

# Examiners' Report

July 2017

Pearson Edexcel Functional Skills  
Mathematics Level 2 (FSM02)

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## **Introduction**

The paper covered the level 2 Functional Skills Mathematics specification in the context of finances and savings, landscaping and diving. A vast majority of learners attempted the questions in the paper and engaged with mathematical concepts set in real-life scenarios. Many presented their calculations in an organised way and correctly interpreted their results. There were, however, a number of blank scripts which indicates that some learners were not fully prepared to attempt this level of qualification.

Some learners struggled with more complex, multi-step questions and often missed essential information. Learners should be encouraged to underline/highlight relevant information and use the given information as a checklist and tick off the data to ensure they have taken everything into account. Learners also need to be encouraged to take a consistent and logical approach to answering questions, showing all relevant working, only rounding/truncating answers at the final stage to an appropriate degree of accuracy. They need to be made aware of the importance of writing their processes correctly (particularly if they get the wrong answer), that there is a difference between 100 divided by 178 and 178 divided by 100. Many do one calculation but write down the other calculation. It is also critical that learners state their decision clearly (Yes or No usually suffices) as at least one mark in every question is awarded for correct conclusion accompanied by accurate figures. Accurate figures also require showing the units they are working with, i.e. cm, £, minutes etc. Some learners failed to gain the checking mark as they either repeated the calculations they had already presented or did not show any check at all.

It was especially clear in this paper that many learners did not have access to a ruler and a pair of compasses. Many learners produce a freehand circle which led to inaccurate responses. Centres should ensure that all learners have access to all equipment listed on the front page of the paper.

There are a few areas that the learners should particularly improve on. These include understanding and using scale correctly (especially when presented in ratio notation), working out what one number is as a percentage or a fraction of another figure and how to convert between currencies.

## **Section A**

### **Question 1**

This question tested the ability to design an efficient two-way table to collect data. Many learners engaged with the question by presenting a questionnaire. This is a valid method of collecting information but is not efficient as it only collects information from one respondent. The question clearly indicated that the data collection sheet is for more than one person. Some created separate tables which is also not efficient. Learners should practise creating two-way tables and testing if it is efficient by checking if all data has been covered by headings and whether each cell or figure represents 3 pieces of information. In this question, an efficient data collection sheet would have cells that would represent whether the respondent had a savings account, which age category they belong to and which saving bracket they fell into. More care should also be taken when writing heading to guarantee that each data category had all subcategories as outlined in the question.

### **Question 2(a)**

In this question learners needed to extract information from the table, work out what one number was as a percentage of another and present their final figure accurate to 2 decimal places. Many learners struggled to extract correct data as they did not read the question carefully enough. It was also common to show their final figures accurate only to 1 decimal place. Centres should practise rounding and writing figures to different level of accuracy.

### **Question 2(b)**

In general, learners know how to work out the different averages and the range. Reading the information carefully will ensure that calculations are not made for averages that have not been asked for. Some found mean or mode where median was the average that the question asked for. Other common error was failure to put amounts in ascending order first.

### **Question 2(c)**

For this question learners were asked to provide an evaluative comment to compare median and mean and decide which of these two averages should be used in the context given in the question. It was encouraging that a considerable number of learners were able to explain why a median would be more appropriate to use with the given figures than a mean. However, some did not read the information properly and compared median with range or simply stated how to work out a mean. Centres should teach learners how 'outliers' affect the value of the mean and when each type of average is appropriate to use. This is a required skill and part of the specification and requires more practice.

### **Question 3**

Majority of learners answered this question well and gained all the marks available. It is evident that learners were well prepared to work out percentage of a value. The most common error was finding 60% of the wrong value. Careful reading of the question is essential to avoid these kinds of errors.

#### **Question 4**

At this level converting between currencies should be a skill that all learners possess and most responses were fully correct. However, some learners still multiplied when they should have divided. Some also truncated the conversion rate to 2 decimal places which cost them the accuracy mark. Also presenting final answer in correct money notation is crucial when dealing with problems involving money. Centres need to ensure learners understand how conversions work. It may be useful to teach them that when given any conversion in the form  $1 = 1.1452$  they should draw an arc above the equal sign with a multiplication sign on it and an arrow from left to right and an arc underneath with a division sign and an arrow from right to left. So, if they follow the direction of the arrows and the instruction they will always multiply or divide correctly when changing from one set of units to another. Centres need to stress the importance of adding a zero (or rounding to decimal places) to money calculations done on a calculator. Learners must understand how money is written correctly to aid communication of figures.

#### **Section B**

##### **Question 5(a)**

Scale presented in ratio format is still a challenge to some of the learners. Centres should teach learners that 1:50 scale means that 1 cm on the grid is 50 cm in real life. Many learners misinterpreted and assumed that 1 square grid represented 50 cm. This is a Level 2 skill that centres should focus on. It was evident that many learners were not using a ruler nor compasses when dealing with this question and often drew the circle freehand which was not sufficiently accurate to display the skill level required. Often the incorrect scale was used, mostly due to not measuring the squares on the grid. Centres should provide the learners with all the equipment required to complete the paper and encourage learners to use it. It is also advised to ask learners to shade in the area that represents positioning constraints so that they can pick up all the marks – some learners who understood the area and drew correct circle did not apply positioning constraints listed in the question.

##### **Question 5(b)**

This multistep complex question required understanding of symmetry, knowledge of methods that lead to finding volume of a compound shape and converting units. Many learners have engaged with the symmetry, which was reassuring, and attempted process to find the area. However, many failed to carry on their calculations to find the volume and did not convert units or incorrectly converted them. There are still too many learners who confuse area with perimeter at this level. Centres should teach learners that if the question talks about a coverage of a space that this implies area calculations. Similarly, if depth is mentioned that usually indicates working in 3 dimensions and so volume needs to be found. Centres need to give learners practice at finding area (volume) of compound shapes ensuring they know which values to use and what to do with them.

### **Question 6**

Many learners answered this question well. The most common error was caused by carelessness. This is another question where centres need to reiterate the importance of highlighting relevant information, as most learners did not acknowledge that the "turf's" price was £11.50 per m<sup>2</sup> and 27 m<sup>2</sup> was needed. Some learners did well to follow the bullet points and present their calculations in 'bite-sized chunks'. This ensures that marks are still picked up even when the final answer is inaccurate. There were only a few errors in the actual mathematics. It was also pleasant to see many learners show a valid check. What was rather disappointing, however, was the fact that still a considerable number of learners did not present their final answer in correct money notation. Centres should encourage learners to present their figures to 2 decimal places and show the £ if they are calculating with money.

### **Question 7**

This question was done well. Learners should read everything and not assume that the bottom right hand 'cell' in a table is the overall total. Some used '22' as the total. Learners must realise that when asked to show a comparison their answer must come from 2 correct processes. So, they needed 7 from finding  $\frac{1}{8}$  of 56 and from the sum of the clients with a garden less than 20 m<sup>2</sup>. A good understanding was shown of how to work out  $\frac{1}{8}$  of an amount. More real-life examples of reading from complex tables should help with this kind of questions.

## **Section C**

### **Question 8(a)**

Time questions are usually a challenge to some learners. It was encouraging to see many learners able to correctly work with variety of time notations in this paper. Some learners misinterpreted the repetition of times shown at warm-up stage and multiplied only one activity by 4. Exposure to some more real-life examples would help with this. Time conversion was mostly completed correctly, but a few still considered 1.5 hours to be equivalent to 1 hour 50 minutes or  $\frac{3}{4}$  of an hour to mean 75 minutes. As always it is a good idea for centres to reiterate to learners that when converting units of time, they need to engage with 60 rather than 100. Some learners who managed to get final time correctly forgot to answer the question. It is very important that learners read the question carefully and provide final answer.

### **Question 8(b)**

This proportion question was done very well with most learners answering it correctly. It is however important to mention that some learners truncated or rounded their figures in the middle of their calculations which then lead to inaccurate final answer. Rounding off non-terminating values for the purpose of simplicity should be done at the final stage. Again, an encouraging large number of learners provided a valid check.

**Question 9(a)**

There was a good understanding of how to find the mean. Careful reading of the question may have stopped some learners working out the mean of all 8 scores. Learners are expected to do the calculation and compare, not force their answer to the value given. Under normal circumstances learners would round 3.125 to 3.1. Some rounded it to 3.2 presumably to fit in with the value given. Learners should know that the 'difference' is always given as a positive number, though they should appreciate that if they are using the method of 'taking' an individual score from another, this can give a mixture of positive and negative numbers. The values obtained were no more than 3 decimal places, so should have been left as they were. If learners must round these off, they should still allow the most accurate value to be seen in their working.

**Question 9(b)**

This multi-step question involving a simple formula was done well in general. Again, as there was plenty of information given, highlighting the relevant information would have proved beneficial. Some may have read the 'five dives' and 'total score' and so ended up adding all 5 points together. Some misinterpreted '3 middle values' and took the 3 values from the middle of the table without considering the need to remove the highest and lowest points. It would be beneficial to re-visit algebra and reiterate that "md" in the formula means  $m \times d$  not  $m + d$ . Also, the correct application of BIDMAS needs extra attention.  $7 + 7.5 + 7.5 \times 3.4$  is incorrect mathematics for  $(7 + 7.5 + 7.5) \times 3.4$

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