Functional Skills maths level 1 and level 2 Chief examiner report

On-screen assessments

March 2022

Functional Skills maths level 1 and level 2

Functional Skills maths standards were reformed in September 2019 and since then there has been considerable variation in the responses seen in the assessments at both levels. This report details the chief examiner's findings for the reform standards for Functional Skills mathematics qualifications at level 1 and level 2, since September 2020.

The assessments comprise a variety of suitable topics that are aimed at engaging learners of all ages and abilities and are considered to be accessible by a range of learners of all abilities. The online assessment system has a facility to enable coloured overlays to be used by learners who require it. Paper-based variants are available as large print and as a braille copy.

Evidence has been seen in assessments to indicate that some learners were clearly capable of completing the tasks in the assessments to a high standard, resulting in achievement of the qualification with a high pass mark and, in a very small number of cases, with 100%. These learners had demonstrated both their ability to use the required underpinning skills and the ability to transfer these skills to problem solving tasks at both levels and to multi-step tasks at level 2.

However, for some learners, they were clearly not at the level being assessed and this was evident in the marks being awarded.

In addition, some learners had shown weak underpinning skills and limited ability in some examples to transfer these skills to problem solving tasks, and just achieved a sufficient number of marks to be awarded the level undertaken.

Some learners were very close to achieving the assessment but were 1 or 2 marks away from the required pass mark. In some of these cases, marks were not awarded due to errors in either final answers or through learners not giving a response to a decision task.

In some assessments, learners had only looked at the first task and then not attempted any further tasks, which is a concern. There were also examples seen of learners only attempting one section when both sections are required to be completed.

It was also evident from some assessments seen that some learners had clearly struggled with the non-calculator section but then performed well in the calculator section. Furthermore, there were also some assessments where the learners had not attempted any of the tasks in the assessment, even straightforward tasks that involved one calculation or extraction of one piece of data from a given table or chart.

There are common themes seen in the errors in assessments at both levels and these are detailed below.

Level 1

Using numbers and the number system

Evidence seen in learners' assessments often indicated errors in the use of money, with responses frequently not shown to 2 decimals and incorrect money notation (for example, omitting the 0 when dealing with pence less than 10 – £31.40 is often seen as £31.4).

In addition, the use of commas instead of decimal points for final answers with decimal values (for example, 12,34 when the learner means 12.34) has resulted in learners not being awarded marks in some examples seen – likewise, the use of decimal points instead of commas or spaces in large numbers (for example, 12.345.678 instead of 12 345 678 or 12,345,678).

Errors were sometimes seen in rounding of either calculated or given values, possibly from learners not reading the question properly.

Substitution in formulae was another area where marks were not awarded for learners, with the most common errors involving the use of indices; often learners multiplied by 2 or 3 instead of finding the square or cube of the number.

The use of simple ratio and direct proportion is an area where learners seem to be improving in but there are still weaknesses seen in calculating values from a given ratio.

Using common measures, shape and space

Practical problems that involved measurements such as length, weight and capacity were often seen with incorrectly calculated conversions, including converting within metric units (for example, division by 100 for a conversion from kilometres to metres and vice versa) and the necessity to work with consistent units has been a commonly seen area of difficulty.

There were also inconsistencies seen in the use of units (for example, converting an area in square centimetres to square metres where learners tended to divide or multiply by 100 instead of using 10,000) and a lack of familiarity in applying the appropriate approaches or methods to tackle the problem was often seen, where area and perimeter responses were often mixed up by learners (for example, a perimeter calculation for an area task and vice versa).

In addition, errors in the conversion of time from a decimal value to hours and minutes were regularly seen (for example, a learner stating that 1.3 hours is 1 hour and 30 minutes). In some instances, these errors were seen in work from otherwise capable learners where evidence was seen of accurate calculations and correct processes but with errors in final conversion.

In some examples where tasks required drawings of 2D or 3D shapes or plans and elevations, these were sometimes incomplete with lines missing and learners should be encouraged to ensure that all lines are drawn.

Handling information and data

In the use of statistics, it was common to see examples where a learner had calculated a mean average for a task that requested a range value, or calculated the range for a mean average task. Unfortunately, learners can lose marks on more than one task for this type of question.

The identification of information from tables and graphs involving whole numbers was generally completed well, although tasks involving the completion of pie charts and graphs often indicated difficulties – generally with inconsistent scales or missing labels, or errors in calculating angles. In addition, the completion of grouped frequency tables still seems problematic for some learners, with inconsistent groups being given and totals not correctly calculated when required.

There was evidence that the identification of probability and the expression of probability as fractions, decimals or percentages is improving; however, this is still an area where errors are often seen.

Level 2

Using numbers and the number system

Measures, shape and space

Calculations involving money generally tended to be completed well at this level, but learners still seem to struggle with reverse percentages (for example, finding the original value of a decreased or increased value).

Conversions between metric and imperial units of length, weight and capacity still seem problematic for some learners, although evidence was seen indicating that some learners were competent in this area.

As with previous years, a small but significant proportion of less able learners showed difficulties when working with area, perimeter and volume of composite shapes. In some examples, the required calculation of the area of compound shapes was calculated as the product of 3 lengths, and tasks that involved area and volume together tended to be poorly answered with confusion often seen between the use of perimeter and area.

Some learners seem to struggle when working with calculations involving circles and remembering the correct formulae for area and circumference, and for the volume of cylinders.

Again, as with level 1, errors were seen following correct substitution in given formulae, with the same errors referred to regarding the use of indices.

Scale drawing was another area where some learners had clearly struggled, particularly when working out either actual or drawn lengths when given a scale factor.

Drawings of plans and elevations, as with level 1, was an area where drawings were sometimes incomplete with lines missing, and the expression of co-ordinates for maps was often incorrectly presented, with learners using colons, semicolons, and full stops instead of using a comma or leaving a space between the x and y values.

Handling information and data

Errors are still seen in the calculation of median and modal values, with learners also not correctly giving comments to indicate comparisons between calculated values. Some tasks require a comparative comment for both values, with learners often only commenting on one value (for example, the median for group A was larger than group B but the mode for group B was smaller). In addition, comments relating to the range of a data set tend to include comments such as ‘it is bigger or smaller’, when the learners should be giving a comment that relates to the spread of data (for example, group A was more consistent or had a narrower range).

Estimation of the mean of grouped frequency data also still seems to be a problematic area for many learners, although evidence has been seen to indicate that this is improving. Many learners fail to find the midpoints and also omit multiplying by the frequency.

Finding the probability of combined events, including the use of 2-way tables, is another area that still requires improvement, although again there is evidence to show that this is improving.

Drawing and interpreting scatter diagrams seems to be improving, with evidence seen of some learners clearly having a good understanding and the ability to apply the required skills when using them.

Generic overview

All learners should be given sufficient opportunity to practise the required skills at each level as stated in the assessment specifications, and this can include the use of sample assessment scripts with associated mark schemes which can be found on the NCFE website. There is also a full suite of resources which includes PowerPoints, learner revision sheets, activity sheets and answer sheets, as well as learner checklists for both levels. Learners should have the ability to practise the differing skills across a range of tasks and this practise will support their development of transferable skills. Learners should also have the opportunity to apply the required skills to a variety of familiar and non-familiar tasks.

Errors at the initial stages of tasks are common and may be as a result of learners not ensuring that they have taken sufficient care to read the task instructions. Some tasks require the learner to make choices or decisions, and, in some assessments, this had not been given. Learners should be encouraged to read questions more than once and, in the case of paper-based assessments, should be encouraged to underline or highlight key information.

Errors have been seen in identifying dimensions (for example, internal volume of 3D shapes, or in calculations involving compound shapes with missing measurements being incorrectly calculated).

Learners should also be encouraged to attempt all tasks, as marks may on occasion be awarded for the correct method seen. This applies even when incorrect values are used, as marks may be awarded for follow-through where an incorrectly calculated value has subsequently been used with the correct following process or method. This is particularly crucial when completing tasks with multi-steps, where the result of one calculation may be required for a subsequent calculation.

Similarly, care in presenting information is important. Displays of calculations and approaches, both on-screen or paper-based, were generally clear and sufficient and, in some cases, resulted in marks being awarded where full marks were not achieved. However, there were some examples seen where learners had only given a final answer without any evidence seen of supporting calculations.

This meant that if the learner’s answer was incorrect, then no part marks could have been awarded and for some learners, this made the difference again between achieving and not achieving the assessment.

Several learners were not awarded marks as it appeared that they had not read the question correctly and did not take note of key phrases such as: 'Show how you decide,' 'Give your answer to 2 decimal places', and 'You must show all your working'. The use of such phrases should indicate to the learner that more than just the final answer is required (for example, an explanation of their answer as a comparison between 2 values, such as 2 mean or median values, is required).

This then ensures that the learners are fulfilling the level 2 skill standard of 'Interpret and communicate solutions to multi-stage practical problems in familiar and unfamiliar contexts and situations' as well as 'Draw conclusions and provide mathematical justifications'.

Again, on many occasions, learners are often not awarded marks due to the lack of explanation or justification of learners’ choices or responses from their calculations.

Learners also need to ensure that for online assessments, they use correct symbols to avoid any uncertainty as to their response (for example, the use of a colon when indicating a ratio, not a forward slash or decimal; the use of the word ‘to’ is also acceptable – 3 to 6). The use of a forward slash (/) is advised when indicating fractions or for division calculations, with the result of the calculation being given

as well, to make it absolutely clear what the learner means. Learners also need to ensure that any written calculations are clearly shown with the result of that calculation also given. The use of an asterix (*) is also acceptable as a multiplication symbol.

Additionally, I would recommend that learners practise checking their final answers as preparation for their actual assessment with the intention to enable them to identify errors in calculations that may then be corrected. It is also recommended that learners are encouraged to return to the task's instructions after completion of a task, to check that their final answer is displayed as requested in the task instructions (for example, to 1 or 2 decimal places or rounded to the nearest whole number).

A full suite of learning resources is available on the NCFE website that can provide opportunities for learners to fully prepare for their assessments. This includes sample assessments and resources such as subject content specific information sheets, customisable PowerPoints and learner activity and answer sheets, along with learner checklists that can be used in teaching environments or as self-directed study.

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Chief examiner

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