Mark Scheme (Results)

November 2012

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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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 question**s: 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: Supermarkets

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1	R1	Process to find correct daily wage	1 or	A	$8.2 \times 7 (=57.4)$ **OR** $56 \div 7 (=8)$
	I6	Valid decision from accurate figures	2	AB	Robert's **AND** (£)57.4(0) **OR** Robert's **AND** (£)8 (per hour)
	A5	Shows a valid check	1	C	A reverse of their calculation
		Total marks for question	**3**		
Q2	R2	Works with consistent units	1	D	150cm **OR** 0.2m **OR** 1.4m **OR** 7
	A4	Attempts to calculate number of boxes	1 or	E	'150' $\div 20(= 7.5)$ **OR** $1.5 \div$ '0.2'$(= 7.5)$ **OR** uses a build up method (at least three) eg. 20+20+20… **OR** Diagram showing lengths placed next to each other (at least three).
	I6	Correct decision based on fully correct method	2	EF	7 **OR** Condone 8 provided diagram clearly shows overhang or explanation given including amount of overhang.
		Total marks for question	**3**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q3a	I6	Begins to interpret table	1 or	G	16 **or** 20 **or** 13 **or** 17 **or** 66 seen
	A4	Finds range	2	GH	7
Q3b		Begins to draw graph	1 or	J	One of : Linear scale, labels, plotting ($\pm$ 2 mm)
		Improves graph	2 or	JK	Two of : Linear scale, labels, plotting ($\pm$ 2 mm)
		Completes graph	3	JKL	All of : Linear scale, labels, plotting ($\pm$ 2 mm) Labels required:- Ben, Aidan, Denise, Sahira and Number of Customers oe **or** equivalent in title
Q3c	R3	Begins to work with constraints	1	M	Aidan correctly completed, 18th **AND** 25th July
	I6	Develops plan	1 or	N	Sahira **OR** Denise correctly completed: Sahira 1st **and** 8th August **OR** 8th **and** 15th August **OR** Denise 4th **and** 11th July **OR** 1st **and** 8th **OR** August 8th **and** 15th August Allow correct completion of Denise and Sahira to fit around incorrect completion of Aidan
	A5	Presents a complete and correct plan	2	NP	Sahira **AND** Denise correctly completed: Denise 4th **and** 11th July **and** Sahira 1st **and** 8th August **OR** Denise 4th **and** 11th July **and** Sahira 8th **and** 15th August **OR** Denise 8th **and** 15th August **and** Sahira 1st **and** 8th August **OR** Denise 1st **and** 8th August **and** Sahira 8th **and** 15th August Allow correct completion of Denise and Sahira to fit around incorrect completion of Aidan
Total marks for question			**8**		

Q4	R1	Works with prices	1 or	Q	Adds prices of at least 2 items **OR** Subtracts price of at least one item from 15 **OR** Lists exactly four different items
	A5	Complete correct solution	2	QR	Correct total <(£)15 for at least 4 different items Eg. (£) 9.3(0) **or** (£)10.8(0) **or** (£)14(.00) **or** (£)14.47 **or** (£)14.59 **OR** (£)5.7(0) left which is not enough for washing powder oe
Total marks for question			**2**		

Section B: A caravan holiday

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5a	A5	Works with numbers in tents	1	A	2 adults & 3 children **OR** 3 adults & 1 child
	R2	Begins to find costs	1 or	B	One of: $2 \times 6 + 3 \times 4(=24)$ **or** $3 \times 6 + 4(=22)$ **or** $2 \times 4.5 (=9)$ **or** '5' $\times 6 +$ '3' $\times 4 (=42)$
	A4	Process to find two costs	2 or	BC	Two of: $2 \times 6 + 3 \times 4(=24)$ **or** $3 \times 6 + 4(=22)$ **or** $2 \times 4.5 (=9)$ **or** '5' $\times 6 +$ '3' $\times 4 (=42)$
	R1	Process to find total cost	3	BCD	'22' $+ 16(=38)$ **OR** '24' $+ 16 (=40)$ **OR** '42' $+ 9 (=51)$
	I6	Process to find cheapest total cost using given criteria	1 or	E	$2 \times 4.5 +$ '38'$(=47)$ **AND** $2 \times 4.5 +$ '40'$(=49)$
	I6	Finds two total costs using given criteria	2	EF	(£)47 **AND** (£)49
Q5b	R1	Process to find cost per adult	1 or	G	$924 \div 5(=184.8)$
	A4	Finds correct cost	2	GH	£184.80 correct money notation
Q5c	A4	Process to find area of plot	1 or	J	$9 \times 10(=90)$ **OR** Marks diagram and counts squares
	I6	Decision from accurate figure	2	JK	Yes **AND** $90(\text{m}^2)$
Total marks for question			**10**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q6a	R1	Process to find suitable route	1 or	L	Complete route indicated on diagram **OR** Process to add a complete route 420 + 320 + 350(=1090) **or** 420 + 320 + 380 + 360 + 340(=1820) **or** 300 + 310 + 380 + 350(=1340) **or** 300 + 310 + 360 + 340(=1310)
	A4	Finds total distance	2	LM	1090 **OR** 1820 **OR** 1340 **OR** 1310
Q6b	R3	Process to find cost of 2 meals	1	N	16 + 16(=32) **OR** '2' × 16 (=32)
	A4	Works with 25%	1	P	0.25 × '32' (=8) oe **OR** 0.75 × '32' (=24) oe
	A5	Works with half price	1	Q	'16' ÷ 2
	I6	Correct figures **OR** Convincing argument for equivalence	1	R	(£)8 discount for both meals with P and Q awarded **OR** (£)24 cost of two meals using both offers with P and Q awarded **OR** (£)12 cost of one meal using both offers with P and Q awarded
Total marks for question			**6**		

Section C: Owning a car

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q7a	R2	Works with saving per week or cost for 4 weeks	1 or	A	60 ÷ 3(=20) **OR** 100 ÷ 4(=25) **OR** 60 × 4 (=240)
	A4	Process to find figures to compare	2 or	AB	'20' × 4(= 80) **OR** 100 ÷ '20'(=5) **OR** 60 ÷ 3(=20) **AND** 100 ÷ 4(=25) **OR** 240 ÷ 3(=80) **OR** '25' × 3 (=75)
	I6	Decision from accurate figure(s)	3	ABC	No **AND** (£)80 **OR** No **AND** 5 (weeks) **OR** No **AND** (£)20 **and** (£)25 **OR** No **AND** (£)75
Q7b	I6	Writes one simple statement	1 or	D	Simple statements: E.g. It cost 90(p) in Jan '07 It was cheapest in Jan '09 It cost most in June '11 It mostly goes up
	I6	Write two simple statement or one developed statement	2	DE	Developed Statements: E.g. Apart from Jan '09 the price is going up The prices range from 85(p) to 136(p)
Q7c	R1	Starts process to find mean	1 or	F	134 + 132.9 + 137.6 + 138.9 + 132.7 + 136.9(=813)
	A4	Complete process to find mean	2 or	FG	'813' ÷ 6(=135.5)
	I6	Finds mean	3	FGH	135.5(p)
Total marks for question			**8**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q8a	R3	Starts to use formula	1 or	J	$350 \times 9 (=3150)$ **OR** $350 \div 100 (=3.5)$ **OR** $45 \times 100 (=4500)$ **OR** $45 \div 9 (=5)$
	A4	Completes substitution	2 or	JK	$350 \times 9 \div 100 (=31.5)$ **OR** $45 \times 100 \div 9 (=500)$
	I6	Valid decision with accurate figures	3	JKL	Yes **AND** [31, 32](litres) **OR** Yes **AND** 500 (miles)
Q8b	R1	Works with ratio	1 or	M	$10 \times 125 (=1250)$
	A4	Finds amount of water required	2	MN	1250(ml) **OR** 1.25 (litres) **OR** (1 litre) 250 (ml)
Q8c	R2	Starts to work with time	1 or	P	Adds at least 2 durations to 10:30 **OR** Subtracts at least 2 durations from 6 pm or 18:00 **OR** Adds at least 3 durations
	A4	Full process	2 or	PQ	Adds all durations to 10:30(=5:55 oe) **OR** Subtracts all durations from 6(=10:35)
	I6	Valid decision with accurate figures	3	PQR	Yes **AND** 5:55(pm) oe **OR** Yes **AND** 5 minutes to spare oe **OR** Yes **AND** 10:35(am)
Total marks for question			**8**		

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