

### NCFE Functional Skills Maths Level 2 Mock exams - How we created these papers

## **Overview**

We have created 5 mock exam papers for Functional skills mathematics Level 2, with mark weighting and topic coverage based on the <a href="NCFE Sample Papers">NCFE Sample Papers</a> provided on the qualhub website, along with the points specified in the <a href="NCFE Functional skills mathematics qualification specification">NCFE Functional skills mathematics qualification specification</a>.

Each physical paper has been designed to look like the NCFE paper based exams, with the mark schemes formatted and broken down to match the NCFE style as well.

#### **Tasks and Marks**

Firstly, we have sectioned our mock papers into 4 activities across 2 papers. Across these 4 activities we have aimed to cover as many of the 28 subject content points as possible from the subject content section. Furthermore, the marks for each activity are broken down into the following:

- Section A Activity 1: 15 marks Non-calculator
   Including a mixture of 1, 2, 3 or 4 mark questions, with no 5-8 mark questions included in Activity 1.
- Section B Activities 2, 3 and 4: 15 marks Calculator
   Including a mixture of 1, 2, 3, 4 and 5-8 mark questions distributed accordingly.

Across each paper, we have aimed to have a similar coverage of 1, 2, 3, 4 and 5-8 mark questions of that on the NCFE past papers:

- 1 mark 4-7 questions
- 2-3 mark 10-15 questions
- 4 mark 3-5 questions
- 5-8 mark at least 2 questions

Each paper includes 25% of marks allocated to tasks that assess underpinning skills, with the remaining 75% of marks allocated to tasks that assess problem solving, as per the NCFE qualification specification.

We have based each activity around a specific theme, meaning all questions within an activity relate to each other based on their scenarios, as seen in the NCFE past papers. However, there are no follow-on questions in the mathematical sense, i.e. we have made sure that the student sitting the paper will not need to know the answer to the previous question to answer the current question. If some information from a previous question is required, then it will be stated again in the current question.

# **Distribution of Topics and Skills**

In each of the papers the distribution of the marks assigned to each of the three main topic areas have been allocated to match NCFE exams. Approximately 40-50% of the total marks are marks coming from topics in Numbers and the Number System, 30-40% from Measures, Shape and Space and 20-30% from Handling Information and Data.

The higher mark questions included in each paper have been designed to test the learner's ability to:

- Read, understand, and use mathematical information and mathematical terms;
- Address individual problems;
- 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;
- Present and explain results clearly and accurately demonstrating reasoning to support the process and show consistency with the evidence presented.

#### **Assessment Difficulty**

Each of the 5 papers have been designed to match the difficulty of an NCFE Functional Skills Maths Level 2 assessment, based on a pass mark of 55%-65%.

# **Question Breakdown**

For each of our 5 papers, we have shown the breakdown of topics and marks for all questions and Activities in the paper, below.

Paper 1: P = problem solving U = underpinning skills

Activity	Activ	vity 1	Acti	vity 2	Acti	vity 3	Activ	vity 4	Total
Total marks per Activity	1	15		15	1	15	1	5	60
Problem solving (P) marks	,	9		12		12	1	2	45
Underpinning skills (U) marks	6 3			3		3	15		
Level 2 subject content	Р	U	Р	U	Р	U	Р	U	-
L2.N1 - Read, write, order and compare positive and negative numbers of any size						1 (3a)	1 (4e)		2
L2.N2 - Carry out calculations with numbers up to one million including strategies to check answers including estimation and approximation	2 (1c)	1 (1d)							3
L2.N3 - Evaluate expressions and make substitutions in given formulae in words and symbols							2 (4a)		2
L2.N4 - Identify and know the equivalence between fractions, decimals and percentages								1 (4b)	1
L2.N5 - Work out percentages of amounts and express one amount as a percentage of another	1 (1b)								1
L2.N6 - Calculate percentage change (any size increase and decrease), and original value after percentage change					2 (3d)		1 (4a) 1 (4e)		4
L2.N7 - Order, add, subtract and compare amounts or quantities using proper and improper fractions and mixed numbers	1 (1b)						1 (4e)		2
L2.N8 - Express one number as a fraction of another				2 (2d)					2
L2.N9 - Order, approximate and compare decimals									0
L2.N10 - Add, subtract, multiply and divide decimals up to three decimal places	1(1b) 1 (1c)						3 (4c)		5
L2.N11 - Understand and calculate using ratios, direct proportion and inverse proportion	1 (1c)				2 (3d)				3
L2.N12 - Follow the order of precedence of operators, including indices									0
Numbers and the Number system: Total Marks									25
L2.M13 - Calculate amounts of money, compound interest, percentage increases, decreases and discounts including tax and simple budgeting			1 (2e)		2 (3d)				3
L2.M14 - Convert between metric and imperial units of length, weight and capacity using a) a conversion factor					2 (3e)		2 (4c)		4

b) a conversion graph									
L2.M15 - Calculate using compound measures including speed, density and rates of pay			4 (2e)						4
L2.M16 - 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)		2 (1a)	4 (2a)						6
L2.M17 - 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)									0
L2.M18 - Calculate actual dimensions from scale drawings and create a scale diagram given actual measurements	2 (1e)						1 (4c)		3
L2.M19 - Use coordinates in 2-D, positive and negative, to specify the positions of points				1 (2c)					1
L2.M20 - Understand and use common 2-D representations of 3-D objects									0
L2.M21 - Draw 3-D shapes to include plans and elevations		1(1f)							1
L2.M22 - Calculate values of angles and/or coordinates with 2-D and 3-D shapes								2 (4d)	2
Measures, Shape and Space: Total Marks									24
L2.H23 - Calculate the median and mode of a set of quantities		2 (1d)							2
L2.H24 - Estimate the mean of a grouped frequency distribution from discrete data			3 (2b)						3
L2.H25 - Use the mean, median, mode and range to compare two sets of data					4 (3b)				4
L2.H26 - Work out the probability of combined events including the use of diagrams and tables, including two-way tables									0
L2.H27 - Express probabilities as fractions, decimals and percentages									0
L2.H28 - Draw and interpret scatter diagrams and recognise positive and negative correlation						2 (3c)			2
Handling Information and Data: Total Marks									11

Paper 2: P = problem solving U = underpinning skills

Activity	Activity 1 Activity 2		Acti	vity 3	Activ	vity 4	Total		
Total marks per Activity	1	5	1	5	1	15	1	5	60
Problem solving (P) marks									45
Underpinning skills (U) marks									15
Level 2 subject content	Р	U	Р	U	Р	U	Р	U	•
L2.N1 - Read, write, order and compare positive and negative numbers of any size		1(1a)							1
L2.N2 - Carry out calculations with numbers up to one million including strategies to check answers including estimation and approximation	1(1f)	1(1d)					1(4c)		3
L2.N3 - Evaluate expressions and make substitutions in given formulae in words and symbols			2(2c)						2
L2.N4 - Identify and know the equivalence between fractions, decimals and percentages	2(1h)								2
L2.N5 - Work out percentages of amounts and express one amount as a percentage of another			2(2d)						2
L2.N6 - Calculate percentage change (any size increase and decrease), and original value after percentage change			2(2c)				1(4d)		3
L2.N7 - Order, add, subtract and compare amounts or quantities using proper and improper fractions and mixed numbers	3(1e)								3
L2.N8 - Express one number as a fraction of another							2(4c)		2
L2.N9 - Order, approximate and compare decimals	1(1h)								1
L2.N10 - Add, subtract, multiply and divide decimals up to three decimal places		1(1g)							1
L2.N11 - Understand and calculate using ratios, direct proportion and inverse proportion	1(1h)				2(3d)				3
L2.N12 - Follow the order of precedence of operators, including indices		1(1d)							1
Numbers and the Number system: Total Marks									24
L2.M13 - Calculate amounts of money, compound interest, percentage increases, decreases and discounts including tax and simple budgeting	1(1f)	1(1b)	1(2d)						3
L2.M14 - Convert between metric and imperial units of length, weight and capacity using a) a conversion factor b) a conversion graph					1(3d)			1(4a)	2
L2.M15 - Calculate using compound measures including speed, density and rates of pay		1(1c)				2(3a)	2(4d)		5
L2.M16 - Calculate perimeters and areas of 2-D shapes including triangles and circles and composite shapes including non-rectangular shapes (formulae given except									0

for triangles and circles)								
L2.M17 - 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)		1(2d)						1
L2.M18 - Calculate actual dimensions from scale drawings and create a scale diagram given actual measurements			2(2a) 1(2b)					3
L2.M19 - Use coordinates in 2-D, positive and negative, to specify the positions of points		2(2e)						2
L2.M20 - Understand and use common 2-D representations of 3-D objects		1(2d)						1
L2.M21 - Draw 3-D shapes to include plans and elevations								0
L2.M22 - Calculate values of angles and/or coordinates with 2-D and 3-D shapes		1(2e)						1
Measures, Shape and Space: Total Marks								18
L2.H23 - Calculate the median and mode of a set of quantities							2(4b)	2
L2.H24 - Estimate the mean of a grouped frequency distribution from discrete data						3(4e)		3
L2.H25 - Use the mean, median, mode and range to compare two sets of data				5(3b)				5
L2.H26 - Work out the probability of combined events including the use of diagrams and tables, including two-way tables				4(3e)				4
L2.H27 - Express probabilities as fractions, decimals and percentages					1(3c)			1
L2.H28 - Draw and interpret scatter diagrams and recognise positive and negative correlation						3(4e)		3
Handling Information and Data: Total Marks								18

Paper 3: P = problem solving U = underpinning skills

Activity	Activ	vity 1	Acti	vity 2	Acti	vity 3	Activity 4		Total
Total marks per Activity	1	5	1	5	,	15	1	5	60
Problem solving (P) marks		7		1	15		1	45	
Underpinning skills (U) marks	8 4 0		0	3		15			
Level 2 subject content	Р	U	Р	U	Р	U	Р	U	-
L2.N1 - Read, write, order and compare positive and negative numbers of any size					1(3c)			1(4a)	2
L2.N2 - Carry out calculations with numbers up to one million including strategies to check answers including estimation and approximation	1(1c)	1(1d)	1(2a) 1(2d)				1(4b)		5
L2.N3 - Evaluate expressions and make substitutions in given formulae in words and symbols			1(2e)				2(4d)		3
L2.N4 - Identify and know the equivalence between fractions, decimals and percentages				1(2b)					1
L2.N5 - Work out percentages of amounts and express one amount as a percentage of another	1(1c)						2(4b)		3
L2.N6 - Calculate percentage change (any size increase and decrease), and original value after percentage change					3(3b)				3
L2.N7 - Order, add, subtract and compare amounts or quantities using proper and improper fractions and mixed numbers		1(1a) 1(1d)		1(2c)				2(4f)	5
L2.N8 - Express one number as a fraction of another									0
L2.N9 - Order, approximate and compare decimals				1(2c)					1
L2.N10 - Add, subtract, multiply and divide decimals up to three decimal places			1(2d)						1
L2.N11 - Understand and calculate using ratios, direct proportion and inverse proportion			2(2e)						2
L2.N12 - Follow the order of precedence of operators, including indices									0
Numbers and the Number system: Total Marks									25
L2.M13 - Calculate amounts of money, compound interest, percentage increases, decreases and discounts including tax and simple budgeting			1(2d)		5(3d)				6
L2.M14 - Convert between metric and imperial units of length, weight and capacity using a) a conversion factor b) a conversion graph	2(1c)				1(3a)				3
L2.M15 - Calculate using compound measures including speed, density and rates of pay					1(3a)		5(4c)		6
L2.M16 - Calculate perimeters and areas of 2-D shapes including triangles and circles and composite shapes including non-rectangular shapes (formulae given except			1(2a) 3(2d)						4

for triangles and circles)						
L2.M17 - 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)				1(3a)		1
L2.M18 - Calculate actual dimensions from scale drawings and create a scale diagram given actual measurements					2(4e)	2
L2.M19 - Use coordinates in 2-D, positive and negative, to specify the positions of points			1(2f)			1
L2.M20 - Understand and use common 2-D representations of 3-D objects		1(1e)				1
L2.M21 - Draw 3-D shapes to include plans and elevations						0
L2.M22 - Calculate values of angles and/or coordinates with 2-D and 3-D shapes						0
Measures, Shape and Space: Total Marks						24
L2.H23 - Calculate the median and mode of a set of quantities		1(1a)				1
L2.H24 - Estimate the mean of a grouped frequency distribution from discrete data				3(3c)		3
L2.H25 - Use the mean, median, mode and range to compare two sets of data						0
L2.H26 - Work out the probability of combined events including the use of diagrams and tables, including two-way tables	2(1b)					2
L2.H27 - Express probabilities as fractions, decimals and percentages	1(1b)					1
L2.H28 - Draw and interpret scatter diagrams and recognise positive and negative correlation		3(1f)				3
Handling Information and Data: Total Marks						10

Paper 4: P = problem solving U = underpinning skills

Activity	Activity 1 Activity 2		Activ	vity 3	Acti	vity 4	Total		
Total marks per Activity	1	5	1	5	1	5	1	5	60
Problem solving (P) marks									45
Underpinning skills (U) marks									15
Level 2 subject content	Р	U	Р	U	Р	U	Р	U	-
L2.N1 - Read, write, order and compare positive and negative numbers of any size									0
L2.N2 - Carry out calculations with numbers up to one million including strategies to check answers including estimation and approximation	2(1f)	1(1b)	3(2e)						6
L2.N3 - Evaluate expressions and make substitutions in given formulae in words and symbols					3(3e)				3
L2.N4 - Identify and know the equivalence between fractions, decimals and percentages									0
L2.N5 - Work out percentages of amounts and express one amount as a percentage of another									0
L2.N6 - Calculate percentage change (any size increase and decrease), and original value after percentage change					1(3e)		2(4e)		3
L2.N7 - Order, add, subtract and compare amounts or quantities using proper and improper fractions and mixed numbers	3(1g)								3
L2.N8 - Express one number as a fraction of another		2(1a)							2
L2.N9 - Order, approximate and compare decimals		1(1c)							1
L2.N10 - Add, subtract, multiply and divide decimals up to three decimal places	1(1e)							1(4a)	2
L2.N11 - Understand and calculate using ratios, direct proportion and inverse proportion	1(1e)		1(2c)		3(3d)				5
L2.N12 - Follow the order of precedence of operators, including indices					2(3c)				2
Numbers and the Number system: Total Marks									27
L2.M13 - Calculate amounts of money, compound interest, percentage increases, decreases and discounts including tax and simple budgeting					3(3c)				3
L2.M14 - Convert between metric and imperial units of length, weight and capacity using a) a conversion factor b) a conversion graph	1(1f)		1(2d)						2
L2.M15 - Calculate using compound measures including speed, density and rates of pay			4(2d)						4
L2.M16 - Calculate perimeters and areas of 2-D shapes including triangles and circles and composite shapes including non-rectangular shapes (formulae given except	1(1f)	2(1d)							3

			1		1		
for triangles and circles)							
L2.M17 - 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)		1(2c)					1
L2.M18 - Calculate actual dimensions from scale drawings and create a scale diagram given actual measurements			1(2a)				1
L2.M19 - Use coordinates in 2-D, positive and negative, to specify the positions of points		1(2c)					1
L2.M20 - Understand and use common 2-D representations of 3-D objects		1(2c)					1
L2.M21 - Draw 3-D shapes to include plans and elevations			2(2b)				2
L2.M22 - Calculate values of angles and/or coordinates with 2-D and 3-D shapes				2(3b)			2
Measures, Shape and Space: Total Marks							20
L2.H23 - Calculate the median and mode of a set of quantities						2(4b)	2
L2.H24 - Estimate the mean of a grouped frequency distribution from discrete data					3(4e)		3
L2.H25 - Use the mean, median, mode and range to compare two sets of data					1(4e)		1
L2.H26 - Work out the probability of combined events including the use of diagrams and tables, including two-way tables					3(4d)		3
L2.H27 - Express probabilities as fractions, decimals and percentages	 			 1(3a)			1
L2.H28 - Draw and interpret scatter diagrams and recognise positive and negative correlation					3(4c)		3
Handling Information and Data: Total Marks							13

Paper 5: P = problem solving U = underpinning skills

Activity	Activ	vity 1	Acti	vity 2	Acti	vity 3	Activity 4		Total
Total marks per Activity	15 15 15		15	1	5	60			
Problem solving (P) marks	12		7		15		1	2	45
Underpinning skills (U) marks	;	3		8		0	3		15
Level 2 subject content	Р	U	Р	U	Р	U	Р	U	-
L2.N1 - Read, write, order and compare positive and negative numbers of any size	1(1e)			1(2b)				1(4b)	3
L2.N2 - Carry out calculations with numbers up to one million including strategies to check answers including estimation and approximation	1(1e)								1
L2.N3 - Evaluate expressions and make substitutions in given formulae in words and symbols		1(1b)							1
L2.N4 - Identify and know the equivalence between fractions, decimals and percentages		1(1c)		1(2f)			1(4a)		3
L2.N5 - Work out percentages of amounts and express one amount as a percentage of another							1(4e)		1
L2.N6 - Calculate percentage change (any size increase and decrease), and original value after percentage change	1(1f)								1
L2.N7 - Order, add, subtract and compare amounts or quantities using proper and improper fractions and mixed numbers	1(1d)	1(1c)							2
L2.N8 - Express one number as a fraction of another				1(2f)					1
L2.N9 - Order, approximate and compare decimals									0
L2.N10 - Add, subtract, multiply and divide decimals up to three decimal places	1(1a) 1(1f) 1(1e)				1(3c)				4
L2.N11 - Understand and calculate using ratios, direct proportion and inverse proportion					2(3a)		3(4c) 2(4e)		7
L2.N12 - Follow the order of precedence of operators, including indices									0
Numbers and the Number system: Total Marks									24
L2.M13 - Calculate amounts of money, compound interest, percentage increases, decreases and discounts including tax and simple budgeting			5(2e)		1(3a) 1(3b)		1(4e)		8
L2.M14 - Convert between metric and imperial units of length, weight and capacity using a) a conversion factor b) a conversion graph			1(2d)		2(3b)				3
L2.M15 - Calculate using compound measures including speed, density and rates of pay			2(2d)						2
L2.M16 - Calculate perimeters and areas of 2-D shapes	1(1d)				1(3b)				3

including triangles and circles and composite shapes including non-rectangular shapes (formulae given except for triangles and circles)  L2.M17 - Use formulae to find volumes and surface areas of 3-D shapes including cylinders (formulae to be given for	
of 3-D shapes including cylinders (formulae to be given for	
3-D shapes other than cylinders)	0
L2.M18 - Calculate actual dimensions from scale drawings and create a scale diagram given actual measurements	1
L2.M19 - Use coordinates in 2-D, positive and negative, to specify the positions of points	2
L2.M20 - Understand and use common 2-D representations of 3-D objects	0
L2.M21 - Draw 3-D shapes to include plans and elevations	0
L2.M22 - Calculate values of angles and/or coordinates with 2-D and 3-D shapes	) 1
Measures, Shape and Space: Total Marks	20
L2.H23 - Calculate the median and mode of a set of quantities 1(2b)	2
L2.H24 - Estimate the mean of a grouped frequency distribution from discrete data	3
L2.H25 - Use the mean, median, mode and range to compare two sets of data	0
L2.H26 - Work out the probability of combined events including the use of diagrams and tables, including two-way tables	8
L2.H27 - Express probabilities as fractions, decimals and percentages 1(1g)	2
L2.H28 - Draw and interpret scatter diagrams and recognise positive and negative correlation	1
Handling Information and Data: Total Marks	16