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Examiners' Report

May 2016

Pearson Edexcel Functional Skills Mathematics Level 2 (FSM02)

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General comments

While the majority of learners engaged with all questions there has been a significant number of blank responses. This implies that learners either were not fully prepared to sit a Level 2 paper or did not apply strategic approach to the timing of their responses evidenced by most blank responses being seen in second half of the paper.

There was some evidence that not all learners had access to a ruler, which disadvantaged them when drawing geometrical shapes on the grid or a calculator, which lead to arithmetical errors.

The majority of learners presented their working throughout each question but there were a few instances where the calculations were not clearly organised or simply missing. This led to some learners missing process marks. Learners should be encouraged to present all their calculations, however simple, and do so in an organised and logical order. It is also critical that they state their decision clearly as at least one mark in a question is awarded for a statement of their conclusion accompanied by accurate figures.
Accurate figures also require showing what units they are working with, i.e. cm, £, minutes etc.
Learners should also be taught how to evaluate their methods, as this is included in Level 2 specification.

Learners engaged with a variety of contexts and responded to tasks well in most cases. However, there were some instances where learners misinterpreted the results of their calculations and their final answer was incorrect. Learners should be encouraged to carefully consider the context, practise extracting essential information (highlighting key data is advisable) and focus on what the demand asks for when making their final decision. They should also develop a habit of showing the check of their calculations, especially when explicitly asked to do so.

There are a few areas that the learners should particularly improve on.
These include understanding and using equivalences between percentages, fractions and decimals (working out $\frac{1}{3}$ seems to cause problems); using rounding appropriately – some learners unnecessarily do so in the intermediate stages of their process which leads to inaccurate final decision; converting between units and using these consistently, especially units of length and time; substituting into a formula; engaging with the concept of an area of a rectangle covered with smaller rectangular pieces (i.e. panels); and organising and collecting data in a table efficiently.

Section A

Question 1a

The vast majority of learners were successful in showing the process to find the mean. However, some learners worked with median, mode or range. It is crucial that learners read the question carefully and identify the correct process to show. Accuracy was a big issue here as several learners truncated their answer to 3.6 (straight from the calculator) instead of rounding it to 3.7. It is vital that learners work to appropriate level of accuracy and round correctly. The checking mark was rarely awarded, as most learners did not show any check of their calculations. Centres should focus on encouraging a habit of showing a check of calculations.

Question 1b

Most learners were able to gain all marks in this question. However, some failed to interpret the diagram and scale correctly. It is advised to practice determining the interval value between two fixed points on a scale. Working with fractions tested here has seen some learners struggling to identify $\frac{3}{5}$ of 400.

Question 2

This question tested ratio and unit conversion. While some learners were able to engage with one of the two skills, they rarely managed to break down the question into logical steps and gain full marks. It seems that learners are often confused whether to multiply or divide by the conversion factor. They also find it difficult to work in consistent units and occasionally swap between them. When working with ratio it is advised to write the proportions and amounts underneath the ratio to avoid confusion.

Question 3a and 3b

This question was not done very well because learners mostly misread the statement about the required area of a rectangle being between 5 m^2 and 6m^2 and assumed they needed a rectangle 5 by 6m. This misinterpretation led to losing most of the marks. Another issue was showing the path around the space and again they misinterpreted the information in the question by putting the path around the whole allotment. It is essential that learners read the questions carefully. While some learners were able to engage with the scale 1:100, others, who most likely did not have a ruler, assumed that 1 square on the grid was representing 100 cm in the allotment. Had they measured the square they would have noted that 2 squares were 1 cm long. It is a very practical skill that was tested here and it should be taught in classes. The b) part of the question asked for the evaluation of their plan. While some learners left it blank, it was pleasant to see that those who attempted the evaluation managed to do so correctly by stating that the path gave easy access to the space for lettuce or other patches. It is important that rewriting the constraints given in the question will not score the evaluation marks.

Section B

Question 4a

Learners who failed to gain full marks did not read the question carefully and either totalled up the tools incorrectly, misread the information from the table or forgot about adding the delivery charge. It is advised that teachers put more emphasis on accuracy in calculations (possibly doing a calculation several times, rounding at different stages and looking at the effect it has on the final answer) and the importance of giving the final answer in correct units rounded to the appropriate number of decimal places. In addition, practice at extrapolating relevant information from a variety of tables, calculating percentages and when it's appropriate to add quantities such as a delivery charge should also be practised.

Question 4b

This time plan question allowed learners to show how they can engage with time constraints problem in functional context in a variety of ways. Ignoring the constraints was the most common reason for lost marks. Often the Varnishing clashed because there were 3 processes occurring when only 2 were allowed at a time. Many of the learners lost the final mark due to not indicating a completion time and hence proving that the tasks could be finished by 4pm. The most successful learners are trying to organise their time plan into some sort of table, which allows them to see the tasks and times clearly. Learners who just tried to write lists often got job in the wrong order or overlapped them.

Centres need to remind their learners that clear timetables are the ones most likely to score the most marks and practise more questions like this, which involve scheduling parallel tasks rather than tasks in series. Centres need to emphasise to their learners that time plans involve start and end times for activities, and although total times can be useful, they should not be the only information in the answer. This type of question always has constraints of one form or another. Centres should make their learners familiar with “constraints” and its meaning so they are on the lookout for them whenever this sort of question appears. Centres should prepare learners by giving a range of tasks in a practical situation that involve time calculations. Logic puzzles to develop lateral thinking skills could be of benefit.

Question 5

The majority of learners seem to be trying to use the method of area, which immediately bars them from obtaining full marks. The correct answers were mainly from learners who looked at the structure of the problems through diagrams. This allowed learners to answer the question without the need to solve complex arithmetical calculations. Some learners still confuse area with perimeter. The area method is not the best solution here so centres should offer more training/teaching on non-area methods for MSS questions. Sketch plans are lacking and learners should be given more of these to do and practise with as it helps them visualise a solution and aids logical thinking. Structure is an important concept in functional skills, and one of the ways of looking at things is to sketch diagrams with dimensions to get an idea of what is happening in the particular

scenario presented by the question. Those that answered the question chose to use the area method which although mathematically correct was not functionally viable. Perhaps this problem could be taught kinaesthetically using paper and a particular shape to cut out to help them visualise the problem.

Question 6

The graph question has been completed better than in recent series with learners including all the necessary information to show on the graph, the biggest error was that of the labels. The 40,750 is regularly causing problems with many learners plotting it as 47,500. Labelling the vertical axis as “Y” is not helpful when it represents profit in £s. Learners need to be reminded to label correctly and choose a sensible and straightforward linear scale.

Section C

Question 7

The majority of learners were unable to produce the fully efficient table with correct entries. This level of two-way table needs to be taught by example and embedded. From the evidence presented many struggled to even show the three headings which are clearly given in the question. Many used the headings from the table, while many struggled to present length of stay as less than 3 and 3 or more. The teaching of basic categorisation methods should lead to a better understanding in this area. Too many simply reproduced the table, while others struggled to separate the data into the required twelve areas and presented the necessary totals for each heading. This topic is frequently covered and teaching staff need to look at recent papers as to the current content. It should be emphasised that efficient table has input opportunities (clear cells) and heading that would allow identifying specific information. For example, in this question one way to test if the table is efficient would be to check if there was a cell that would identify the number of guests from abroad who stayed for less than 3 days and rated the service as good.

Question 8a

The converting between currencies tested here had mixed rate of success. Some learners were clearly unsure how to do their conversion, i.e. whether to multiply or divide. Practice of these processes is needed. Learners also need to be taught not to round key values until the final stage of calculations. There were too many rounding the initial 1.3203 to 1.3 which is worrying. Those who converted correctly and engaged with 5 nights lost last mark due to inaccurate answer caused by rounding too early in their calculations or misinterpreting their final figure and giving incorrect conclusion.

Question 8b

The majority of learners scored full marks in this question. However, there were two recurring errors in unsuccessful learners' responses. One was that of finding 0.3 rather than $\frac{1}{3}$ of a given value. It is vital that learners at this level do not confuse a third with 30%. The other error was that of presenting the final answer with 3 or more decimal places when the question clearly asked for monetary value, which functionally should be given to 2 decimal places.

Question 9

This formula question had a varied rate of success. Some learners clearly did not know how to substitute values into the formula or misinterpreted and added the values rather than multiplied. This is an essential skill at Level 2 and it is always tested so it should not be anything new to learners who prepare for this qualification. Those who successfully substituted and carried out calculations have lost marks for presenting their answer to 3 decimal places when again the question asked for amount of money and so functionally the answer should be presented accurately to 2 decimal places. The last mark was awarded for checking and again most learners failed to present their check.

Llywodraeth Cynulliad Cymru
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