem and leaf, scatter diagram or a map 	<p>An investigative approach could be used in a range of contexts from learning, life and work.</p> <p>This aspect of the Numeracy Unit could be delivered at the same time as the statistical Outcomes in the Managing Finance and Statistics Unit and Geometry and Measures Unit.</p> <p>Examples of contexts for learning and teaching are given in the <i>Unit Support Notes</i>.</p>
2.2 Making and justifying decisions using evidence from the interpretation of data	<ul style="list-style-type: none"> ◆ make decisions based on patterns, trends or relationships in data ◆ use evidence from the interpretation of data to justify decisions ◆ understand the effects of bias and sample size 	<p>Examples of probability contexts could include:</p> <ul style="list-style-type: none"> ◆ Using weather statistics to estimate the probability of different types of weather. ◆ Using statistics to find the relative incidence of accidents amongst uninsured drivers.
2.3 Making and justifying decisions based on probability	<ul style="list-style-type: none"> ◆ recognise patterns, trends and relationships and use these to state the probability of an event happening ◆ use evidence from the interpretation of probability to justify decisions ◆ analyse the probability of combined events, identifying the effects of bias and describing probability through the use of percentages, decimal fractions, fractions and ratio to make and justify decisions 	<ul style="list-style-type: none"> ◆ Use data from government websites to deduce which age group is most likely to have accidents.

Appendix 2: Suggested resources

The following table lists organisations that may provide suitable resources for the delivery of the National 5 Lifeskills Mathematics Course.

Suggested organisation	Possible resources or support materials
BBC Scottish Bitesize Maths	Provides online resources for teaching and learning mathematics.
BBC Skillswise Maths	Is a free-to-access website for adult tutors and students, with printable worksheets and factsheets and online games, videos and quizzes.
Teaching Ideas	Provides free online resources for Mathematics and Numeracy. Many examples are contextualised and age graded.
Office of Fair Trading Skilled to Go	Skilled to go uses real-life consumer situations to help learners develop consumer skills, knowledge and confidence alongside literacy and numeracy. A free toolkit of resources includes games, quizzes, role plays and case studies, plus video and audio content.
National Centre for Excellence in the Teaching of Mathematics (NCETM)	The NCETM aims to meet the needs of teachers of mathematics and realise the potential of learners through a national infrastructure for mathematics-specific CPD. The NCETM provides and signposts resources to teachers, mathematics education networks, HEIs and CPD providers. At the same time, the National Centre encourages schools and colleges to learn from their own best practice through collaboration and by sharing good practice locally, regionally and nationally.
Nrich maths	This website offers thousands of free mathematics enrichment materials (problems, articles and games) for teachers and learners from ages 5 to 19 years. All the resources are designed to develop subject knowledge, problem-solving and mathematical thinking skills. The website is updated with new material on the first day of every month.
STEM Scotland	STEM Scotland is the website to assist you to find information on science engagement in Scotland and is supported by the Office of the Chief Scientific Advisor of the Scottish Government with the aim to champion science in Scotland. This website will help you to find science, technology, engineering, and maths activities suitable for various pupil levels linked to Curriculum for Excellence, family activities, and science engagement for the general public.

The above resources were correct at the time of print and may be subject to change.

Appendix 3: Combined skills list for the Units

This skills list may be particularly useful if a combined or thematic approach is taken to assess the National 5 Lifeskills Mathematics Course. The following skills could be drawn on and possibly combined to demonstrate achievement of the Units.

Skills
<p>Financial skills</p> <ul style="list-style-type: none"> ◆ Analysing a financial position using budget information (MF&S) ◆ Analysing and interpreting factors affecting income (MF&S) ◆ Determining the best deal given three pieces of information (MF&S) ◆ Converting between several currencies (MF&S) ◆ Investigating the impact of interest rates on savings and borrowing (MF&S)
<p>Statistical skills</p> <ul style="list-style-type: none"> ◆ Using a combination of statistics to investigate risk and its impact on life (MF&S) ◆ Using a combination of statistical information presented in different diagrams (MF&S) ◆ Using statistics to analyse and compare data sets (MF&S) ◆ Drawing a line of best fit from given data (MF&S)
<p>Measurement skills</p> <ul style="list-style-type: none"> ◆ Calculating a quantity based on two related pieces of information (G&M) ◆ Constructing a scale drawing, including choosing the scale (G&M) ◆ Planning a navigation course (G&M) ◆ Carrying out efficient container packing (G&M) ◆ Using precedence tables to plan tasks (G&M) ◆ Solving a problem in time management (G&M) ◆ Considering the effects of tolerance (G&M)
<p>Geometric skills</p> <ul style="list-style-type: none"> ◆ Investigating a situation involving gradient (G&M) ◆ Solving a problem involving a composite shape which includes part of a circle (G&M) ◆ Solving a problem involving the volume of a composite solid (G&M) ◆ Using Pythagoras' theorem within a two-stage calculation (G&M)
<p>Numerical skills</p> <ul style="list-style-type: none"> ◆ Selecting and using appropriate numerical notation and units (N) ◆ Selecting and carrying out calculations (N) ◆ Recording measurements using a scale on an instrument (N) ◆ Interpreting measurements and the results of calculations to make decisions (N) ◆ Justifying decisions based on the results of measurements and calculations (N) ◆ Extracting and interpreting data from at least three graphical forms (N) ◆ Making and justifying decisions using evidence from the interpretation of data (N) ◆ Making and justifying decisions based on probability (N)

Key:

Managing Finance and Statistics: (MF&S)

Geometry and Measures (G&M)

Numeracy (N)

Appendix 4: Reference documents

The following reference documents will provide useful information and background.

- ◆ Assessment Arrangements (for disabled learners and/or those with additional support needs) — various publications are available on SQA’s website at: www.sqa.org.uk/sqa/14977.html.
- ◆ [*Building the Curriculum 4: Skills for learning, skills for life and skills for work*](#)
- ◆ [*Building the Curriculum 5: A framework for assessment*](#)
- ◆ [Course Specifications](#)
- ◆ [Design Principles for National Courses](#)
- ◆ [Guide to Assessment \(June 2008\)](#)
- ◆ Principles and practice papers for curriculum areas
- ◆ [SCQF Handbook: User Guide](#) (published 2009) and SCQF level descriptors (to be reviewed during 2011 to 2012): www.sqa.org.uk/sqa/4595.html
- ◆ [*SQA Skills Framework: Skills for Learning, Skills for Life and Skills for Work*](#)

Administrative information

Published: May 2014 (version 1.1)

History of changes to Course Support Notes

Course details	Version	Description of change	Authorised by	Date
	1.1	Appendix 1: Headings in table amended to indicate distinction between Assessment Standards and sub-skills. Explanation of Assessment Standard 1.5 in Numeracy amended to indicate that decisions based on measurements are included.	Qualifications Manager	May 2014

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Unit Support Notes — Lifeskills Mathematics: Managing Finance and Statistics (National 5)



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Please refer to the note of changes at the end of this document for details of changes from previous version (where applicable).

Introduction

These support notes are not mandatory. They provide advice and guidance on approaches to delivering and assessing the Managing Finance and Statistics Unit. They are intended for teachers and lecturers who are delivering this Unit. They should be read in conjunction with:

- ◆ the *Unit Specification*
- ◆ the *Course Specification*
- ◆ the *Course Assessment Specification*
- ◆ the *Course Support Notes*
- ◆ appropriate assessment support materials

General guidance on the Unit

Aims

The general aim of this Unit is to develop skills that focus on the use of mathematical ideas and valid strategies that can be applied to managing finance and statistics in real-life contexts which may be new to the learner. This includes skills in analysing financial positions, budgeting as well as organising and presenting data to justify solutions and/or draw conclusions. The Outcomes cover aspects of finance and statistics in real-life situations requiring mathematical reasoning.

Learners who complete this Unit will be able to:

- 1 Use reasoning skills and financial skills linked to real-life contexts.
- 2 Use reasoning skills and statistical skills linked to real-life contexts.

In addition, learners will have the opportunity to develop generic and transferable skills for learning, skills for life and skills for work. These include numeracy and thinking skills.

Progression into this Unit

Entry into this Unit is at the discretion of the centre. However, learners would normally be expected to have attained the skills, knowledge and understanding required by one or more of the following or equivalent qualifications and/or experience:

- ◆ National 4 Lifeskills Mathematics Course or its component Units
- ◆ Core Skills Numeracy (SCQF level 4)

Prior learning, life and work experiences may also provide an appropriate basis for entry into this Unit. This could include relevant skills, knowledge and understanding and appropriate experiences and outcomes from the mathematics curriculum area.

Centres wishing to establish the suitability of learners without prior qualifications and/or experiences and outcomes may benefit from carrying out a diagnostic review of prior life and work experiences. This approach may be particularly useful for adults returning to education.

Skills, knowledge and understanding covered in the Unit

Information about skills, knowledge and understanding is given in the National 5 Lifeskills Mathematics *Course Support Notes*.

If this Unit is being delivered on a free-standing basis, teachers and lecturers are free to select the skills, knowledge, understanding and contexts which are most appropriate for delivery in their centres.

Progression from this Unit

This Unit may provide progression to:

- ◆ other qualifications in mathematics or related areas
- ◆ Core Skills Numeracy (SCQF level 6)
- ◆ National Certificate Group Awards
- ◆ further study, employment and/or training

The Managing Finance and Statistics Unit has applications in a variety of other subject areas as well as life and work. The skills, knowledge and understanding developed in this Unit could support both breadth and depth of learning in other curriculum areas such as business, science, social studies and health and wellbeing, in addition to life and work contexts.

Approaches to learning and teaching

The purpose of this section is to provide general advice and guidance on approaches to learning and teaching for this Unit.

Effective learning and teaching will draw on a variety of approaches to enrich the experience of learners. In particular, a mix of approaches which provide opportunities for personalisation and choice will help to motivate and challenge learners. Some of these approaches include: interdisciplinary learning, cross-curricular approaches, investigative and problem solving approaches and resource based learning and e-learning. Examples of how these approaches could be used across all component Units of the Course are described in the *Course Support Notes*.

Examples of how these approaches could be used to combine and integrate the learning and teaching of this Unit are outlined in the table below. The combination of delivery of this Unit is entirely at the discretion of the centre. Two approaches are suggested here, but other possibilities may exist:

Possible combinations	Suggested approaches
Outcomes 1 and 2 combined	<p>In this approach, the financial and statistical Outcomes could be combined.</p> <p>Learners could be given the opportunity to use financial statistics to analyse a financial position, analyse factors affecting income given in graphical form, use data/information given in graphical form to determine the best deal or investigate the impact of interest rates.</p> <p>Assessment evidence could be collected for the two Outcomes at the same time.</p>
Outcomes 1 and 2 sequentially	<p>In this approach, the financial and statistical Outcomes could be delivered sequentially and in any order.</p> <p>However, it may be beneficial for learners to develop their knowledge and understanding of finance in Outcome 1 first, if there is an intention to use this knowledge and understanding as a context for statistics in Outcome 2.</p> <p>Alternatively, different contexts can be used for the delivery of statistics in Outcome 2.</p> <p>Assessment evidence could be collected at the end of the Unit or during the delivery of each Outcome.</p>

Exemplification of assessment can be found in the *National Assessment Resource*.

Further information about resources for learning and teaching can be found in Appendix 2 of the *Course Support Notes*.

Developing skills for learning, skills for life and skills for work

For this Unit there are significant opportunities to develop the following skills for learning, skills for life and skills for work. Some of these opportunities are described in the table below:

SQA Skills for Learning, Skills for Life and Skills for Work framework definition	Suggested approaches for learning and teaching
<p>Numeracy is the ability to use numbers to solve problems by counting, doing calculations, measuring, and understanding graphs and charts. This is also the ability to understand the results.</p>	<p>Throughout this Unit learners will have ample opportunities to: use number to solve problems arising in everyday life; solve practical problems involving money, time and measurement; and handle information through interpretation, drawing conclusions, making deductions and informed decisions.</p>
<p>Applying Applying is the ability to use existing information to solve a problem in a different context, and to plan, organise and complete a task.</p>	<p>Wherever possible, learners should be given the opportunity to apply the skills, knowledge and understanding they have developed to solve personal mathematical problems in a range of real-life contexts. Learners should be encouraged to think about how they are going to tackle problems, decide which skills to use and then carry out the calculations to an appropriate degree of accuracy to complete the task. To determine a learner's level of understanding, learners should be encouraged to show and explain their thinking at all times. At level 5, learners could be encouraged to think creatively to adapt mathematical strategies to suit the problem or situation.</p>
<p>Analysing and evaluating is the ability to identify and weigh-up the features of a situation or issue and to use your judgement of them in coming to a conclusion. It includes reviewing and considering any potential solutions.</p>	<p>Wherever possible, learners should be given the opportunity to identify real-life tasks or situations which require the use of mathematics. Learners should be encouraged to analyse the task or situation to decide how it can be addressed and what mathematical skills will need to be applied. Learners should also be provided with opportunities to interpret the results of their calculations and to draw conclusions. Conclusions drawn by the learner could be used to form the basis of any reasoning by making choices or decisions to solve a problem or tackle a situation. Opportunities to work with situations involving probability may provide appropriate contexts to develop analysis and evaluative skills.</p>

There may also be further opportunities for the development of additional skills for learning, skills for life and skills for work in the delivery of this Unit. These opportunities may vary and are at the discretion of the centre.

Discrete test or question paper	Outcome 1 Outcome 2 combined	<p>Learners could be given a test which consists of short response and extended response questions. For Outcome 1 this may include converting between several currencies, calculating the impact of interest rates or determining the best deal given three pieces of information.</p> <p>The use of extended response questions could provide opportunities for assessing reasoning skills. For example, based on a given scenario, learners could draw and justify conclusions based on a line of best fit drawn by the learner on a scattergraph.</p>
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It would normally be expected that considerable learning and teaching would have taken place prior to the collection of evidence for assessment purposes.

Further advice and guidance on assessment for the Lifeskills Mathematics Course and its components Units is contained within the *Course Support Notes*.

Exemplification of assessment is provided in the *National Assessment Resource*.

When delivering this Unit as part of the National 5 Lifeskills Mathematics Course, reference should be made to the appropriate content statements within the 'Further mandatory information on Course coverage' section in the *Course Assessment Specification*.

Equality and inclusion

It is important that where possible, inclusive approaches to learning and assessment encourage personalisation and choice for learners. The additional support needs of learners should also be taken into account when planning learning experiences and when considering any reasonable adjustments that may be required.

Any additional support provided to learners to help them access assessment tasks should maintain the integrity of the Outcomes and Assessment Standards.

Examples of support which may be appropriate for this Unit are as follows:

- ◆ practical helpers under direct learner instruction could assist with practical activities
- ◆ adapted equipment
- ◆ the use of a calculator or similar aid
- ◆ ICT and other assistive technologies

Other types of support are also possible and would be determined by the teacher/lecturer in response to the specific needs of the learner.

It is recognised that centres have their own duties under equality and other legislation and policy initiatives. The guidance given in these *Unit Support Notes* is designed to sit alongside these duties but is specific to the delivery and assessment of the Unit.

Alternative approaches to Unit assessment to take account of the specific needs of learners can be used. However, the centre must be satisfied that the integrity of the assessment is maintained and that the alternative approach to assessment will, in fact, generate the necessary evidence of achievement.

Appendix 1: Reference documents

The following reference documents will provide useful information and background.

- ◆ Assessment Arrangements (for disabled learners and/or those with additional support needs) — various publications on SQA’s website:
<http://www.sqa.org.uk/sqa/14976.html>
- ◆ [*Building the Curriculum 4: Skills for learning, skills for life and skills for work*](#)
- ◆ [*Building the Curriculum 5: A framework for assessment*](#)
- ◆ [*Course Specifications*](#)
- ◆ [*Design Principles for National Courses*](#)
- ◆ [*Guide to Assessment \(June 2008\)*](#)
- ◆ *Principles and practice papers for curriculum areas*
- ◆ *Research Report 4 — Less is More: Good Practice in Reducing Assessment Time*
- ◆ *Coursework Authenticity — a Guide for Teachers and Lecturers*
- ◆ [*SCQF Handbook: User Guide*](#) (published 2009) and SCQF level descriptors (to be reviewed during 2011 to 2012):
www.sqa.org.uk/sqa/4595.html
- ◆ [*SQA Skills Framework: Skills for Learning, Skills for Life and Skills for Work*](#)
- ◆ SQA Guidelines on e-assessment for schools
- ◆ SQA Guidelines on online assessment for further education
- ◆ SQA e-assessment web page: www.sqa.org.uk/sqa/5606.html

Administrative information

Published: May 2014 (version 1.0)

History of changes to Unit Support Notes

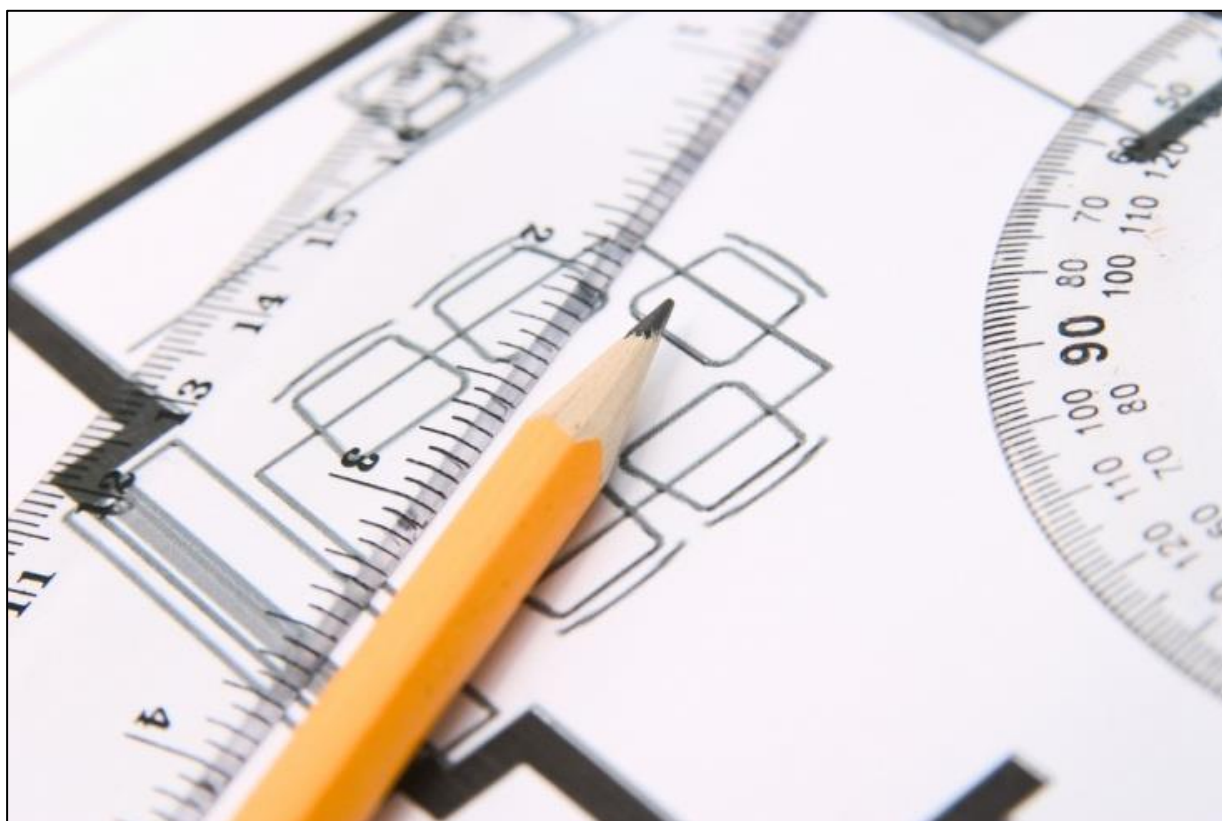
Unit details	Version	Description of change	Authorised by	Date

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Unit Support Notes — Lifeskills Mathematics: Geometry and Measures (National 5)



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Please refer to the note of changes at the end of this document for details of changes from previous version (where applicable).

Introduction

These support notes are not mandatory. They provide advice and guidance on approaches to delivering and assessing the Geometry and Measures (National 5) Unit. They are intended for teachers and lecturers who are delivering this Unit. They should be read in conjunction with:

- ◆ the *Unit Specification*
- ◆ the *Course Specification*
- ◆ the *Course Assessment Specification*
- ◆ the *Course Support Notes*
- ◆ appropriate assessment support materials

General guidance on the Unit

Aims

The general aim of this Unit is to develop skills that focus on the use of mathematical ideas and valid strategies that can be applied to geometry and measurement in real-life contexts which may be new to the learner. This includes skills in analysing and using geometry and measures to determine and justify solutions to real-life problems. The Outcomes cover aspects of geometry and measurement in real-life situations requiring reasoning.

Learners who complete this Unit will be able to:

- 1 Use reasoning skills and measurement skills linked to real-life contexts.
- 2 Use reasoning skills and geometric skills linked to real-life contexts

Progression into this Unit

Entry into this Unit is at the discretion of the centre. However, learners would normally be expected to have attained the skills, knowledge and understanding required by one or more of the following or equivalent qualifications and/or experience:

- ◆ National 4 Lifeskills Mathematics Course or its component Units
- ◆ Core Skills Numeracy (SCQF level 4)

Prior learning, life and work experiences may also provide an appropriate basis for entry into this Unit. This could include relevant skills, knowledge and understanding and appropriate experiences and outcomes from the mathematics curriculum area.

Centres wishing to establish the suitability of learners without prior qualifications and/or experiences and outcomes may benefit from carrying out a diagnostic review of prior life and work experiences. This approach may be particularly useful for adults returning to education.

Skills, knowledge and understanding covered in the Unit

Information about skills, knowledge and understanding is given in the National 5 Lifeskills Mathematics *Course Support Notes*.

If this Unit is being delivered on a free-standing basis, teachers and lecturers are free to select the skills, knowledge, understanding and contexts which are most appropriate for delivery in their centres.

Progression from this Unit

This Unit may provide progression to:

- ◆ other qualifications in mathematics or related areas
- ◆ Core Skills Numeracy (SCQF level 6)
- ◆ National Certificate Group Awards
- ◆ further study, employment and/or training

The Geometry and Measures Unit has applications in a variety of other subject areas as well as life and work. The skills, knowledge and understanding developed in this Unit could support both breadth and depth of learning in other curriculum areas such as technology, science, physical education, geography and health and wellbeing, in addition to life and work contexts.

Approaches to learning and teaching

The purpose of this section is to provide general advice and guidance on approaches to learning and teaching for this Unit.

Effective learning and teaching will draw on a variety of approaches to enrich the experience of learners. In particular, a mix of approaches which provide opportunities for personalisation and choice will help to motivate and challenge learners. Some of these approaches include: interdisciplinary learning, cross-curricular approaches, investigative and problem solving approaches, resource based learning and e-learning. Examples of how these approaches could be used across all component Units of the Course are described in the *Course Support Notes*.

Examples of how these approaches could be used to combine and integrate the learning and teaching of this Unit are outlined in the table below. The combination of delivery of this Unit is entirely at the discretion of the centre. Two approaches are suggested here, but other possibilities may exist:

Possible combinations	Suggested approaches
Outcomes 1 and 2 combined	<p>In this approach, the measurement and geometric Outcomes could be combined.</p> <p>Learners could be given the opportunity to use measurements whilst investigating gradients, and solving problems involving composite shapes or solids. Learners could also apply measures whilst solving a problem involving Pythagoras' theorem involving a two stage calculation.</p> <p>Assessment evidence could be collected for both Outcomes at the same time.</p>
Outcomes 1, 2 and 3 sequentially	<p>In this approach, the measures and geometry Outcomes could be delivered sequentially and in any order.</p> <p>However, it may be beneficial for learners to develop their knowledge and understanding of measures and measurement in Outcome 1 first, if there is an intention to use this knowledge and understanding as a context for geometry in Outcome 2.</p> <p>Assessment evidence could be collected at the end of the Unit or during the delivery of each Outcome.</p>

Exemplification of assessment can be found in the *National Assessment Resource*.

Further information about resources for learning and teaching can be found in Appendix 2 of the *Course Support Notes*.

Developing skills for learning, skills for life and skills for work

For this Unit there are significant opportunities to develop the following skills for learning, skills for life and skills for work. Some of these opportunities are described in the table below:

SQA Skills for Learning, Skills for Life and Skills for Work framework definition	Suggested approaches for learning and teaching
<p>Numeracy is the ability to use numbers to solve problems by counting, doing calculations, measuring, and understanding graphs and charts. This is also the ability to understand the results.</p>	<p>Throughout this Unit learners will have ample opportunities to: use number to solve problems using geometry and measures arising in real-life contexts; solve practical problems involving shape and measurement; and handle information through interpretation, drawing conclusions, making deductions and informed decisions.</p>
<p>Applying is the ability to use existing information to solve a problem in a different context, and to plan, organise and complete a task.</p>	<p>Wherever possible, learners could be given the opportunity to apply the skills, knowledge and understanding they have developed to solve mathematical problems involving geometry and measurement in a range of real-life contexts. Learners could be encouraged to think about how they are going to tackle problems, decide which skills to use and then carry out the calculations in order to complete the task. To determine a learner's level of understanding, learners could be encouraged to show and explain their thinking.</p>
<p>Analysing and evaluating is the ability to identify and weigh-up the features of a situation or issue and to use your judgement of them in coming to a conclusion. It includes reviewing and considering any potential solutions.</p>	<p>Wherever possible, learners could be given the opportunity to analyse real-life tasks or situations involving geometry and measures. Learners should be encouraged to analyse the task or situation to decide how it can be addressed and what mathematical skills and strategies will need to be applied. Learners could also be asked to interpret the results of their calculations and to draw conclusions. Conclusions drawn by the learner should be used to form the basis of any reasoning demonstrated by using solutions to justify choices or decisions.</p>

There may also be further opportunities for the development of additional skills for learning, skills for life and skills for work in the delivery of this Unit. These opportunities may vary and are at the discretion of the centre.

Approaches to assessment

The purpose of this section is to give advice and guidance on approaches to integrating assessment within this Unit.

The Geometry and Measures Unit can be assessed in a variety of ways and could include, for example:

- ◆ practical assignments such as a project or investigation
- ◆ specific assessment tasks or activities
- ◆ discrete tests or question papers

The following table gives some example of how these approaches could be used within the Unit to provide a varied and integrated assessment experience. This approach aims to make the assessment more coherent and meaningful for learners. Please note that these approaches are not exhaustive and other possibilities also exist.

Approach to assessment	Outcomes	Examples of approaches to assessment
Project/ investigation	Outcome 1 Outcome 2 combined	Learners could be asked to investigate a DIY or building scenario by: <ul style="list-style-type: none"> ◆ working with a bathroom as a composite shape which includes part of a circle ◆ constructing a scale drawing including choosing the scale ◆ calculating the area of a bathroom floor to work out how many tiles would be required to cover the area ◆ considering the effects of tolerance on the number of tiles that would be required and considering how accuracy may affect the cost of a job ◆ calculating quantities of adhesive and grout based on related measurements ◆ produce a precedence table to plan the job ◆ calculate the required size of a towel radiator for the volume of the bathroom using given specifications
Assessment tasks/activities	Outcome 1 Outcome 2	For Outcome 1, learners could be given a task which asks them to carry out efficient container packing of vehicles onto a ferry. The size and shape of the vehicles would vary. The focus here is on efficiency with the most effective use of space. For Outcome 2, learners could be asked to create a new form of packaging for a product. Learners could be asked to calculate the volume of the container to work out how much product it could hold. Learners could create their own packing using nets of various sizes.

Discrete test or question paper	Outcome 1 Outcome 2 combined	Learners could be given a test which consists of short response and extended response questions. For Outcome 1 this may include planning a navigation course, constructing a scale drawing including choosing a scale. The use of extended response questions could provide opportunities for assessing reasoning skills. For example, drawing conclusions or justifying decisions based on solutions to a basic problem involving tolerance or Pythagoras Theorem within a two stage calculation.
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It would normally be expected that considerable learning and teaching would have taken place prior to the collection of evidence for assessment purposes.

Further advice and guidance on assessment for the Lifeskills Mathematics Course and its components Units is contained within the *Course Support Notes*.

Exemplification of assessment is provided in the *National Assessment Resource*.

When delivering this Unit as part of the National 5 Lifeskills Mathematics Course, reference should be made to the appropriate content statements within the 'Further mandatory information on Course coverage' section in the *Course Assessment Specification*.

Equality and inclusion

It is important that where possible, inclusive approaches to learning and assessment encourage personalisation and choice for learners. The additional support needs of learners should also be taken into account when planning learning experiences and when considering any reasonable adjustments that may be required.

Any additional support provided to learners to help them access assessment tasks should maintain the integrity of the Outcomes and Assessment Standards.

Examples of support which may be appropriate for this Unit are as follows:

- ◆ practical helpers under direct learner instruction could assist with practical activities
- ◆ adapted equipment
- ◆ the use of a calculator or similar aid
- ◆ ICT and other assistive technologies

Other types of support are also possible and would be determined by the teacher/lecturer in response to the specific needs of the learner.

It is recognised that centres have their own duties under equality and other legislation and policy initiatives. The guidance given in these Unit Support Notes is designed to sit alongside these duties but is specific to the delivery and assessment of the Unit.

Alternative approaches to Unit assessment to take account of the specific needs of learners can be used. However, the centre must be satisfied that the integrity of the assessment is maintained and that the alternative approach to assessment will, in fact, generate the necessary evidence of achievement.

Appendix 1: Reference documents

The following reference documents will provide useful information and background.

- ◆ Assessment Arrangements (for disabled learners and/or those with additional support needs) — various publications on SQA’s website:
<http://www.sqa.org.uk/sqa/14976.html>
- ◆ [*Building the Curriculum 4: Skills for learning, skills for life and skills for work*](#)
- ◆ [*Building the Curriculum 5: A framework for assessment*](#)
- ◆ [*Course Specifications*](#)
- ◆ [*Design Principles for National Courses*](#)
- ◆ [*Guide to Assessment \(June 2008\)*](#)
- ◆ *Principles and practice papers for curriculum areas*
- ◆ *Research Report 4 — Less is More: Good Practice in Reducing Assessment Time*
- ◆ *Coursework Authenticity — a Guide for Teachers and Lecturers*
- ◆ [*SCQF Handbook: User Guide*](#) (published 2009) and SCQF level descriptors (to be reviewed during 2011 to 2012):
www.sqa.org.uk/sqa/4595.html
- ◆ [*SQA Skills Framework: Skills for Learning, Skills for Life and Skills for Work*](#)
- ◆ SQA Guidelines on e-assessment for schools
- ◆ SQA Guidelines on online assessment for further education
- ◆ SQA e-assessment web page: www.sqa.org.uk/sqa/5606.html

Administrative information

Published: May 2014 (version 1.0)

History of changes to Unit Support Notes

Unit details	Version	Description of change	Authorised by	Date

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Unit Support Notes — Numeracy (National 5)

Unit Support Notes for the Numeracy Unit are available on the [Literacy and Numeracy page](#) of SQA's website.



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Please refer to the note of changes at the end of this document for details of changes from previous version (where applicable).