



## Chief Examiner Report for Functional Skills Mathematics

**NCFE Functional Skills Qualification in Maths at Level 1 – 603/5055/6**

**NCFE Functional Skills Qualification in Maths at Level 2 – 603/5060/X**

**Window: 14<sup>th</sup> October – 18<sup>th</sup> October 2019 (Paper)**

<b>Level 1 Pass Mark</b>	<b>37 / 60</b>
<b>Level 2 Pass mark</b>	<b>37 / 60</b>

Each learner's external assessment paper is marked by an Examiner and awarded a raw mark. During the awarding process, a combination of statistical analysis and professional judgement is used to establish the raw marks that represent the minimum required standard to achieve a Pass grade. As well as analysing performance on the assessment paper itself, performance standards and statistical outcomes in legacy qualifications and equivalent assessments (both within NCFE and, where available, across other awarding organisation) are considered to ensure Pass marks represent comparable standards.

### Introduction

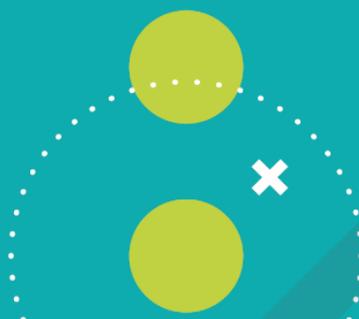
This report details the Chief Examiner's findings for the first assessment window for the reformed Functional Maths Skills at Level 1 and Level 2 specifically for paper based assessments. The findings from online assessments can be found in the online assessment Report. There are considerable similarities across both paper based and online assessments with common problematic areas.

### Overview – Level 1 & Level 2

For both the Level 1 and Level 2 assessments, the reformed assessment criteria now comprises two sections in each assessment, one section that is non-calculator and one section where the use of a calculator is permitted. Maths assessments now have 60 marks per assessment, with 15 marks for the non-calculator section and 45 for the calculator section.

It is a requirement for learners to complete both sections of the assessment and within the same sitting. The assessments contain a combination of tasks including directed tasks where they will be specifically asked to make calculations, for example, and area of perimeter of a shape and other tasks where the learner is required to decide themselves what mathematical skills they need to use and apply to solve a task or problem.





There was some evidence to support how learners have clearly demonstrated their competence in the required mathematical skill to a high standard. Some learners have also shown the ability to use both the required underpinning skills and the problem solving skills to complete a variety of mathematical problems, clearly explaining their responses and justifying answers when asked to do so within the task. There have however, been instances where learners were clearly not at the required level and in some instances learners had only looked at the first task and then not attempted any further tasks, which is a concern. In addition, examples were seen of learners attempting only one section when both sections are required to be completed.

The assessments are marked in accordance with set mark schemes and are marked positively, learners are awarded marks for correct tasks and methods, with all examiners being standardised on the same live scripts prior to being approved to mark that variant of script. Sampling of examiners marking has also been undertaken to ensure consistency and accuracy of marking across examiners.

## Level 1

At this level learners are expected to be able to use the required knowledge and skills contained within the reformed assessment criteria to recognise and obtain solutions to straightforward problems. These problems then require learners to work through either one step or multiple steps. They are also expected to address individual problems, some of which will draw upon a combination of two of the mathematical content areas, e.g. using number and handling data or using common measures and using number to the required levels of accuracy.

### Number:

Generally tasks involving calculations with numbers have been completed well, although this has varied between the non-calculator and calculator sections. Some learners have completed the non-calculator section well, demonstrating a clear knowledge and ability to apply the underpinning skills with full mathematical calculations and working out being evidenced, but then not performed as well when applying the skills to problem solving tasks. The opposite has also been noted where learners have performed poorly when unable to use a calculator but have performed well on problem solving tasks.

Specific areas that have appeared problematic for learners include; equivalences between fractions, decimals and percentages particularly where it is evident that the learners do not have a sound understanding of, and the ability to, apply the underpinning skills and particularly in applying the skills to problem solving tasks.

Working with simple ratio has been another problematic area for some learners, both when given a specific ratio and values to work with and when asked to decide what a ratio for a given set of value would be.





## Measure, Shape and Space:

Evidence was seen to indicate that whilst some tasks in the assessments have been completed well, errors have often been seen with final displays of money, with responses frequently not shown to two decimal places, particularly when the value ends with a zero, i.e. £8.3 instead of £8.30. Conversion between units of measurement including time has also been seen as a problematic area for learners, with incorrect metric conversions, i.e. use of 100 to convert from mm to m; inconsistent units or lack of familiarity in applying the appropriate approaches or methods to tackle the problem. Converting within metric units and the necessity to work with consistent units is a common area that requires development as is the ability to convert between units in different systems, e.g. metric to imperial .

Such errors can affect the problem solving aspect as well, such as calculating a correct area or perimeter, skills that are often completed incorrectly and regularly muddled up by learners with perimeter calculations for an area task and area calculations for a perimeter task frequently seen. In addition the conversion of time, when shown as a decimal, has been an area identified as problematic, e.g. 2.4 hours is often written as “2 hours and 4 minutes” or “2 hours and 40 minutes”, instead of 2 hours and 24 minutes.

## Handling Data:

In the area of handling data evidence indicated that some learners seemed to find difficulty in showing the probability of an outcome as a numerical response, e.g. percentage, fraction or decimal. Learners often represent it as likely or unlikely, and learners need to be taught to show this as a mathematical response.

The identification of information from tables and graphs involving whole numbers has generally been completed well by learners but there is evidence to show that completion of simple pie charts and graphs, especially in the labelling and the completion of a scale on an axis when requested, can be problematic for some learners.

## Level 2

Learners are expected to be able to use the required knowledge and skills contained within the reformed assessment criteria to recognise and obtain solutions to complex problems which require them to work through at least two connected steps or processes that involve multistep. It is also expected at this level that the learner can address individual problems, some of which will draw upon a combination of all three of the mathematical content areas and that they have the ability to make connections between those areas.





## Number:

At this level the reformed criteria now requires learners to read, write, order and compare numbers, both positive and negative, of any size and complete calculations with numbers up to one million. At this level learners tended to demonstrate good skills in the use of the four operations and evidence seen indicated that the learners were able to apply these to a range of tasks. Working with larger numbers was generally undertaken competently although in some cases, particularly for Section B of the assessments, errors were seen that may be the result of values being incorrectly inputted to a calculator, as working appeared to support a good understanding of the required mathematical skills and the task requirements but final answers were incorrect.

There has also been evidence seen that indicated that learners preparing for assessment would benefit in further practice in the use of fractions and percentages, especially calculating reverse percentages, i.e. finding the original value when given a discounted or increased value or being given the difference of two values and asked to calculate what percentage was originally used. Learners generally indicated the ability to know the equivalences between mixed fractions, improper fractions, decimals and percentages although some very weak responses were also seen at this level.

The use of decimals to three places was generally performed well and evidence of this was seen in both sections of the assessments.

## Measure, Shape and Space:

It has been evident that some learners still tend to be careless with units –performing incorrect conversions between different metric units. Examples of such misconceptions include 100 metres being equivalent to a kilometre and a litre is equal to 100 millilitres, particularly more so in the use of compound 2D and 3D shapes. There have also been errors in the conversion between metric and imperial units. There has been evidence of some learners being able to convert accurately between units of measurement, e.g. cubic metres to litres

The use of conversion graphs to find values tended to be done well although subsequent calculations involving the manipulation of data were not always accurate.

There has been evidence of learners confusing calculations for area and volume of composite shapes and this has occasionally manifested itself in the area of compound shapes being calculated as the product of three lengths. Learners are no longer given the formulae for triangles and circles so centres need to ensure that this is included in the teaching delivered to learners including area and circumference formulae.

As part of measure, learners are also now required use coordinates, both positive and negative, to specify the position of objects or to plot items and evidence seen in assessments indicated this had been problematic for some learners mainly around the X & Y axis as it was apparent that some learners did not know which axis was which.





## Handling Data

Learners have made errors in calculations involving the use of averages when calculating the median and mode, especially involving data sets that may have zeros in them. Learners have generally calculated this without recognising that zero in the calculation has a purpose. In addition, tasks where learners are asked to use two appropriate statistical measures of their own choosing have tended to be partially correct, with many learners failing to calculate two measures e.g. mean and median and have only calculated one.

There was evidence of some accuracy in the use of frequency tables with some learners accurately identifying the mid-points of ranges and then using the relevant values to complete the required calculations. There were many examples seen though where they have failed to find the mid-point but have used the upper or lower boundaries instead or have not multiplied the midpoint by the number of values before attempting to find a mean or median

Learners have also struggled with the probability of combined events, a new criteria to this level, as is the drawing and interpretation of scatter graphs and recognising positive and negative correlation.

## Generic Summary - Level 1 & Level 2:

The reformed criteria means that it is crucial that learners are adequately prepared prior to being entered for an assessment. Several examples have been noted where learners were evidently not at the level being assessed, with some very low marks being awarded, and in some assessments no calculations/responses were seen that justified any marks at all across the whole assessment. Centres are advised that learners undertake an initial/diagnostic assessment prior to being entered for any assessment, so that all learners can be entered onto the correct level. This will also enable learners and centres to identify gaps in learners' skills and formulate a learning plan that meets these needs prior to undertaking the required level of assessment. Learners also need to be confident in their underpinning skills and have the ability to transfer the necessary skills to a range of tasks and across mathematical content areas.

Learners need to be confident in the use of protractors for measuring angles and completing pie charts.

In several cases, learners had not even provided responses to some of the more simple tasks such as identifying information from a table or chart or identifying the correct calculations to use. It was also noticeable that some learners were not consistent in the application of various skills across a range of tasks. They completed a fairly straightforward task well but then struggled to apply the same mathematical skills to a problem solving task.

Learners need to ensure that they show all working out, this is especially crucial for tasks with several marks. If an error is initially made, marks may still be awarded for part answers and also may be awarded for follow through to a correct answer from their working, even with an incorrect final response. In some task the incorrect final response may also be awarded a mark. There were several assessments seen where learners had not indicated any working out and had final incorrect





answers so could not be awarded any part marks. On some occasions, learners have lost all the marks for a task where an incorrect answer has been given without any supporting working. In some cases learners had indicated only a correct answer with no working but some tasks require the working to be shown for full marks to be awarded correct. In some cases this lack of working out made the difference for the learner between achieving and not achieving the assessment, so it is vital that centres advise learners of the importance of this and encourage them to show all working out.

Errors at the initial stages of tasks are regularly seen and may be the result of learners not ensuring that they have read the task instructions fully. Learners should be guided to read questions more than once and in the case of paper based assessments can be encouraged to underline or highlight key information essential to the tasks.

Several learners are not awarded marks due to not taking note of key command phases such as:

“Show how ...”

“Explain your answer”

These phrases indicate that more than a worked answer is required, and fulfills the Level 2 skill standards of learners being expected to be able to use the knowledge and skills required to recognise and obtain a solution or solutions to complex problems.

For both levels in some examples, marks were occasionally not awarded due to the lack of explanation or justification of learners’ choices or responses, learners have merely stated ‘Yes’ or ‘No’ as their final response without a supporting explanation and in some cases without any calculations.

For this assessment window there were two scripts, one at each level available to learners which included suitable topics to engage learners of all ages and abilities. The assessments are generic and are considered to be accessible by a range of learners of all abilities.

Reasonable Adjustments can be provided for learners with specific learning needs, such as enlarged print, braille and coloured scripts.

A full suite of learning resources is available on the NCFE website that can provide opportunities for learners to be fully prepared for their assessments. This includes sample assessments and other additional resource, such as Skills Forward.

**Chief Examiner: Heather Peacock**

**Date: November 2019**

