Principal Examiner Feedback

May 2011

Functional Skills Mathematics
Level 1 (FSM01)

PEARSON

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Functional Skills Mathematics Level 1

Introduction

From the evidence presented in this paper it is clear that some candidates are not using calculators effectively to process arithmetic. By their very nature, functional questions involve arithmetic operations and data handling techniques. Candidates did encounter problems addressing some of the questions because they appeared to lack a calculator.

In order to award marks for process, a key element in functional skills examinations, the candidate should show working and a clear methodology.
It is not the case that correct answers always earn full marks: the process by which the answers have been arrived at attracts the majority of the marks.
Candidates need to be encouraged to read questions very carefully in order that they are able to handle the conditions and constraints that functional mathematics questions provide.

Organisation of the work is crucial for the award of marks: disorganised working spread across the working space attracts few marks simply because the process followed is not clear. This is particularly important in functional skills exams because candidates are having to answer open ended questions and need to describe the process through reasoned mathematics and relevant argument. Centres need to continue to place emphasis on the meaning of the notepad symbol as some candidates are still ignoring the key need to show clear evidenced working.

Overall, candidates found questions most difficult when they were not directed: that is, the more open-ended type questions. Centres need to continue to offer opportunities for solving these types of problem in preparation for examinations in functional skills.

It is evident that careful reading of questions and use of required detail is essential when aiming for high marks. Techniques such as underlining, highlighting or emphasising key words or phrases in each question was evident in the work of high scoring candidates.

In functional questions, the facility to reflect on whether the final answer is reasonable is important. Candidates need to reflect on whether the final answer is reasonable in the context of the question.

Report on Individual Questions

Section A

Q1a   Candidates require more practice reading scales on graphs. Many of the candidates did not find 850g on a scale ranging from 500g to 1000g. Candidates might draw horizontal (and vertical) lines on conversion graphs. They could write down the value in kg on the scale before attempting to convert it to tonnes.
Candidates need practice interpreting scales to enable them to read from axes with intervals between minor grid lines which are not powers of 10. They need to practice identifying the actual intervals and perhaps adding extra marked divisions to show for example 100s on the Cement axis.
Some candidates missed the requirement to give an answer in **tonnes** and left 2600 with or without kg seen, perhaps due to not knowing the correct conversion to use.

Q1b   It was evident that some candidates were not properly equipped to succeed and instead attempted this question without a calculator. Most realised division was required but many lost the second mark through failure to consider the context and round up to give the 22 full bags rather than 21.25. The bold **bags** should have been a reminder. Candidates need to practice thinking about whether to round up or down in real-life situations. They should be reminded that in questions where a number of items need to be purchased as a whole, they must round up to the nearest available unit. Candidates that accomplished the answer through repeat addition were successful in this question as it was clear that 840 was not enough, so they needed to go up to 880.

Q1c   Candidates found interpreting more than one piece of information challenging. The successful candidates coordinated two pieces of information.
Further work on extracting information is needed. The biggest error was misinterpreting the first part of the rule involving 1 week per cm for the first 4 cm and assuming that only 1 week was needed for the full first 4 cm. Many candidates didn't attach weeks to their numbers.
It appeared that the word "per" for the first 4 cm caused difficulty. Often candidates went on to give the correct 6 weeks for the remaining 3 cm, suggesting they found it easier to understand the "for each" wording in this part. Encouraging candidates to draw a vertical number line type diagram showing the 7 cm depth of concrete may help some visualise the situation and interpret the instructions given. The most successful candidates demonstrated their knowledge of sequencing by drawing diagrams, to aid their working out.

Q2   Some candidates did not appreciate that each floorboard was 4m long and that metres were in the table. Many simply multiplied the cost by 35, rather than 140. Candidates need extra practice in picking out useful information. It's noticeable that many candidates make a point of underlining or highlighting the numbers given in the text of the question - a good way of checking whether all the information has been used.
Those that identified the total length of the boards first before multiplying by the price were the most successful.

Q3   Candidates found this a challenging task. Candidates confused perimeter and area. Many didn't read that the floor needed 3 coats and so bought paint to cover 40 square metres. With multistep problems candidates should explain what they are doing, e.g. if they are finding the area they could write 'area =' 40, and not just 40 somewhere in the answer box. Some confused units of area. It was not uncommon to see 8m x 5m = 40m, and $15m^2$ = 225m. Many candidates did not use all the different features of the problem. Not doing three coats was common, and solutions that made no reference to tin coverage was also common.

Plenty of practical discussion of this type of problem could enable more candidates to combine all aspects and provide a complete solution. Practice relating the idea of coverage to area is needed – including discussion about areas and multiple layers. Some candidates spotted that 1 litre of varnish could be used to varnish one strip of 5 squares on the floor plan. They could then see that a total of 8 litres was needed without any need for sophisticated calculation.

Section B

Q4   Some candidates did not appear to be familiar with the distance chart and struggled to use it to obtain correct values for journey times.
Some did not give a complete route and omitted either the start and finish at the farm – candidates need to understand that a route plan needs to include the start and finish points to enable a driver to follow it completely. A few otherwise correct responses were let down by poor arithmetic adding times – whilst this work would probably be best done mentally, the habit of checking such calculations, perhaps by adding numbers in a different order, should be encouraged. At the top end, candidates were testing several routes and arriving at more than optimal solution.
Teachers could be encouraged to show candidates traditional maps and atlases that use this method of demonstrating the distance between destinations, as it is commonly used.

Q5a   This question was answered correctly by the majority of candidates. Some candidates didn't read the condition that trays need to be completely filled, and produced answers that used (eg) 5B only, leaving some space in the 5th tray
Trial and improvement was the most common strategy used, usually with success. In this type of question, candidates need to be reminded to make sure that their final answer is shown clearly. Candidates should be advised to give their solution in terms of the question, e.g. 3 x 50 + 2 x 20 needs to be interpreted.

Q5b   The majority of candidates did not consider the context of building a fence and took the requirement for small posts at every 10m around the perimeter literally and included the corners where the large posts would be placed. When candidates did address the issue of the corners, they took a post off both ends of their 7 to give a total of 20.
Candidates need to be encouraged to visualise the situation, what the fence could look like, how the posts work and exactly where they would be positioned on the plan. The most successful candidates had often done exactly this with sketches adding post positions.
Teachers could provide candidates with a variety of methodologies for this type of question to allow for checking to take place.
Teachers might allow learners the opportunity to discuss the advantages of different methodologies and reminded to use them to check answers.

Q6a   This question was successfully answered by the majority of candidates. Candidates dealt with the flow diagram well, although there were some instances of calculator use changing the order of operations and resulting in 104.2.
Some thought they were solving an equation here and did the opposite processes, i.e. 122 + 32, then x9, then ÷ 5. Centres could spend time working with candidates on the order of operations. Candidates need to be aware that a flow chart overrides the usual BIDMAS/BODMAS and should find, and ideally write down, the output from each individual stage before applying the next function.

Q6b   Some candidates did not understand the demand in this question. Candidates were asked to explain. Some candidates made a judgement without converting the lengths to a common unit. A number of   incorrect conversions were offered, the most common being 100 mm in 1m. There are various ways of "visualising" standard lengths but candidates could perhaps be encouraged to remember that the size of their exam paper (A4) is about 300 mm and roughly 3 of these would make 1m. Candidates need practice thinking about the size of everyday objects using both systems.   They need to be aware that millimetres rather than more familiar centimetres are the chosen unit for measurement in many workplace settings.

Some candidates found it helpful to use centimetres but needed to remember to convert both quantities in order to demonstrate the comparison being made.

Q7   Many candidates gave answers as £5000 instead of diving by 100 to change to £'s.   Many candidates did not write down the calculation that they were attempting on their calculators (i.e. 0.1 x 50 000), and some were confused with the units. A common error was to insert a decimal point in the space in 50 000 to get 50.000, which perhaps indicates an unfamiliarity in the way large numbers are written.

Section C

Q8a   The majority of candidates thought that the two pie charts were different companies. Jeeva was working for the car company. Centres need to work more on this type of question with their candidates so that there is a better understanding of what these diagrams show and that 'more or less' statements can only be supported if totals for each chart are included in the information given. Candidates did not appreciate that each chart was not relative to each other and could not be compared directly due to lack of information. Candidates could be encouraged to think laterally and should consider whether their answers are "real".

Q8b   This was successfully answered by the majority of candidates. However, some thought the question asked about the angle and not a percentage – therefore 90 degrees was a common answer. A fraction was also offered by a minority of candidates.

Q9a   Most candidates were able to interpret the information in the tables and make good progress in making a decision for Jeeva. Some candidates did not show all the stages in their work (e.g. they did not show the addition stages in each part of the calculation). Candidates need to realise that this comparison required full justification using figures provided. Some gave a prose answer referring to some values but without giving full comparison of bonus totals under both Plan A and Plan B.

Q9b   Candidates are improving with this type of question. However, candidates who did not achieve full marks were more often forgetting to include labels on the axes. Some candidates also used scales that caused confusion, in the belief that they had to use the whole area of graph paper. Many acceptable line graphs and bar charts were seen. Sharing with students a standard checklist of scale, labels, plotting may help them ensure that a full 3 marks are obtained. Practice in choosing appropriate scales may help with more accurate plotting.

Q10a Candidates found this question challenging. Some didn't make reference to the cost of each car tax directly. Centres might encourage candidates to write down values for each item. Some candidates misinterpreted the table and did not understand the 'before' or 'on or after' instructions. A significant number of candidates thought that the date for car A was incorrectly recorded (they thought it should have been April 2010). Candidates could be encouraged to highlight appropriate rows or columns in tables. Care needs to be taken with using all aspects of dates given – many looked at just the 4th April and overlooked the year of registration for Car A giving £110 as the cost of registration. Reference to the 3 marks available for this question could have prompted candidates to give more detail in their answers.

Q10b. This question was answered correctly for the overwhelming majority of candidates. However, some candidates stated the upper bound of the range correctly as 150 and did not state the lower bound

Pass mark for FSM01

Maximum mark	48
Pass mark	28
UMS	6

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

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