

Mark Scheme (Results)

July 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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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 $£12 \div 5$,
 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 –	1	1 of

(e.g. bar, stick, line graph,)	or	linear scale(s), labels, plotting (2mm tolerance)
	2	2 of
	or	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 football tournament

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1a	R1	Chooses a ground with sufficient capacity	1 or	A	Chooses Crown Ground OR Star Meadow
	I6	Justifies choice	2	AB	Crown Ground has sufficient space and is not too large OR Star Meadow so that everyone can have a seat
Q1b	R3	Begins to calculate costs	1 or	C	$6 \times 75(=450)$ OR $24 \times 68(=1632)$ OR $24 \times 0.68(=16.32)$
	A4	Completes costs	2 or	CD	(£)450 AND 1632(p) or (£)16.32
	A4	Finds Total	3	CDE	Correct total £1761.32(p) accept rounded answers e.g. £1761 or £1800 or £1760
Q1c	R2	Works with fraction	1 or	F	$3600 \div 3(=1200)$ OR $3600 \div 500(=7.2)$ or uses build up method or repeated subtraction
	A4	Completes calculation	2	FG	'1200' $\div 500(=2.4)$ OR $7.2 \div 3(=2.4)$ OR $7 \div 3(=2.33..)$ OR
	16	Makes decision	1	H	'1200' and $2 \times 500(=1000)$ and $3 \times 500(=1500)$ 3 boxes OR 2 boxes AND reason e.g. none wasted
Total marks for question			8		
Q2	R1	Works with ratio	1	J	Realises 1 L produces 6 L of drink e.g. $5 + 1(=6)$ or uses 6 in a calculation.
	A4	Begins to calculate amount of drink needed or available	1 or	K	$6 \times 12(=72)$ OR $5 \times 12(=60)$ OR $70 \div 6(=11.6...)$ OR
	I6	Correct answer and correct decision	2	KL	$70 \div 5(=14)$ Yes AND 72 OR Yes AND 11.6...
Total marks for question			3		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q3	I6	Plans games for 1 team	1 or	M	Plans games for 1 team (3 matches) e.g. AB AC AD or at least 4 different games. Plans all games for all teams AB AC AD BC BD CD with no repeats One of: 10 am start, 35min per game, 15 min gap between games. For at least 2 games. Two of: 10 am start, 35min per game, 15 min gap between games. For at least 4 games. All of: 10 am start, 35min per game, 15 min gap between games. For all games. Ignore extra details e.g. finish times. Ignore additional games.
	A5	Checks each team only plays 3 games	2	MN	
	R2	Begins to schedule game times	1 or	P	
	A4	Works towards full schedule	2 or	PQ	
	I6	Complete correct timetable	3	PQR	
Total marks for question			5		

Section B: Solar power

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q4	R3	Chooses an appropriate graph, bar chart or line graph.	1 or	A	One of: Plotting, linear scale, labels
	I6	Begins to plot chart or graph	2 or	AB	Two of: Plotting, linear scale, labels
	A4	Completes a correct chart or graph	3	ABC	All of: Plotting, linear scale, labels
Total marks for question			3		
Q5a	I6	Considers the shape or size of the panel	1 or	D	1 rectangle OR 24 squares indicated
	A5	Correct shape and size of the panel and checks 24 cells used	2	DE	Rectangle with correct dimensions, 2 by 12, 3 by 8, 4 by 6.
Q5b	R2	Process to find length of a panel ft length of their rectangular panel	1 or	F	156 × 'a side' OR 15.6 × 'a side' OR 0.156 × 'a side' accept rounding to 160 o.e.
	A4	Finds length of their panel.	2	FG	Length of panel (mm, cm, m)
	A4	Convert units to metres	1	H	e.g. $156 \div 1000 (=0.156)$
Q5c	I6	Considers maximum temperature	1	J	States that max recorded temperature is less than 55°C
	I6	Considers minimum temperature	1	K	States min recorded temperature is greater than -30°C
Q5d	R2	Considers angles	1 or	L	A 20° or 70° OR B 60° or 30° OR C 30° or 60° allow $\pm 2^\circ$ OR Clear indication of relevant angle to horizontal on A, B or C OR
	A4	Decision with correct angle	2	LM	Chooses C and states A too small and B too large Chooses C and indicates 30°
Total Marks for Question			9		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q6	R3	Starts to use formula	1 or	N	$45 \times 3320 (=149400)$ OR $3320 \div 100 (=33.2)$ OR $2000 \times 100 (=20000)$ OR $2000 \div 45 (=44.4..)$
	A4	Completes substitution in formula	2 or	NP	$45 \times 3320 \div 100 (=1494)$ OR $2000 \times 100 \div 45 (=4444.44..)$
	I6	Correct answer	3	NPQ	(£)1494 OR 4444(.44..)(kWh)
	I6	Correct decision from their working	1	R	The claim is exaggerated as £2000 is a lot more than £1494 OR You need to produce 4444(.44..)(kWh) to make £2000
Total marks for question			4		

Section C: Planning a wedding

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q7a	R2	Begins to consider data	1 or	A	Two of: All layers different size, same shape, total at least 120
	A5	Considers all constraints	2 or	AB	R 24 + 38 + 60(=122) OR S 30 + 48 + 70(=148) OR S 16 + 48 + 70(=134)
	I6	Makes decision from correct figures	3	ABC	Indicates correct 3 tiers: R 8, 10, 12 AND 122 OR S 8, 10, 12 AND 148 OR S 6, 10, 12 AND 134
Q7b	R2	Begins to calculate price	1 or	D	Adds at least two prices from the table
	A4	Correct price for their correct combination	2	DE	e.g. 32.25 + 40.50 + 50.75(=123.50) or 3x40.50(=121.50) (£)123.50 OR (£)158.25 OR (£)150.50 OR
Total marks for question			5		
Q8	R2	Begins to calculate costs	1 or	F	One of: 14 × 120(=1680) OR 16 × 120(=1920) OR 18 × 120(=2160) OR 2000 ÷ 120(=16.6..)
	A4	Calculates costs accurately	2	FG	Two of : (£)1680 or (£)1920 or (£)2160 OR [16.66, 17]
	I6	Decides hotel from costs	1	H	The Grove AND (£)1920 OR The Grove AND [16.66, 17]
Total marks for question			3		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q9a	R2	Begins to find 20%	1 or	J	0.2 × 580(=116) OR Begins to use a build up method e.g. 10% is 58 (£)116
	I6	Finds 20%	2	JK	
Q9b	A4	Subtracts discount	1	L	(£)464 OR ft from part (a)
Total marks for question			3		

Q10	R1	Looks for a route	1or	M	Finds a route between Ali's and the Town Hall e.g. AS(P)T AB(P)T NB may be shown on diagram
	I6	Finds a route via the park	2	MN	E.g. ASPT ABPT NB may be shown on diagram
	R2	Begins to calculate time taken	1 or	P	Time for their route '23' '27' '53' or '57' OR Works backwards from 11:30am
	A4	Allows time for photographs	2or	PQ	'53' or '57' OR Works backwards from 11:30 am to Ali's house
	I6	Calculates start time	3	PQR	10:37
Total marks for question			5		

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