Mark Scheme (Results)

February 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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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: A loft conversion

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1a	A4	Finds total	1	A	(£)14 825
Q1b	R1	Process to find percentage	1 or	B	13 500 ÷ 10(=1350) **OR** 13 500 × 0.1(=1350) o.e. Accept 13 500 × 0.9 (=12 150) o.e
	I6	Finds 10%	2	BC	(£)1350
Total marks for question			**3**		
Q2a	R1	Begins to draw and position wardrobe	1 or	D	2 of: Rectangle with correct width (2 sq), correct length (5 sq), suitable position
	I6	Draws wardrobe on grid	2	DE	All of: Rectangle with correct width (2 sq), correct length (5 sq), suitable position
	A4	Begins to draw and position TV cabinet	1 or	F	2 of: Rectangle with correct width (1 sq), correct length (2 sq), suitable position
	I6	Draws TV cabinet on grid	2	FG	All of: Rectangle with correct width (1 sq), correct length (2 sq), suitable position
Q2b	R3	Converts and compares dimensions	1 or	H	Chooses Rose **OR** Ivy (may identify by dimensions) **AND** No incorrect rugs **OR** converts any dimension
	I6	Full solution (either both rugs or one rug with comparison of converted dimensions)	2	HJ	Chooses Rose **AND** Ivy (may identify by dimensions) **OR** e.g. Rose **AND** 0.9 (m) and 1.5 (m) **OR** e.g. Ivy **AND** 200 (cm) and 100 (cm)

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q2c	R2	Coordinates tallies	1 or	K	≤ tally total for an item × unit price (=interim amount) e.g. 5 ×10(=50) May be implied by subsequent working **OR** all tallies correct (5, 8, 16)
	A4	Uses coordinated tallies to work towards total	2 or	KL	Totals at least two interim amounts e.g. '50' + '32' or (5 × 10) + (8 × 4) **OR** finds three interim totals correct for their tally (not added) **OR** At least two trial solutions working towards £100
	A4	Process for correct total for three interim amounts	3	KLM	e.g. '50' + '32' + '40'(= 122) **or** '40' + '28' + '40'(= 108) (total may be less than (£)100) **OR** can make (£)22 more
	I6	Communicates solution	1	N	A fully correct solution seen e.g. (5 × 10) + (8 × 4) +(16 ×2.5) = 122 **OR** (4 × 10) + (7 × 4) + 16 × 2.5) = 108 **OR** Total must be correct and at least (£)100
Total marks for question			**10**		
Q3	R3	Converts words to figure	1	P	(£)20 876 seen **OR** implied by subsequent working e.g. (20 876 – 20450) =426
	A4	Process to find figures to compare	1 or	Q	214950 – 194500(=20450) **OR** 194500 + '20876'(=215376) **OR** 214950 – '20876'(=194074)
	I6	Decision from correct figures	2	QR	No **AND** 20450 **or** 215376 **or** 194074 **or** 426
Total marks for question			**3**		

Section B: Social club

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q4	R2	Starts to work with cost of activities or membership	1 or	A	E.g. $18 + 18 + 128(=164)$ **OR** $13.5 + 13.5 + 100.8(=127.8)$ **OR** $2 \times (18 - 13.5)(=9)$ **OR** $95 - 55 (=40)$ **OR** $128 - 100.8(=27.2)$
	A4	Process to combine cost of membership and activities or to find total discount on activities	2 or	AB	'164'+ 55(=219) **OR** '127.8'+ 95(=222.8) **OR** '127.8' + 60 (=187.8) **OR** '164' –'127.8'(=36.2) **OR** '9'+'27.2'(=36.2)
	A4	Process to find costs to compare	3	ABC	'164'+ 55(=219) **and** '127.8'+ 95(=222.8) **OR** '9'+'27.2'(=36.2) **and** 95 – 55(=40)
	I6	Valid decision and accurate figures	1	D	Yes **and** (£)219 **and** (£)222.8(0) **OR** Yes **and** (£)36.2(0) **and** 40 **OR** Yes and (£)3.8(0)
Total marks for question			**4**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5	I6	Process to find any route meeting non-numeric constraints	1	E	Describes a non repeating route which starts and finishes at Exton (may be shown on diagram) e.g. 1.2, 1.7, 2.6, 1.5, 1.8
	R3	Process to find the total distance for either route between 7.5 and 8.5 miles	1 or	F	1.2 + 1.6 + 1.9 + 1.4 + 2(=8.1(miles)) OR 2 + 2.6 + 1.5 + 1.8(=7.9(miles)) OR Route with repeats e.g. 2 + 2 + 2 + 2
	A4	Correct answer for correct route meeting all constraints	2	FG	7.9(miles) OR 8.1(miles)
	A5	Shows a check for their route	1	H	Subtracts distance(s) from their route **OR** Checks distance is within constraints OR Finds another route with correct figures
		Total marks for question	4		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q6a	R3	Converts time	1	J	45(minutes) **OR** 30(minutes)
	R3	Works with time	1 or	K	Adds at least two times together **OR** 8 pm to 11 pm (=3 hours or 180 mins) **OR** Works forwards from 8pm or backwards from 11 pm (at least 2 times found)
	A4	Complete process to add time needed, or to time plan forwards or backwards	2	KL	'45' + 40 + 40 + '30'+ 60(=215) oe **OR** 8, 8:45, 9:25, 10:05, 10:35, 11:35 condone 1 error ft. **OR** 11, 10, 9:30, 8:50, 8:10, 7:25 condone 1 error ft.
	I6	Decision and accurate figures	1	M	No **and** 3 hours 35 minutes **and** 3 hours **OR** No **and** 215 minutes **and** 180 minutes **OR** No **and** 11:35 (finish) **OR** No **and** 7:25 (start) **OR** No **and** 35 minutes extra needed
Q6b	R1	Draws appropriate graph or chart	1 or	N	1 of: linear scale, labels, plotting ±2 mm
	A4	Improves graph or chart	2 or	NP	2 of: linear scale, labels, plotting ±2 mm
	I6	Fully correct graph or chart	3	NPQ	All of: linear scale, labels, plotting ±2 mm minimum labels: Awful, Poor, OK, Good, Excellent, number of people - may be seen in title
Q6c	I6	Makes valid comment about survey	1	R	E.g. Most of the people liked film evenings If figures are quoted they must be from developed information
Total marks for question			**8**		

Section C: College canteen

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q7	R3	Process to find area of rectangle	1 or	A	$6 \times 10 (=60)(m^2)$ **OR** counts squares
	A4	Process to find cost	2 or	AB	'60' $\times$ 8.49(=509.4)
	I6	Correct cost	3	ABC	£509.40 (correct money notation)
Total marks for question			**3**		
Q8	R2	Identifies relevant information	1 or	D	30(%) **OR** 25(%) **OR** 3/10 o.e.
	I6	Makes decision with justification	2	DE	No and justification e.g. $\frac{1}{4}$ is not the same as $\frac{3}{10}$ **OR** 30(%) is not the same as 25(%)
Total marks for question			**2**		
Q9a	R3	Starts to substitute in formula or reverse substitute	1 or	F	$6 \times 230 (=1380)$ **OR** $500 \times 3 (=1500)$
	A4	Completes substitution	2	FG	$6 \times 230 \div 3 (=460)$ **OR** $500 \times 3 \div 230 (=6.52...)$
	I6	Valid decision and accurate figures	1	H	No **AND** 460 **OR** No **AND** 6.5…. **OR** No **AND** 7 No **AND** 40 under
Q9b	R1	Process to find scale factor or builds up	1 or	J	$20 \div 4 (=5)$ **OR** $8 \div 4 (=2)$ **OR** $8 + 8 + 8$ (at least 3) **OR** 8:4, 16:8, 24:12 (at least 3)
	A4	Process to find number of tomatoes	2 or	JK	'5' $\times$ 8(=40) **OR** $8 + 8 + 8 + 8 + 8 (=40)$ **OR** '2' $\times$ 20(=40)
	I6	Correct answer	3	JKL	40 (tomatoes)
Total marks for question			**6**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q10	R3	Process for total cost or 1 discount	1 or	M	One of: 3.6 + 1.5 + 0.9(=6) 3.6 ÷ 2(=1.8) 3.6 ÷ 3(=1.2) **or** 1.5 ÷ 3(=0.5) **or** 0.9 ÷ 3(=0.3)
	R2	Process for 2 offers or discounts	2 or	MN	Two of: A:'6' − 2.5 (=3.5) B: 3.6 ÷ 2(=1.8) **or** 1.5 + 0.9 + 1.8(=4.2) C: '6'÷ 3(=2) **or** '6'÷ 3 × 2(=4) **or** 3.6 ÷ 3 × 2 (=2.4) **and** 1.5 ÷ 3 × 2 (=1) **and** 0.9 ÷ 3 × 2 (=0.6)
	A4	Full process for all 3 offers or 2 discounts	3	MNP	B: 3.6 ÷ 2(=1.8) **AND** C: '6'÷ 3(=2) **OR** A: '6' − 2.5 (=3.5) **AND** B: 1.5 + 0.9 + '1.8'(=4.2) **AND** C: '6'÷ 3 × 2(=4) **or** '2.4'+'1'+'0.6'(=4)
	A4	Finds accurate figures to compare	1	Q	1.8 **and** 2 **OR** 3.50 **and** 4.2 **and** 4
	I6	Valid ft decision	1	R	e.g. Deal B, ft provided marks M and N are awarded
		Total marks for question	**5**		

Ofqual

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