Mark Scheme (Results)

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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1a	R1	Process to find adults needed or begin to build ratios	1 or	A	$30 \div 6 (=5)$ o.e. **OR** 1:6 2:12 3:18 ……
	A4	Finds number of adults needed	2	AB	5(adults)
Q1b	R2	Process to find coach cost per child or total amount collected or total entry cost	1 or	C	$375 \div 30 (=12.5)$ **OR** $30 \times 17 (=510)$ **OR** $4.3 \times 30 (=129)$
	A4	Process to find figures to compare	2 or	CD	'12.5'+ 4.3(=16.8) **OR** '129'+ 375(=504) **and** 30×17(=510) **OR** '510'−'129'(=381) **OR** '510'− 375(=135) **and** 4.3×30(=129)
	I6	Valid decision and accurate figures	3	CDE	Yes **and** (£)16.8(0) **OR** Yes **and** (£)504 **and** (£)510 **OR** Yes **and** (£)381 Yes **and** (£)135 **and** (£)129
		Total marks for question	5		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q2a	R3	Begins to prepare time plan	1 or	F	At least 2 activities linked to start and finish times (elapsed time correct) **OR** correct sequential plan with all activities
	A5	Develops time plan	2 or	FG	Activities not ordered sequentially but all activities present **and** linked to appropriate start times and finish times **OR** fully ordered sequentially linked time plan (allow one error or one omission) with appropriate start times (finish times may be implicit) or appropriate finish times (start times may be implicit)
	I6	Fully accurate time plan	3	FGH	Fully ordered sequentially linked time plan with all start times appropriate (finish times may be implicit) or appropriate finish times (start times may be implicit)
Q2b	I6	Valid decision and reason based on likelihood	1	J	e.g. Yes it's over 20 °C more often **OR** Yes 7 out of 10 times are over 20 °C **OR** Can't tell sample is too small **OR** Impossible to tell as weather is unpredictable **OR** Allow Yes average temperature is more than 20°C **OR** Yes last 3 temperatures are all over 20°C

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q2c	R1	Begins to prepare data collection sheet	1 or	K	Input opportunities **and** **Two of:** Heading for child's names **OR** Heading for contact number **OR** Heading for medical information
	R2	Improves data collection sheet	2 or	KL	Input opportunities **and** **Three of:** Heading for child's names **OR** Heading for contact number **OR** Heading for medical information Allow questionnaire for up to 2 marks only
	I6	Efficient data collection sheet	3	KLM	**All of:** **Efficient** input opportunities for at least 6 children Heading for child's names Heading for contact number Heading for medical information Fit for purpose
		Total marks for question	7		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q3					Candidate may work in pounds and/or pence
	R1	Process to find money available or overspend or full cost for 2 items	1	N	2.5 + 2.5(=5) **OR** 2.9 − 2.5(=0.4) **OR** 2.9 × 2(=5.80)
	A4	Process to find half price	1 or	P	2.9 ÷ 2(=1.45)
	A4	Process for total cost or under spend or money available for second item and cost of second item or difference between half price cost and total overspend	2 or	PQ	2.9 + '1.45'(=4.35) **OR** 2.5 −'1.45'(=1.05) **OR** '5' – 2.9(=2.1) **and** 2.9 ÷ 2(=1.45) **OR** '5.8' – '1.45'(=4.35) **OR** '1.45' – 2 × '0.4'(=0.65)
	I6	Valid decision and accurate figures	3	PQR	Yes **and** (£)4.35 **and** (£)5 **OR** Yes **and** 40(p) **and** (£)1.05 **OR** Yes **and** (£)2.1(0) **and** (£)1.45 **OR** Yes **and** 65(p) left
		Total marks for question	**4**		

Section B: Making candles

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q4a	R1	Substitutes in word formula	1 or	A	200 ÷ 10 × 9(=180) minimally acceptable 200 ÷ 10 or 200 × 9
	A4	Finds grams of wax needed	2	AB	180 (grams)
Q4b	A4	Uses consistent units	1	C	300 (cm) **OR** 0.15 (m) **OR** 3.75 (m)
	R2	Process to find number of wicks she can make or process to find total length of wick needed	1 or	D	'300'÷ 15(=20) **OR** 3 ÷'0.15'(=20) **OR** 15 × 25(=375) **OR** '300' ÷ 25(=12) **OR** Uses a build-up method (at least 3 steps)
	I6	Valid decision and accurate figures	2	DE	No **and** 20 **OR** No **and** 300 **and** 375 **OR** No **and** 3.75 **OR** No **and** 12 or needs 3 cm more (for each candle)
	A5	Checks by reverse process or different method	1	F	e.g. 20×15(=300) **OR** 375÷25(=15)
		Total marks for question	**6**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5a	R2	Makes appropriate selection	1	G	B **OR** E (or both) identified and no others
Q5b	R1 A4	Identifies and uses a vanilla cost Process to calculate cost for vanilla	1or 2	H HJ	Uses 8 or 14 3×14(=42) **OR** 6×8(=48) **OR** 2 × 14 + 2 × 8(=44) **OR** 14 + 4 × 8(=46)
	A4	Process for quantities of some lemon and some ginger	1 or	K	e.g. 2×12+6(=30) **OR** 2×11+7(=29) **OR** 7+12+11(=30) **OR** 6+11+12(=29) **OR** 3×6+2×7(=32) **OR** 3×7+2×6(=33)
	I6	Finds total cost inside budget ft. or shows amount left from £75	2	KL	Correct **total** cost inside budget, or amount left ft. their combination must include some vanilla, some lemon & some ginger cost
	I6	Communicates **optimal** additional quantities	1	M	Communicates valid combination of lemon **and** ginger totalling 250 ml
Total marks for question			**6**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q6a	R1	Draws appropriate graph (appropriate graphs include bar chart, barline chart, line graph)	1 or	N	One of: linear scale, labels, plotting
	A4	Improves graph or chart	2 or	NP	Two of: linear scale, labels, plotting
	I6	Fully correct graph or chart	3	NPQ	All of: linear scale, labels, plotting Minimum labelling: one axis Jan – Mar, Apr – Jun, Jul – Sep, Oct – Dec, other axis or title: profit **or** £ Plotting tolerance ±2mm
Q6b	I6	Interprets graph or table	1	R	Makes valid comment, e.g. Most profit in Oct – Dec **OR** Least profit in Jul – Sep **OR** Profit starts off high but decreases Apr – Sep and then increases Oct – Dec
		Total marks for question	**4**		

Section C: Five-a-side football

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q7a	R1	Begins mean process or reverse calculates or finds differences	1 or	A	$360 + 520 + 465 + 410 + 420(=2175)$ **OR** $435 \times 5(=2175)$ **OR** $\pm75 \ \pm85 \ \pm30 \ \pm25 \ \pm15$
	A4	Process for figures to compare	2 or	AB	$360 + 520 + 465 + 410 + 420(=2175)$ **and** $435 \times 5(=2175)$ **OR** '2175'$\div 5$ **OR** 115 over **and** 115 under
	I6	Valid decision **and** accurate figures	3	ABC	Yes **and** 435 **from full mean process** seen **OR** Yes **and** 2175 from totalling **and** reverse process **OR** Yes **and** sum of differences =0
Q7b	R1	Uses scale	1 or	D	Rectangle with two of: Correct length, correct width, suitable distance from hedge, suitable distance from building
	I6	Considers constraints	2 or	DE	Rectangle with three of: Correct length, correct width, suitable distance from hedge, suitable distance from building
	A5	Fully correct solution	3	DEF	Rectangle with correct length, correct width, suitable distance from hedge, suitable distance from building
		Total marks for question	**6**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q8a	R3	Begins to consider time needed or time available	1 or	G	6 × 50(=300) **OR** 6 × 50 + 15(=315) **OR** Allow 6 × 65(=390) Elapsed time from 10.30 to 4 pm=5½ hours **OR** At least two correct durations of time e.g. 10.30 11.20 12.10 ……**OR** Allow 10.30 11.35 12.40 ……**OR** 4 3.45 2.55 …..**OR** Allow 4 2.55 1.50 ………. Accept use of 24 hour clock
	A4	Processes to find figures to compare	2 or	GH	'315' ÷ 60(=5¼ hours) **and** 5½ hours available **OR** 10.30 + 5 hours + 15 mins (= 3.45) o.e. **OR** Allow '390' ÷ 60(=6½ hours) **and** 5½ hours available **OR** 10.30 11.20 12.10 1 1.50 2.40 3.30 3.45 **OR** Allow 10.30 11.35 12.40 1.45 2.50 3.55 5 **OR** 4 3.45 2.55 2.05 1.15 12.25 11.35 10.45 **OR** Allow 4 2.55 1.50 12.45 11.40 10.35 9.30 Condone one error or omission in counting forwards or backwards Accept use of 24 hour clock
	I6	Valid decision and accurate figures	3	GHJ	Yes **and** 5hr 15 mins **and** 5 hours 30 mins **OR** Yes **and** 315 mins **and** 330 mins **OR** Yes **and** finished by 3.45 **OR** Yes **and** 1545 and 1600 **OR** Yes **and** could start at 10.45

Q8b	R1	Begins to list games	1 or	K	Lists at least 3 different games
	I6	Improves list	2 or	KL	Lists at least 6 different games but may also have repeats Eg A two way table with only diagonal blocked out shows 12 games
	I6	Completes list	3	KLM	Lists exactly 6 different games
		Total marks for question	**6**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q9a	A4	Deals successfully with points	1 or	N	Dragons and Rovers in either order before Aces and Griffins in either order
	I6	Correct places	2	NP	Dragons Rovers Aces Griffins
Q9b	R1	Process to calculate 25%	1 or	Q	0.25 × 180(=45) o.e. Allow 0.75 × 180 (=135) o.e.
	A4	Finds correct amount showing units	2	QR	£45 includes money units
		Total marks for question	**4**		

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