Mark Scheme (Results)

January 2013

Functional Skills Mathematics
Level 1 (FSM01)

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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1a	R2	Uses one of the criteria successfully	1 or	A	At least one correct month based on sea temperatures – June-Nov inclusive **AND** evidence for choices shown either in statement or figures or indicating entries in the data table **OR** At least one correct month based on daytime land temperatures May, June, September, October **AND** evidence for choices shown either in statement or figures or indicating entries in the data table
	I6	Uses both criteria successfully	2	AB	June **or** September (or both) **AND** evidence for choices shown either in statement or figures or indicating entries in the data table.
Q1b	R1	Works with prices	1 or	C	Any hotel price + any scuba price
	A4	Process to find holiday cost	2 or	CD	625 + 128 (= 753) **OR** 639 + 128(=767) **OR** 695 + 128(=823) **OR** 800 – 625 – 128(=47) **OR** 800 – 639 – 128(=33) **OR** 800 – 695 – 128(= –23)
	I6	Valid decision and accurate figures	3	CDE	Yes **AND** (£)753 **or** (£)767 **OR** Yes **AND** (£)47 **or** (£)33
	A5	Appropriate check of their calculation	1	F	Reverse of any of their calculations **OR** check that their answer is < 800 e.g. 800-753=47 **OR** valid alternate calculation
Total marks for question			**6**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q2	R1	Uses consistent units	1	G	0.76 seen **OR** converts any weight in kg to g
	R2	Begins to calculate total weight of diving kit	1 or	H	Adds at least 3 weights **OR** subtracts at least 3 weights from 22 **OR** subtracts at least 3 weights from 19 (may be g or kg or accept incorrect conversions)
	A4	Full process to calculate total weight of diving kit (need not include bag)	2 or	HJ	2.8 + 1.6 + 3.3 + '0.76' + 1.75 + 7.4 + 3(=20.61) **OR** 2.8 + 1.6 + 3.3 + '0.76' + 1.75 + 7.4(=17.61) **OR** 22 – (2.8 + 1.6 + 3.3 + '0.76' + 1.75 + 7.4 + 3)(=1.39) **OR** 19 – (2.8 + 1.6 + 3.3 + '0.76' + 1.75 + 7.4)(=1.39) **OR** 22 – (2.8 + 1.6 + 3.3 + '0.76' + 1.75 + 7.4)(=4.39 (may be g or kg or accept incorrect conversions)
	I6	Correct total weight	3	HJK	20.61 **or** 1.39 **or** 20610 **or** 1390
	16	Valid decision from valid working, allow follow through provided mark J is awarded	1	L	E.g. Yes **and** 20.61(kg) **OR** Yes **and** 20610(g) **OR** Yes **and** 1.39(kg) **OR** Yes **and** 1390 (g) **and** 3000 (g) **OR** allow follow through provided mark J is awarded
		Total marks for question	**5**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q3a	R2	Process to calculate with time	1 or	M	E.g. 2 hours + 2 hours 30 minutes **OR** 13:50 – 2 hours **OR** 13:... – 2 hours 30 minutes **OR** shows calculation using at least one step
	A4	Completes process **OR** one time calculation correctly completed	2	MN	E.g. 4 hours 30 minutes seen **OR** 4.5 hours seen **OR** 11:50 seen **OR** 11:20 seen **OR** 9:20 seen **OR** correct arrival with any bus time.
	A5	Correctly considers all timings and chooses appropriate bus	1	P	07:15 **OR** 08:25 **OR** 08:45
Q3b	A4	Process to find 10%	1 or	Q	22 ÷10 (= 2.2) oe **OR** 19.8(0) seen
	I6	Correctly finds 10%	2	QR	£2.20 in correct money notation
Total marks for question	**5**				

Section B: School leaver's party

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q4a	R3	Processes sales or number of people	1 or	A	562.50÷37.50(=15) **OR** 262.50÷37.50(=7) **OR** 1050.00÷37.50(=28) **OR** 187.50÷37.50(=5) **OR** 112.50÷37.50(=3) **OR** 562.50+262.50+1050.00+187.50+112.50(=2175) **OR** 37.50 × 60(=2250)
	A4	Complete process to find figures to compare	2 or	AB	562.50 ÷ 37.50(=15) + 262.50 ÷ 37.50(=7) + 1050.00÷37.50(=28) + 187.50÷37.50(=5) + 112.50÷37.50(=3) **OR** 562.50 + 262.50 + 1050.00 + 187.50 + 112.50(=2175) **AND** 37.50 × 60(=2250) **OR** '2175'÷60 (=36.25)
	I6	Correct answers	3	ABC	58 (people) **OR** 2175 **AND** 2250 **OR** 36.25
	I6	Valid decision from correct answers	1	D	Yes **and** 58 **OR** Yes and good explanation with 2175 **and** 2250 **OR** 36.25
Q4b	R2	Process to calculate time	1	E	8pm to 1am = 5 hours oe **OR** Identifies 1 extra hour required e.g adds 55
	A4	Process to calculate total cost	1 or	F	345 + '1' × 55(=400)
	I6	Correct total cost	2	FG	(£)400
Total marks for question			**7**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5a	R3	Process to calculate tables needed	1 or	H	107 ÷ 8(=13.375) **OR** repeat addition 8 + 8 + 8…(=112) **OR** 107 – 8 – 8... oe
	A4	Correct answer	2	HJ	14
Q5b	R1	Begins data collection sheet	1 or	K	2 of: Input opportunities, heading of courses **or** names of dishes, heading for people **or** names of people
	R2	Improves sheet	2 or	KL	Heading for names or input opportunities for 8 people **AND** heading of courses **or** names of dishes
	I6	Efficient complete sheet	3	KLM	All of: Efficient input opportunities for 8 people **AND** heading for people **or** names of people, **AND** names of dishes. A tally chart is not efficient.
		Total marks for question	**5**		
Q6	I6	Begins to produce sequential time plan	1	N	Sequential plan with at least 3 activities.
	R2	Identifies information	1 or	P	1 of: Drinks at 7:30, awards starts 9:30 **or** meal ends at 9:30, dancing starts at 10:15 **or** awards last for 45 (mins) or (ft from 9:30)
	A4	Calculates with time	2 or	PQ	2 of: Drinks at 7:30, awards starts 9:30 **or** meal ends at 9:30, dancing starts at 10:15 **or** awards last for 45 (mins) or (ft from 9:30)
	A5	Complete checked sequential time plan	3	PQR	Fully correct time plan showing start times for photos, drinks, meal, awards and dancing
		Total marks for question	**4**		

Section C: Garden improvements

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q7	R1	Process to find number of bulk bags needed	1 or	A	$2000 \div 500$ (=4) **OR** build up method **OR** $4 \times 500 (=2000)$
	I6	Process to find cost of bulk bags	2	AB	$265 + 109$ (=374)
	R2	Process to find number of 50 kg packs needed	1	C	$2000 \div 50$ (=40) **OR** build up method **OR** $40 \times 50 (=2000)$ May be implied by subsequent use of 30
	A4	Works with fractions or cost	1 or	D	'40' $\div 4 \times 3 (=30)$ **OR** '40' $\div 4 (=10)$ **OR** $11.75 \times$ '40' $(=470)$ **OR** 35.25
	A4	Works with fraction and cost	2 or	DE	'30' $\times 11.75 (=352.5)$ **OR** '470' $\div 4 \times 3 (=352.5)$ **OR** '470 – 117.5 $(=352.5)$ **OR** $265 +$ '117.50' $(=382.5)$ **OR**
	I6	Finds correct lowest cost of gravel	3	DEF	(£)352.5(0)
		Total marks for question	**6**		

Q8a	R1	Considers a constraint for the vegetable patch	1 or	G	9 adjoining squares indicated **OR** allows at least 1 m from fence and house (does not need to be a rectangle)
	A4	Considers all constraints for the vegetable patch	2	GH	9 adjoining squares indicated **AND** allows at least 1 m from fence and house (does not need to be a rectangle)
	R2	Considers a constraint for pond	1 or	J	Rectangle 2 m × 1 m **OR** at least 3 m from house
	I6	Correctly positions pond	2	JK	Rectangle 2 m × 1 m **AND** at least 3 m from house
Q8b	R3	Begins to substitute or reverse calculate	1 or	L	65 × 2(=130) **OR** 323 – 128(=195) **OR** 65 × 3(=195)
	A4	Completes full process	2 or	LM	128 + 65 + 65(=258) **OR** 65 × 2(=130) + 128(=258) **OR** '195' + 128(=323) **OR** 323 – 128(=195) **AND** 195÷2(=97.5)
	I6	Finds correct charge or difference	3	LMN	(£)258 **OR** (£)97.5 **OR** 4(days)
Total marks for question			**7**		
Q9	R3	Uses table	1	P	Identifies at least 1 bucket of green and 1 bucket of brown waste (may be seen on diagram or table)
	A4	Uses ratio Begins to use unitary method **OR** Works with buckets in correct ratio.	1 or	Q	6 brown buckets and 2 green buckets **OR** 9 brown buckets and 3 green buckets **OR** 12 brown buckets and 4 green buckets **OR** Identifies 4 buckets of green nitrogen waste **OR** 2 brown buckets spare
	I6	Communicates answer meeting all constraints	2	QR	Identifies contents of 12 brown buckets and 4 green buckets **OR** clear identification of what is not used.
Total marks for question			**3**		

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