Qualification Specification

Highfield Functional Skills Qualification in Mathematics at Level 1
and
Highfield Functional Skills Qualification in Mathematics at Level 2

Qualification Number (Level 1): 603/4996/7
Qualification Number (Level 2): 603/4992/X

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Appendix 2: Qualification content

The content of the functional skills qualifications is determined by a range of skills called 'subject content'. Learners are required to demonstrate their underpinning knowledge of the subject content as well as their ability to apply the content when solving problems in different contexts.

The subject content is split into 3 mathematical areas:
- Using numbers and the number system
- Using common measures, shape and space
- Handling information and data

Each assessment will assess a range of the subject content from all 3 mathematical areas.

The subject content also outlines the skills expected of learners in relation to solving mathematical problems and decision making.

Centres should note that subject content at each level of qualification subsumes and builds upon the content at lower levels.

The subject content for level 1 and level 2 is outlined on the following pages.

Subject Content: Highfield Functional Skills Qualification in Mathematics at Level 1

Use of number and the number system: learners are expected to be able to count in steps of various sizes, including negative numbers; read, write and understand positive whole numbers to one million. They can order and compare whole numbers of any size, and fractions, ratios and decimals and recognise the effect of multiplying and dividing by powers of 10, 100 and 1000. They can identify, compare and extend a range of numerical and spatial patterns, use, understand and calculate with fractions, decimals and percentages and calculate simple interest. For specific detail on using numbers and the number system, see below.

Level 1: Using numbers and the number system: *whole numbers, fractions, decimals and percentages*	
1.	read, write, order and compare large numbers (up to one million)
2.	recognise and use positive and negative numbers
3.	multiply and divide whole numbers and decimals by 10, 100, 1000
4.	use multiplication facts and make connections with division facts
5.	use simple formulae expressed in words for one or two-step operations
6.	calculate the squares of one-digit and two-digit numbers
7.	follow the order of precedence of operators
8.	read, write, order and compare common fractions and mixed numbers
9.	find fractions of whole number quantities or measurements
10.	read, write, order and compare decimals up to three decimal places
11.	add, subtract, multiply and divide decimals up to two decimal places
12.	approximate by rounding to a whole number or to one or two decimal places
13.	read, write, order and compare percentages in whole numbers
14.	calculate percentages of quantities, including simple percentage increases and decreases by 5% and multiples thereof
15.	estimate answers to calculations using fractions and decimals
16.	recognise and calculate equivalences between common fractions, percentages and decimals
17.	work with simple ratio and direct proportions

Use of common measures, shape and space: learners are expected to be able to work out simple relationships between common units of measurement to define quantities, also involving mathematical terms for position and direction. They can apply and use calculations with common measures including money, time, length, weight and capacity. They can visualise, draw and describe 2-D and 3-D shapes and use properties of 2-D shapes in calculations. For specific detail on using common measures, shape and space, see below.

Level 1: Using common measures, shape and space	
18.	calculate simple interest in multiples of 5% on amounts of money
19.	calculate discounts in multiples of 5% on amounts of money
20.	convert between units of length, weight, capacity, money and time, in the same system
21.	recognise and make use of simple scales on maps and drawings
22.	calculate the area and perimeter of simple shapes including those that are made up of a combination of rectangles
23.	calculate the volumes of cubes and cuboids
24.	draw 2-D shapes and demonstrate an understanding of line symmetry and knowledge of the relative size of angles
25.	interpret plans, elevations and nets of simple 3-D shapes
26.	use angles when describing position and direction, and measure angles in degrees

Handle information and data: learners are expected to be able to select, construct and interpret a range of statistical diagrams in various contexts; select and use methods and forms to present and describe outcomes. They can extract and interpret information from tables, diagrams, charts and graphs; apply simple statistics and recognise features of charts to summarise and compare sets of data; recognise and use the probability scale and interpret probabilities. For specific detail on handling information and data, see below.

Level 1: Handling information and data	
27.	represent discrete data in tables, diagrams and charts including pie charts, bar charts and line graphs
28.	group discrete data and represent grouped data graphically
29.	find the mean and range of a set of quantities
30.	understand probability on a scale from 0 (impossible) to 1 (certain) and use probabilities to compare the likelihood of events
31.	use equally likely outcomes to find the probabilities of simple events and express them as fractions

Solving mathematical problems and decision making: learners at Level 1 are expected to be able to use the knowledge and skills listed above to recognise and obtain a solution or solutions to a straightforward problem. A straightforward problem is one that requires learners to either work through one step or process or to work through more than one connected step or process.

Individual problems are based on the knowledge and/or skills in the mathematical content areas (number and the number system; common measures, shape and space; information and data). At Level 1 it is expected that the learner will be able to address individual problems, some of which draw upon a combination of any two of the mathematical content areas and require learners to make connections between those content areas.

Level 1: Solving mathematical problems and decision making
Learners at Level 1 are expected to be able to:

Learners at Level 1 are expected to be able to:
- read, understand and use mathematical information and mathematical terms used at this level;
- address individual problems as described above;
- use knowledge and understanding to a required level of accuracy;
- analyse and interpret answers in the context of the original problem;
- check the sense, and reasonableness, of answers; and
- present results with appropriate explanation and interpretation demonstrating simple reasoning to support the process and show consistency with the evidence presented.

The context of individual problems at this level will require some comprehension in order for the learner to be able to independently identify and carry out an appropriate mathematical approach.

Subject Content: Highfield Functional Skills Qualification in Mathematics at Level 2

Use of numbers and the number system: learners are expected to be able to use numbers of any size; read, write and make use of positive and negative integers of any size; use, order and compare integers, fractions, decimals, percentages and ratios as well as recognise the value of a digit in any whole or decimal number. They can use numerical and spatial patterns for a purpose and calculate with, and convert between, numbers written as fractions, decimals, percentages and ratios. For specific detail on using numbers and the number system, see below.

Level 2: Using numbers and number system: *whole numbers, fractions, decimals and percentages*	
1.	read, write, order and compare positive and negative numbers of any size
2.	carry out calculations with numbers up to one million including strategies to check answers including estimation and approximation
3.	evaluate expressions and make substitutions in given formulae in words and symbols
4.	identify and know the equivalence between fractions, decimals and percentages
5.	work out percentages of amounts and express one amount as a percentage of another
6.	calculate percentage change (any size increase and decrease), and original value after percentage change
7.	order, add, subtract and compare amounts or quantities using proper and improper fractions and mixed numbers
8.	express one number as a fraction of another
9.	order, approximate and compare decimals
10.	add, subtract, multiply and divide decimals up to three decimal places
11.	understand and calculate using ratios, direct proportion and inverse proportion
12.	follow the order of precedence of operators, including indices

Use of measures, shape and space: learners are expected to be able to handle relationships between measurements of various kinds, use angles and coordinates when involving position and direction and make use of geometric properties in calculations with 2-D and 3-D shapes and understand the relationships between them. For specific detail on measures, shape and space – see below.

Level 2: Measures, shape and space	
13.	calculate amounts of money, compound interest, percentage increases, decreases and discounts including tax and simple budgeting
14.	convert between metric and imperial units of length, weight and capacity using a) a conversion factor and b) a conversion graph
15.	calculate using compound measures including speed, density and rates of pay
16.	calculate perimeters and areas of 2-D shapes including triangles and circles and composite shapes including non-rectangular shapes (formulae given except for triangles and circles)
17.	use formulae to find volumes and surface areas of 3-D shapes including cylinders (formulae to be given for 3-D shapes other than cylinders)
18.	calculate actual dimensions from scale drawings and create a scale diagram given actual measurements
19.	use coordinates in 2-D, positive and negative, to specify the positions of points
20.	understand and use common 2-D representations of 3-D objects
21.	draw 3-D shapes to include plans and elevations
22.	calculate values of angles and/or coodinates with 2-D and 3-D shapes

Handle information and data: learners are expected to be able to construct, interpret and evaluate a range of statistical diagrams. They can calculate and interpret probabilities. They can calculate, analyse, compare and interpret appropriate data sets, tables, diagrams and statistical measures such as mean, median, mode and range, and use statistics to compare sets of data. They can identify patterns and trends from data as well as recognise simple correlation. For specific detail on handling information and data, see below.

Level 2: Handling information and data	
23.	calculate the median and mode of a set of quantities
24.	estimate the mean of a grouped frequency distribution from discrete data
25.	use the mean, median, mode and range to compare two sets of data
26.	work out the probability of combined events including the use of diagrams and tables, including two-way tables
27.	express probabilities as fractions, decimals and percentages
28.	draw and interpret scatter diagrams and recognise positive and negative correlation

Solving mathematical problems and decision making: Learners at Level 2 are expected to be able to use the knowledge and skills listed above to recognise and obtain a solution or solutions to a complex problem. A complex problem is one which requires a multistep process, typically requiring planning and working through at least two connected steps or processes.

Individual problems are based on a combination of the knowledge and/or skills from the mathematical content areas (number and the number system; measures, shape and space; information and data). At Level 2 it is expected that the learner will be able to address individual problems some of which draw upon a combination of all three mathematical areas and require learners to make connections between those content areas.

Level 2: Solving mathematical problems and decision making
Learners at Level 2 are expected to be able to: - read, understand, and use mathematical information and mathematical terms; - address individual problems as described above; - use knowledge and understanding to a required level of accuracy; - identify suitable operations and calculations to generate results; - analyse and interpret answers in the context of the original problem; - check the sense and reasonableness of answers; and - present and explain results clearly and accurately demonstrating reasoning to support the process and show consistency with the evidence presented. The context of individual problems at this level will require interpretation and analysis in order for the learner to be able independently to identify and carry out an appropriate mathematical process or processes.