Mark Scheme (Results)

July 2011

Functional Skills Mathematics
Level 1 (FSM01)

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Guidance for Marking Functional Mathematics Papers

General
- All candidates must receive the same treatment. You must mark the first candidate in exactly the same way as you mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- All the marks on the mark scheme are designed to be awarded. You should always award full marks if deserved, i.e. if the answer matches the mark scheme. You should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

Applying the Mark Scheme
- The mark scheme has a column for **Process** and a column for **Evidence**. In most questions the majority of marks are awarded for the process the candidate uses to reach an answer. The evidence column shows the most likely examples you will see:
  if the candidate gives different evidence for the process, you should award the mark(s).
- **Finding 'the answer'**: in written papers, the demand (question) box should always be checked as candidates often write their 'final' answer or decision there. Some questions require the candidate to give a clear statement of the answer or make a decision, in addition to working. These are always clear in the mark scheme.
- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.
- If there is a **choice of methods** shown, then marks should be awarded for the 'best' answer.
- A suspected **misread** may still gain process marks.
- It may be appropriate to **ignore subsequent work** (isw) when the candidate's additional work does not change the meaning of their answer. You are less likely to see instances of this in functional mathematics.
- You will often see correct working followed by an incorrect decision, showing that the candidate can calculate but does not understand the demand of the functional question. The mark scheme will make clear how to mark these questions.
- **Transcription** errors occur when the candidate presents a correct answer in working, and writes it incorrectly on the answer line; mark the better answer.

- **Follow through marks** must only be awarded when explicitly allowed in the mark scheme. Where the process uses the candidate's answer from a previous step, this is clearly shown. Speech marks are used to show that previously incorrect numerical work is being followed through, for example **'240'** means **their** 240.
- Marks can usually be awarded where **units** are not shown. Where units, including money, are required this will be stated explicitly. For example, 5(m) or (£)256.4 indicate that the units do not have to be stated for the mark to be awarded.
    - **Correct money notation** indicates that the answer, in money, must have correct notation to gain the mark. This means that money should be shown as £ or p, with the decimal point correct and 2 decimal places if appropriate.
        - e.g. if the question working led to £12÷5,
            - Mark as correct: £2.40   240p   £2.40p
            - Mark as incorrect: £2.4 2.40p £240p 2.4   2.40 240

    - Candidates may present their answers or working in many **equivalent** ways. This is denoted **o.e.** in the mark scheme. Repeated addition for multiplication and repeated subtraction for division are common alternative approaches. The mark scheme will specify the minimum required to award these marks.
    - A **range** of answers is often allowed :
        - [12.5,105] is the inclusive closed interval
        - (12.5,105) is the exclusive open interval
    - **Parts of questions:** because most FS questions are unstructured and open, you should be prepared to award marks for answers seen in later parts of a question, even if not explicit in the expected part.
    - Discuss any queries with your Team Leader.

- **Graphs**
  The mark schemes for most graph questions have this structure:

Process		Evidence
Appropriate graph or chart – (e.g. bar, stick, line graph,)	1 or	1 of linear scale(s), labels, plotting (2mm tolerance)
	2 or	2 of linear scale(s), labels, plotting (2mm tolerance)
	3	all of linear scale(s), labels, plotting (2mm tolerance)

The mark scheme will explain what is appropriate for the data being plotted.

A **linear scale** must be linear **in the range where data is plotted,** whether or not it is broken, whether or not 0 is shown, whether or not the scale is shown as broken. Thus a graph that is 'fit for purpose' in that the **data is displayed clearly and values can be read**, will gain credit.

The minimum requirements for **labels** will be given, but you should give credit if a title is given which makes the label obvious.

Plotting must be correct for the candidate's scale. Award the mark for plotting if you can read the values clearly, even if the scale itself is not linear.

The mark schemes for **Data Collection Sheets** refer to **input opportunities** and to   **efficient input opportunities.** When a candidate gives an input opportunity, it is likely to be an empty cell in a table, it may be an instruction to 'circle your choice', or it may require writing in the data in words. These become efficient, for example, if there is a well-structured 2-way table, or the input is a tick or a tally rather than a written list.

Section A: Improving a Lounge

Question	Process	Mark	Mark Grid	Evidence
Q1 (a)	Begins to determine if Owain has enough wood.	1 or	A	Adds together two pieces of the bookcase eg: 1500 + 1000(=2500) **OR** Subtracts a shelf or side panel from a plank of wood. eg: 3000 – 1000(=2000) This mark can be implied from correct evidence in AB

	Correct reason with evidence	2	AB	Reasoning to support decision must be complete.
				Eg: 1000 and yes
				     5000 and 6000 and yes
				     'Only' 5000 and yes

Q1 (b)	Positions table	1 or 2	C CD	2 of: correct length, correct width, suitable position all of: correct length, correct width, suitable position
	Positions bookcase	1 or 2	E EF	2 of: correct length, correct width, suitable position all of: correct length, correct width and suitable position
	Total marks for question	**6**		
Q2 (a)	Chooses blind type	1	G	D or F seen or implied
Q2 (b)	Complete process to find total cost	1 or	H	'68.69'+'68.69'÷2(=103.035) **OR** '76.49'+'76.49'÷2(=114.735)
	Calculates total cost	2	HJ	e.g. (£)'103.03/04' or (£)'114.73/74'
	Total marks for question	**3**		
Q3	Process to calculate cost	1 or	K	Digits 170 ×48 (=81.60) **OR** 75÷48(=1.5625)
	Calculates total cost or cost per drill hole	2	KL	81.6(0) **OR** 1.56… or 1.57
	Correct decision from correct working seen Dependent upon mark K being gained	1	M	Choosing Jack's repairs
	Total marks for question	**3**		

Question	Process	Mark	Mark Grid	Evidence
Q4	Interprets map and begins to process	1	N	Describes a route with 3 or more stages eg: OABC **OR** Process to find distance for a route with 3 or more stages. eg: 13 + 19 + 25(=57miles)
	Develops Solution	1 or	P	Describes a complete non repeated route. Condone implied journey from Owains house to Ainsey at the start of the route. eg: Owain go's to Ainsey…. **OR** Finds the distance for a complete non repeated route.
		2	PQ	Describes a complete non repeated route **AND** Finds the distance for a complete non repeated route
	Finds a shortest route with its distance	1	R	Describes shortest route **AND** states shortest distance. eg: OABCO and states the shortest distance 72 (miles)
	Total marks for question	4		

Section B: Pet Rabbits

Question	Process	Mark	Mark Grid	Evidence
Q5 (a)	Substitutes in formula or begins to reverse check	1 or	A	3.25×2000 (=6500) **OR** $7000 \div 2000$(=3.5)) **OR** $7000 \div 3.25$(=2153.8…)
	Displays a correct figure to compare	2	AB	6500(cm²) **OR** 3.5 (kg) **OR** [2153,2154]
	Decision ft from valid working. Mark A must be awarded.	1	C	eg: yes **and** '6500'(cm²)
Q5 (b)	Chooses cheapest water bowl	1	D	600 (ml) or (£)7.50 seen or (£)32.50 seen
	Coordinates bowl and food choices	1 or	E	Communicates cost **or** item choices for [14.50, 40]
	Refines bowl and food choices	2 or	EF	Communicates cost **or** item choices for [30, 40] Costs must be correct at all stages.
	Optimising kg of food for £32.50 **OR** £40 **OR** £31	3	EFG	(2 ×) 20(kg) + 15(kg) **and** (2 ×) (£)11 + (£)9.50 (3 ×) 20(kg) + 10(kg) **and** (3 ×) (£)11 + (£)7 (2 ×) 20(kg) + 10(kg) **and** (2 ×) (£)11 + (£)7
Total marks for question		7		

Question	Process	Mark	Mark Grid	Evidence
Q6 (a)	Process to find Perimeter	1 or	H	170+170+80(=420) or 1.7+1.7+0.8(=4.2)
	Finds Perimeter	2	HJ	420(cm) or 4.2(m)
	Correctly uses cm to m conversion.	1	K	Converts 'perimeter' to metres '4.2' (m) or '5' (m) seen **OR** Converts to metres a fencing measurement or a linear combination of fencing measurements. eg: 0.8(m) or 3.4(m)
Q6 (b)	Process to find cost of fencing	1 or	L	e.g. '4.2' ×6.50(= 27.3) or '5'×6.50(=32.5)
	Finds cost	2	LM	£27.30 or £32.50 correct money notation
Total marks for question		**5**		
Q7	Process to calculate mean or reverse check	1 or	N	5+8+10+6+4+9(=42) or 42 – (5+8+10+6+4+9) (= 0)
	Completes solution	2	NP	42÷6=7 **OR** achieves 42 by 7×6 and (5+8+10+6+4+9) 7 from median, no credit
	Finds range	1	Q	6
	Communicates check from correct figures	1	R	Clearly states both mean and range **allowing** comparison
Total marks for question		**4**		

Section C: Health Care

Question	Process	Mark	Mark Grid	Evidence
Q8 (a)	Identifies 1030pm as time to take last tablets	1	A	Mark in 2230 row seen in at least one column
	Divides time for one tablet **OR**	1 or	B	Marks one of 1500, 1230 and 1730 in correct column **OR**
	Displays three consecutive markings with two time periods of equal duration.			displays three consecutive markings within one column with two time periods of equal duration. The time periods must be at least 2 hours
	Markings must not exceed tablet dose instructions			eg: marks 1100, 1530 and 2000 for Tablet B
	Divides time for both tablets	2	BC	Marks all of 1500, 1230 and 1730 in correct column.
	Markings must not exceed tablet dose instructions			
Q8 (b)	Identifies one constraint	1 or	D	Picks any date(s) between 24 June and 1 July inclusive **OR** indicates a Monday or Wednesday
	Identifies 27 or 29 June	2	DE	Indicates 27 or 29 June or both. Condone up to and including 6 additional indications of dates between 3 June and 3 July. Ignore other indications outside this range.
Total marks for question		5		

Question	Process	Mark	Mark Grid	Evidence
Q9	Considers 25%	1	F	0.25×9.60 (=2.40) **OR** 0.75×9.60 (=7.20) **OR** states 25% = $\dfrac{1}{4}$
	Considers $\dfrac{1}{3}$	1	G	$9.60 \div 3$ (=3.20) **OR** $(9.60 \div 3) \times 2$ (=6.40) **OR** $\dfrac{1}{3}$ = 33% (oe)
	Considers £2.99	1	H	9.60-2.99 (=6.61) **OR** 2.99 ÷9.60 (=31%) **OR** disregards 2.99 with reason (eg 3.20 > 2.99)
	Produces a correct figure	1	J	Has at least one from 2.4, 7.2, 3.2, 6.4, 6.61
	Makes decision Based upon award of F and G and H mark	1	K	Decision based upon valid working
Total marks for question		5		

Question	Process	Mark	Mark Grid	Evidence
Q10 (a)	Simple data collection sheet	1 or	L	2 categories with at least two input opportunities
	More developed data collection sheet	2 or	LM	At least 4 categories **and** at least 4 input opportunities
	Complete data collection sheet	3	LMN	A data collection sheet that coordinates the time of day with waiting time. All categories correct. eg: a two way table with 9 input opportunities.
Q10 (b)	Works with a fraction	1 or	P	300÷2 (=150) **OR** 300÷3 (=100) **OR** 300÷4 (=75) **OR** converts fractions to percentages or equivalent fractions or decimals
	Works with 2 fractions	2 or	PQ	Two of: 300÷2 (=150) 300÷3 (=100) 300÷4 (=75) **OR** converts fractions to percentages or equivalent fractions or decimals
	Makes decision based on all three fractions	3	PQR	Decision based on three of: 300÷2 (=150) 300÷3 (=100) 300÷4 (=75) **OR** converts fractions to percentages or equivalent fractions or decimals
Total marks for question	6			

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