Examiners' Report

March 2016

Pearson Edexcel Functional Skills Mathematics Level 2 (FSM02)

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Introduction

This level 2 paper included the contexts of sheep farming, football and selling hair products. The type of question in this paper required a more thoughtful approach to answering questions as is demonstrated by question 2b where learners were required to work out a mean average of weight gained from daily readings of a lamb's weight rather than to work out the mean average of the lambs weight from daily readings which is a Level 1 skill.

General comments

Whilst many learners were able to successfully access this paper, and attempt and gain marks in the many of the questions, it was disappointing that a significant minority of learners did not appear to be working at the level of mathematics required to successfully attempt a level 2 exam. Learners who are unable to show a correct process for finding 24% of a given value or when asked to produce a table drew a bar chart need further preparation before attempting a level 2 examination.

Calculations relating to money and interpreting given data were often successfully answered. Two multistage problems relating to compound areas, creating, and populating a table were attempted by the majority of learners and some were able to respond fully and correctly. However, a significant number of learners were unable to progress beyond the first few steps needed to solve these problems or, in many cases, failed to attempt the questions at all. Centres would be advised to provide their learners the opportunity to practice working through a wide range of multistage problems during exam preparation if possible.

Centres should encourage learners to include the decimal fraction part of answers throughout their calculations to avoid accuracy errors. Understanding that a decimal fraction can be a significant amount, if the unit used is large, could be helpful here.

Centres should remind learners to show all stages of their working, even when they are using a calculator, in order to avoid losing marks for process. Similarly, learners need to be reminded to present answers involving units with the correct unit for the figure they have given in order to be sure of gaining the maximum marks available.

Many learners often failed to gain a final mark as they did not provide a negative or positive decision or a conclusion after the completion of their calculations.

Section A

Q1a This first question required learners to find the perimeter of a field boundary in order to calculate the amount of fencing required and if sufficient was available. It was pleasing to note that most learners did start to find the perimeter, although a significant number failed to find the length of the side not given in the diagram and thus lost 2 of the 4 marks. The majority of the learners were able to make a correct comparison with the 500 metres of fencing available.

Q1b This compound area question, which included the number of sheep, which could be kept per acre and a unit conversion, was often correctly completed. It was, however, disappointing to see that many learners were confusing perimeter with area and that although some learners understood that they needed to multiply lengths to find an area they were uncertain which lengths to multiply and often incorrectly used the two opposite sides in their calculation or incorrectly multiplied all the lengths together. Successful learners often divided the given compound shape into rectangles, by drawing on the diagram, thus minimising errors.
Learners who then used a trial and improvement method to ascertain how many sheep could be kept in the field often failed to complete the process and show that 4 acres was greater than the calculated area in square meters and thus lost the final 2 marks.

Q2a It was pleasing to see that most learners were able to start to find the amount of wormer needed for 54 sheep by finding the total weight of the flock or the amount of wormer needed for one sheep of average weight. However many struggled with using decimals which was necessary as the correct amount of wormer was 4.6 ml per sheep. A significant number of learners were unable to use the given dosage rate of 2 ml per 10 kg to find the dosage per sheep and rounded to convenient but incorrect values such as 4.5 ml. Decimals are an important part of numerical functionality and it is useful for learners to be able to handle decimal fractions confidently and accurately. Exam practice would be very beneficial in achieving this competence.

Q2b The next question required learners to calculate the mean average weight gained by a lamb from the weight of the lamb recorded each day. It was very disappointing that the majority of learners failed to gain any marks for this question as they had not read the question correctly and found the mean average of the weights recorded each day. Many who did find the difference between the weights each day then failed to successfully complete the question as they incorrectly either added the 5 values and then divided by 6 or they compared each day's value with the given mean average of 250g. It is helpful if learners highlight the important information in the question to minimise the risk of making similar mistakes. Finding the mean average of 6 values is a skill that may

be tested on a Level 1 paper but is unlikely to be found on a Level 2 paper and learners need to be prepared for problems involving higher level skills. Centres should advise learners to look carefully for the actual question asked, when the mean average is required or used in a Level 2 paper, and provide exam practice for problems that require the use of a mean average in a range of contexts.

Section B

Q3 This next multi-staged question required learners to design and populate a table to show the information provided about four football referees and to work out the number and levels of additional referees were required for the weekend football matches from the given information. Credit was also given to those who successfully designed and populated a table to show referees available and referees required with the appropriate level.
Many learners were able to produce a functional table and enter the correct information though few produced efficient tables with the minimum amount of data to be entered, generally by ticking in a box. Entering more than one piece of information in a box often led to errors in finding the referees required as well as being inefficient. Exam practice at designing data collection sheets/tables, entering given or collected data into them and then interpreting the data collated would be very helpful to learners.

Q4 Whilst the majority of learners were able to start updating the league table for football matches many had not taken the time to fully read the question and made errors in the figures inserted into the table. Highlighting the information required in order to answer the question fully and correctly can be a great help to learners in the Functional Mathematics exam and learners are more likely to be successful in this exam if they use this approach to the questions.

Q5a The majority of learners were able to begin to substitute the given values into the formula but to obtain the first mark a full substitution or the evaluation of at least three values was required. Of those who did a full substitution the majority were only able to complete a partial evaluation and thus lost the third mark. Some learners lost the third mark, even though their numerical answer was correct, as they failed to use correct money notation.
It was pleasing to note that the majority of learners did show a check of their working for which credit was given even if the original working was erroneous. It would be helpful to learners if they were provided with exam practice at substituting into formulae including inserting in the "missing" operation signs as well as the given values.

Q5b It was pleasing to note that a reasonable number of learners were able to answer this time and speed question correctly. However a significant number were unable to remember or use the standard speed/distance/time formula but for those who they needed to use 40 ÷ 30 the majority could not change the result of this calculation into hour an minutes correctly. Working with journey times is a very functional activity and Centres would be advised to work with learners to help them develop this useful skill.

Section C

Q6a The first question in this last section concerned selling hair products and required learners to work out the best option using percentages and, for one option, a bonus payment. The majority of learners were able to answer this question fully and correctly. Some learners lost marks as they failed to provide a correct decision. Those who were successful used fractions to calculate the percentages required but the build-up method was rarely successful. Care was also needed to read the options carefully as some learners incorrectly added the bonus before calculating the 8% commission and thus lost two of the three available marks. Practice to ensure a reliable and efficient method of working out percentages would be advantageous to learners. Highlighting the information in the question which needs to be used to find the required answer could also be useful.

Q6b It was disappointing that few learners were able to answer this question correctly. The majority of learners who understood that they had been asked to work out a route and the distance travelled were unable to add fractions correctly. Many attempted to convert to equivalent fractions but could not correctly complete this process. As learners are encouraged to use a calculator for this exam it would have been of great benefit to learners to be able to use a calculator to add fractions and this would have improved the success of learners in answering this question.
For those who were able to add the fractions correctly and find a route the majority failed to evaluate their answer by stating, for example, that their route was the shortest or they did not have to backtrack using their route. Evaluation of a solution to a problem is to be encouraged and Centres would improve their candidate's chances of success in the exam if class time was used to discuss the evaluation of solutions.

Q7a The next question-required learners to draw a graph to compare two sets of given data. Overall, this question was not well completed. Learners struggled to find a suitable scale and were often unable to correctly interpret the scale they had chosen in order to plot the data accurately. There were examples of two separate graphs being drawn which were not useful in the comparison of the data, especially when different scales had been used on the two graphs. Labelling of the graph was often incomplete which lost many learners a valuable mark.

Q7b The next part of the graph question required learners to make a comparison between the two sets of data. This comparison required a comment on all the months of the given sales figures and in many cases the comment was too straightforward and did not given the detailed comparison expected thus losing the candidate marks. Time could be usefully spent with learners prior to an exam interpreting a range of comparative graphs to ensure a suitable comment is made in an exam question.

Q8 This final question required learners to maximise the profit that could be made buying and selling some hair products. The majority of learners adopted a trial and improvement approach and were thus unable to reach the correct answer. Successful learners worked out the profit on each item, how many of each item could be purchased for £50 and used this information to find the maximum profit of £13.41 (10 items at £1.49 profit). Unfortunately, even those learners who answered the question correctly often lost the final mark as they did not show a check of their working. It is important for learners to regularly check their working even when not specifically asked to do so and important for them to realise that repeating a calculation or writing that they have used a calculator is insufficient to be awarded the mark.