Mark Scheme (Results)

June 2013

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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1a	I6	Works with 24 hour and 12 hour time	1	A	E.g. 14:00 is 2.00 (pm) **OR** 4.00 (pm) is 16:00 **OR** No he'd be 2 hours early **OR** Accept 14 (hrs) and 16 (hrs)
Q1b	R2	Starts a process to work with time	1 or	B	Works with any time difference e.g. counts up from10:25 to 11:00 **or** 10:25 to 11:25 **or** 12:20 - 10:25 **OR** adds minutes **or** finds difference in hours **OR** adds 35 and 20 **OR** 10 to 12 = 2 (hrs)
	A4	Uses full correct process to find difference in time for the 10:25 coach	2 or	BC	Complete method for calculating time difference e.g.1 + 20 + 35 (=1 hr 55 mins) **OR** counts up from 10:25 to 12:20 (=1 hour 55 minutes)
	I6	Correct answer	3	BCD	1 (hour) 55 (mins) **OR** 115 (mins)
Q1c	R3	Fully correct process to find 30%	1 or	E	23×0.3 (=6.9) **or** 46×0.3 (=13.8) **OR** $23 \div 10 = 2.3$ **AND** $2.3 + 2.3 + 2.3$ (=6.9) **or** $46 \div 10 = 4.6$ **AND** $4.6 + 4.6 + 4.6$ (=13.8) **OR** 23×0.7 (=16.1) **or** 46×0.7 (=32.2) oe
	A4	Correct answer	2	EF	£6.90 correct money notation **OR** £13.80 (for two tickets) correct money notation
Total marks for question			**6**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q2	R1	Starts to work with prices for 1 person or 2 people	1	G	$173.5 \div 2 (=86.75)$ **OR** $25 \times 2 (=50)$ **OR** $132.25 \times 2 (=264.5)$ **OR** $18.95 \times 2 (=37.9)$ May be seen in subsequent working
	R2	Process for price of 1 option	1 or	H	$25 + 25 + 173.5 (=223.5)$ **OR** '264.5' + '37.9'(=302.4) **OR** $25 + 173.5 \div 2 (=111.75)$ **OR** $132.25 + 18.95 (=151.2)$
	A4	Process for price of 2 options	2 or	HJ	$25 + 25 + 173.5 (=223.5)$ **AND** '264.5' + '37.9'(=302.4) **OR** $25 + 173.5 \div 2 (=111.75)$ **AND** $132.25 + 18.95 (=151.2)$
	A5	Process to find the difference in price between both options	1 or	K	e.g. '302.4'– '223.5'(=78.9) **OR** '151.2' –'111.75'(=39.45) **OR** $(173.5 + 25)$ – '151.2' (=47.3) **OR** $(173.5 \times 2 + 25)$ – '302.4' (=69.6)
	I6	Presents difference in price between both options for 2 people	2	KL	(£)78.9(0)
Total marks for question			**5**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q3a	I6	Writes one simple statement	1 or	M	See below
	I6	Writes two simple statements or one developed statement	2	MN	Simple statements include: e.g. Holiday (Hotel) has more good/excellent (reviews); Poppy (Hotel) has more average (reviews); More people reviewed HH; 51 thought HH was terrible Developed statements include: e.g. Holiday (Hotel) is best as it has more good and excellent reviews than Poppy (Hotel)
Q3b	R3	Process to calculate total or work with differences	1 or	P	$5 + 5 + 4 + 5 + 3 + 5 (=27)$ **OR** $4.5 \times 6 \ (=27)$ **OR** $\pm0.5, \pm0.5, \pm0.5, \pm0.5, \pm1.5, \pm0.5$
	A4	Process to calculate mean or reverse check	2 or	PQ	'27' $\div\ 6 (=4.5)$ **OR** $5 + 5 + 4 + 5 + 3 + 5 (=27)$ **AND** $4.5 \times 6 \ (=27)$ **OR** Sum of differences (=0)
	I6	Correct conclusion from valid process with correct figures	3	PQR	e.g. The review score is 4.5 **OR** It is 4.5 **OR** Yes **and** 27 **and** 27 from 2 different processes **OR** Yes **and** no difference
Total marks for question			**5**		

Section B: Playgroup

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q4a	R1	Process to use proportion	1 or	A	e.g. $20 \div 8$ (=2.5) **OR** 3×8 (=24) **OR** $8 + 8$ + one more (=3) **OR** $20 \div 3$ (=6.6..) **OR** 1/8=3/24 **OR** Diagram or tallies may be seen
	I6	Correct conclusion with correct figure(s)	2	AB	Yes **AND** supporting evidence
Q4b	A4	Works with fraction	1	C	Yes **AND** $\frac{1}{2}$ of 4 =2 **OR** Yes **AND** 3 out 4 $> \frac{1}{2}$ oe **OR** 75% and only 50% needed oe **OR** ¾ are qualified so 3:1 which is more than 2:2 **OR** ¼ is less than ½ so okay
		Total marks for question	**3**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5	A4	Process to work with costs up to £130	1 or	D	e.g. adds at least 3 different figures from list or subtracts at least 2 from 130
	I6	Communicates toys to be bought with mathematical justification	2	DE	Chooses three items (or three prices) and total cost Jigsaws, construction toy and play mat (£)112 **OR** (£)18 (left) Jigsaws, building bricks, play mat and (£)129 **OR** (£) 1 (left) Jigsaws, construction toy and building bricks (£) 123 **OR** (£)7 (left)
		Total marks for question	**2**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q6a	R1	Starts to find elapsed time	1 or	F	12:00 – 9:30 (=2 hrs 30 mins or 2.5) **OR** 9:30 – 45 mins (=8:45) **OR** 12:00 + 1 hr 15 mins (=13:15) **OR** 5 × 45(=225) **OR** counts up from 9:30 or 8:45 to 12:00 or 1:15 **OR** uses clock face
	A4	Develops solution with more than 1 feature	2	FG	45 + 1 hr 15 mins (= 2 hrs) **OR** 13:15 – 8:45 (4.5 hrs) **OR** 225 mins = 3 hrs 45 mins **OR** 5 × 1hr 15mins (=6hrs 15 mins) **OR** 5 × 2hrs 30 mins (=12hrs 30 mins)
	R2	Complete process to find hours worked	1 or	H	e.g.5 × '4 hrs 30 mins' (=22 hrs 30 mins) **OR** 5 × ('2' + '2 hrs 30 mins') or 5 × '2' + 5 × '2 hrs 30 mins' (=22 hrs 30 mins)
	I6	Decision with correct answer	2	HJ	No **AND** 22 hrs 30 mins **or** 30 mins less Accept 22.5 hrs
Q6b	R3	Process to calculate quantity of drink	1 or	K	25 × 200(=5000) **OR** 200 ÷ 1000 (=0.2) **OR** 1000 ÷ 200 (=5)
	A4	Full process	2 or	KL	'5000' ÷ 1000 (=5) **OR** 25 × '0.2' (=5) **OR** 25 ÷ '5' (=5)
	I6	Correct answer	3	KLM	5 (litres)
	A5	Shows a check on their calculation	1	N	Any valid reverse calculation

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q6c	R1	Works with biscuits needed **or** packets	1	P	25×5 (= 125) **OR** 22×6 (= 132) **OR** Uses build up method with at least 5 (packets) **OR** 1 (packet) a day **AND** 3 more needed
	A4	Process for number of packets **or** days	1 or	Q	'125' ÷ 22 (=5.68...) **OR** 110 **AND** 125 full build up method oe **OR** 5 (packets) with 15 more needed **OR** 25×5 (= 125) **and** 22×6 (= 132) **OR** '132' – '125' (=7)
	I6	Finds number of packets	2	QR	6 (packets)
Total marks for question			**11**		

Section C: Indoor karting

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q7	R2	Understands problem, considers criteria to place cafe	1 or	A	Rectangle with **two** of: Correct length (4 sq) Correct width (3 sq) Suitable distance from pit stop (2 sq) Suitable distance karting area (1 sq)
	A4	Develops solution	2 or	AB	Rectangle in suitable position with **three** of: Correct length (4 sq) Correct width (3 sq) Suitable distance from pit stop (2 sq) Suitable distance karting area (1 sq)
	I6	Fully correct solution	3	ABC	Rectangle in suitable position with **all** of: Correct length (4 sq) Correct width (3 sq) Suitable distance from pit stop (2 sq) Suitable distance karting area (1 sq)
Total marks for question			**3**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q8a	A4	Works with consistent units	1	D	1.5 (m) **OR** 45 000 (mm) **OR** 4500 (cm) **AND** 150 (cm) Conversion may be seen in subsequent calculation
	R3	Process to find total number of barriers	1 or	E	45 ÷ '1.5' (=30) **OR** '45 000' ÷ 1500 (=30) **OR** '1.5' × 30 (=45) **OR** Uses a build up method (at least three) **OR** Subtracts at least one length from 45
	I6	Correct answer from valid process allow ft	2	EF	30 (barriers) allow ft from valid process
Q8b	R3	Process to find length of barriers or perimeter	1 or	G	Shows addition of at least 2 of 12, 12, 30, 20 and no others **OR** Shows subtraction of at least 2 of 12, 12, 30, 20 from 74
	A4	Complete process to find length of barriers	2 or	GH	eg 12 + 12 + 30 + 20 =74 **OR** 2 × 30 + 2 × 12 –10 =74 **OR** 74 - 30 - 12 - 20 - 12 = 0
	I6	Correct conclusion from correct calculation	3	GHJ	Yes **AND** 74 from calculation
Total marks for question	**6**				

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q9a	R3	Starts to use formula	1 or	K	eg 2×375 (=750) **OR** 8×100 (=800) **OR** $375 \div 100$ (=3.75)
	A4	Completes substitution	2 or	KL	'750' $\div 100$ (=7.5) **OR** '800' $\div 375$ (=2.13...) **OR** $2 \times$ '3.75' (=7.5)
	I6	Correct conclusion and correct figures	3	KLM	e.g. No AND (£) 7.5(0) **OR** he is 50p out **OR** No AND (£) 2.13...
Q9b	A4	Finds fastest winning time	1	N	45.05 **OR** (Race) 4

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q9c	R2	Starts to design a data collection sheet	1 or	P	Two of: input opportunities start times listed for at least 2 one hour slots times heading type of photo heading at least two photo types listed (or letters)
	I6	Develops a data collection sheet	2 or	PQ	input opportunities with both of: start times listed for at least 2 one hour slots **or** heading for start times **AND** at least 3 photo types listed (or letters) **or** heading for photo types Allow Questionnaire for up to 2 marks only
	I6	Presents efficient solution	3	PQR	All of: efficient input opportunities start times for 3 correct one hour slots – ignore extras All 4 photo types listed (or letters)
Total marks for question			**7**		