Examiners' Report

June 2017

Pearson Edexcel Functional Skills Mathematics Level 1 (FSM01)

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Introduction

There now, seem to be fewer learners without a calculator, which is pleasing. Some still struggle without a calculator and this leads to far too many arithmetic mistakes and they would have taken far too long to work out some of the answers. In many cases, not nearly enough of the working in the questions was shown. Marks are awarded for process. Also, when a question requires a comparison, the 2 figures for comparison must be stated explicitly. Too often questions requiring a yes/no answer or required conclusion did not have that final statement.

Highlighting important information in the question is a useful aid. Teachers should encourage learners to highlight key words and phrases in the questions so that they do not miss vital information. Ticking off each sentence in a question to confirm they have used/understood the information within it may help weaker learners to answer more fully the question being asked. Learners should be encouraged to consider whether their solution is fit for purpose/workable/business-like/functional. They should be questioning whether their answer is sensible.

They must always write units of measurement as there is always somewhere on the paper where a mark is specifically awarded for this. Most often it is a money question but not always. Learners should keep reminding themselves that money always has 2dp, no matter what figures the calculator displays. Specific problems arise with e.g. 48.5 being written as 48.05 not 48.50 or left as 48.5. Where learners wrote units throughout their working out they rarely lost £, miles.

Learners need a basic knowledge of fractions, percentage, decimals and the FDP interrelationship. The fraction 1/3 in particular causes problems.

The check is a weak area; it can either be approached as a reversal of the calculation, starting with the answer and working backwards or as a different method to get to the answer. In fact, even a reverse of part of the calculation will suffice.

Learners should be encouraged to annotate given diagrams or draw a rough sketch which can be very helpful in visualising the problem.

Learners need a basic knowledge of measures of average. All too often learners work out the median or mode or range when asked for the mean.

Pupils need to be taught to work to several decimal places throughout their working, and then round at the end.

Learners need to be taught the basics of good graph-drawing. They should be encouraged to use a 'sensible' linear scale i.e. one in multiples of 2, 4, 5, 10, 100, 1000 – whatever is appropriate. No graph with a scale in multiples of 3 will ever be very accurate. Labelling the axes correctly is also left out far too often.

Section A

Question 1a
This question was answered well. Some learners were not reading the question carefully and identifying any limitations. Encourage learners to highlight or underline any limitations as they are reading them - therefore making them stand out when they start their calculations.

Question 1b
Many learners gained all 3 marks on this question. Of the ones which didn't the main problems were that the full criteria were not being carefully read i.e. Start Cork and Finish Dublin. Many learners would benefit from actually drawing the route on their sketch and this would help them to identify places not/already visited. Also when units are given, in this case miles, encourage learners to include units at every stage of the calculation. This will not only ensure they include the units in their answers but also for other questions, ensure the correct units are used.

Some learners did not consider the starting point of the trip. Also, some learners did not specify each location and some learners simply added up the numbers without considering different stopping locations. A point to note is that marks will not be fully awarded to learners who submit an answer without "miles". Learners should be reminded to spend time carefully reading the question and to include appropriate units in the final answer.

Question 2
Most learners applied the formula correctly as given. However, some learners also made the wrong decision. Reading the comments, many learners seem to misunderstand what the conversion formula was for. Rather than understanding that the conversion of the UK price into euros (£1.15 equating to 1.38 euros) still gave the UK price but in a different currency; they seemed to see this as the Irish price and think it was £1.38 in Ireland. Conversion questions come up on a regular basis and learners may benefit from more discussion in class about how currency conversions work and what they are for/why they exist. We often assume that learners have this knowledge. On a practical level, learners would benefit from more emphasis on writing units at all times to avoid confusion.

Whilst being able to make the calculation is important, so is what it represents and understanding the purpose of the calculation. This is also highlighted by quite a few learners after correctly converting £1.15, then putting the Euro amount of 1.32 through the same process when it should have gone backwards from Euros to pounds.

Question 3a
Incorrect conversions are still causing problems when the question asks for a different unit from the data given - encourage learners to convert **before** they start the calculation to the units required in the answer. If learners struggle to remember conversions using the prefix 1m = 100cm and Km = 1000m, then they could try to visualise everyday measures which could help them e.g. this question talks of 2 x cans (330ml). If they can relate that to 3 cans to a litre bottle - then this would help to remember that there are 1000ml

in litre and not 100. They could use items such as bottles of water - which they may have in the exam with them - generally 500ml, therefore a litre is more therefore must be more than 100ml to litre.

Making statements such as Yes, 3160ml is more than 3 litres, they take it as given that we know that they know this information and teachers would benefit their learners by asking them to state the obvious and write down conversions at all times.

Question 3b
Learners do find fractions difficult and this question proved problematic to some and others didn't attempt it. Successful learners started by finding ¾ of 24 and comparing their answer to 16 rather than trying to work out whether 16 was ¾ of 24. There was also some misunderstanding of three quarters written in words and several learners calculated 1/3 instead. The vocabulary around fractions can be quite complex for some learners at level 1 and teachers should be supporting the learners with the vocabulary as well as how to perform the calculations themselves.

Many learners did not attempt the check. This question had many ways to check the answer, including, reverse calculation as standard, but also alternate methods and proof of three quarters by adding a quarter to get the whole amount. It is very surprising how many learners do a check and get an incorrect result, i.e. they do not actually perform the check. E.g. 18 ÷ 24 = 364. The use of function machines and reversing a process through a function machine is a good activity for practising reverse calculation skills.

Section B

Question 4a
The majority of learners attempted this question but many failed to engage with the problem, and very few gained full marks. Most learners who gained 1 or 2 marks had a sheet with column headings and totals or separate columns to tick yes and no, but others simply copied the given information from the question.

Those who drew a 2 way table or summary sheet were able to input most of the data correctly. Centres need to focus on developing skills in this area. There are few occasions in reality where level 1 learners will come across or be required to use data summary. They need to practise using and drawing 2 way tables and summary sheets for a variety of situations.

Question 4b
Many learners tackled this question well with most finding a correct answer, and encouragingly writing a valid check. The main reasons for losing marks were incorrect money notation, or an invalid or missing check. A few seemed confused by the question and just multiplied the deposit by 12, or just added 1 month to the deposit for the total cost.

There is a need to emphasise 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.

Question 5
Learners need more exposure to real life instances of the use of time and even speed. Although this was not asked for, it would be appropriate as then learners would develop an understanding of what it means per hour, and then use this process to develop other units of time such as time for each mile. Most learners earned the mark for the 18x4=72 and correctly converted this to 1 hour and 12 minutes. The main difficulty was, as usual dealing with quarter of an hour. Learners often use their phones for time, and rarely use analogue clocks. More practice converting times maybe using bus and train timetables could be useful.

Question 6a
This was answered well indicating that tables can be interpreted, and values read from them correctly. Learners should be reminded to highlight key aspects of the demand and for each piece of information required, use this to select information from the table.

Question 6b
This question proved more problematic. Most learners who attempted the drawing gained 1 mark for drawing a correct rectangle. Scales seemed well understood, but the need for more than one bike rack was consistently overlooked. Some seemed to think they needed to draw a curved 3D bike rack similar to the one depicted in the question. Centres could help their learners by using squared paper in doing scale drawings. Simple ideas of planning a layout of a room by placing scaled diagrams of furniture would be a simple way to help with this.

Question 7
Most learners succeeded in using the given formula to find the area. Learners should be encouraged to read all the question when answering the question, although they were able to use the function machine and arrived at an answer of 50 000 from 250 x 200, some stopped at this point and did not relate the 50 000 to 56 000 i.e the area of land needed for 70 sheep, the more successful learners either followed the approach above or divided the area of the field by 800 to see how many sheep could fit in the field.

Learners should be reminded always to give a decision if the question requires one, i.e., in this case, "Is Jim Correct?"

Learners need to be taught how to use area in unfamiliar scenarios as well as familiar ones.

Question 8a
This question was answered well, with many gaining full marks. Most learners succeeded in writing out the formula for calculating the mean. Some attempted to find the median when the demand states clearly that the mean is to be calculated.

Learners should be reminded that they need to total the numbers before dividing or the calculator may give a wrong answer. They should also ask themselves does the answer appear reasonable i.e $23+45+33+9 \div 4 = 103.25$ is not reasonable.

The check was well completed by most learners, multiplying their answer by four to re-find the total number of lambs. Learners should also be reminded a check is not just a repeat of their working for the original answer obtained.

Question 8b
Most learners completed a bar chart successfully, gaining all 3 marks. They need to remember to follow three guidelines when drawing a bar chart: label the axes; use a linear scale, and plot accurately. They should try to use sensible scales, e.g. going up in 5's or 10's, and ensure that the full range of values is covered on their axis. Learners should be encouraged to read questions carefully. This question clearly asks to draw a bar chart which some failed to do. Also some began their scale at 10, they should be reminded the scale needs to take in the full range of values so should start at below the lowest value of 9. They also need to practice putting scale evenly, perhaps by using the cm on a ruler as a guide to the distance between each increment or by favouring graph paper that clearly shows blocks of five or ten.

Question 9
A difficult 6-mark question, but very functional. Many learners struggled with this question, however they would have made better progress by splitting the question into two parts and then finishing off with a comment.

One calculation involved finding 70% of an amount. Learners were often unaware of how to calculate this. Learners should be able to calculate a percentage using x% ÷ 100 x amount. A simple step to double this for the final answer.

The second calculation was more complicated as it involved a buy 5 get one free offer. Many learners calculated the cost of 30 bales, but did not consider the free bales. Successful learners listed "5 plus 1" with its cost until they reached the required total of 30. The best response for this question was where learners clearly separated the two offers and dealt with them discretely before making their final decision.

For the farming supplies some learners were able to calculate the 70% of either £88 or £176 whatever their chosen method was but then subtracted this again from the original price i.e 176 − 123.20 = £52.80 Learners would benefit from a mixture of questions distinguishing between x% of the normal price and x% off the normal price, as of is only required at level 1.

For the Hay Farm question a number of learners need not deal with the extra bag free, many could only manage 30 x 6.30 = £189 and progress no further, others interpreted the question as Jim would gain an extra 6 free bags and subtracted 37.80 to be left with £151.20. This error of having 6 free bags instead of 5 mainly came about from learners number spotting and dividing 30 by 5. Some learners used the build up method (5 bags − 1 free) this approach seemed to work since they could then picture you are only paying for 25 and did the calculation 25 x £6.30.