National 5 Course Specification

National 5 Applications of Mathematics

Course code:	C844 75
Course assessment code:	X844 75
SCQF:	level 5 (24 SCQF credit points)
Valid from:	session 2023–24

The course specification provides detailed information about the course and course assessment to ensure consistent and transparent assessment year on year. It describes the structure of the course and the course assessment in terms of the skills, knowledge and understanding that are assessed.

This document is for teachers and lecturers and contains all the mandatory information you need to deliver the course.

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Contents

Course overview

The course consists of 24 SCQF credit points which includes time for preparation for course assessment. The notional length of time for a candidate to complete the course is 160 hours.

The course assessment has two components.

Component	Marks	Duration
Question paper 1 (non-calculator)	35	50 minutes
Question paper 2	55	1 hour and 40 minutes

Recommended entry	Progression
Entry to this course is at the discretion of the centre. Candidates should have achieved the fourth curriculum level or the National 4 Applications of Mathematics course or equivalent qualifications and/or experience prior to starting this course.	♦ other qualifications in mathematics or related areas, eg Skills for Work courses, National Progression Awards, National Certificate Group Awards ♦ further study, employment or training

Conditions of award

The grade awarded is based on the total marks achieved across all course assessment components.

Achievement of this course gives automatic certification of the following Core Skill:

♦ Numeracy at SCQF level 5

Course rationale

National Courses reflect Curriculum for Excellence values, purposes and principles. They offer flexibility, provide more time for learning, more focus on skills and applying learning, and scope for personalisation and choice.

Every course provides opportunities for candidates to develop breadth, challenge and application. The focus and balance of assessment is tailored to each subject area.

Mathematics engages learners of all ages, interests and abilities. Learning mathematics develops logical reasoning, analysis, problem-solving skills, creativity and the ability to think in abstract ways. It uses a universal language of numbers and symbols, which allows us to communicate ideas in a concise, unambiguous and rigorous way.

The National 5 Applications of Mathematics course explores the applications of mathematical techniques and skills in everyday situations, including financial matters, statistics, and measurement. The skills, knowledge and understanding in the course also support learning in other curriculum areas, such as technology, health and wellbeing, science, and social studies.

Purpose and aims

The purpose of the National 5 Applications of Mathematics course is to motivate and challenge candidates by enabling them to think through real-life situations involving mathematics and to form a plan of action based on logic.

The mathematical skills within this course are underpinned by numeracy, and designed to develop candidates' mathematical reasoning skills in areas relevant to learning, life and work. The course aims to:

- motivate and challenge candidates by enabling them to select and apply mathematical techniques in a variety of real-life situations
- develop the ability to analyse real-life problems or situations with some complex features involving mathematics
- develop confidence 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, and make informed decisions
- develop the ability to use a range of mathematical skills to analyse, interpret and present a range of information
- develop the ability to communicate mathematical information in a variety of forms
- develop the ability to think creatively and in abstract ways

Who is this course for?

This is a suitable course for learners who have achieved the fourth level of learning across the mathematics experiences and outcomes in the broad general education, or who have attained the National 4 Applications of Mathematics course, or who have equivalent qualifications or experience.

This course is particularly suitable for learners who wish to develop the mathematical reasoning and numerical skills which are useful in other curriculum areas and workplaces.

Course content

Throughout this course, candidates acquire and apply operational skills necessary for solving problems, through application-led learning. Through real-life contexts, candidates acquire and apply mathematical operational skills directly relevant to life and work, and learn to appreciate the role of mathematical ideas in the world.

Candidates develop mathematical reasoning skills and gain experience in making and justifying decisions and drawing conclusions.

Skills, knowledge and understanding

Skills, knowledge and understanding for the course

The following provides a broad overview of the subject skills, knowledge and understanding developed in the course:

- analyse real-life situations and problems involving mathematics
- identify valid mathematical operational skills to tackle real-life situations or problems
- select and apply numeracy skills
- select and apply skills in finance, statistics, measurement, geometry, graphical data and probability
- use mathematical reasoning skills to draw conclusions or justify decisions
- communicate mathematical information in an appropriate way

Skills, knowledge and understanding for the course assessment

The following provides details of skills, knowledge and understanding sampled in the course assessment.

Numeracy skills	
Skills	**Explanation**
Selecting and using appropriate numerical notation and units	♦ Including: =, +, −, ×, /, ÷, <, >, ( ), %, colon, decimal point and simple formulae ♦ Selecting and using appropriate units for money, time and measurement (length, weight, volume and temperature)

Numeracy skills	
Skills	**Explanation**
Selecting and carrying out calculations	♦ Adding and subtracting numbers given to two decimal places ♦ Multiplying or dividing a number (given up to two decimal places) by a single-digit whole number ♦ Multiplying or dividing a number (given up to two decimal places) by multiples of 10, 100 and 1000 ♦ Rounding answers to the nearest specified significant figure or three decimal places ♦ Finding percentages and fractions of shapes and quantities ♦ Recognising and using mixed fractions, eg $3\frac{1}{2}$, $\frac{1}{3}$, $4\frac{1}{4}$, $\frac{1}{8}$, $\frac{2}{6}$ ♦ Adding and subtracting simple fractions, eg $\frac{1}{2}+\frac{1}{4}$ and $\frac{2}{3}-\frac{1}{3}$ ♦ Finding the number of fractional parts in a mixed number, eg $2\frac{1}{2}=5$ halves ♦ Calculating compound percentage increase and decrease ♦ Expressing a quantity as a percentage of another quantity ♦ Converting equivalences between fractions, decimals and percentages ♦ Calculating speed, time and distance ♦ Calculating volume (cylinder, triangular prism) ♦ Calculating area (triangles and composite shapes) ♦ Calculating perimeter and circumference ♦ Calculating ratio including dimensions from scale drawings, eg scale of $1:10$ ♦ Calculating direct and indirect proportion
Recording measurements using a scale on an instrument	♦ To the nearest marked, minor unnumbered division on an instrument for length, angle, weight, volume and temperature
Interpreting measurements and the results of calculations to make decisions	♦ Identifying relevant measurements and results of calculations to make a decision

Numeracy skills	
Skills	**Explanation**
Justifying decisions by using the results of measurements and calculations	♦ Using evidence from the results of calculations to justify decisions

Financial skills	
Skills	**Explanation**
Analysing a financial position using budget information	♦ Budgeting and planning for personal use or planning an event ♦ Balancing incomings and outgoings from a range of sources
Analysing and interpreting factors affecting income	Income and deductions for different personal circumstances and career choices. These include: ♦ basic pay, gross/net pay ♦ overtime ♦ incentive payments, eg bonus and commission ♦ benefits and allowances ♦ National Insurance ♦ income tax ♦ pension contributions
Determining the best deal	♦ Comparing at least three products, given three pieces of information on each
Converting between several currencies	♦ Converting between currencies in either direction; involving the use of at least three currencies in a multi-stage task
Investigating the impact of interest rates on savings and borrowing	These include: ♦ loans ♦ savings ♦ credit cards ♦ store cards ♦ credit agreements

Statistical skills	
Skills	**Explanation**
Using a combination of statistics to investigate risk and its impact on life	♦ Using the link between simple probability and expected frequency
Using a combination of statistical information presented in different diagrams	♦ Constructing, interpreting and comparing boxplots, scattergraphs and pie charts
Using statistics to analyse and compare data sets	♦ Calculating mean, median, mode, range, interquartile range, and standard deviation
Drawing a line of best fit from given data	♦ Data presented in tabular form

Measurement skills	
Skills	**Explanation**
Calculating a quantity	♦ Based on two related pieces of information
Constructing a scale drawing, including choosing a scale	From written information and/or a sketch: ♦ lines are to be drawn and measured to the nearest millimetre ♦ angles are to be drawn and measured to the nearest degree
Planning a navigation course	♦ Using a given or constructed map or plan ♦ Using bearings and length
Carrying out efficient container packing	♦ By assigning items to uniform containers to minimise the amount of containers used
Using precedence tables to plan tasks	♦ Where some activities can be done simultaneously, whereas others must be done in sequence
Solving a problem involving time management	♦ Planning the timing of activities with some complex features, eg working across time zones

Measurement skills	
Skills	**Explanation**
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

Geometric skills	
Skills	**Explanation**
Investigating a situation involving gradient	♦ Using vertical distances and horizontal distances ♦ Using coordinates
Solving a problem involving a composite shape	♦ Which may include part of a circle
Solving a problem involving the volume of a composite solid	♦ Including simple fractional parts of solids
Using Pythagoras' theorem	♦ Within a two-stage calculation

Graphical data and probability skills	
Skills	**Explanation**
Extracting and interpreting data from different graphical forms	This includes: ♦ tables with at least five categories of information ♦ charts where all the values are not given or where the scale is not obvious, eg comparative/compound bar chart ♦ graphs where part of the axes are missing or the scale is not obvious, eg conversion line graph ♦ diagrams, eg pictogram, stem and leaf, scatter diagram or a map

Graphical data and probability skills	
Skills	**Explanation**
Making and justifying decisions using evidence from the interpretation of data	♦ Making decisions based on patterns, trends or relationships in data ♦ Using evidence from the interpretation of data to justify decisions ♦ Understanding the effects of bias and sample size
Making and justifying decisions based on probability	♦ Recognising patterns, trends and relationships and using these to state the probability of an event happening ♦ Using evidence from the interpretation of probability to justify decisions ♦ Analysing the probability of combined events, identifying the effects of bias and describing probability through the use of percentages, decimals, fractions and ratio to make and justify decisions

Skills, knowledge and understanding included in the course are appropriate to the SCQF level of the course. The SCQF level descriptors give further information on characteristics and expected performance at each SCQF level (www.scqf.org.uk).

Skills for learning, skills for life and skills for work

This course helps candidates to develop broad, generic skills. These skills are based on SQA's Skills Framework: Skills for Learning, Skills for Life and Skills for Work and draw from the following main skills areas:

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

These skills must be built into the course where there are appropriate opportunities and the level should be appropriate to the level of the course.

Further information on building in skills for learning, skills for life and skills for work is given in the course support notes.

Course assessment

Course assessment is based on the information provided in this document.

The course assessment meets the key purposes and aims of the course by addressing:

- breadth — drawing on knowledge and skills from across the course
- challenge — requiring greater depth or extension of knowledge and/or skills
- application — requiring application of knowledge and/or skills in practical or theoretical contexts as appropriate

This enables candidates to:

- demonstrate mathematical operational skills
- analyse and interpret real-life situations and problems involving mathematics in new and unfamiliar 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 use of a calculator
- use mathematical reasoning skills to draw conclusions or justify decisions
- communicate mathematical information appropriately

Course assessment structure

Question paper 1 (non-calculator) 35 marks

The purpose of this question paper is to allow candidates to demonstrate the application of mathematical skills, knowledge and understanding from across the course. A calculator cannot be used.

This question paper gives candidates an opportunity to demonstrate an understanding of a range of mathematical skills and to select, apply and combine them to perform calculations. Candidates also have opportunities to demonstrate skills in interpreting and presenting information.

This question paper has 35 marks out of a total of 90 marks.

It consists of short-answer and extended-response questions, most of which are in context.

Setting, conducting and marking question paper 1 (non-calculator)

This question paper is set and marked by SQA, and conducted in centres under conditions specified for external examinations by SQA.

Candidates complete this in 50 minutes.

Question paper 2 55 marks

The purpose of this question paper is to allow candidates to demonstrate the application of mathematical skills, knowledge and understanding from across the course. A calculator may be used.

This question paper gives candidates an opportunity to interpret and analyse real-life problems or situations, select appropriate strategies, carry out calculations and draw valid conclusions or justify decisions.

This question paper has 55 marks out of a total of 90 marks.

It consists of short-answer questions, extended-response questions and case studies, most of which are in context.

Setting, conducting and marking question paper 2

This question paper is set and marked by SQA, and conducted in centres under conditions specified for external examinations by SQA.

Candidates complete this in 1 hour and 40 minutes (including time to read and absorb case study information).

Specimen question papers for National 5 courses are published on SQA's website. These illustrate the standard, structure and requirements of the question papers candidates sit. The specimen papers also include marking instructions.

Grading

A candidate's overall grade is determined by their performance across the course assessment. The course assessment is graded A–D on the basis of the total mark for all course assessment components.

Grade description for C

For the award of grade C, candidates will typically have demonstrated successful performance in relation to the skills, knowledge and understanding for the course.

Grade description for A

For the award of grade A, candidates will typically have demonstrated a consistently high level of performance in relation to the skills, knowledge and understanding for the course.

Equality and inclusion

This course is designed to be as fair and as accessible as possible with no unnecessary barriers to learning or assessment.

For guidance on assessment arrangements for disabled candidates and/or those with additional support needs, please follow the link to the assessment arrangements web page: www.sqa.org.uk/assessmentarrangements.

Further information

The following reference documents provide useful information and background.

- National 5 Applications of Mathematics subject page
- Assessment arrangements web page
- Building the Curriculum 3–5
- Design Principles for National Courses
- Guide to Assessment
- SCQF Framework and SCQF level descriptors
- SCQF Handbook
- SQA Skills Framework: Skills for Learning, Skills for Life and Skills for Work
- Coursework Authenticity: A Guide for Teachers and Lecturers
- Educational Research Reports
- SQA Guidelines on e-assessment for Schools
- SQA e-assessment web page

Appendix 1: course support notes

Introduction

These support notes are not mandatory. They provide advice and guidance to teachers and lecturers on approaches to delivering the course. They should be read in conjunction with this course specification and the specimen question paper.

Approaches to learning and teaching

The purpose of this section is to provide general advice and guidance on approaches to learning and teaching across the course.

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
- collaborative working
- resource-based learning
- e-learning

Examples of how each of these approaches could be used within learning and teaching are described below.

Interdisciplinary learning

Interdisciplinary learning could be used to develop candidates' mathematical skills through scheduled or special events throughout the year. Some examples are described below.

Trade fairs or sponsored events

Candidates could:

- collect, record and interpret data such as income and expenditure, or results from sponsored events including the amount of money pledged and then collected
- represent financial data in graphical form and analyse it to establish the amount of profit and/or loss or how the amount of money pledged compared to money collected
- measure achievements in sponsored events within their school/college
- use probability to estimate the expected amounts of money to be raised
- use their knowledge of probability to decide whether events should run in the future and justify this decision with evidence from their calculations

Shows, exhibitions and plays

Candidates could:

- manage the finance of ticket sales and costs of production, ie working within budget and determining the affordability of props, equipment or refreshments
- plan and manage 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
- plan events using precedence tables
- manage the timing of events using appropriate timing devices

Sports days

Candidates could:

- take measurements and record the results of events — these results could be represented in a range of different graphical forms and the effects of tolerance discussed
- use data to calculate mean scores or the range of the results for a particular event and interpret these as part of a write-up following the event
- predict the probability of a team or individual winning an event using the results of previous sporting events
- plan the use of space and the positioning of equipment for events
- interpret sports results and incorporate a commentary into a write-up of the event
- compare achievements and make decisions about who should win prizes — justification for prizes could be based on the data collected

Visiting speakers, external visits or work experience

Candidates could:

- see how numeracy, finance, statistics, geometry and measurements are used in various occupations within, for example, the health sector, the police, the armed forces, sports coaching, engineering, architecture, the construction industry, accountancy, retail, and the energy sector
- carry out a range of calculations typically used in workplace situations

School trips, excursions or voluntary work

Candidates could:

- use mathematical skills in a variety of contexts such as outdoor education centres, field trips, visits to museums, visits to local companies
- work out the timings for international school trips across time zones and convert between several currencies using different companies to work out the best deal

Cross-curricular opportunities

Cross-curricular topics or themes could be used to build on the relationship between mathematics and other subjects or curriculum areas. Examples of possible cross-curricular learning and teaching opportunities are described below.

Technologies

Candidates could:

- design and make items using a range of measuring tools and equipment
- measure and mark out materials in accordance with working drawings which may use simple formulae
- choose a scale and create scale drawings of items to be constructed
- calculate the quantity of materials required based on related measurements, eg area or volume
- budget for the production of items using different materials
- interpret and calculate dimensions and scale from drawings/diagrams/orthographic projections and apply them to work pieces
- understand the need for tolerance and accuracy in measurement when designing and making items
- manufacture items with given measurements to defined degrees of tolerance and accuracy
- manage the timing of practical tasks to deadlines

Art and Design

Candidates could:

- use knowledge of shape and space to create models, pictures or patterns
- use scale factors on the dimensions of patterns, pictures or models
- calculate or estimate the quantity of materials needed, eg the amount of clay which is needed for a sculpture or the number of tiles needed for a mosaic
- use knowledge of measurement to create pictures or patterns

Geography

Candidates could:

- take and record measurements during field trips, eg soil samples and weather readings
- carry out calculations associated with measurement and interpret graphical data such as weather charts, maps or plans
- collect, organise, present and compare data collected during field trips
- plan a navigation course between various points
- use scale when measuring distances on maps or plans which may also involve ratios
- use simple formulae, eg to calculate speed, time and distance

- investigate a situation involving gradient in physical geography or when interpreting contour lines on maps
- analyse data from field trips to recognise patterns and relationships
- discuss the effects of bias and sample size
- consider percentage or fractional amounts of land used for particular purposes, eg housing, industry or recreation — ratio and proportion could also be explored
- measure or observe and record information (the effects of bias and sample size could be discussed), eg measure and record the volume of a tank, collect field samples or calculate the height of a tree

Health and wellbeing

Candidates could:

- use measuring instruments such as scales, measuring jugs, timers and thermometers during cooking or when preparing food
- carry out calculations associated with dietary requirements and food labelling — decisions could be made to redress imbalances in diet or exercise
- calculate a quantity for a recipe given two related pieces of information, eg calculating the amount of butter needed when given the quantity of flour and sugar, or using ratio and proportion for ingredients
- prepare a dish based on a given budget
- understand the need for tolerance of measurements in cooking and the effects of inaccurate measuring
- work out the best deal on pre-prepared foods based on cost, health data and portion size — this may involve undertaking a basic costing exercise to compare issues surrounding fresh versus convenience foods, or sourcing foods locally in season versus buying foods from further afield
- analyse health statistics and investigate risks associated with diet and exercise choices
- work with lifestyle statistics presented in different ways, appreciating the effects of potential bias, and making choices associated with health and wellbeing

Physical Education

Candidates could:

- measure physical achievements, record, compare and report results to others in graphical form
- take fitness measurements such as heart rate and breathing rates and use statistics to compare and contrast results
- combine knowledge of maths, geography and physical education in orienteering activities to make decisions associated with distance estimation, time, speed and bearings
- analyse fitness data and justify changes over time
- draw a line of best fit on a scattergraph to compare variables
- use boxplots to illustrate range, median and quartiles for data associated with health statistics, eg weight, body mass index, and resting heart rates

Sciences

Candidates could:

- measure and record data collected during practical scientific experiments, and explore how data can be presented in different ways
- manipulate and compare collected data and interpret the results
- calculate the quantity of a substance based on a related quantity in an experiment
- investigate the impact of renewable energy systems using statistics
- plan a scientific experiment using precedence tables
- calculate the probability of combined events using scientific experiments
- carry out calculations associated with data and interpret data to make decisions based on the results of these calculations
- discuss bias and the impact of sample size on the reliability of scientific data
- calculate the probability of combined events occurring

Social sciences

Candidates could:

- explore the use of numeracy in business
- take part in an enterprise activity and develop numerical skills associated with money and money management
- use scenarios to calculate profit and loss and identify trends in sales
- identify trends in customer numbers and use them to devise a duty rota or stocking schedule

Investigative and problem-solving approaches

Investigative and problem-solving approaches can provide opportunities for candidates to observe, explore, experiment and discuss mathematical solutions to real-life problems.

Candidates could investigate the impact of interest rates on saving and borrowing by exploring the concepts of probability and risk analysis. This could stimulate mathematical thinking, especially when supported by questioning and/or discussion.

Prompt questions could be used to determine candidates' 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?'

Collaborative working

Collaborative approaches can be used where it is helpful to simulate real-life situations, share tasks and promote team-working skills, for example:

- Candidates could independently identify a valid strategy for a problem involving time management. They 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.
- Candidates could be asked to work out how to solve a given problem. They could be asked to collect their own data to manipulate. They could share their ideas with others and agree on the best mathematical solution.
- Candidates could participate in quizzes or competitions to practise mathematical and numerical skills and strategies, sharpen recall of number facts and develop efficient calculation strategies.

Resource-based learning

Examples of resource-based learning include:

- using technology to collect, organise, represent and manipulate data and information
- developing skills in managing money or time and in analysing statistics by using government publications, extracts from company spreadsheets, budgets, invoices, magazine articles, leaflets, bills and advertisements
- 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 in many learning contexts. Calculators often help candidates to process numbers, freeing up time for them to analyse situations, draw conclusions and make informed decisions. However, candidates should, where possible, be encouraged to develop and improve their skills in completing both written and mental calculations to develop numerical fluency and efficiency.)
- working with online conversion tables for measurements such as British and European shoe and clothes sizes, distance and weight measurements, and electronic and non-electronic blood pressure machines — *Guinness World Records* could be used for stimulus material

E-learning

Centres could use ICT to support learning and teaching. For the National 5 Applications of Mathematics course, candidates could use:

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

Useful websites

The table below lists organisations that may provide resources suitable for the National 5 Applications of Mathematics course.

Organisation	Possible resources or support materials
BBC Bitesize Maths (National 5)	This website provides online resources for teaching and learning mathematics.
BBC Skillswise Maths	A free-to-access website for teachers, lecturers and students, with printable worksheets and factsheets and online games, videos and quizzes.
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 continuing professional development (CPD). The NCETM provides and signposts resources to teachers, mathematics education networks, HEIs and CPD providers. At the same time, the NCETM 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 Central	This online resource supports learning and teaching relating to sciences, technologies, engineering and mathematics (STEM). It includes classroom resources and video playlists.
STEM Central in Motion	STEM Central in Motion provides an opportunity for practitioners and Education Scotland's partner organisations to share ideas and materials relating to the STEM central learning contexts and enriching STEM in the classroom context.
Teaching Ideas	This website provides free online resources for mathematics and numeracy. Many examples are contextualised and age-graded.

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

Preparing for course assessment

The course assessment focuses on breadth, challenge and application. Candidates draw on and extend the skills they have learned during the course. These are assessed through two question papers: one non-calculator and a second paper in which a calculator may be used.

In preparation for the course assessment, candidates should be 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 use of a calculator
- use mathematical reasoning skills to draw conclusions or justify decisions
- communicate mathematical information appropriately

The question papers sample knowledge and skills acquired in the course and provide opportunities to apply skills in a wider range of situations, some of which may be unfamiliar to the candidate.

Prior to the course assessment, candidates may benefit from responding to short-answer questions, multiple-choice questions and extended multi-step case study questions.

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

Course planners should identify opportunities throughout the course for candidates to develop skills for learning, skills for life and skills for work.

Candidates should be aware of the skills they are developing and teachers and lecturers can provide advice on opportunities to practise and improve them.

SQA does not formally assess skills for learning, skills for life and skills for work.

There may also be opportunities to develop additional skills depending on approaches being used to deliver the course in each centre. This is for individual teachers and lecturers to manage.

Significant opportunities to develop the skills for learning, skills for life and skills for work 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
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.	Candidates could be given opportunities to: ♦ use numbers to solve problems arising in everyday life ♦ use numbers to solve problems using geometry and measures arising in real-life contexts ♦ solve practical problems involving money, time, shape and measurement ♦ interpret information ♦ draw conclusions ♦ make deductions and informed decisions
Applying is the ability to use existing information to solve a problem in a different context, and to plan, organise and complete a task.	Candidates could be given the opportunity to apply the skills, knowledge and understanding they have developed to solve mathematical problems in a range of real-life contexts. Candidates could be encouraged to think creatively to adapt mathematical strategies to suit the problem or situation. Candidates could be encouraged to show and explain their thinking to determine their level of understanding. Candidates 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.

SQA skills for learning, skills for life and skills for work framework definition	Suggested approaches for learning and teaching
Analysing and evaluating is the ability to identify and weigh-up the features of a situation or issue and to use judgement to come to a conclusion. It includes reviewing and considering any potential solutions.	Candidates could be given the opportunity to identify which real-life tasks or situations require the use of mathematics. Candidates could be given the opportunity to interpret the results of their calculations and to draw conclusions. Conclusions drawn by the candidate should be used as the basis of any reasoning demonstrated by making and justifying choices or decisions to solve a given problem. Situations involving probability may provide appropriate contexts to develop analysis and evaluative skills.

During the course there are opportunities for candidates to develop their literacy skills and employability skills.

Literacy skills are particularly important as these skills allow candidates to access, engage in and understand their learning, and to communicate their thoughts, ideas and opinions. This course provides candidates with the opportunity to develop their literacy skills by analysing real-life contexts and communicating their thinking by presenting mathematical information in a variety of ways. This could include the use of numbers, formulae, diagrams, graphs, symbols and words.

Employability skills are the personal qualities, skills, knowledge, understanding, and attitudes required in changing economic environments. The mathematical operational and reasoning skills developed in this course aim to enable candidates to confidently respond to the mathematical situations that can arise in the workplace. It aims to provide candidates with the opportunity to analyse a situation, decide which mathematical strategies to apply, work through those strategies effectively, and make informed decisions based on the results.

Additional skills for learning, skills for life and skills for work may also be developed during this course. These opportunities may vary and are at the discretion of the centre.

Appendix 2: skills, knowledge and understanding with suggested learning and teaching contexts

Examples of learning and teaching contexts that could be used for the course can be found below.

The first two columns are identical to the tables of 'Skills, knowledge and understanding for the course assessment' in this course specification.

The third column gives suggested learning and teaching contexts. These provide examples of where the skills could be used in individual activities or pieces of work.

<table>
<tr><th colspan="3">Numeracy skills</th></tr>
<tr><th>Skills</th><th>Explanation</th><th>Suggested learning and teaching contexts</th></tr>
<tr><td>Selecting and using appropriate numerical notation and units</td><td>♦ Including: =, +, −, ×, /, ÷, <, >, ( ), %, colon, decimal point and simple formulae
♦ Selecting and using appropriate units for money, time and measurement (length, weight, volume and temperature)</td><td rowspan="2">A wide range of approaches could be used for learning and teaching numeracy skills. These may include:

♦ 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 — appropriate areas include art, craft-based subjects, technology, health and wellbeing, and geography</td></tr>
<tr><td>Selecting and carrying out calculations</td><td>♦ Adding and subtracting numbers given to two decimal places
♦ Multiplying or dividing a number (given up to two decimal places) by a single-digit whole number
♦ Multiplying or dividing a number (given up to two decimal places) by multiples of 10, 100 and 1000</td></tr>
</table>

Numeracy skills		
Skills	**Explanation**	**Suggested learning and teaching contexts**
	♦ Rounding answers to the nearest specified significant figure or three decimal places ♦ Finding percentages and fractions of shapes and quantities ♦ Recognising and using mixed fractions, eg $3\frac{1}{2}$, $\frac{1}{3}$, $4\frac{1}{4}$, $\frac{1}{8}$, $\frac{2}{6}$ ♦ Adding and subtracting simple fractions, eg $\frac{1}{2}+\frac{1}{4}$ and $\frac{2}{3}-\frac{1}{3}$ ♦ Finding the number of fractional parts in a mixed number, eg $2\frac{1}{2}=5$ halves ♦ Calculating compound percentage increase and decrease ♦ Expressing a quantity as a percentage of another quantity ♦ Converting equivalences between fractions, decimals and percentages ♦ Calculating speed, time and distance ♦ Calculating volume (cylinder, triangular prism) ♦ Calculating area (triangles and composite shapes) ♦ Calculating perimeter and circumference ♦ Calculating ratio including dimensions from scale drawings, eg scale of 1:10 ♦ Calculating direct and indirect proportion	Candidates should develop the ability to: ♦ 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, eg 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 3/4, and that calculating 3/4 of £100 will give the same answer as 75% of £100 Appendix 3 contains additional learning and teaching contexts.

Numeracy skills		
Skills	**Explanation**	**Suggested learning and teaching contexts**
Recording measurements using a scale on an instrument	♦ To the nearest marked, minor unnumbered division on an instrument for length, angle, weight, volume and temperature	Candidates 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. Candidates must be able to measure to the nearest marked minor unnumbered division. Digital readouts are not acceptable.
Interpreting measurements and the results of calculations to make decisions	♦ Identifying relevant measurements and results of calculations to make a decision	Candidates 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.
Justifying decisions by using the results of measurements and calculations	♦ Using evidence from the results of calculations to justify decisions	

Financial skills		
Skills	**Explanation**	**Suggested learning and teaching contexts**
Analysing a financial position using budget information	♦ Budgeting and planning for personal use or planning an event ♦ Balancing incomings and outgoings from a range of sources	Candidates could engage in an extended budget-building simulation. They could: ♦ select a job and determine how much money they would earn ♦ explore house advertisements and calculate the mortgage ♦ select a car to purchase ♦ use catalogues to select goods Candidates could use a budget (paper or digital) when simulating earning and spending. Throughout the simulation, chance cards could be used for credits and debits. Candidates could be given the opportunity to use financial statistics to analyse a financial position presented in graphical form.

Financial skills		
Skills	**Explanation**	**Suggested learning and teaching contexts**
Analysing and interpreting factors affecting income	Income and deductions for different personal circumstances and career choices. These include: ♦ basic pay, gross/net pay ♦ overtime ♦ incentive payments, eg bonus and commission ♦ benefits and allowances ♦ National Insurance ♦ income tax ♦ pension contributions	An investigative approach could be used to find out pay, and pay deductions for a chosen job or career. Real-life materials could be used such as job advertisements and simplified employment contracts. Calculations could involve: basic pay, overtime, gross/net pay, allowances, National Insurance, income tax and pension contributions. Candidates could be given the opportunity to use financial statistics to analyse factors affecting income given in graphical form.

Financial skills		
Skills	**Explanation**	**Suggested learning and teaching contexts**
Determining the best deal	♦ Comparing at least three products, given three pieces of information on each	Candidates could carry out an investigation or project using the internet to source information about a chosen product, such as a mobile phone contract or computer gaming product. Given three pieces of information, they could compare at least three products, such as amount of data download allowed per month, unit costs or additional features. Candidates could be given the opportunity to use data/information presented in graphical form to determine the best deal.
Converting between several currencies	♦ Converting between currencies in either direction; involving 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. Candidates could discuss the impact of different rates and the effect of commission. They could be engaged in a simulated travel itinerary and convert given amounts of money for different countries. They could also test scenarios for the best deal with banks, exchange bureaus; ATM cash machines and high street travel agents.

Financial skills		
Skills	**Explanation**	**Suggested learning and teaching contexts**
Investigating the impact of interest rates on savings and borrowing	These include: ♦ loans ♦ savings ♦ credit cards ♦ store cards ♦ credit agreements	Candidates could be given a variety of real-life loan and interest rate tables. They 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 annual percentage rate (APR) could be discussed. Candidates could participate in a 'needs and wants' problem-solving activity where they could be given the opportunity to cost items they would like to have and compare this against income. Candidates could be given the opportunity to use data/information presented in graphical form to investigate the impact of interest rates.

Statistical skills		
Skills	**Explanation**	**Suggested learning and teaching contexts**
Using a combination of statistics to investigate risk and its impact on life	♦ Using the link between simple probability and expected frequency	Simulations could provide possible contexts for the discussion of probability. Candidates could draw on a range of statistics about one topic such as greenhouse gas emissions and global warming, or diet and the risk of cancer. There are many opportunities for topical links to be made with other curriculum areas like health and wellbeing and social sciences. Candidates could also investigate and discuss the meaning of health and safety statistics for accidents at work, speed limits, safe loads to carry and transport. They 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; health statistics, life expectancy and life insurance and annuities; promotional materials from insurance companies and newspapers.
Using a combination of statistical information presented in different diagrams	♦ Constructing, interpreting and comparing boxplots, scattergraphs and pie charts	Candidates could use other subject areas such as sport and geography as contexts for analysing and comparing data sets. For example, they could analyse the time taken to run 100 metres 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.
Using statistics to analyse and compare data sets	♦ Calculating mean, median, mode, range, interquartile range, and standard deviation	

Statistical skills		
Skills	**Explanation**	**Suggested learning and teaching contexts**
Drawing a line of best fit from given data	♦ Data presented in tabular form	Computer programs and advanced calculators could also be used to construct and manipulate graphical forms.

Measurement skills		
Skills	**Explanation**	**Suggested learning and teaching contexts**
Calculating a quantity	♦ Based on two related pieces of information	Candidates 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 written information and/or a sketch: ♦ lines are to be drawn and measured to the nearest millimetre ♦ angles are to be drawn and measured to the nearest degree	From verbal information and/or a sketch, candidates could be asked to design and use scale representations of everyday situations, eg sewing patterns or house plans. They could enlarge/reduce simple shapes on grid paper to a specified scale.
Planning a navigation course	♦ Using a given or constructed map or plan ♦ Using bearings and length	From a given starting point, candidates could use a protractor to plot a navigation course using the bearings and distance. Then, using a given millimetre scale, they could present this course in graphical form and calculate the distance and possible time it would take to complete it from the starting point.

Measurement skills		
Skills	**Explanation**	**Suggested learning and teaching contexts**
Carrying out efficient container packing	♦ By assigning items to uniform containers to minimise the amount of containers used	Candidates could explore ways in which packing is used in the home, eg how many books/DVD/CD cases can be packed onto a shelf while assessing different ways to arrange the items.
Using precedence tables to plan tasks	♦ Where some activities can be done simultaneously, whereas others must be done in sequence	Candidates could work collaboratively to plan an event, such as a school fair or concert, in which some activities can be carried out simultaneously whereas others must be completed in sequence.
Solving a problem involving time management	♦ Planning the timing of activities with some complex features, eg working across time zones	Candidates could use a problem-solving approach for given scenarios which involve calculating time intervals such as international travel arrangements, or event/task management. For example, they could estimate the arrival time at an international destination given the actual flight time and the time zone difference. Or they could 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	Using prefixes such as milli- and micro-, candidates could consider types of components that would use the different tolerance levels, eg a fence post and a car engine component. Groups could discuss possible limits and the need for compatibility.

Geometric skills		
Skills	**Explanation**	**Suggested learning and teaching contexts**
Investigating a situation involving gradient	♦ Using vertical distances and horizontal distances ♦ Using coordinates	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. Candidates could use measurements while investigating gradients, and solve problems involving composite shapes or solids.
Solving a problem involving a composite shape	♦ Which may include part of a circle	
Solving a problem involving the volume of a composite solid	♦ Including simple fractional parts of solids	Candidates could use a problem-solving approach to design a cuboid-shaped container to hold 500 millilitres of liquid. They 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. Candidates could also apply measures while solving a problem involving Pythagoras' theorem involving a two-stage calculation.

Graphical data and probability skills		
Skills	**Explanation**	**Suggested learning and teaching contexts**
Extracting and interpreting data from different graphical forms	This includes: ♦ tables with at least five categories of information ♦ charts where all the values are not given or where the scale is not obvious, eg comparative/compound bar chart ♦ graphs where part of the axes are missing or the scale is not obvious, eg conversion line graph ♦ diagrams, eg pictogram, stem and leaf, scatter diagram or a map	An investigative approach could be used in a range of contexts from learning, life and work. Appendix 3 contains additional learning and teaching contexts.
Making and justifying decisions using evidence from the interpretation of data	♦ Making decisions based on patterns, trends or relationships in data ♦ Using evidence from the interpretation of data to justify decisions ♦ Understanding the effects of bias and sample size	Appendix 3 contains additional learning and teaching contexts.

Graphical data and probability skills		
Skills	**Explanation**	**Suggested learning and teaching contexts**
Making and justifying decisions based on probability	♦ Recognising patterns, trends and relationships and using these to state the probability of an event happening ♦ Using evidence from the interpretation of probability to justify decisions ♦ Analysing the probability of combined events, identifying the effects of bias and describing probability through the use of percentages, decimals, fractions and ratio to make and justify decisions	Examples of probability contexts could include: ♦ using weather statistics to estimate the probability of different types of weather ♦ using statistics to find the relative incidence of accidents among uninsured drivers Candidates could use data from government websites to deduce which age group is most likely to have accidents.

Appendix 3: additional examples of learning and teaching contexts

Using numerical skills to solve real-life problems
Candidates could: ♦ use recipes to carry out measurements involving weight, capacity and temperature — all measurements should be metric ♦ apply ratio and proportion to make a suitable mix of mortar for a building project, eg one bucket of cement to one bucket of lime to five buckets of sand ♦ calculate the income tax due for one year, given a year's income and tax rates ♦ calculate compound interest over three years, based on a savings account with a given interest rate and calculate the corresponding reduction in savings, given a decrease in the interest rate ♦ use a utility bill to calculate, for example, average costs per day, discounts, VAT, and costs if usage is increased by 15% each month ♦ calculate income and expenditure for a shop using monthly accounts ♦ measure up and cost materials required to landscape a garden ♦ estimate the annual cost of gas for a household, given the amount of gas used per week and the cost per unit ♦ compare the fuel consumption of a range of cars, given the mileage per litre ♦ calculate, given the appropriate tables/charts and figures: — how much money has been made from the number 1 singles in the past year — how much the artists or groups have made compared to the manufacturer — which artists have made the most money in a year — the percentage that the artist receives, compared to the recording company and the government ♦ look up the latest Scottish football league tables and answer questions such as: — Which team has the highest average score per match played? — What proportion of goals is scored at home compared with away? — What percentage of goals has been scored by the five top teams?

Interpreting graphical data and situations involving probability

At this level, candidates should be able to decide on an appropriate form to convey particular information. Discussion should take place on the appropriate use of graphs and diagrams and their key features.

The suitability of using boxplots, stem and leaf diagrams, histograms, dot plots and cumulative frequency graphs could be investigated as well as more familiar graphs such as line graphs, bar graphs, pie charts and distance–time graphs.

Graphs at this level could include more complex ideas such as qualitative graphs in which situations that do not necessarily have numerical values are represented.

Candidates should be able to extract and interpret data from a table.

In this case, they should be able to determine the cost of travel insurance for a family, based on the duration and destination of their holiday and the ages of the family members. Candidates should also be able to discuss and make decisions relating to the cost of the travel insurance options within a given budget for different sizes of families.

They should be able to explain and make decisions, based on risk assessment, about whether the whole family, including elderly family members, can afford to travel with insurance.

Age	**2–15 years**		**16–64 years**		**65 or over**	
Number of nights	Europe	Outside Europe	Europe	Outside Europe	Europe	Outside Europe
6–9	£18.20	£33.90	£24.30	£44.50	£30.60	£55.25
10–17	£21.80	£38.25	£28.40	£51.20	£35.25	£63.75
18–23	£24.75	£42.50	£33.20	£56.25	£41.75	£70.50

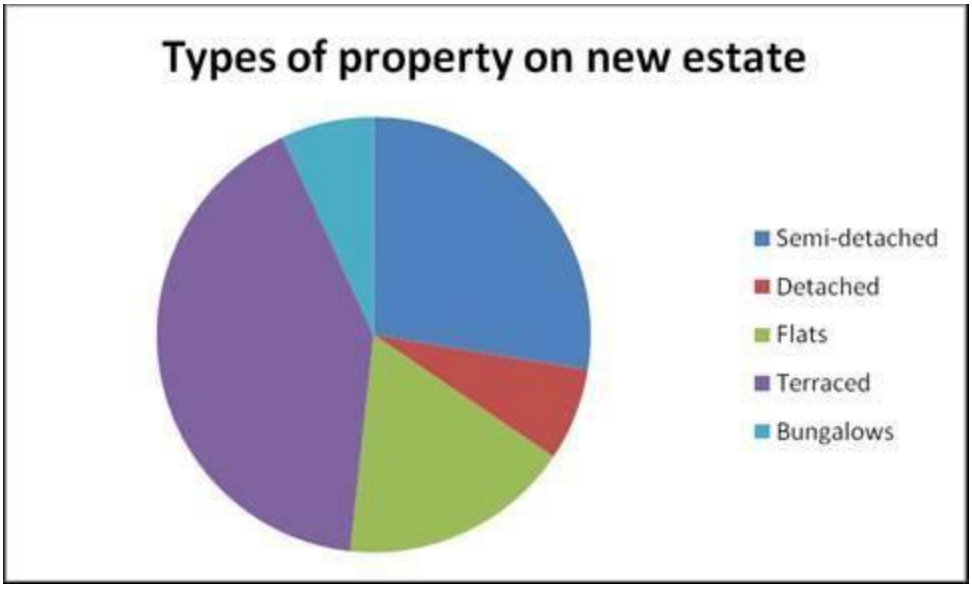
Interpreting graphical data and situations involving probability

Using a compound bar chart, such as the example shown below, candidates should be able to extract and interpret data.

In this case, they could be asked to calculate the amount of commission and/or bonus pay earned and to identify which employee earned most commission. They should be able to discuss and make decisions about the company threshold for bonus pay and the likelihood of each salesperson being awarded employee of the week.

From a pie chart such as this, candidates should be able to extract and interpret data.

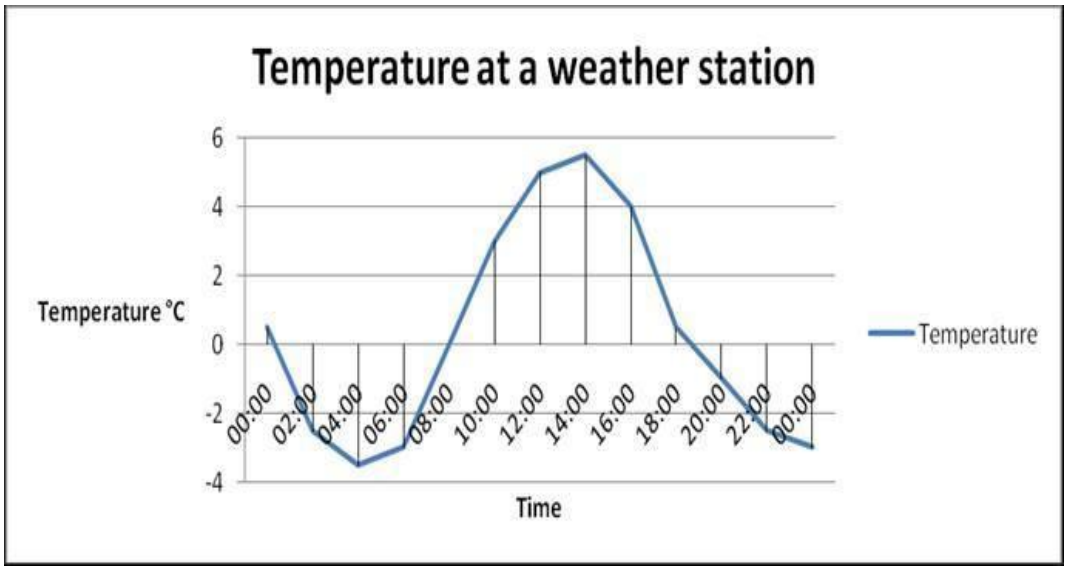
They should, for example, be able to identify the number of each type of property given the total number in the estate. They should also be able to make decisions about the types of marketing strategies suitable for each type of property.



Interpreting graphical data and situations involving probability

From a line graph such as this, candidates should be able to extract and interpret data.

They should be able to, for example, estimate the temperature at any time of the day. They should also be able to make decisions on temperature trends and heating strategies which might be suitable for homes or offices.



Interpreting graphical data and situations involving probability

Candidates should be able to decide on an appropriate way of illustrating a particular set of data. They could be asked a supplementary question to interpret the graphical data, as this example illustrates:

During a survey at a health club, the ages of a sample of women attending the club were recorded:

24	32	51	43	19	25	29	23
31	50	47	30	25	27	18	23
38	28	43	35	52	32	36	18

During the survey, the ages of a sample of men attending the health club were also recorded:

48	56	62	58	35	35	30	25
20	32	43	28	60	46	37	39
40	55	76	48	47	25	32	48

a Draw an appropriate statistical diagram to compare these two sets of data.

b Comment on any differences between the ages of the men and women attending the club.

A back-to-back stem and leaf diagram would be the most appropriate, but various graphs or diagrams could be drawn. Candidates could draw two boxplots with a common scale. Some candidates may group the two sets of data using class intervals and then draw a compound bar graph. Discussion could take place on the different types of answers given. In the comment part of the question, candidates should be encouraged to comment on which group (men or women) seems to be older and on the spread of ages for each group.

Interpreting graphical data and situations involving probability

Candidates should be able to combine their numerical and graphical skills to construct a pie chart. This involves calculating a total, calculating angles and using a protractor and compass to draw the pie chart. An example like the one below, from a healthy-eating context, could be used.

A survey was carried out in a school to find out how popular the fruits on offer at the canteen were.

The results of the survey are shown below.

Favourite fruit	Student votes
Grapes	25
Orange	20
Apple	60
Pear	15
Banana	80

Construct a pie chart to illustrate this information.

Interpreting graphical data and situations involving probability

Candidates could be asked questions involving a cumulative frequency graph.

This activity could provide an interesting introduction to this type of graph. The semi-interquartile range (SIQR) can be estimated from a cumulative frequency graph and this is a useful measure for consistency or reliability of a product or service. Comparing the SIQR for two sets of data would be a useful extension to this to activity.

The key points on drawing a cumulative frequency diagram should be stressed:

- The cumulative frequency axis should be vertical.
- The axes should be clearly labelled.
- The horizontal scale should be continuous, ie 1200, 1300, 1400, etc.
- The cumulative frequency should be plotted against the upper limit of the class interval.
- A smooth curve (ogive) should be used to join the points.

An example like the one below, from a workplace context, could be used.

A company manufactures high powered lamps. A sample of 100 of these lamps was chosen at random to find their lifetime.

The results are shown below.

Lifetime of lamp (t hours)	**Frequency**
$1200 \le t < 1300$	4
$1300 \le t < 1400$	10
$1400 \le t < 1500$	16
$1500 \le t < 1600$	24
$1600 \le t < 1700$	20
$1700 \le t < 1800$	14
$1800 \le t < 1900$	8
$1900 \le t < 2000$	4

a Construct a cumulative frequency column for the data.

b Using squared paper, draw a cumulative frequency diagram for this data.

c From your diagram, estimate the median and quartiles of the lifetime of a lamp.

d Estimate the semi-interquartile range.

Appendix 4: question paper brief

The course assessment consists of two question papers which will assess:

- analysing and interpreting real-life situations and problems involving mathematics in new and previously unseen situations
- selecting and integrating mathematical operational skills from across the course to tackle real-life situations or problems
- applying a range of mathematical operational skills to an appropriate degree of accuracy with and without the aid of a calculator
- using mathematical reasoning skills to draw conclusions or justify decisions
- communicating mathematical information appropriately

The question papers will sample the 'Skills, knowledge and understanding' section of the course specification.

This sample will draw on all of the skills, knowledge and understanding from each of the following areas:

- reasoning skills
- financial skills
- statistical skills
- measurement skills
- geometric skills
- numerical skills
- interpretation skills

Command words are the verbs or verbal phrases used in questions and tasks which ask candidates to demonstrate specific skills, knowledge or understanding. For examples of some of the command words used in this assessment, refer to the past papers and specimen question papers on the subject page.

The course assessment consists of two question papers:

	Paper 1 (non-calculator)	Paper 2 (case studies)
Time	50 minutes	1 hour and 40 minutes (including time to read and absorb case study information)
Marks	35	55
Skills	The purpose of question paper 1 is to allow candidates to demonstrate, **without the aid of a calculator**, an understanding of a range of mathematical operational and reasoning skills and to select, apply and combine them to perform calculations in real-life contexts. Candidates also have opportunities to demonstrate skills in interpreting and presenting information. Questions will sample the mandatory skills, knowledge and understanding from the course specification.	The purpose of question paper 2 is to allow candidates to demonstrate the application and extension of mathematical skills, knowledge and understanding from across the course through the use of case studies. A calculator can be used. This question paper gives candidates an opportunity to interpret and analyse real-life problems or situations, select appropriate strategies, carry out calculations and draw valid conclusions or justify decisions. Questions will sample the mathematical operational skills from the course specification.
Type of question	Short answer and extended response.	Short answer and extended response based on source material.
Type of question paper	Structured question papers: both papers are question-and-answer papers which have spaces for answers.	
Proportion of level 'C' questions	Many questions will use a stepped approach to ensure that there are opportunities for candidates to demonstrate their abilities beyond level 'C'. Approximately 65% of the marks will be available for level 'C' responses.	
Balance of skills	Operational and reasoning skills will be assessed in both question papers. Some questions will assess only operational skills but most will require some reasoning as well.	

Administrative information

Published: May 2023 (version 3.0)

History of changes to course specification

Version	Description of change	Date
2.0	Course support notes added as appendix.	May 2017
2.1	Question paper brief added as appendix.	September 2017
3.0	Question paper duration and marks amended.	May 2023

Note: You are advised to check SQA's website to ensure you are using the most up-to-date version of the course specification.