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Principal Examiner Feedback

March 2012

Functional Skills Mathematics
Level 2 (FSM02)

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Functionality and Process Skills

Candidates must ensure that the process of how they come to an answer is clearly shown: in real life there is more than one way to get to an answer and that rarely is it the case that only one way and one answer is acceptable. Candidates should ensure that even though they are using a calculator they show all stages in their working. In a number of questions on every paper, the correct answer only without working may be credited with just one mark, or sometimes none, when the whole question may be worth 4 or even 5 marks: it is here that the process marks are important and working must be shown.

Candidates should be prepared to check that their answers are fit for purpose such as interpreting graphs, devising a time plan, finding a numerical value and giving a data collection form.

In questions that involve comparing possible values to draw a conclusion, those students who took a little time to analyse each situation having separately worked out these values were invariably well rewarded, especially if they came to a conclusion relating to their figures. Breaking down a question into its component parts and coming to a judgment is an important aspect of these processes.

In questions that involve an explanation, candidates must realise that their answer must be supported by mathematics.

Introduction

Overall the response to this paper showed that it was accessible to nearly all candidates; most candidates attempted and gained marks in most questions. Calculations relating to averages, best buys and percentages were often successfully answered.

There is evidence that candidates do not have a calculator during the exam. Questions are written on the assumption that candidates will have a calculator during the exam and it is a significant handicap to the candidate if this is not the case. At level 2 candidates are expected to use their calculators efficiently.
It was clear that a number of candidates ran out of time, as in some cases section C was not attempted, and this may, in part, be due to inefficient calculating methods.

Candidates should be reminded that all writing needs to be legible. Where a number is crossed out, it is best to rewrite the number rather than superimpose it on the original.

There is evidence in this paper that a significant number of candidates were well prepared for the multistage problems that form part of the Functional Skills mathematics paper. Those centres which provided their candidates with practice in working through multistage problems in a range of contexts are to be congratulated.

Candidates should be reminded to show all stages of their working even when they are using a calculator in order to avoid losing marks for process. Similarly candidates need to present answers with the appropriate units.

Question 1

In this question a common mistake was to use 2.30 × 40 for the time for each song instead of 2.5 × 40 and therefore candidates limited themselves to only 2 marks out of the 4 available. Those who changed the 2 minutes 30 seconds into 150 seconds were generally successful and a significant minority did get the correct 100 minutes or 1 hour 40 minutes. The majority of candidates added the 100, 30, 40 and 45 in various orders, but a few candidates thought that there was a break for each song. The D mark was most commonly lost because the final answer was not compared to the midnight deadline. Candidates need the opportunity to practice working and converting between hours, minutes and decimal notation.

In the second part of this question the majority of candidates found £17.50 and £32 and added them rather than adding £17.50 to the £25 cheaper option. Some lost marks for incorrect money notation; a final answer of 42.5 was **not** awarded full marks. A small minority of candidates worked out the unitary price of each poster or flyer which is not a functional approach to this problem; candidates should be made aware that unitary methods are only valid where single items can be purchased. Centres should advise candidates that correct money notation is often required for full marks.

Question 2

The majority of candidates were able to work correctly with proportional parts given as a fraction but a few gave answers where the total number of tracks was greater than the 20 tracks that were being divided. Candidates should be encouraged to look at the sense of their answers in order to identify errors in their working.

The second part of this question was well answered with most candidates scoring at least 4 out of the 6 marks. Marks were lost where candidates were unable to correctly find 15% or mistakenly used 20% and a significant minority did not subtract the 15% from the original cost. At Level 2 centres need to encourage candidates to use a calculator for percentages rather than the 10% and 5% method where there is a tendency for errors to occur with the decimal quantities.

Buy 10 for the price of 9 did cause confusion for some candidates who subtracted only one free track at £1.10 instead of two. Occasionally some candidates worked out all the costs correctly but identified the wrong store as the cheapest.

Question 3

Many candidates were unable to find the balance for 19 June. A balance sheet was obviously unfamiliar to them. This would be a particularly useful activity for embedding ICT into a functional mathematics lesson whilst introducing the concept of a balance sheet. Candidates could work on simple balance sheets which emphasise that negative balances are possible.

Question 4

The majority of candidates were able to read values from the graph however many did not state the correct units. Centres should encourage candidates to read scales carefully and check the units used on a graph. Many candidates ignored the quantities of oil and just worked with the costs from the graph and some paired the costs and quantities incorrectly. A few candidates calculated the difference in costs on both dates for the correct amount of oil but failed to add their answers to get the final result and make the correct decision so lost the final mark.

Question 5

Many candidates were unable to convert correctly between mm and metres, and many errors were made by those candidates who chose to work in centimetres. Regular practice at converting within the metric system would be useful exam preparation for candidates.

The problem of fitting the solar panels onto the roof was attempted by nearly all candidates. Responses based on working demonstrated by drawing were often successful. Many candidates considered only one line of vertical panels and not the option of placing the panels horizontally which gave the greatest number of panels. Those calculating the number of panels without drawing often, erroneously, tried to work with area. The area of the roof was divided by the area of one panel which gave an answer of 15. This meant the layout of the panels and how they would fit was not considered. Some candidates produced very little or no working but just stated an answer which limited the marks available to them.

In the second part of the question the majority of candidates showed that the figures had to be added then divided by 6 in order to check the mean. Brackets around the numbers to be added were often omitted and some candidates failed to compare with the given figure given and so lost the second mark. A few found the median rather than the mean.

In the third part of the question most candidates were able to multiply the cost per kWh by the number of kWh but some used a rounded cost per kWh which gave an incorrect answer. Centres may like to use petrol prices and utility bills as exam practice for prices which are not whole numbers of pence. Many candidates failed to round their answer to the nearest whole pound and therefore lost the second mark. The majority of candidates did not complete a suitable check for their calculation and so lost the final mark.

Doing an inverse operation or estimation to check answers seems to be a difficult concept for candidates and centres should consider providing opportunities for candidates to practice this skill.

Question 6

Very few candidates understood what was required by a two-way table. This is a Level 2 method of collating data and candidates will need to have seen and used two-way tables as preparation for the exam.

Question 7

This proved to be an accessible question with the majority of the candidates correctly completing the question. A minority of the candidates could not convert Dollars to Sterling properly e.g. dividing the dollars by 0.62 instead of multiplying. Others left out the conversion altogether. Some failed to include the 4 bouncy castles or, when they did, multiplied the delivery charge by 4 as well. A minority of candidates lost a mark through not giving a decision even though their working was correct.

Centres should provide candidates with the opportunity to experience 'ordering' items to appreciate that delivery charges are only applied once to the total order not each item individually. Practice at converting between currencies would also be beneficial.

Question 8

Candidate success in this question was mixed. A significant number of candidates achieved full marks. However repeated percentage change was not understood by a significant minority. Many found 20% and 9% of £135 and then added the two values stating that the VAT was incorrect.

Centres are advised to highlight to students that where they need to show a value is correct, i.e. if the answer is given in the question, then candidates must show all their working to prove they can achieve the same answer.

Many candidates did not use a calculator and build up methods were common. This not only creates more opportunities for errors but also uses more time which risks candidates having insufficient time to complete the paper.

Question 9

In this question candidates were required to use a formula and to follow a given method. A minority of candidates were able to answer this correctly. To be successful in this question, candidates needed to read the script carefully in order to fully comprehend the given instructions. Misconceptions as to how to substitute in a formula were evident and even those that could complete the substitution failed to perform the following operation correctly. A lack of understanding of cubing was demonstrated and this needs to be addressed for Level 2 candidates. A significant number of candidates only multiplied 0.52 by 8 once, others did the first part correctly and then multiplied it by 1000 but then instead of dividing 300000 by their answer they subtracted it. Many candidates failed to recognise the need to multiply by 0.85.

It would be advantageous for candidates to be exposed to the use of algebra in realistic contexts to improve confidence.

The second part of the question was generally well done; many found the correct probability and most cancelled the resulting fraction correctly whilst some candidates interpreted the probability as a correct percentage. Giving the probability in words, such as 'out of' or' 2 in 5 chance' etc. or as a ratio, lost candidates marks and is to be discouraged.

The final part of the question was mostly answered correctly. It was encouraging to see confident and correct calculations involving a rate of change. A few candidates lost marks because they forgot to include a decision in their response.

Pass mark for FSM02

Maximum mark	48
Pass mark	29
UMS	6

Note: Grade boundaries vary from year to year and from subject to subject, depending on the demands of the questions.