



Reformed Functional Skills Maths Levels 1 and 2 Senior Examiner's Report (October 2022)

Introduction

Reformed Functional Skills maths has been available since September 2019. Despite the disruption to teaching and learning during the Covid pandemic centres have now had reasonable opportunity to become familiar with and implement teaching and learning to the new requirements of the qualification. Learner performance has improved since the introduction of the qualification but there is still evidence that shows learners find certain subject content areas challenging. Centres should use this report to be aware of the areas that learners still find challenging and where they can incorporate some of these areas into their teaching and learning programs.

There are significantly more exams taking place at Level 2 than Level 1 and it is clear that most centres are much more familiar with the new subject content at Level 2 and aware of the increased challenge that Reformed Functional Skills maths presents compared to the legacy qualification. Poor pass rates in some centres suggest that learners have been insufficiently prepared to take the Level 2 exam, or the teaching program does not sufficiently cover a broad enough range of the subject content that could be tested. It should be noted that any subject content area can be tested in any assessment version.

At Level 1 learners are required to solve most one-step problems and some problems of more than one step. At Level 2 learners are required to solve multi-step problems. The subject content at both Level 1 and Level 2 is split across three mathematical areas: Number, Measures and Handling Data. Any single question could include skills needed from any one, two or all three mathematical areas.

Overall learner performance

It is encouraging to note that many learners are willing to tackle problem solving questions where there is more than one step. This is apparent as many learners will successfully complete the first step of a problem even if they cannot complete the rest. This is a useful strategy to use as learners will gain marks for this step even if they cannot complete the whole question.

It is also encouraging to note that many learners are performing well in the underpinning skill questions. This performance dips slightly in the non-calculator section as learners still need to improve their skills in written calculations methods. It is recommended that learners have sufficient opportunity to do practice papers so that they can see the difference in the way that underpinning skill questions are presented, compared to problem solving questions.

Learners are comfortable with basic calculations, particularly in Section B where they can use a non-scientific calculator. In general, learners are also good at finding basic percentages, can readily use conversion graphs and are familiar with mean, median, mode and range.

The areas which cause learners more difficulty is outlined in more detail below but at Level 1 these areas include:

- finding areas of combinations of rectangles
- order of precedence of operators
- drawing 3D shapes
- interpreting plans, elevations and nets

At Level 2 these areas include:

- finding estimated mean of grouped data
- finding area and circumference of circles
- surface area and volume of cylinders
- percentage change and original value before percentage change
- combined probability

There is a significant number of learners who do not have sufficient skills to enable them to complete multi-step problems, although very often they will make a start and score one or two marks. Problem solving questions incorporate 75% of the overall assessment and often include high tariff questions of 4-8 marks.

Results show that learners are familiar with graphs and charts, however, they often struggle with the onscreen functionality and lose marks due to not attempting the question or abandoning it part way through. Learners should be encouraged to complete the onscreen practice papers to support with functionality concerns. Learners should ensure their graphs are fully labelled with an x axis and y axis title and a main graph title.

There is also evidence that learners do not read questions properly and miss key information or key words, such as 'estimate', or 'give a reason for your answer.' This is causing the loss of relatively low-level marks that could easily be picked up along the way.

Specific Subject Content Performance Feedback

Level 1:

SC7 – Follow the order of precedence of operators

This continues to be an area of relatively poor performance for learners, although clear improvements have been seen since this subject content was introduced at Level 1. Scientific calculators are not permitted and 25% of the paper is non-calculator anyway so it is essential that learners are taught BIDMAS to ensure they know the order in which operations should be calculated. Square or cubed numbers are generally not included at Level 1.

SC11 – Add, subtract, multiply and divide decimals up to 2 decimal places

In Section B (calculator section), learners perform reasonably well with this subject content, especially when it is tested as an underpinning skill. However, when tested as part of a problem-solving question performance is less secure. Learners should also be taught at least one clear paper-based method for each operation to ensure they have the skills to tackle this subject content in the non-calculator section also.

SC16 - Recognise and calculate equivalences between fractions, decimals and percentages

The relationship between fractions, decimals and percentages is not clear to many learners, other than common unit fractions, e.g. $\frac{1}{4}$, $\frac{1}{2}$, etc which they can identify as 25%, 50%, etc. Where learners have to do a calculation to see equivalences, they are less able to score marks.

SC22 – Calculate perimeter and area of simple shapes, including those made up of a combination of rectangles.

Learners' performance in this area is significantly improved compared to when the qualification was introduced. Most learners understand that multiplication is required for area and addition required for perimeter. They also understand that the shape needs to be split into rectangles and each one calculated separately. Where marks are lost (particularly with finding perimeter) is the incorrect calculation of missing lengths or just ignoring the length that shows no measurement.

SC25 – Interpret plans, elevations and nets of simple 3D shapes

Many learners fail to understand that a plan or an elevation is a 2D drawing of an aspect of a 3D shape. Often, they will try to recreate the 3D shape from a different angle. Learners should have experience of a wide variety of 3D shapes including cylinders and also including real life objects such as a house or shed.

SC26 – Use angles when describing position and direction and measure angles in degrees

Learners perform well where this subject content is tested as a multiple-choice question, however learners should be made familiar with the terms 'clockwise' and 'anticlockwise' when describing turns, as well as have familiarity with compass points and calculating degrees. Learners should also be proficient in using a protractor whether doing paper-based or onscreen tests.

SC28 – Group discrete data and represent grouped data graphically

Learners appear to understand the concept of grouping data, particularly where some scaffolding is provided in the form of an incomplete table. However, they are less familiar with the concept of evenly spaced groupings and this then has implications when trying to represent this data in graphs and charts.

Level 2

SC5, SC6, SC13 – Percentages as a whole, represent an opportunity to score several marks in a paper as there are several percentage subject content areas covered. Learners are adept at calculating basic percentages of amounts, and are then able to add or subtract these, however, they are less familiar with calculating one amount as a percentage of another, calculating percentage change and calculating original value after percentage change.

SC7 Add and subtract fractions including proper, improper and mixed numbers

Performance in this area appears to be improving but learners need secure strategies to find common denominators, particularly with mixed numbers and improper fractions. It should be noted that if fractions are converted to decimals to enable ease of adding or subtracting then often a method mark can be achieved.

SC9b – Approximate decimals

Many learners fail to correctly approximate decimals when asked to round to a specified number of decimal places. In some cases, learners may have the skills to do this but nevertheless lose this mark because they have not re-read the question to check how the answer should be expressed.

SC10 - Multiply and divide decimals up to three decimal places.

Although this is often tested as underpinning skill, it can appear in the non-calculator section and learners therefore need to have reliable paper-based methods they can use when tackling these questions. It can also be tested anywhere in the paper as part of a problem-solving scenario. Most learners perform well in this where it appears in the calculator section.

SC11 – Calculate using ratios, direct proportion and inverse proportion

Inverse proportion is the part of the subject content that is very poorly answered in every assessment version it is tested in. Learners are much more proficient at calculating ratios and direct proportion but centres should be aware of the requirement to test to the challenging end of the subject content and therefore inverse proportion is a common question that will appear on assessments.

SC13 – Calculate compound interest

It is encouraging to see that many learners are now correctly calculating compound interest accurately. Centres should still be aware of many learners' preference to calculate one year's interest and multiply that by the number of years to get an incorrect answer. It would be beneficial for learners to be taught the formula for compound interest as this is much faster than using the 'one year at a time' method.

SC15 – Calculate using compound measures include speed and density and rates of pay

Centres should note that where learners are required to calculate using speed and density that the formulae are given. Learners should be taught how to use these formulae in all question types. Performance generally is on the low side, especially when this is part of a problem-solving question. Other compound measures can also be tested, e.g. rates of pay.

SC16 and SC17 – Calculate areas and perimeters of 2D shapes including triangles and circles

Use formulae to find volumes and surface area of 3D shapes including cylinders (formulae not given for cylinders)

It is encouraging to see more and more learners attempting to calculate areas and perimeters of circles. The formulae are not given and therefore must be memorised. Often learners will use the wrong memorised formula, i.e. using the formula for the area of a circle when they want to find the circumference or vice versa. Learners perform less well on finding volumes and surface areas of cylinders suggesting that they have not memorised these formulae.

SC19 - Use coordinates in 2D, positive and negative, to specify the positions of points

Learners generally perform well in this subject content area. Some learners are unaware of that the x axis position comes first and this is generally where marks are lost. .

SC24 - Estimate the mean of a grouped frequency distribution from discrete data

Performance in this area has significantly improved since the introduction of the qualification, however there is still a significant majority of learners that do not score full marks. Many learners begin the process of finding estimated mean by working out the midpoints and multiplying by the frequency, but are often unable to take this to the next step. Some learners are still using the method to find basic mean when attempting this question.

SC26 – Work out the probability of combined events including using diagrams and two-way tables.

This subject content continues to show learners performing less favourably. Learners appear to lack the skills and resort to adding the fractions or decimals instead of multiplying. Centres should ensure that this topic is specifically taught so that learners are prepared when sitting the exam.

SC28 – Draw and interpret scatter diagrams and recognise positive and negative correlation.

At Level 2 scatter diagrams are the only chart type assessed (bar, line and pie charts being assessed at Level 1). Learners may be asked to interpret a scatter diagram in terms of reading the line of best fit and describing in terms of positive and negative correlation, but they may also be asked to draw a scatter diagram or add a plot point in a specific position. Generally, learners perform well in this subject content.

Advice for centres

In summary the main advice for centres is to ensure that their teaching and learning programs incorporate all of the subject content that learners are unfamiliar with and that this subject content is taught and practiced as both underpinning skill and as part of a problem-solving question. Learners should be given opportunities to work with and without a calculator. Due to the requirement of assessments to be robust and challenging, centres should ensure teaching is to the challenging end of the subject content statement.

Additionally, centres should ensure all learners have the opportunity to practise the functionality on XAMS for onscreen exams. Learners will need to be familiar with drawing graphs, drawing shapes, drag and drop, etc. The maths functionality tool on the Skillsfirst website will support learners with this also. You can access this by clicking:

<https://skillsfirst.co.uk/index.php?page=qualifications&url=maths-functionality-tool&id=11722&type=Article>

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Department for Education. Subject Content Functional Skills Maths Document

<https://www.gov.uk/government/publications/functional-skills-subject-content-mathematics>

Scope of Study – pages 13-18 of the above document.

**For further information, please contact the
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