

Mark Scheme (Results)

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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1a	R1 A4	Starts to work out duration Correct duration	1 or 2	A AB	10 OR 15 OR evidence of subtracting times or counting on 25 (minutes)
Q1b	R1	Works with time	1 or	C	60 ÷ 15 oe (=4) OR 4 × 23 oe OR 23 ÷ 15(=1.53..)
Q1c	A4 R2	Completes calculation Start to find mean or find max total	2 1 or	CD E	92 (beats per minute) 180 × 3 (=540) OR 190 + 184 + 172 (=546) OR allow 81 + 75 + 87(=243) OR (190 + 184 + 172 + 81 + 75 + 87) ÷ 6 (=789)
	A4	Completes mean calculation	2 or	EF	(190 + 184 + 172) ÷ 3(=182) OR '546' ÷ 3 (=182) OR 190 + 184 + 172 (=546) and 180 × 3 (=540) OR allow (81 + 75 + 87) ÷ 3 (=81) OR allow 243 ÷ 3 (=81)
	I6	Makes decision based on correct calculations	3	EFG	Yes oe AND 182 OR 540 and 546
Total marks for question			7		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q2	R2	Starts to schedule correct patient on correct day	1	H	Two of: Mr Sharma on Monday OR Jon Little on Tuesday OR Sue Collins on Wednesday (may be in any slot including hashed out areas, but not double booked with another person)
	I6	Starts to work with time of booking	1	J	Mrs Green before 11 am OR Mr Sharma after 10.30am (may be in any slot including hashed out areas, but not double booked with another person)
	A5	Starts to work with schedule	1 or	K	2 of: Mrs Green 20 minutes OR Sue Collins 30 minutes OR Jon Little 20 minutes OR Mr Sharma 30 minutes (must be in available slots)
	R2	Continues to work with schedule	2 or	KL	3 of: Mrs Green 20 minutes OR Sue Collins 30 minutes OR Jon Little 20 minutes OR Mr Sharma 30 minutes (must be in available slots)
	I6	Completes diary correctly	3	KLM	Fully complete correct diary meeting all constraints
Total marks for question			5		
Q3(a)	A4	Draws graph	1 or	N	1 of : labels, linear scale, plotting ($\pm 2\text{mm}$)
	I6	Improves graph	2 or	NP	2 of : labels, linear scale, plotting ($\pm 2\text{mm}$)
	I6	Completes graph	3	NPQ	All of : labels, linear scale, plotting ($\pm 2\text{mm}$)
Q3(b)	R2	Responds to data	1	R	Makes one simple statement e.g. In January there were more appointments missed; the least missed appointment were in April
Total marks for question			4		

Section B: Owning a dog

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q4(a)	R1	Writes down likelihood	1	A	Evens OR Equal chance OR As likely as a male OR 50% OR $\frac{1}{2}$ oe OR 1:1 oe Condone 1:2 oe
Q4(b)	I6	Works with 8-10 weeks or weekends	1 or	B	Selects a date between 6 June and 20 June inclusive OR
	I6	Works with both 8-10 weeks and weekends	2	BC	Selects a weekend date 9 June OR 10 June OR 16 June OR 17 June
Q4(c)	R1	Works with cost of 3 bags or cost of 1 bag	1 or	D	$5.65 \times 2 (=11.3)$ OR $3.8 \times 3 (=11.4)$ OR $5.65 \div 3 (=1.883\dots)$
	A4	Completes calculation	2 or	DE	$5.65 \times 2 (=11.3)$ and $3.8 \times 3 (=11.4)$ OR '1.883...' $\times 2 (=3.766\dots)$ OR '11.3' $\div 3 (=3.766\dots)$
	I6	Makes decision	3	DEF	Pet Town with 11.3 and 11.4 OR Pet Town with 3.766... (and 3.8)
Total marks for question			6		
Q5a	R2	Process to find 10% or 12 months	1 or	G	0.1×11.50 oe ($=1.15$) OR $11.5(0) \times 12 (=138)$ OR 0.9×11.50 oe ($=10.35$)
	A4	Works with 10% and 12 months	2 or	GH	'1.15' $\times 12 (=13.8)$ OR '138' $\times 0.1$ oe OR $12 \times 11.50 - '10.35' \times 12$
Q5b	I6	Correct savings	3	GHJ	£13.80(p) OR 1380p correct money notation
	A4	Works with decimals	1	K	(£)72.65
	A5	Shows a check	1	L	'72.65' + 25 oe OR Estimation e.g. 100 – 25
Total marks for question			5		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q6	R2	Converts to consistent units	1	M	e.g. $1.5 \times 1000 (=1500)$ OR $60 \div 1000 (=0.06)$ OR $100 \div 1000(=0.1)$ OR $160 \div 1000(=0.16)$ NB : Units conversion could occur anywhere in their calculations
	R3	Works with total amount of food	1	N	'1500' $\times 2(=3000)$ OR $1.5 \times 2 (=3)$
	A4	Works with amount of food needed	1 or	P	$60 + 100(=160)$ OR $60 \times 21(=1260)$ OR $100 \times 21(=2100)$ OR $'160' \times 21(=3360)$ OR $'0.16' \times 21 (=3.36)$
	A4	Works with total amount of food and amount of food needed	2	PQ	'1500' $\times 2 (=3000)$ AND '160' $\times 21 (=3360)$ OR $1.5 \times 2 (=3)$ AND '0.16' $\times 21 (=3.36)$ OR $'3000' \div '160' (=18.75)$ OR $'3' \div '0.16' (=18.75)$
	I6	Decision based on correct calculations	1	R	No AND 3000 and 3360 OR No AND 3 and 3.36 OR No AND 18.75 (days)
Total marks for question			5		

Section C: Knitting

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q7(a)	R2	Starts to use formula	1 or	A	$36 \times 2.5 (=90)$ OR any number in table $\div 2.5$ e.g. $92 \div 2.5 (=36.8)$ 90 OR 36.8 Decision ft from '90' or '36.8' provided at least process mark A scored (decision can be for 'correct size' or one size larger than 'correct size')
	A4	Completes use of formula	2	AB	
	I6	Makes decision	1	C	
Q7(b)	R2	Works with 6 buttons	1	D	$6 \times 35(=210)$ OR $6 \times 0.35(=2.1)$ OR $25 - 6 \times 0.35$ oe $(=22.9)$ NB. May occur as part as another calculation $2.9(0) \times 7(=20.3)$ OR $3.15 \times 7(=22.05)$ OR $3.4(0) \times 7(=23.8)$ $'20.3' + '2.1'(=22.4)$ OR $'22.05' + '2.1'(=24.15)$ OR $'23.8' + '2.1'(=25.9)$ OR $'22.9'$ and $'20.3'$ OR $'22.9'$ and $'22.05'$ OR $'22.9'$ and $'23.8'$ OR $'22.9' \div 7 (=3.27..)$ Acorn and Bright AND $22.4(0)$ and 24.15 OR Acorn and Bright AND 2.6 and 0.85 OR Acorn and Bright AND $[3.27, 3.28]$ OR Acorn and Bright AND 22.05 and 20.3 and 22.9
	R3	Works with 7 balls of wool	1 or	E	
	A4	Works with wool and buttons	2 or	EF	
	I6	Decision with correct calculations	3	EFG	
Total marks for question			7		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q8a	R2	Starts to work with information given	1 or	H	200 ÷ 20 (=10) OR 160 ÷ 20 (=8) OR 200 × 160 (=32000) OR 20 × 20 (=400) OR Repeated addition of 20 or subtraction (at least 3) OR Attempts to show squares on one dimension of the diagram
	R3	Develops solution	2 or	HJ	'10' × '8' (=80) OR '32000' ÷ '400' (=80) OR '400' × 60(=24000) OR 60 ÷ '10'(=6) OR 60 ÷ '8'(= 7.5) OR attempts to show squares on both dimensions of the diagram
	A4	Completes calculation	3	HJK	80(squares) OR 24000(cm ²) and 32000(cm ²) OR E.g. 200(cm) by 120(cm) or 160(cm) by 150(cm)
	I6	Correct decision ft their figures	1	L	No oe ft from '80' AND at least process mark J scored
Q8(b)	R1	Works with ratio	1 or	M	36 ÷ 4 (=9) OR uses build up method, at least 5 OR 27 : 9 OR 9 : 27 OR 9 & 27
	I6	Finds number of yellow and white squares	2	MN	9 yellow and 27 white
	A5	Checks answer	1	P	'9' + '27' OR any reverse operation eg. 9 × 4
Q8c	A4	Starts to use information	1 or	Q	Any symmetrical (line or rotational) pattern with any number of shaded squares
	I6	Correct diagram	2	QR	12 Shaded squares with 1 or 2 lines of symmetry OR rotational symmetry of order 2 or 4.
Total marks for question			9		

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