

# Mark Scheme (Results)

March 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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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 - (e.g. bar, stick, line graph, )	1	1 of
	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: Gymnastics competition**

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1a	R1	Adds at least 2 times together <b>or</b> begins time plan <b>or</b> begins working back from 1pm <b>or</b> works out total time hall is booked for	1 or	A	e.g. 15+30(=45) <b>OR</b> 9, 9.15, 9.45 ..... <b>OR</b> 1, 12.40, 12.25 ..... <b>OR</b> 4(hours) or 240(minutes) <b>OR</b> 110 minutes or 1 hour 50 minutes
	A4	Complete process to add time needed <b>or</b> to time plan forwards or backwards	2 or	AB	15+30+30+30+30+30+15+20(=200) o.e. <b>OR</b> 15+30+30+20+15(=110) <b>AND 240 OR</b> 1hr 50 minutes <b>AND 4 hours seen OR</b> 10.50 from working forward <b>OR</b> 11.10 from working backward 9, 9.15, 9.45, 11.45, 12, 12.20 condone 1 error (ft) <b>OR</b> 1, 12.40, 12.25, 10.25, 9.55, 9.40 condone 1 error (ft)
	I6	Valid decision and accurate figures	3	ABC	yes <b>AND 3 hours 20 minutes AND 4 hours o.e. OR</b> yes <b>AND 12.20 OR</b> yes <b>AND 9.40 from counting back method OR</b> yes <b>AND 40(minutes) left</b>

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1b	R1	Understands problem, considers criteria to place beam space	1 or	D	rectangle with <b>two</b> of: correct length correct width suitable distance from space for other equipment suitable distance from edges
	A4	Develops solution	2 or	DE	rectangle with <b>three</b> of: correct length, correct width, suitable distance from space for other equipment suitable distance from edges
	I6	Fully correct solution	3	DEF	rectangle with <b>all</b> of: correct length correct width suitable distance from space for other equipment suitable distance from edges
Q1c	R1	Begins to consider criteria	1 or	G	1 round with 4 different events OR 1 club with 4 different events
	R2	Improves rota	2 or	GH	Incorrect solution with no more than 2 errors OR 2 omissions OR 1 error and 1 omission
	A5	Fully correct rota	3	GHJ	e.g. bars, beam, floor, vault vault, bars, beam, floor floor, vault, bars, beam beam, floor, vault, bars
<b>Total marks for question</b>			<b>9</b>		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q2a	I6	Valid decision with reason	1	K	e.g. no <b>AND</b> Manjit scored higher <b>OR</b> no <b>AND</b> 7.6 is more than 7.35 <b>OR</b> no <b>AND</b> Sara scored higher <b>OR</b> no <b>AND</b> 7.8 is more than 7.35
Q2b	A4	Finds final score	1	L	31.8(0)
<b>Total marks for question</b>			<b>2</b>		

Q3	R3	Process to add hall hire and other costs <b>or</b> to find cost of medals <b>or</b> amount from entrance fees	1 or	M	200+25(=225) <b>OR</b> 12×1.5(=18) <b>OR</b> 32×2(=64)
	A4	Complete process for total costs or income	2	MN	200+25+12×1.5(=243) <b>OR</b> 192 + '64'(=256) <b>OR</b> '243'-192(=51)
	A4	Complete process for both cost and income	1 or	P	200+25+12×1.5(=243) <b>AND</b> 192 + '64'(=256) <b>OR</b> '243'-192(=51) <b>AND</b> 32×2(=64) <b>OR</b> '243'-'64'(=179)
	I6	Finds correct cost and correct income	2	PQ	51 <b>AND</b> 64 <b>OR</b> 243 <b>AND</b> 256 <b>OR</b> (±)13 <b>OR</b> 179 ( <b>AND</b> 192)
	I6	Correct (Ft) decision based on their figures in mark Q provided mark M awarded	1	R	e.g. yes
<b>Total marks for question</b>			<b>5</b>		



**Section B: Beauty salon**

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
<b>Q4a</b>	R1	Begins to consider constraints	1 or	A	two of: not Monday, afternoon, 3 free slots in the same day
	I6	Fully correct solution	2	AB	indicates Wednesday 1:00-1:30, 1:30-2:00, 2:00-2:30 <b>OR</b> Thursday 1:30-2:00, 2:00-2:30, 2:30-3:00 Note: accept answer fully stated in space below question or in the table
<b>Q4b</b>	R1	Process to find discount or %	1 or	C	$0.25 \times 60 (=15)$ <b>OR</b> $60 \div 4 (=15)$ <b>OR</b> uses a complete build up method <b>OR</b> (£) 45 seen
	A4	Finds discount	2	CD	(£)15 evidenced
<b>Q4c</b>	R2	Totals figures or looks at differences or begins to reverse calculate	1 or	E	$190+175+155+210+235 (=965)$ <b>OR</b> $200 \times 5 (=1000)$ <b>OR</b> -10, -25, -45, 10, 35 or 10, 25, 45, -10, -35
	A4	Process to find figures to compare or complete process for mean or uses differences	2 or	EF	$190+175+155+210+235 (=965)$ <b>AND</b> $200 \times 5 (=1000)$ <b>OR</b> $'965' \div 5 (=193)$ <b>OR</b> sum of differences = $\pm 35$
	I6	Valid decision and accurate figures	3	EFG	no <b>AND</b> 965 <b>AND</b> 1000 <b>OR</b> no <b>AND</b> 193 <b>OR</b> no <b>AND</b> sum of differences = $\pm 35$
<b>Total marks for question</b>			<b>7</b>		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5	A4	Uses consistent units	1	H	0.25(0) <b>OR</b> 4000 seen <b>OR</b> 1 litre lasts 4 days <b>OR</b> 16 (days) or 2 weeks 2 days seen
	A4	Process to find number of days	1 or	J	'4000'÷250(=16) <b>OR</b> 4÷'0.25'(=16) <b>OR</b> uses a complete build up method <b>OR</b> 1 litre lasts 4 days, 4 ×4(=16) o.e.
	I6	Communicates number of days	2	JK	16(days) or 2 weeks 2 days
<b>Total marks for question</b>			<b>3</b>		

Q6a	R1	Chooses a suitable graph type	1 or	L	one of: linear scale, labels, plotting (2 mm tolerance)
	R2	Improves graph or chart	2 or	LM	two of: linear scale, labels, plotting (2 mm tolerance)
	I6	Fully correct graph or chart	3	LMN	all of: linear scale, labels, plotting (2 mm tolerance) Note 'profit' must be seen on axis or in title
Q6b	I6	Makes a suitable quantitative comment	1	P	e.g. Ashton makes the most profit <b>OR</b> Hove makes the least profit <b>OR</b> Total profit is (£)99000
Q6c	R1	Begins to use rule	1 or	Q	4×30+25 (=145) minimum 4×30 seen
	A4	Finds cost	2	QR	(£)145
<b>Total marks for question</b>			<b>6</b>		

Section C: Planning a garden

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q7a	R2	Process to calculate area	1	A	$6 \times 8 (=48)$ <b>OR</b> marks and counts squares on diagram
	A4	Process to calculate number of bags needed or area 5 bags will cover	1 or	B	'48' $\div$ 9(=5.33...) <b>OR</b> '48' $\div$ 10(=4.8) <b>OR</b> '48' $\div$ [9, 10] <b>OR</b> '48' $\div$ 5(=9.6) $5 \times 9 (=45)$ <b>OR</b> $5 \times 10 (=50)$ <b>OR</b> $5 \times [9, 10]$
	I6	Finds correct figures to compare	2	BC	4.8 (bags) $50 \text{ (m}^2\text{)}$ <b>AND</b> $48 \text{ (m}^2\text{)}$ [5.3,5.4] (bags) $45 \text{ (m}^2\text{)}$ <b>AND</b> $48 \text{ (m}^2\text{)}$ $9.6 \text{ (m}^2\text{ to be covered per bag)}$ Note: '48' must come from a valid method
Q7b	R1	Starts to work with length or cost	1 or	D	$3+3+2(=8)$ <b>OR</b> $3+3+2+2(=10)$ <b>OR</b> $N \times 14.5$ Where $2 \leq N \leq 10$ <b>OR</b> $3 \times 14.5(=43.5)$ <b>OR</b> $2 \times 14.5(=29)$
	R1	Full process to find cost	2 or	DE	'8' $\times$ 14.5(=116) <b>OR</b> '43.5' $\times$ 2+'29'(=116) <b>OR</b> $10 \times 14.5(=145)$ <b>OR</b> '43.5' $\times$ 2+'29' $\times$ 2 (=145)
	A4	Finds cost	3	DEF	(£)116
Q7c	A5	Shows a suitable check	1	G	e.g. '116' $\div$ '8'(=14.5) <b>OR</b> '116' $\div$ 14.5(=8) <b>OR</b> uses estimation <b>OR</b>
<b>Total marks for question</b>			<b>7</b>		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
<b>Q8</b>	R3	Process for total of monthly cost or divides deposit over 12 months for Outdoor Living	1 or	H	$12 \times 180 (=2160)$ <b>OR</b> $240 \div 12 (=20)$
	A4	Full process for total cost or monthly cost for Outdoor Living	2	HJ	'2160'+240(=2400) <b>OR</b> '20'+180(=200)
	R1	Full process for total cost or monthly cost for Cabins & More	1	K	$2184+168(=2352)$ <b>OR</b> $(2184+168) \div 12 (=196)$
	I6	Correct answers for total cost or monthly cost for both suppliers	1	L	Outdoor Living total cost (£)2400 <b>OR</b> monthly cost (£)200 <b>AND</b> Cabins & More total cost (£)2352 <b>OR</b> monthly cost (£)196
	I6	Valid (ft) decision provided H mark awarded and there are figures in L to compare	1	M	e.g. Cabins & More and H mark awarded and figures in L to compare
<b>Total marks for question</b>			<b>5</b>		

<b>Q9(a)</b>	I6	Begins to consider criteria	1 or	N	chooses a bush or tree that meets 2 of the 3 criteria and makes no incorrect choice Mahonia or Callicarpa or Buddleia
	I6	Chooses a tree or bush that meets all criteria	2	NP	Rose
<b>Q9(b)</b>	A4	Begins to add costs or to subtract from 200	1 or	Q	e.g. $60+59=119$ <b>OR</b> $200-123=77$ <b>OR</b> $60+85+59=204$ <b>OR</b> lists 3 items that cost under £200 in total but total is incorrect or missing
	I6	Communicates items to be bought with mathematical justification	2	QR	chooses 3 items with accurate supporting figures e.g. patio set, heater and lights (£)181 <b>OR</b> (£)19 left e.g. patio set and 2 lights (£)184 <b>OR</b> (£)16 left
<b>Total marks for question</b>			<b>4</b>		

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