Mark Scheme (Results)

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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1a	R2	Begins to consider constraints	1or	A	2 of: at least 5 days shown (could be abbreviations) **OR** at least 5 activities (treat "run 3 times" as 1 activity) **OR** no same activity on consecutive days
	I	Completes plan	2	AB	All of: Seven days shown **with** seven activities (treat "run 3 times" as 1 activity) **AND** no same activity on consecutive days **AND** run at weekend Do not accept blank for rest day
Q1b	R1	Starts to find number of drinks	1 or	C	$500 \div 35$ (=14.2....) **OR** 14×35 (=490) **OR** $500 \div 14$ (=35.7....)**OR** build-up method (at least 3) **OR** successive subtraction of 35 or 14 from 500 (at least 3)
	A1	Completes calculation	2	CD	14.2.... or 14.3 **OR** 490 **OR** 35.7... **OR** 10
	I	Decision ft their figures provided C awarded.	1	E	e.g. Yes with supporting working for mark C
Total marks for question			**5**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q2a	I	Makes valid comment	1	F	Yes **AND** e.g the numbers are generally going down **OR** Yes **AND** the times go down, up, down, down **OR** Yes **AND** times are getting shorter etc (better, quicker, faster...)
Q2b	R1	Draws graph	1 or	G	1 of: Linear scale, labels, plotting (2mm tolerance)
	R2	Improves graph	2 or	GH	2 of: Linear scale, labels, plotting (2mm tolerance)
	I	Completes graph	3	GHJ	All of: Linear scale, labels, plotting (2mm tolerance)
Q2c	A1	Starts to work with formula	1or	K	98×2 (=196) **OR** $240 - 30$(=210)
	A1	Complete process	2	KL	'196' + 30 (=226) **OR** '210' ÷ 2(=105)
	I	Valid decision from correct figures	1	M	Yes **and** 226 (mins) **OR** Yes **and** best practice time can be up to 105(mins) **OR** 98 is shorter than 105 **OR** shorter or faster by 14 min **OR** phrase indicating Yes e.g. he is expected to run it in 226
		Total marks for question	**7**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q3	R1	Process for sponsor rate or time	1 or	N	26×24.35(=633.1) **OR** 4 hours - 3 hours 49 min **OR** 11 or 229 or 240 seen
	A1	Process for sponsor rate and time	2	NP	26×24.35(=633.1) **AND** 11 or 229
	A1	Combines money	1 or	Q	1000 − at least two of '633.1', 50, or '11' **OR** 1000 − '694.1'(=305.9)
	I	Finds correct amount in correct money notation	2	QR	£305.90 cao correct money notation
		Total marks for question	**4**		

Section B: A holiday in France

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q4	R1	Starts to process a cost or budgets	1 or	A	1 of: $1200 \times 2(=2400)$ or $110 \times 2(=220)$ or $1200+110(=1310)$ **OR** $300 \times 5(=1500)$ or $300 \times 2 (=600)$ **OR** $2600 + 100 (=2700)$ or $2600 \div 2(=1300)$ or $2600 \div 5 (=520)$ **OR** $5 \times 550 (=2750)$ **OR** $550 \div 2(=275)$
	R2	Full process for 1 villa for 2 weeks or 2 villas for 1 week	2 or	AB	1 of: $1200 \times 2 + 110 \times 2 (=2620)$ or '2620' $\div 5(=524)$ **OR** $300 \times 5 \times 2 (=3000)$ or $300 \times 2 (=600)$ **OR** $2600 + 100 (=2700)$ or '2700'$\div 5 (=540)$ **OR** 2 of $1200+110(=1310)$ **OR** $300 \times 5(=1500)$ **OR** '1300'+'50'(=1350) or '2700'$\div 2(=1350)$

A1	Full process for 2 villas and budget	3 or	ABC	5 × 550 (=2750) **AND** 2 of: 1200 × 2 + 110 × 2 (=2620) **OR** 300×5×2 (=3000) **OR** 2600 + 100 (=2700) **OR** 2 of '2620' ÷ 5(=524) **OR** 300 × 2 (=600) **OR** '2700'÷ 5 (=540) **OR** '2750'÷ 2(=1375) **AND** 2 of 1200+110(=1310) **OR** 300×5(=1500) **OR** '1300'+'50'(=1350) or '2700'÷2(=1350)
A4	Correct figures to compare	4	ABC D	All of: 2620 **AND** 3000 **AND** 2700 **AND** 2750 **OR** All of: 524 **AND** 600 **AND** 540 **OR** All of: 1310 **AND** 1500 **AND** 1350 **AND** 1375 **OR** budget left 130 **AND** 250 **AND** 50 **OR** budget left per person 26 **AND** 50 **AND** 10 **OR** per person per week 262 **AND** 300 **AND** 270.**AND** 275
I6	Correct decisions from correct figures	1	E	States Villa Adele **AND** Villa Charlotte, provided mark D is awarded
Total marks for question		**5**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5a	R2	Shows process for time needed for journey	1 or	F	180 ÷ 45 (=4) **OR** Counts up in 45's e.g. 45, 90, 135, 180 or 45 + 45 + 45 + 45 (miles) **OR** Counts on from 9.30 am to 2 pm (4.5hrs) **OR** Counts back from 2 pm to 9.30 am (4.5hrs)). condone 4:30
	A4	Finds time needed or works with speed could go at to meet target or works with distance can cover	2	FG	4 (hours) **AND** 4.5(hrs) condone 4:30 **OR** Arrives in Paris at 1.30(pm) **OR** Leave Calais by 10(am) **OR** 180 ÷ 4.5 (=40) **OR** 45 × 4.5 (=202.5)
	I6	Draws valid ft conclusion provided F awarded	1	H	Yes ft with F awarded
Q5b	R1	Works with fraction	1 or	J	¼ × 80 (=20) o.e. **OR** ¾ seen
	A4	Complete process to find petrol needed	2 or	JK	3 × '20' (=60) **OR** (80 ÷ 4) × 3(=60) **OR** 80 − '20' (=60)
	I6	Correct answer	3	JKL	60 (Litres)
Total marks for question			**6**		

Q6a	A4	Calculates change	1	M	12.75
Q6b	R1	Starts time plan	1 or	N	Lists at least two different activities with times that do not clash, starting after 12.20, finishing before 4.30
	R2	Improves time plan	2	NP	At least three different activities with times that do not clash, start after 12.20, exit by 4.30 pm
	I6	Considers all activities	1	Q	Lists 4 correct activities in sequential order
	I6	Complete correct time plan	1	R	Correct solutions: HT – 1.00, ST – 1.45, CT – 3.00, BR – 3.45 **OR** BR – 12.45, HT – 2.00, CT – 3.00, ST – 4.00 **OR** HT – 1.00, ST - 1.45, BR - 2.15, CT - 3.00 **OR** HT - 1.00 - BR 2.15 - CT 3.00 - ST 4.00
Total marks for question			**5**		

Section C: Landscape gardening

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q7	R1	Begins to consider scale and constraints	1 or	A	2 of: Correct width, correct length, suitable position
	I6	Complete solution	2	AB	All of: Correct width, correct length, suitable position
Total marks for question			**2**		
Q8a	R3	Starts to work with parts	1 or	C	Uses build up method e.g. 1:4, 2:8, 3:12, 4:16 at least 4 seen **OR** 5 parts seen **OR** $100 \div 5 (=20)$ **OR** 80
	A4	Completes process for both parts	2 or	CD	Builds up to 20:80 **OR** $100 \div 5 (=20)$ **and** '20' $\times 4 (=80)$
	I6	Correct figures with correct colour	3	CDE	20 red **AND** 80 cream
Q8b	A4	Process to calculate perimeter	1 or	F	$6 + 15 + 6 + 15 (=42)$ **OR** $40 - 6 - 15 - 6 - 15 (=$difference of 2$)$
	I6	Decision from accurate figures	2	FG	No **and** 42(m) **OR** No **and** 2(m) short or difference of 2
Q8c	R2	Works with bags of sand or total weight	1 or	H	$75 \div 25 (=3)$ oe **OR** $75 \times 18 (=1350)$
	A4	Works with sand and total weight or cost of sand per m^2	2	HJ	'3' $\times 18 (=54)$ **OR** '1350' $\div 25 (=54)$ **OR** '3' $\times 2 (=6)$
	R3	Process to calculate cost	1 or	K	'54' $\times 2 (=108)$ **OR** '6' $\times 18 (=108)$
	I6	Finds cost	2	KL	(£)108
Total marks for question			**9**		

Q9	R1	Process to cost 2 bags at Star Gardens	1 or	M	10 + 5(=15) **OR** 3 × 10(=30) **OR** 1/2 price =£5
	A4	Full process for Star Gardens cost	2	MN	15 × 3(=45) **OR** 30 + 15 (=45) **OR** full build up method
	R2	Decides on the number of bags at Golden Gardens	1 or	P	4 seen **OR** 12.50 × 2(=25)
	A4	Full process for Golden Gardens cost	2	PQ	4 × 12.50(=50) **OR** 2 × 25(=50) **OR** Uses full build up method
	I6	Valid decision from correct figures	1	R	Star Gardens **AND** 45 **and** 50
Total marks for question			**5**		

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