

Conditions and Requirements

Functional Skills mathematics Conditions and Requirements

April 2024

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Contents

Introduction.....	3
<i>About this document</i>	<i>3</i>
<i>Requirements set out in this document</i>	<i>3</i>
<i>Revisions to this document</i>	<i>4</i>
<i>Summary of requirements</i>	<i>4</i>
Subject Level Conditions	5
<i>Functional Skills Mathematics Subject Level Conditions</i>	<i>5</i>
Requirements for Functional Skills qualifications in mathematics	15
<i>Assessment requirements</i>	<i>15</i>
<i>Standard setting requirements</i>	<i>20</i>
<i>Assessment strategy requirements</i>	<i>21</i>
Appendix 1: subject content (published by the Department for Education).....	30

Introduction

About this document

This document is part of a suite of documents which sets out our regulatory requirements for awarding organisations offering functional skills qualifications in mathematics.

We have developed these requirements with the intention that functional skills qualifications in mathematics should fulfil the following purposes:

- provide reliable evidence of learners' achievements against demanding content that is relevant to the workplace
- provide assessment of learners' underpinning knowledge as well as their ability to apply this in different contexts
- provide a foundation for progression into further study or employment; and
- where appropriate, contribute to the Government's school and college accountability measures

Requirements set out in this document

This document sets out the Subject Level Conditions and Requirements for functional skills qualifications in mathematics. These conditions and requirements come into effect at 9.30am on 9 August 2019 and apply to the following functional skills qualifications in mathematics –

- qualifications awarded to all learners registered on or after 1 September 2019
- all qualifications awarded on or after 1 August 2021

For clarity, these conditions and requirements do not apply to a functional skills qualification in mathematics awarded to a learner registered before 1 September 2019, so long as that award takes place before 1 August 2021. Awarding organisations will therefore have a two-year transition period within which to award legacy qualifications to learners registered before 1 September 2019, and to allow those learners to retake assessments as necessary.

All learners registered for a functional skills qualification in mathematics on or after 1 September 2019 who have demonstrated the requisite level of attainment must be awarded a qualification which complies with these conditions and requirements.

Appendix 1 reproduces the [subject content requirements for functional skills qualifications in mathematics](#), as published by the Department for Education. Awarding organisations must comply with these requirements under Condition FSE1.1(a).

With respect to all functional skills qualifications in mathematics, awarding organisations must also comply with:

- our [General Conditions of Recognition](#), which apply to all awarding organisations and qualifications
- all [relevant Regulatory Documents](#)

Revisions to this document

This document was republished in April 2024 to remove FSM6 (interpretation and definitions) to avoid duplication with the Qualification Level Conditions for functional skills qualifications.

This document was republished in April 2021 to implement the outcome of our consultation on a change to the regulation end date for legacy Functional Skills qualifications from 31 August 2020 to 31 July 2021.

This document was republished in August 2019 to implement the outcome of our consultation on changes to Guided Learning hours in Functional Skills qualifications.

It adds:

- Condition FSM7 – Disapplication of General Conditions of Recognition applying to functional skills in mathematics
- Condition FSM8 – Total Qualification Time

This document was also revised in July 2018 to incorporate:

- the purposes of the qualification
- the subject content, as published by the Department for Education

Summary of requirements

Subject Level Conditions
Condition FSM1 - Compliance with content requirements
Condition FSM2 - Assessment Strategies
Condition FSM3 - Technical Evaluation
Condition FSM4 - Assessment
Condition FSM5 - Specified levels of attainment
Condition FSM6 - Not in use
Condition FSM7 - Disapplication of General Condition of Recognition applying to functional skills in mathematics
Condition FSM8 - Total Qualification Time
Requirements in relation to Functional Skills qualifications in mathematics
Assessment requirements

[Standard setting requirements](#)

[Assessment strategy requirements](#)

Subject Level Conditions

Functional Skills Mathematics Subject Level Conditions

Condition FSM1 - Compliance with content requirements

- FSM1.1 In respect of each functional skills qualification in mathematics which it makes available, or proposes to make available, an awarding organisation must –
- (a) comply with the requirements relating to that qualification set out in the document published by the Secretary of State entitled '[Subject content functional skills: mathematics](#)', document reference DFE- 00046-2018,
 - (b) have regard to any recommendations or guidelines relating to that qualification set out in that document, and
 - (c) interpret that document in accordance with any requirements, and having regard to any guidance, which may be published by Ofqual and revised from time to time.

Condition FSM2 - Assessment Strategies

- FSM2.1 In respect of each functional skills qualification in mathematics which it makes available, or proposes to make available, an awarding organisation must –
- (a) establish and maintain an assessment strategy for that qualification,
 - (b) ensure that the assessment strategy complies with any requirements which may be published by Ofqual and revised from time to time, and
 - (c) have regard to any guidance in relation to assessment strategies which may be published by Ofqual and revised from time to time.
- FSM2.2 In particular, an awarding organisation must ensure that the assessment strategy for a functional skills qualification in mathematics sets out how the awarding organisation intends to secure, on an ongoing basis, compliance with its Conditions of Recognition in respect of the assessments for that qualification.
- FSM2.3 An awarding organisation must ensure that all assessments for a functional skills qualification in mathematics which it makes available, or proposes to make available, are designed, set, delivered and marked in compliance with its assessment strategy for that qualification.
- FSM2.4 An awarding organisation must –
- (a) keep under review its assessment strategy for a functional skills qualification in mathematics, and revise it where necessary, so as to satisfy itself that the assessment strategy meets at all times the requirements of Conditions FSM2.1 and FSM2.2,
 - (b) review that assessment strategy promptly upon receiving a request from Ofqual to do so, and subsequently ensure that its assessment strategy complies with any requirements that Ofqual has communicated to it in writing, and
 - (c) promptly notify Ofqual of any revisions made by it to that assessment strategy.

FSM2.5 An awarding organisation must –

- (a) upon receiving a request from Ofqual to do so, demonstrate to Ofqual's satisfaction that it has complied with its assessment strategy for a functional skills qualification in mathematics in respect of any particular assessment for that qualification, or provide an explanation to Ofqual as to why it has not so complied, and give effect to any recommendation that Ofqual may make in respect of its compliance with its assessment strategy.

Condition FSM3 - Technical Evaluation

- FSM3.1 Before first making available a functional skills qualification in mathematics, an awarding organisation must –
- (a) promptly notify Ofqual that it proposes to make the qualification available,
 - (b) comply with the terms of any written notice served by Ofqual requiring the awarding organisation to provide Ofqual with information, and
 - (c) either –
 - (i) comply with any requirements specified to it by Ofqual in relation to the qualification, or
 - (ii) have received written confirmation from Ofqual that it has no such requirements.
- FSM3.2 For the purposes of Condition FSM3.1(b), a notice given by Ofqual may –
- (a) specify the time within which the information is to be provided,
 - (b) specify a form in which the information is to be provided, and
 - (c) require an awarding organisation to provide information which is already in its possession or which has to be created or obtained by it.
- FSM3.3 Where Ofqual specifies requirements in relation to a qualification under Condition FSM3.1(c), it may specify that the awarding organisation may make that qualification available before those requirements are complied with.

Condition FSM4 - Assessment

- FSM4.1 An awarding organisation must ensure that in respect of each assessment for a functional skills qualification in mathematics which it makes available, or proposes to make available, it complies with any requirements, and has regard to any guidance, which may be published by Ofqual and revised from time to time.

Condition FSM5 - Specified levels of attainment

- FSM5.1 An awarding organisation must ensure that the specification for each functional skills qualification in mathematics which it makes available, or proposes to make available, sets out specified levels of attainment which comply with any requirements which may be published by Ofqual and revised from time to time.
- FSM5.2 In respect of each functional skills qualification in mathematics which it makes available, an awarding organisation must comply with any requirements, and have regard to any guidance, which may be published by Ofqual and revised from time to time in relation to –
- (a) the promotion of consistency between the measurement of Learners' levels of attainment in that qualification and similar qualifications made available by other awarding organisations, and
 - (b) the setting of specified levels of attainment.
- FSM5.3 In setting the specified levels of attainment for a functional skills qualification in mathematics which it makes available, an awarding organisation must have regard to an appropriate range of qualitative and quantitative evidence.
- FSM5.4 In respect of each functional skills qualification in mathematics which it makes available, the range of evidence to which an awarding organisation has regard for the purposes of Condition FSM5.3 will only be appropriate if it includes evidence of –
- (a) the Level of Demand of the assessments for that qualification,
 - (b) at Levels 1 and 2, the level of attainment demonstrated in those assessments by –
 - (i) an appropriately representative sample of Learners taking that qualification, or
 - (ii) individuals (whether Learners or otherwise) as part of robust technical pre-testing of those assessments,
 - (c) at the entry levels, the level of attainment, where available, demonstrated in those assessments by –
 - (i) an appropriately representative sample of Learners taking that qualification, or
 - (ii) individuals (whether Learners or otherwise) as part of robust technical pre-testing of those assessments,

- (d) where available, the level of attainment demonstrated by Learners taking that qualification in a –
 - (i) prior assessment (which was not for that qualification), whether or not that assessment was for a regulated qualification, or
 - (ii) prior qualification, whether or not that qualification was a regulated qualification, and
- (e) following the first time that a Component designed in line with these Subject Level Conditions is awarded, the level of attainment demonstrated by Learners who have previously been awarded that Component.

FSM5.5 An awarding organisation must maintain a record of –

- (a) the evidence to which it has had regard in setting the specified levels of attainment for each functional skills qualification in mathematics which it makes available, and
- (b) its rationale for the selection of and weight given to that evidence.

Condition FSM6 - Not in use

Condition FSM6 is no longer in use. For the relevant interpretation and definitions condition, see FSQ2 in the [Qualification Level Conditions for functional skills qualifications](#).

Condition FSM7 - Disapplication of General Condition of Recognition applying to functional skills in mathematics

- FSM7.1 In respect of each functional skills qualification in mathematics which an awarding organisation makes available, or proposes to make available, General Condition of Recognition E7 does not apply.

Condition FSM8 - Total Qualification Time

- FSM8.1 In respect of each functional skills qualification in mathematics that it makes available or proposes to make available, an awarding organisation must –
- (a) design that qualification such that the number of hours for Guided Learning will be 55 hours,
 - (b) assign to that qualification 55 hours of Guided Learning,
 - (c) assign to that qualification a number of hours for Total Qualification Time by applying the Total Qualification Time Criteria.
- FSM8.2 An awarding organisation must –
- (a) keep under review the number of hours it has assigned to each functional skills qualification in mathematics for each of Total Qualification Time and Guided Learning,
 - (b) in particular, review the numbers of hours assigned following any revision to the –
 - document entitled ‘Subject content functional skills: mathematics’, or
 - Total Qualification Time Criteria, and
 - (c) revise the number of hours that the awarding organisation has assigned, if appropriate.
- FSM8.3 Following any review by Ofqual of the number of hours assigned to a qualification in respect of Total Qualification Time or Guided Learning, an awarding organisation must revise that number in any manner required by Ofqual.

Requirements for Functional Skills qualifications in mathematics

Assessment requirements

Condition FSM4.1 allows us to specify requirements and guidance in relation to the assessment of functional skills qualifications in mathematics.

We set out our requirements for the purposes of Condition FSM4.1 below.

The relevant knowledge, skills and understanding for the qualification is set out in the Department for Education's '[Subject content functional skills: Mathematics](#)', document reference DFE-00046-2018 (the 'Content Document'), with which an awarding organisation must comply under Condition FSM1.1.

Single Component

Each functional skills qualification in mathematics must be made up of a single Component.

Assessment with and without a calculator

In designing and setting the assessment(s) for a functional skills qualification in mathematics which it makes available, or proposes to make available, an awarding organisation must ensure that of the total marks available –

- (a) 25% are allocated to questions or tasks which must be completed by Learners without the use of, or access to, a calculator¹ (the 'Non-calculator Test')
- (b) 75% are allocated to questions or tasks for which Learners are permitted to use a calculator (the 'Calculator Test')

Each functional skills qualification in mathematics must comprise either –

- (a) a single assessment, with separate sections for each of the Non-calculator Test and the Calculator Test
- (b) two assessments, one comprising the Non-calculator Test and the other the Calculator Test

¹ Throughout these requirements a calculator is defined as any electronic device which may be used for the performance of mathematical computations.

Weighting of content areas

The Content Document stipulates the following three separate content areas for each level –

- (a) using numbers and the number system
- (b) using common measures, shape and space
- (c) handling information and data

In respect of a functional skills qualification in mathematics that it makes available, or proposes to make available, an awarding organisation must –

- (a) ensure that each assessment, or pair of assessments –
 - (i) samples as much of the subject content as practicable
 - (ii) contains a reasonable balance between the three content areas
 - (iii) samples in the Calculator Test and the Non-calculator Test subject content which is appropriate to each
- (b) sample all of the content in as few iterations of the assessment(s) as possible

In complying with the requirements at (a) and (b) above, an awarding organisation must take all reasonable steps to ensure that assessments at each level are comparable and are not predictable.

Underpinning skills and problem solving

The Content Document states that functional skills qualifications in mathematics need to provide assessment of Learners' underpinning skills – defined as 'the ability to do maths when not as part of a problem'² – as well as their ability to apply mathematical thinking to solve problems.³

In designing and setting the assessment(s) for a functional skills qualification in mathematics which it makes available, or proposes to make available, an awarding organisation must –

- (a) take reasonable steps to ensure that of the total marks available in that assessment, or pair of assessments –
 - (i) 25% are allocated to questions or tasks which assess underpinning skills

² [Content Document](#), fn. 1, p. 3.

³ [Content Document](#), p. 4.

- (ii) 75% are allocated to questions or tasks which assess problem solving
- (b) where it is not possible to achieve these weightings having taken reasonable steps, ensure that the weighting of the assessment of underpinning skills and problem solving is within +/- 2% of the relevant weighting specified in (a)
- (c) ensure that, within the parameters set out in (a) and (b), there is reasonable coverage of assessment of Learners' underpinning skills and problem solving within each of the Calculator Test and the Non-calculator Test

Overall assessment time

An awarding organisation must design and set the assessment(s) for a functional skills qualification in mathematics on the basis that the total amount of time spent by each Learner in taking the assessment(s) shall be –

- (a) at entry level –
 - (i) no less than an hour and 15 minutes
 - (ii) no more than an hour and 45 minutes
- (b) at levels 1 and 2 –
 - (i) no less than an hour and 45 minutes
 - (ii) no more than two hours and 30 minutes

Setting assessments

An awarding organisation must set all assessments for a functional skills qualification in mathematics that it makes available.

Adaptations at entry level

An awarding organisation may permit a Centre to adapt questions or tasks in assessments at entry level for the purpose of making those assessments more accessible to Learners.

Where an awarding organisation permits a Centre to adapt questions or tasks, such adaptations must relate only to the context presented by that question or task. An awarding organisation must not permit a Centre to amend –

- (a) the knowledge, skills or understanding that a Learner is required to demonstrate in the question or task
- (b) the Level of Demand of the question or task

- (c) any specified conditions under which the assessment must be completed, including in particular the time within which the assessment must be completed (unless any such amendment is part of a Reasonable Adjustment or for the purposes of Special Consideration)

Marking of assessments

Levels 1 and 2

Evidence generated by a Learner in an assessment at levels 1 and 2 must be marked by the awarding organisation or a person connected to the awarding organisation.

Entry level

Evidence generated by a Learner in an assessment at entry level may be marked –

- (a) by the awarding organisation or a person connected to the awarding organisation
- (b) by a Centre
- (c) through a combination of (a) and (b)

In any event, the awarding organisation must demonstrate to Ofqual's satisfaction in its assessment strategy that –

- (a) it has taken all reasonable steps to identify the risk of any Adverse Effect which may result from its approach to marking the assessments (and to Moderation where appropriate)
- (b) where such a risk is identified, it has taken all reasonable steps to prevent that Adverse Effect or, where it cannot be prevented, to mitigate that Adverse Effect

Guidance for Centres

Under Condition G9.2(a) an awarding organisation must ensure that every assessment for a qualification which it makes available is fit for purpose on delivery.

Under Condition C2.5 an awarding organisation must provide effective guidance to a Centre in respect of the parts of the delivery of a qualification that the Centre undertakes.

Under Condition H1.1 an awarding organisation must ensure that the criteria against which Learners' performance will be differentiated are applied accurately and consistently by all Assessors.

Taking these obligations together, and without prejudice to any other action that they might require, an awarding organisation must provide effective guidance to Centres in respect of the adaptation, delivery and marking by Centres, as relevant, of assessments for a functional skills qualification in mathematics which it makes available, or proposes to make available.

Standard setting requirements

Condition FSM5.1 allows us to specify requirements and guidance in relation to the specified levels of attainment that must be used for functional skills qualifications in mathematics.

Condition FSM5.2(b) allows us to specify requirements and guidance in relation to how those specified levels of attainment are set.

We set out our requirements for the purposes of Conditions FSM5.1 and FSM5.2(b) below.

Specified level of attainment in functional skills qualifications in mathematics

In relation to each functional skills qualification in mathematics, an awarding organisation must ensure that there shall be a single specified level of attainment – 'Pass'.

Setting the specified level of attainment

An awarding organisation must set a single boundary mark for a Pass for each version of the Component that it permits a Learner to take.

This means that, where the Component comprises two assessments, an awarding organisation –

- (a) must set a single boundary mark which is then applied to a Learner's combined mark from both assessments
- (b) must set such a boundary mark for each combination of different versions of the assessments that it permits a Learner to take
- (c) must not set a boundary mark for either of the individual assessments

An awarding organisation must set boundary marks for the Component in such a way as to secure suitable qualification level standards. Where a number of alternative versions of the Component are used simultaneously, this includes securing the maintenance of standards across those alternative versions.

Issuing results

In relation to the Component, an awarding organisation must ensure that a Learner is issued a result of 'Fail' where he or she does not meet the criteria to be awarded a Pass.

Assessment strategy requirements

Condition FSM2.1(a) requires an awarding organisation to establish and maintain an assessment strategy for each functional skills qualification in mathematics which it makes available or proposes to make available. Condition FSM2.2 requires an awarding organisation to ensure that the assessment strategy for a functional skills qualification in mathematics sets out how the awarding organisation intends to secure, on an ongoing basis, compliance with its Conditions of Recognition in respect of the assessments for that qualification.

Condition FSM2.1(b) requires an awarding organisation to have regard to any requirements in relation to assessment strategies published by Ofqual. We set out our requirements for the purposes of Condition FSM2.1(b) below.

General requirements

An assessment strategy for a functional skills qualification in mathematics must provide a comprehensive picture of the steps and approach an awarding organisation will take to secure compliance with its Conditions of Recognition in relation to the design, delivery and marking of assessments for, and the award of, that qualification.

An assessment strategy must present a logical and coherent narrative that includes clear and concise evidence demonstrating how an awarding organisation will seek to ensure that the qualification, and the assessments for it, are fit for purpose. In particular, it must include information and evidence to show how the awarding organisation promotes and acts on feedback between the different stages of the qualification development cycle so as to continuously improve the assessments for that qualification.

Detailed requirements

We set out below our detailed requirements on the specific information and evidence an awarding organisation must include in its assessment strategy. The amount of information and evidence that can be included may vary across the areas identified, depending on the relevant point in the qualification development cycle to which a particular item pertains and the extent to which Ofqual has determined the regulatory approach in relation to a particular issue.

These detailed requirements are intended to indicate the minimum items that an assessment strategy must include. They are not intended to provide a template specifying the form that it must take, since the optimal structure and content of an assessment strategy will depend on the approach that is being proposed by the awarding organisation.

Section 1: Assessment design and approach

Overall assessment time

For each level, the overall assessment time from within the permitted range, and a rationale for this.

Examples of relevant conditions -

- Condition FSM4.1
- Condition E4.2
- Conditions G9.1 – G9.2

Individual assessment time

For each level, the assessment time for each individual Component, and for each assessment where more than one assessment is used in a Component, and a rationale for these times (for example in terms of covering the required subject content effectively, and balancing reliability and manageability).

Examples of relevant conditions -

- Condition FSM4.1
- Condition D1
- Condition E4.2
- Condition G1
- Conditions G9.1 – G9.2

Number of marks per Component

For each level, the number of marks for each individual Component, and for each assessment where more than one assessment is used in a Component, and a rationale for those numbers of marks (for example in terms of covering the required subject content effectively, and balancing reliability and manageability).

Examples of relevant conditions -

- Condition FSM4.1
- Condition D1
- Condition E4.2
- Condition G1

Assessment structure

For each level, details of how assessments will be structured, for example:

- whether different assessments, or different sections of a single assessment, are to be used for the Calculator Test and Non-calculator Test

Examples of relevant conditions -

- Condition FSM4.1

- Condition D1
- Condition E4.2
- Condition G1

Coverage of subject content

Approach to coverage of the subject content, including:

- sampling a representative amount and range in each assessment or set of assessments
- covering the whole subject content in as few iterations of assessments as reasonably practicable
- assessing the subject content in accordance with any specific Ofqual requirements (e.g. in relation to underpinning skills and problem-solving and the Calculator Test and Non-calculator Test etc.)

Examples of relevant conditions -

- Condition FSM1.1
- Condition FSM4.1
- Condition D1
- Condition E4.2
- Condition G1

Item types and mark schemes

For each level:

- details of the range and balance of item types to be used (e.g. multiple-choice, short answer, extended response, etc.) and how these will support valid assessment of the subject content at the appropriate level
- approach to mark scheme design, including for different item types, and an explanation of how resulting mark schemes will support reliable application
- a sample of example items and associated mark schemes, representing the range to be used in assessments, with commentaries explaining the approaches taken

Examples of relevant conditions -

- Condition FSM1.1
- Condition FSM4.1

- Condition D1
- Condition E4.2
- Condition G1
- Condition H1

Availability of assessments

Approach to availability of assessments, including:

- number of assessments to be available
- type of assessment (e.g. online and/or paper-based)
- nature of opportunities (e.g. on-demand or sessions)
- duration for which assessments will be available
- approach to Learners taking an assessment again

In light of the approach to assessment availability, any specific risks that have been identified, how these will be mitigated, and how particular challenges will be addressed, including:

- ensuring comparability of assessments
- minimising predictability of assessments
- ensuring security of assessments

Examples of relevant conditions -

- Condition D1
- Condition E4.2
- Condition G1
- Conditions G9.1 – G9.2
- Condition H2
- Condition H3

Section 2: Assessment development and delivery

Developing assessment materials

Process for developing assessment materials, including different stages and personnel involved, how evidence regarding functioning of previous assessments is used, and any differences by assessment type.

Examples of relevant conditions -

- Condition FSM1.1
- Condition FSM4.1
- Condition D1
- Condition D3
- Condition E4.2
- Condition G1
- Condition G3
- Condition G9.1

Assessment setting arrangements

Approach to training individuals who will be responsible for setting assessments and/or items, including ensuring security and mitigating any conflicts of interest.

Examples of relevant conditions -

- Condition A4
- Conditions A5.1 – A5.3
- Condition G1
- Condition G4

Assessor standardisation

Approach to training and standardising assessors, including details of standardisation procedures and any wider training.

Examples of relevant conditions -

- Condition G1.3
- Condition H1
- Condition H2

- Condition H5

Monitoring marking

Processes in place to monitor accuracy and consistency of marking and issuing of results, and to take remedial action where necessary.

Examples of relevant conditions -

- Condition H1
- Condition H2
- Condition H5
- Condition H6.1(d)

Malpractice & security arrangements

How malpractice will be addressed and security of assessments will be ensured, including any differences by assessment type.

Examples of relevant conditions -

- Condition A8
- Condition G4

Section 3: Centre assessment and moderation

Centre assessment

- approach to whether Centre-adaptation and/or Centre marking will be permitted at entry level
- an explanation of the rationale for this, and how any risks will be managed, for example in relation to authenticity of Learners' work and accuracy of Centres' marking

Examples of relevant conditions -

- Condition FSM4.1
- Condition C1
- Conditions C2.1 – C2.3
- Condition D1
- Condition E4.2

- Condition G1
- Condition G3
- Condition G9

Guidance and training to centres

Approach to the provision of guidance and training to Centres around Centre-adapted, and Centre-marked assessments. In particular to cover:

- guidance around adapting assessments
- approach to reviewing Centre-adapted assessments
- training in relation to application of assessment criteria for the entry level mark schemes

Examples of relevant conditions -

- Condition FSM4.1
- Condition C1
- Condition C2.5
- Condition G9.2
- Condition H1.1
- Condition H5

Approach to marking

- the steps taken to identify the risk of any Adverse Effect which may result from the awarding organisation's approach to marking assessments (and to Moderation and monitoring where appropriate)
- where such a risk has been identified, the steps taken to prevent that Adverse Effect or, where it cannot be prevented, to mitigate that Adverse Effect

Examples of relevant conditions -

- Condition FSM4.1
- Condition A6
- Condition D1
- Condition H1
- Condition H2
- Condition H5

Moderation of Centre-marked assessments

Approach to Moderation of marking at entry level, where relevant.

Examples of relevant conditions -

- Condition C1
- Conditions C2.1 and C2.2(j)
- Condition H2

Section 4: Standard setting and maintenance

Approach to ensuring decisions in relation to standard setting follow an appropriate technical methodology and have appropriate scrutiny

- an explanation of the technical methodology employed in the process, including the personnel involved and their roles
- an explanation of how the decisions from the process are approved within the awarding organisation and the personnel involved in this

Examples of relevant conditions -

- Condition FSM5
- Condition D1
- Condition H3

Approach to ensuring decisions in relation to standard setting are based on an appropriate range of qualitative and quantitative evidence

- details of the range of evidence used to inform decisions and the weight given to different sources
- a rationale for why this approach is optimal, in light of the assessment design/approach and cohort make-up

Examples of relevant conditions -

- Condition FSM5
- Condition D1
- Condition H3

Approach to ensuring decisions in relation to standard setting promote comparability, over time and between awarding organisations, and are kept under review

- details of how comparability between different versions of assessments and different types of assessment (e.g. online vs paper-based) is ensured, both where these are available at the same time and on an ongoing basis
- for on-demand assessments, details of how and when remedial action is taken when emerging evidence regarding an existing assessment suggests previous decisions in relation to standard setting may need reconsidering
- details of how evidence generated in line with any requirements set by Ofqual under Condition FSM5.2(a) in relation to inter-awarding organisation comparability will be used to inform decisions on standard setting

Examples of relevant conditions -

- Condition FSM5
- Condition D1
- Condition H3

Appendix 1: subject content (published by the Department for Education)



Department
for Education

Subject content functional skills: mathematics

February 2018

Contents

Introduction	3
Purpose	4
Functional Skills Mathematics - Entry Levels 1 to 3	5
Learning aims and outcomes at Entry Levels	5
Subject Content: Entry Level 1	6
Subject Content: Entry Level 2	8
Subject Content: Entry Level 3	10
Functional Skills Mathematics - Levels 1 and 2	12
Learning aims and outcomes at Levels 1 and 2	12
Subject Content: Level 1	13
Subject Content: Level 2	16
Explanation behind the use of the term <i>mathematical problem solving</i> , for information	19

Introduction

This document sets out the purpose, learning aims and outcomes, and subject content for Functional Skills mathematics at Entry Level, Level 1 and Level 2.

A key aim for Functional Skills mathematics specifications is that they enable the student to gain confidence and fluency in, and a positive attitude towards, mathematics. Students will convey their confidence in using mathematics when they can demonstrate a sound grasp of mathematical knowledge and skills (see purpose section) and apply it to solve mathematical problems.

Awarding Organisation specifications should encourage teachers to emphasise the interconnectedness of the three different areas of mathematics set out in this content, namely: number and the number system; common measures, shape and space; and information and data. At each level (Entry Levels 1-3, Level 1 and Level 2) the level of difficulty of mathematical problem solving increases as does the number and extent of connections made within the content.

Mathematical problem solving is an important aspect of Functional Skills, but it is also vital that the underpinning knowledge and skills¹ required, both with and without a calculator, can be demonstrated in their own right, for example, use of times tables. Awarding Organisation specifications should encourage teachers to ensure that core knowledge and skills are secure in their students. Throughout this document, mathematical problem solving is conveyed via the following terms: simple (Entry Level), straightforward (Level 1) and complex (Level 2). Each term relevant to that level is explained in the subject content.

In interpreting the content, Awarding Organisations should note that the content at each level of qualification subsumes and builds upon the content at lower levels.

¹ *The ability to do maths when not as part of a problem.*

Functional Skills qualifications should provide reliable evidence of a student's achievements against demanding content that is relevant to the workplace. They need to provide assessment of students' underpinning knowledge as well as their ability to apply this in different contexts. They also need to provide a foundation for progression into employment or further technical education and develop skills for everyday life. In some contexts, Functional Skills qualifications will also play a part in the Government's accountability systems.

Functional Skills mathematics specifications should enable the student to gain confidence and fluency in and a positive attitude towards, and to develop behaviours such as persistence and logical thinking as they apply mathematical tools and approaches.

Purpose of Functional Skills Mathematics for Entry Levels: to demonstrate a sound grasp of the underpinning skills and basics of mathematical skills appropriate to the level, and the ability to apply mathematical thinking to solve simple problems in familiar situations. Achievement of these qualifications can provide the skills for further study at Levels 1 and 2.

Purpose of Functional Skills Mathematics for Level 1 and Level 2: a qualification for work, study and life. Achievement of the qualification demonstrates a sound grasp of mathematical skills at the appropriate level and the ability to apply mathematical thinking effectively to solve problems successfully in the workplace and in other real life situations.

Learning aims and outcomes at Entry Level

Functional Skills mathematics qualifications at these levels should:

- Enable students to become confident in their use of fundamental mathematical knowledge and skills, as described through the content; and
- Indicate that students can demonstrate their understanding by applying their knowledge and skills to solve simple mathematical problems or carry out simple tasks.

Subject Content: Entry Level 1

Entry Level 1 - using numbers and the number system – whole numbers
1. Read, write, order and compare numbers up to 20
2. Use whole numbers to count up to 20 items including zero
3. Add numbers which total up to 20, and subtract numbers from numbers up to 20
4. Recognise and interpret the symbols +, – and = appropriately
Entry Level 1 - using common measures, shape and space
5. Recognise coins and notes and write them in numbers with the correct symbols (£ & p), where these involve numbers up to 20
6. Read 12 hour digital and analogue clocks in hours
7. Know the number of days in a week, months, and seasons in a year. Be able to name and sequence
8. Describe and make comparisons in words between measures of items including size, length, width, height, weight and capacity
9. Identify and recognise common 2-D and 3-D shapes including circle, cube, rectangle (incl. square) and triangle
10. Use everyday positional vocabulary to describe position and direction including left, right, in front, behind, under and above
Entry Level 1 - handling information and data
11. Read numerical information from lists
12. Sort and classify objects using a single criterion
13. Read and draw simple charts and diagrams including a tally chart, block diagram/graph

Solving mathematical problems and decision making: Entry Level 1 students are expected to be able to use the knowledge and skills listed above to recognise a simple mathematical problem and obtain a solution. A simple mathematical problem is one which requires working through one step or process.

At Entry Level 1 it is expected that students will be able to address individual problems each of which draw upon knowledge and/or skills from one mathematical content area (i.e. number and the number system; common measures, shape and space; information and data).

Entry Level 1 - solving mathematical problems and decision making
Entry Level 1 students are expected to be able to: <ul style="list-style-type: none">• Use given mathematical information and recognise and use simple mathematical terms appropriate to Entry Level 1;• Use the methods given above to produce, check and present results that make sense; and

- Provide a simple explanation for those results.

The context for simple problems at this level should be familiar to all students and easily described.

Subject Content: Entry Level 2

Entry Level 2 - using numbers and the number system – whole numbers, fractions and decimals
1. Count reliably up to 100 items
2. Read, write, order and compare numbers up to 200
3. Recognise and sequence odd and even numbers up to 100
4. Recognise and interpret the symbols +, −, ×, ÷ and = appropriately
5. Add and subtract two-digit numbers
6. Multiply whole numbers in the range 0x0 to 12x12 (times tables)
7. Know the number of hours in a day and weeks in a year. Be able to name and sequence
8. Divide two-digit whole numbers by single-digit whole numbers and express remainders
9. Approximate by rounding to the nearest 10, and use this rounded answer to check results
10. Recognise simple fractions (halves, quarters and tenths) of whole numbers and shapes
11. Read, write and use decimals to one decimal place
Entry Level 2 - using common measures, shape and space
12. Calculate money with pence up to one pound and in whole pounds of multiple items and write with the correct symbols (£ or p)
13. Read and record time in common date formats, and read time displayed on analogue clocks in hours, half hours and quarter hours, and understand hours from a 24-hour digital clock
14. Use metric measures of length including millimetres, centimetres, metres and kilometres
15. Use measures of weight including grams and kilograms
16. Use measures of capacity including millilitres and litres
17. Read and compare positive temperatures
18. Read and use simple scales to the nearest labelled division
19. Recognise and name 2-D and 3-D shapes including pentagons, hexagons, cylinders, cuboids, pyramids and spheres
20. Describe the properties of common 2-D and 3-D shapes including numbers of sides, corners, edges, faces, angles and base
21. Use appropriate positional vocabulary to describe position and direction including between, inside, outside, middle, below, on top, forwards and backwards
Entry Level 2 - handling information and data
22. Extract information from lists, tables, diagrams and bar charts
23. Make numerical comparisons from bar charts
24. Sort and classify objects using two criteria
25. Take information from one format and represent the information in another format including use of bar charts

Solving mathematical problems and decision making: Entry Level 2 students are expected to be able to use the knowledge and skills listed above to recognise a simple problem and obtain a solution. A simple problem is one which requires working through one step or process.

At Entry Level 2 it is expected that students will be able to address individual problems each of which draw upon knowledge and/or skills from one mathematical content area (i.e. number and the number system; common measures, shape and space; information and data).

Entry Level 2 - solving mathematical problems and decision making
<p>Entry Level 2 students are expected to be able to:</p> <ul style="list-style-type: none">• Use given mathematical information including numbers, symbols, simple diagrams and charts;• Recognise, understand and use simple mathematical terms appropriate to Entry Level 2;• Use the methods given above to produce, check and present results that make sense; and• Present appropriate explanations using numbers, measures, simple diagrams, simple charts and symbols appropriate to Entry Level 2. <p>The context for simple problems at this level should be familiar to all students and easily described.</p>

Subject Content: Entry Level 3

Entry Level 3 - using numbers and the number system – whole numbers, fractions and decimals
1. Count, read, write, order and compare numbers up to 1000
2. Add and subtract using three-digit whole numbers
3. Divide three-digit whole numbers by single and double digit whole numbers and express remainders
4. Multiply two-digit whole numbers by single and double digit whole numbers
5. Approximate by rounding numbers less than 1000 to the nearest 10 or 100 and use this rounded answer to check results
6. Recognise and continue linear sequences of numbers up to 100
7. Read, write and understand thirds, quarters, fifths and tenths including equivalent forms
8. Read, write and use decimals up to two decimal places
9. Recognise and continue sequences that involve decimals
Entry Level 3 - using common measures, shape and space
10. Calculate with money using decimal notation and express money correctly in writing in pounds and pence
11. Round amounts of money to the nearest £1 or 10p
12. Read, measure and record time using am and pm
13. Read time from analogue and 24 hour digital clocks in hours and minutes
14. Use and compare measures of length, capacity, weight and temperature using metric or imperial units to the nearest labelled or unlabelled division
15. Compare metric measures of length including millimetres, centimetres, metres and kilometres
16. Compare measures of weight including grams and kilograms
17. Compare measures of capacity including millilitres and litres
18. Use a suitable instrument to measure mass and length
19. Sort 2-D and 3-D shapes using properties including lines of symmetry, length, right angles, angles including in rectangles and triangles
20. Use appropriate positional vocabulary to describe position and direction including eight compass points and including full/half/quarter turns
Entry Level 3 - handling information and data
21. Extract information from lists, tables, diagrams and charts and create frequency tables
22. Interpret information, to make comparisons and record changes, from different formats including bar charts and simple line graphs
23. Organise and represent information in appropriate ways including tables, diagrams, simple line graphs and bar charts

Solving mathematical problems and decision making: Entry Level 3 students are expected to be able to use the knowledge and skills listed above to recognise a simple problem and obtain a solution. A simple problem is one which requires working through one step or process.

At Entry Level 3 it is expected that students will be able to address individual problems each of which draw upon knowledge and/or skills from one mathematical content area (i.e. number and the number system; common measures, shape and space; information and data).

Entry Level 3 - solving mathematical problems and decision making
<p>Entry Level 3 students are expected to be able to:</p> <ul style="list-style-type: none">• Use given mathematical information including numbers, symbols, simple diagrams and charts;• Recognise, understand and use simple mathematical terms appropriate to Entry Level 3;• Use the methods given above to produce, check and present results that make sense to an appropriate level of accuracy; and• Present results with appropriate and reasoned explanation using numbers, measures, simple diagrams, charts and symbols appropriate to Entry Level 3. <p>The context for simple problems at this level should be familiar to all students.</p>

Functional Skills Mathematics - Levels 1 and 2

Learning aims and outcomes at Levels 1 and 2

Functional Skills mathematics qualifications at these levels should:

- Indicate that students can demonstrate their ability in mathematical skills and their ability to apply these, through appropriate reasoning and decision making, to solve realistic problems of increasing complexity;
- Introduce students to new areas of life and work so that they are exposed to concepts and problems which, while not of immediate concern, may be of value in later life; and
- Enable students to develop an appreciation of the role played by mathematics in the world of work and in life generally.

Subject Content: Level 1

Use of number and the number system: students at Level 1 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 content on 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: students at Level 1 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 content on 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: students at Level 1 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 content on 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: students 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 students 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 student will be able to address individual problems, some of which draw upon a combination of any two of the mathematical content areas and require students to make connections between those content areas.

Level 1 - solving mathematical problems and decision making
Students 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 student to be able independently to identify and carry out an appropriate mathematical approach.

Subject Content: Level 2

Use of numbers and the number system: students at Level 2 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 content on numbers and the number system – see below.

Level 2 - using numbers and the number system – <i>whole numbers, fractions, decimals and percentages</i>
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: students at Level 2 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 content 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 coordinates with 2-D and 3-D shapes

Handle information and data: students at Level 2 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 common averages (mean, median, mode) and spread (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 content on 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: students 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 student will be able to address individual problems some of which draw upon a combination of all three mathematical areas and require students to make connections between those content areas.

Level 2 - solving mathematical problems and decision making

Students 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 student to be able independently to identify and carry out an appropriate mathematical process or processes.

Explanation behind the use of the term *mathematical problem solving* (for information)

Mathematical problem solving is a core element of Functional Skills mathematics, though underpinning knowledge will also be tested in its own right. Problem solving should not seek to obscure or add additional mathematical complexity beyond the level of the qualification. Defining what problem solving means in the context of examinations is challenging.

In discussing this same issue, a working group in 2015 for higher level qualifications² suggested that considering *attributes* of problem solving was a way forward. They came to a consensus regarding a range of attributes typical of problem solving questions. They emphasised that not all (in fact often just one) of these attributes – listed below – may be necessary to be present within a single task in order to consider it as involving problem solving³. This is especially pertinent when considering the difference in intended level of challenge between students studying for higher level qualifications as compared to Functional Skills.

Attributes, of which one or more may be present in a single task to consider it as problem solving, are listed below:

A. Tasks that have little or no scaffolding: there is little guidance given to the student beyond a start point and a finish point. Questions do not explicitly state the mathematical process(es) required for the solution.

B. Tasks that provide for multiple representations, such as the use of a sketch or a diagram as well as calculations.

C. The information is not given in mathematical form or in mathematical language; or there is a need for the results to be interpreted or methods evaluated, for example, in a real-world context.

D. Tasks have a variety of techniques that could be used.

E. The solution requires understanding of the processes involved rather than just application of the techniques.

² See 'A' level mathematics working group report, (2015) Ofqual/15/5789 pages 4-5

³ Problem-solving tasks - tasks that focus primarily on the assessment of problem solving - a set of requirements focusing on one problem. These tasks may be broken down into a number of steps or parts (that is, items). See also report by ACME 'Problem-Solving within mathematics', June 2016.

F. The task requires two or more mathematical processes or may require different parts of mathematics to be brought together to reach a solution⁴.

⁴ *Not all of these attributes would be required within a single task to establish it as problem solving. Neither does the presence of one or more attributes within a task automatically imply problem solving is taking place.*



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