



MATHEMATICS
FUNCTIONAL SKILLS
Level 1 & 2
SPECIFICATION
For Teaching from 2010

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For Teaching from 2010

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SUMMARY OF ASSESSMENT

Level 1 Paper (1½ hours) 810/01	
Calculators required	
Available Marks	= 65
Target Level 1 Pass	= 46 (70%)

The assessments will be externally assessed.

There will be two assessment opportunities available a year (November and May).

Qualification Accreditation Number: 500/8492/6

1. INTRODUCTION

Criteria

This specification meets the *Functional skills qualifications criteria*, *Functional skills criteria for Mathematics*, *Controlled assessment regulations for functional skills* and *Statutory Regulation of External Qualifications* issued by Ofqual. The qualification may be undertaken through the medium of English only.

Rationale

The term **functional** should be considered in the broad sense of providing learners with the skills and abilities they need to take an active and responsible role in their communities, in their everyday life, workplace and in educational settings. Functional mathematics requires learners to be able to use mathematics in ways that make them effective and involved as citizens, able to operate confidently in life, and to work in a wide range of contexts. Individuals at any age who possess these skills will be able to participate and progress in education, training and employment as well as develop and secure the broader range of aptitudes, attitudes and behaviours that will enable them to make a positive contribution to the communities in which they live and work.

To facilitate this approach, assessments will concentrate on real-life contexts which are intended to be familiar to candidates. The questions set will range from closed, structured questions, to more open questions allowing a range of responses.

Prior Learning

Although there is no specific requirement for prior learning, this specification builds on the Programmes for Study for *Mathematics* at Key Stages 1 – 3.

This specification may be followed by any candidate irrespective of their gender, ethnic, religious or cultural background. The specification is not age-specific and, as such, provides opportunities for candidates to extend their lifelong learning.

Progression

The skills candidates develop are vital in the further study of any subject at an equivalent level. This qualification subsumes the skills standards required for *Functional Skills Mathematics* at Entry 1 - 3, and provides progression towards *Functional Skills Mathematics* at Level 2.

2. CONTENT (FUNCTIONAL SKILLS STANDARDS)

Introduction

The aim of the mathematics standards is to encourage people to demonstrate their mathematical skills in a range of contexts and for various purposes. They are essentially concerned with developing and recognising the ability of learners to apply and transfer skills in ways that are appropriate to their situation.

They are written to be sufficiently flexible to be interpreted in a variety of contexts; for example, in school and workplace settings, and by a range of users. They provide the framework for assessment, rather than the detail, and as such need to be relatively context free.

Fundamental to individuals being able to use mathematics effectively in life and work is their ability to understand and make sense of mathematical information, to use and process that information, to interpret and analyse the results of their activity, and to present them to others. These skill standards form the basis of the functional skills standards for mathematics and apply at all levels.

The key attributes of these skill standards are presented below and should provide the framework for the delivery, development and assessment of functional mathematics.

Representing	Analysing	Interpreting
Selecting the mathematics and information to model a situation	Processing and using the mathematics	Interpreting and communicating the results of the analysis
<p>A learner can:</p> <ul style="list-style-type: none"> • recognise that a situation has aspects that can be represented using mathematics • make an initial model of a situation using suitable forms of representation • decide on the methods, operations and tools, including ICT, to use in a situation • select the mathematical information to use 	<p>A learner can:</p> <ul style="list-style-type: none"> • use appropriate mathematical procedures • examine patterns and relationships • change values and assumptions or adjust relationships to see the effects on answers in the mode • find results and solutions 	<p>A learner can:</p> <ul style="list-style-type: none"> • interpret results and solutions • draw conclusions in the light of the situation • consider the appropriateness and accuracy of the results and conclusions • choose appropriate language and forms of presentation to communicate results and solutions

Mathematics: Level 1

The standard at Level 1 is underpinned by the skill standards of representing (selecting the mathematics and information to model a situation), analysing (processing and using mathematics) and interpreting (interpreting and communicating the results of analysis).

The coverage and range statements provide an indication of the type of mathematical content candidates are expected to apply in functional contexts; however, relevant content could also be drawn from content equivalent to National Curriculum Mathematics Levels 1 - 4 and the Adult Numeracy Standards at Level 1.

The following skill standard weightings will be applied in each assessment:

Skill Standard	Assessment weighting
Representing	30% - 40%
Analysing	30% - 40%
Interpreting	30% - 40%

In each assessment, opportunities will be available for candidates to develop all of the skill standards.

The coverage and range will be sampled across three assessment series.

LEVEL 1

<u>Skill Standards</u>	<u>Coverage and range (indicative)</u>
<p><u>Representing</u></p> <p>At Level 1, learners will be able to,</p> <ul style="list-style-type: none"> • understand practical problems in familiar and unfamiliar contexts and situations, some of which are non-routine • identify and obtain necessary information to tackle the problem • select mathematics in an organised way to find solutions <p><u>Analysing</u></p> <p>At Level 1, learners will be able to,</p> <ul style="list-style-type: none"> • apply mathematics in an organised way to find solutions to straightforward practical problems for different purposes • use appropriate checking procedures at each stage <p><u>Interpreting</u></p> <p>At Level 1, learners will be able to,</p> <ul style="list-style-type: none"> • interpret and communicate solutions to practical problems, drawing simple conclusions and giving explanations 	<p>At Level 1, learners will be able to,</p> <ul style="list-style-type: none"> • understand and use whole numbers and understand negative numbers in practical contexts • add, subtract, multiply and divide whole numbers using a range of strategies • understand and use equivalences between common fractions, decimals and percentages • add and subtract decimals up to two decimal places • solve simple problems involving ratio, where one number is a multiple of the other • use simple formulae expressed in words for one- or two-step operations • solve problems requiring calculation, with common measures, including money, time, length, weight, capacity and temperature • convert units of measure in the same system • work out areas and perimeters in practical situations • construct geometric diagrams, models and shapes • extract and interpret information from tables, diagrams, charts and graphs • collect and record discrete data and organise and represent information in different ways • find mean and range • use data to assess the likelihood of an outcome

3. SCHEME OF ASSESSMENT

Structure

The assessment will take the form of a written paper containing questions of varying length set in real-life contexts. Some questions will be open response and some will be fixed response.

Open response questions are defined to be questions that are based upon real-life contexts that require candidates to apply their skills, knowledge and understanding in order to resolve problems or produce effective outcomes. They do not prescribe the processes or methods by which the candidate responds.

Fixed response questions are defined to be questions that confine the candidates to either a single or limited number of correct responses and where process is not explicitly credited.

At Level 1, there will be a minimum of 75% open response in the assessment.

Opportunities will be available for developing the skills standards as defined in the Functional Skills standards and the coverage and range will be sampled across three assessment series. The marks for each question or part question will be indicated.

Duration

The assessment will last $1\frac{1}{2}$ hours. All questions will be compulsory.

Conditions

The assessment takes the form of a timetabled examination determined by WJEC, conducted according to the regulations specified in the JCQ booklet *Instructions for the Conduct of Examinations*.

Resources

Candidates should have suitable calculator, a ruler, compasses and a protractor. The following rules will apply to the use of calculators:

- (i) The calculator must be of a size suitable for use on the desk at which the candidate will attempt the examination.
- (ii) The power supply for the calculator is the responsibility of the candidate and must be integral.
- (iii) The working condition of the calculator is the responsibility of the candidate.
- (iv) A fault in a calculator will not normally be considered as justifying the giving of special consideration to the user.
- (v) Calculator cases, instruction leaflets and similar materials must not be in the possession of candidates during the examination.
- (vi) Calculators must not be borrowed from other candidates in the course of an examination for any reason, although the invigilator may provide a candidate with a replacement calculator.

- (vii) Programmable calculators may be used but no prepared programs may be taken into the examination room.

(Information and/or programs stored in the calculator's memory must be cleared before the examination. Retrieval of information and/or programs during the examination is an infringement of the regulations.)

- (viii) Candidates are responsible for clearing any information and/or programs stored in the calculator before the examination.

Calculators which have non-numerical functions or give non-numerical information are not permitted. Such prohibited facilities include data banks, dictionaries, language translators, text retrieval and calculators with facilities which are capable of carrying out symbolic algebra. The use of any calculators with facilities which are capable of communicating with other machines for sending/receiving messages is strictly prohibited and the use of such calculators by candidates will be regarded as malpractice.

Context

The assessment will be connected with the real world, education, training, work and social roles to provide a relevant and familiar context for all candidates while requiring some transfer of skills at a level appropriate to Level 1.

Pass Marks

The following pass marks will be used as targets in task-setting and in mark schemes:

Level 1	70%
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The target of 70% for pass marks at each level will be reviewed in the light of evidence of performance and the difficulty of the questions/tasks. The awarding process for this component will include complete scripts within a range of marks specified by the principal examiner, mark distributions and other statistical information including item analysis.

Awarding, Reporting and Re-sitting

This WJEC Functional *Mathematics* specification provides assessments in November and May. Where a candidate's performance is sufficient to meet the Level 1 requirements, a Functional Skills qualification pass certificate at Level 1 will be awarded. Candidates will only be awarded a pass or fail at Level 1. No other level will be awarded.

Candidates will receive provisional results in the normal way (i.e. confirmation of the level achieved, or Fail where not achieved) and certificates. Centres will receive an item analysis of performance by their entry for each series, and an overall Chief Examiner's report on the examination.

This is a single component examination, and there is no provision for any carry-forward of marks. There is no limitation on re-sits other than the shelf life of the specification.

4. OTHER ISSUES

Access and Fair Assessment

QCDA have reviewed the Functional skills standards and assessment criteria through wide ranging consultations and have had the materials analysed by specialist agencies to identify potential barriers to achievement and to mitigate their impact. Functional skills assessments are subject to similar analysis and review protocols.

Functional skills assessments will provide a valid measure of the candidates' ability to meet the qualification requirements in line with their normal ways of working.

Guidance to question paper setters follows advice in 'Fair Access by Design' produced jointly by the regulators and the JCQ awarding bodies.

This specification has been designed to offer fair access for all candidates and to minimise any later need to make reasonable adjustments for candidates who have particular requirements, while preserving the rigour of the qualification. Where necessary, WJEC will make reasonable adjustments so that candidates with disabilities can access assessment. These will ensure that candidates are not given an unfair advantage or disadvantage compared with candidates not using reasonable adjustments, or invalidate the assessment requirements set out in the specification. WJEC Functional Skills qualifications and assessment materials anticipate the needs of all candidates.

There will be a large age range with access to the Functional skills qualification. For example, younger candidates are likely to have a more limited experience of employment within a particular sector than some older candidates. This does not mean that such contexts should always be avoided but sufficient descriptions and/or images may be necessary to ensure that the contexts are understood by all. All source material will use simple language and avoid jargon.

Assessments will take account of the need to ensure there is no detrimental effect on candidates' performance as a result of culture-specific contexts, for example in the case of ESOL candidates.

Every effort will be made to ensure that source material is free of any form of bias (e.g. gender, ethnic, age) that might favour or disadvantage any candidate or group of candidates and that specifications and assessment materials provide fair and equal access in terms of disability, gender, race, age, sexual orientation and religion/belief.

As a single component qualification, all candidates are required to complete some element of assessment and cannot, therefore, be exempt from the entire assessment for a qualification.

The table below summarises the access arrangements for candidates entered for the WJEC Functional Skills Mathematics Level 1 assessment.

Access Arrangements	Yes/No	Comments
Reader / screen reader	Yes	
Scribes	Yes	
Practical Assistants	Yes	
Word Processors	Yes	
Transcripts	Yes	
BSL interpreters	Yes	
Oral language modifiers	Yes	
Modified question papers (including Braille)	Yes	
Extra Time	Yes	
Models, visual/tactile aids, speaking scales	Yes	Permitted as a reasonable adjustment or give the candidate any advantage not available to other candidates.

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SUMMARY OF ASSESSMENT

Level 2 Paper (1½ hours) 810/02	
Calculators required	
Available Marks	= 65
Target Level 2 Pass	= 46 (70%)

The assessments will be externally assessed.

There will be two assessment opportunities available a year (November and May).

Qualification Accreditation Number: 500/8491/4

1

INTRODUCTION

Criteria

This specification meets the *Functional skills qualifications criteria*, *Functional skills criteria for Mathematics*, *Controlled assessment regulations for functional skills* and *Statutory Regulation of External Qualifications* issued by Ofqual. The qualification may be undertaken through the medium of English only.

Rationale

The term **functional** should be considered in the broad sense of providing learners with the skills and abilities they need to take an active and responsible role in their communities, in their everyday life, workplace and in educational settings. Functional mathematics requires learners to be able to use mathematics in ways that make them effective and involved as citizens, able to operate confidently in life, and to work in a wide range of contexts. Individuals at any age who possess these skills will be able to participate and progress in education, training and employment as well as develop and secure the broader range of aptitudes, attitudes and behaviours that will enable them to make a positive contribution to the communities in which they live and work.

To facilitate this approach, assessments will concentrate on real-life contexts which are intended to be familiar to candidates. The questions set will range from closed, structured questions, to more open questions allowing a range of responses.

Prior Learning

Although there is no specific requirement for prior learning, this specification builds on the Programmes for Study for *Mathematics* at Key Stages 1 - 3.

This specification may be followed by any candidate irrespective of their gender, ethnic, religious or cultural background. The specification is not age-specific and, as such, provides opportunities for candidates to extend their lifelong learning.

Progression

The skills candidates develop are vital in the further study of any subject at an equivalent level. This qualification subsumes the skills standards required for *Functional Skills Mathematics* at Entry 1 - 3 and Level 1, and provides progression towards Level 3 qualifications.

2 CONTENT (FUNCTIONAL SKILLS STANDARDS)

The aim of the mathematics standards is to encourage people to demonstrate their mathematical skills in a range of contexts and for various purposes. They are essentially concerned with developing and recognising the ability of learners to apply and transfer skills in ways that are appropriate to their situation.

They are written to be sufficiently flexible to be interpreted in a variety of contexts; for example, in school and workplace settings, and by a range of users. They provide the framework for assessment, rather than the detail, and as such need to be relatively context free.

Fundamental to individuals being able to use mathematics effectively in life and work is their ability to understand and make sense of mathematical information, to use and process that information, to interpret and analyse the results of their activity, and to present this to others. These skill standards form the basis of the functional skills standards for mathematics and apply at all levels.

The key attributes of these skill standards are presented below and should provide the framework for the delivery, development and assessment of functional mathematics.

Representing	Analysing	Interpreting
<p>Selecting the mathematics and information to model a situation</p>	<p>Processing and using the mathematics</p>	<p>Interpreting and communicating the results of the analysis</p>
<p>A learner can:</p> <ul style="list-style-type: none"> • recognise that a situation has aspects that can be represented using mathematics • make an initial model of a situation using suitable forms of representation • decide on the methods, operations and tools, including ICT, to use in a situation • select the mathematical information to use 	<p>A learner can:</p> <ul style="list-style-type: none"> • use appropriate mathematical procedures • examine patterns and relationships • change values and assumptions or adjust relationships to see the effects on answers in the model • find results and solutions 	<p>A learner can:</p> <ul style="list-style-type: none"> • interpret results and solutions • draw conclusions in the light of the situation • consider the appropriateness and accuracy of the results and conclusions • choose appropriate language and forms of presentation to communicate results and solutions

Mathematics: Level 2

The standard at Level 2 is underpinned by the skill standards of representing (selecting the mathematics and information to model a situation), analysing (processing and using mathematics) and interpreting (interpreting and communicating the results of analysis).

The coverage and range statements provide an indication of the type of mathematical content candidates are expected to apply in functional contexts; however, relevant content could also be drawn from content equivalent to National Curriculum Mathematics Levels 1 - 6 and the Adult Numeracy Standards at Level 2.

The following skill standard weightings will be applied in each assessment:

Skill Standard	Assessment weighting
Representing	30% - 40%
Analysing	30% - 40%
Interpreting	30% - 40%

In each assessment, opportunities will be available for candidates to develop all of the skill standards.

The coverage and range will be sampled across three assessment series.

LEVEL 2

Skills Standards	Coverage and range (indicative)
<p><u>Representing</u></p> <p>At Level 2, learners will be able to:</p> <ul style="list-style-type: none"> • understand routine and non-routine problems in familiar and unfamiliar contexts and situations • identify the situation or problems and identify the mathematical methods needed to solve them • choose from a range of mathematics to find solutions <p><u>Analysing</u></p> <p>At Level 2, learners will be able to:</p> <ul style="list-style-type: none"> • apply a range of mathematics to find solutions • use appropriate checking procedures and evaluate their effectiveness at each stage <p><u>Interpreting</u></p> <p>At Level 2, learners will be able to:</p> <ul style="list-style-type: none"> • interpret and communicate solutions to multistage practical problems in familiar and unfamiliar contexts and situations • draw conclusions and provide mathematical justifications 	<p>At Level 2, learners will be able to:</p> <ul style="list-style-type: none"> • understand and use positive and negative numbers of any size in practical contexts • carry out calculations with numbers of any size in practical contexts, to a given number of decimal places • understand, use and calculate ratio and proportion, including problems involving scale • understand and use equivalences between fractions, decimals and percentages • understand and use simple formulae and equations involving one- or two-step operations • use and recognise 2D representations of 3D objects • find area, perimeter and volume of common shapes • use, convert and calculate using metric and, where appropriate, imperial measures • collect and represent discrete and continuous data, using information and communication technology (ICT) where appropriate • use and interpret statistical measures, tables and diagrams, for discrete and continuous data, using information and communication technology (ICT) where appropriate • use statistical methods to investigate situations • use probability to assess the likelihood of an outcome

3

SCHEME OF ASSESSMENT

Structure

The assessment will take the form of a written paper containing questions of varying length set in real-life contexts. Some questions will be open response and some will be fixed response.

Open response questions are defined to be questions that are based upon real-life contexts that require candidates to apply their skills, knowledge and understanding in order to resolve problems or produce effective outcomes. They do not prescribe the processes or methods by which the candidate responds.

Fixed response questions are defined to be questions that confine the candidates to either a single or limited number of correct responses and where process is not explicitly credited.

At Level 2, there will be a minimum of 75% open response in the assessment. Opportunities will be available for developing the skills standards as defined in the Functional Skills standards and the coverage and range will be sampled across three assessment series. The marks for each question or part question will be indicated.

Duration

The assessment will last 1½ hours. All questions will be compulsory.

Conditions

The assessment takes the form of a timetabled examination determined by WJEC, conducted according to the regulations specified in the JCQ booklet *Instructions for the Conduct of Examinations*.

Resources

Candidates should have suitable calculator, a ruler, compasses and a protractor. The following rules will apply to the use of calculators:

- (i) The calculator must be of a size suitable for use on the desk at which the candidate will attempt the examination.
- (ii) The power supply for the calculator is the responsibility of the candidate and must be integral.
- (iii) The working condition of the calculator is the responsibility of the candidate.
- (iv) A fault in a calculator will not normally be considered as justifying the giving of special consideration to the user.
- (v) Calculator cases, instruction leaflets and similar materials must not be in the possession of candidates during the examination.
- (vi) Calculators must not be borrowed from other candidates in the course of an examination for any reason, although the invigilator may provide a candidate with a replacement calculator.

- (vii) Programmable calculators may be used but no prepared programs may be taken into the examination room.

(Information and/or programs stored in the calculator's memory must be cleared before the examination. Retrieval of information and/or programs during the examination is an infringement of the regulations.)

- (viii) Candidates are responsible for clearing any information and/or programs stored in the calculator before the examination.

Calculators which have non-numerical functions or give non-numerical information are not permitted. Such prohibited facilities include data banks, dictionaries, language translators, text retrieval and calculators with facilities which are capable of carrying out symbolic algebra. The use of any calculators with facilities which are capable of communicating with other machines for sending/receiving messages is strictly prohibited and the use of such calculators by candidates will be regarded as malpractice.

Context

The assessment will be connected with the real world, education, training, work and social roles to provide a relevant and familiar context for all candidates while requiring some transfer of skills at a level appropriate to Level 2.

Pass Marks

The following pass marks will be used as targets in task-setting and in mark schemes:

Level 2	70%
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The target of 70% for pass marks at each level will be reviewed in the light of evidence of performance and the difficulty of the questions/tasks. The awarding process for this component will include complete scripts within a range of marks specified by the principal examiner, mark distributions and other statistical information including item analysis.

Awarding, Reporting and Re-sitting

This WJEC Functional *Mathematics* specification provides assessments in November and May. Where a candidate's performance is sufficient to meet the Level 2 requirements, a Functional Skills qualification pass certificate at Level 2 will be awarded. Candidates will only be awarded a pass or fail at Level 2. No other level will be awarded.

Candidates will receive provisional results in the normal way (i.e. confirmation of the level achieved, or Fail where not achieved) and certificates. Centres will receive an item analysis of performance by their entry for each series, and an overall Chief Examiner's report on the examination.

This is a single component examination, and there is no provision for any carry-forward of marks. There is no limitation on re-sits other than the shelf life of the specification.

4

OTHER ISSUES

Access and Fair Assessment

QCDA have reviewed the Functional skills standards and assessment criteria through wide ranging consultations and have had the materials analysed by specialist agencies to identify potential barriers to achievement and to mitigate their impact. Functional skills assessments are subject to similar analysis and review protocols.

Functional skills assessments will provide a valid measure of the candidates' ability to meet the qualification requirements in line with their normal ways of working.

Guidance to question paper setters follows advice in 'Fair Access by Design' produced jointly by the regulators and the JCQ awarding bodies.

This specification has been designed to offer fair access for all candidates and to minimise any later need to make reasonable adjustments for candidates who have particular requirements, while preserving the rigour of the qualification. Where necessary, WJEC will make reasonable adjustments so that candidates with disabilities can access assessment. These will ensure that candidates are not given an unfair advantage or disadvantage compared with candidates not using reasonable adjustments, or invalidate the assessment requirements set out in the specification. WJEC Functional Skills qualifications and assessment materials anticipate the needs of all candidates.

There will be a large age range with access to the Functional skills qualification. For example, younger candidates are likely to have a more limited experience of employment within a particular sector than some older candidates. This does not mean that such contexts should always be avoided but sufficient descriptions and/or images may be necessary to ensure that the contexts are understood by all. All source material will use simple language and avoid jargon.

Assessments will take account of the need to ensure there is no detrimental effect on candidates' performance as a result of culture-specific contexts, for example in the case of ESOL candidates.

Every effort will be made to ensure that source material is free of any form of bias (e.g. gender, ethnic, age) that might favour or disadvantage any candidate or group of candidates and that specifications and assessment materials provide fair and equal access in terms of disability, gender, race, age, sexual orientation and religion/belief.

As a single component qualification, all candidates are required to complete some element of assessment and cannot, therefore, be exempt from the entire assessment for a qualification.

The table below summarises the access arrangements for candidates entered for the WJEC Functional Skills Mathematics Level 2 assessment.

Access Arrangements	Yes/No	Comments
Reader / screen reader	Yes	
Scribes	Yes	
Practical Assistants	Yes	
Word Processors	Yes	
Transcripts	Yes	
BSL interpreters	Yes	
Oral language modifiers	Yes	
Modified question papers (including Braille)	Yes	
Extra Time	Yes	
Models, visual/tactile aids, speaking scales	Yes	Permitted as a reasonable adjustment or give the candidate any advantage not available to other candidates.