

Mark Scheme (Results)

March 2011

FS

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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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

Q	Process	Mark	Mark Grid	Evidence
SECTION A: The children's nursery				
Q1	Understands problem creates suitable table	1 or	A	2 of : Lists 3 categories, provides input opportunities, heading tally or tally marks shown, heading total or frequency or totals seen
	Interprets given table and extracts info (some completion of table)	2 or	AB	table with all three categories containing at least 1 accurate row completed for tally OR total OR child name (under 2: Ann, Sue, Mark, Faz, Sunil, Anji, Abbi, Reema, Liam; 2: May, Pete, Fiona, Zac, Irene, Rory, Gary, Farah; 3-7: Bob, Raj, Hugh, Sally, Ali, Manjit, Helen, Sophie, Molly, Clare, Billy, Matt, Henry) OR bar chart with all three categories containing at least 1 accurate bar
	Fully correct table or chart	3	ABC	table with accurate results for all 3 categories: these may be by tally OR total under 2 years 9 ; 2 years 8; 3-7 years 13 OR bar chart, fully labelled all 3 bars at correct heights
Total marks for question		3		

Q	Process	Mark	Mark Grid	Evidence
Q2 (a)	Understands problem shows process to find max numbers in any category OR Considers adults used for existing children	1 or	D	$5 \times 3 (=15)$ OR $4 \times 4 (=16)$ OR $2 \times 8 (=16)$ OR 3 adults (used) for under 2s OR 2 adults (used) for 2 year olds OR 2 adults (used) for 3-7 year olds
	Finds correct max number for any category OR Begins to consider where extra children could be placed	2 or	DE	15 OR 16 seen OR 2 adults left for under 2s or 6 children, OR 2 adults left 2 year olds or 8 children, OR 3 spaces left for 3-7 year olds
	Finds correct total max number OR correct total spaces left Readjusts adults acceptably	3	DEF	47 (total allowed) OR 17 (spaces left)
	Makes correct (ft) decision from their total must have scored at least process mark D	1	G	e.g. No, and 47 seen OR No 17 spaces left OR yes if she reallocates her adults with evidence of how reallocation will be done
Q2 (b)	Works with two of: Hours per day, days per week, number of staff, hourly rate	1 or	H	process to multiply 2 of : 5, 8, 11, 5.95 (=40 or 55 or 29.75 or 88 or 47.6, or 65.45)
	develops solution	2	HJ	process to multiply 3 of : 5, 8, 11, 5.95 (=440, or 238, or 327.25 or 523.6(0))
	Correct full process incorporating all aspects	1 or	K	process to multiply all 4 of : 5, 8, 11, 5.95
	Calculates weekly wage bill	2	KL	(£)2618 c.a.o.
Total marks for question		8		

Q	Process	Mark	Mark Grid	Evidence
Q3 (a)	interprets problem draws story time corner on plan	1 or	M	rectangular shape and 2 of: correct length, correct width, suitable location
		2	MN	rectangular shape with correct length, correct width in suitable location Note: A suitable location is in any corner other than door position
Q3 (b)	interprets problem draws messy play area on plan	1 or	P	2 of: rectangular shape, suitable location, correct area
		2	PQ	all of: rectangular shape, suitable location, correct area Note: A suitable location has any edge along a wall. If diagrams are unlabelled mark for best candidate outcome.
Q3 (c)	Finds remaining space (ft) or identifies active play space and makes decision	1	R	Clear evidence of counting squares or calculating area or labelling space AND decision e.g. subtracts two areas from 48, or from 47(door) or from 43.5(door and windows) OR identifies 20m ² OR area larger than 20m ²
Total marks for question		5		

Q	Process	Mark	Mark Grid	Evidence
SECTION B: Badminton				
Q4 (a)	begin to prepare an order of play rota (list or 2 way table)	1 or	A	shows at least 3 different valid games
	improves rota (list or 2 way table)	2 or	AB	shows at least 6 different valid games
	full rota to meet constraints (list or 2 way table)	3	ABC	shows exactly 9 different valid games with no pair playing 2 consecutive games
Q4 (b)	shows process to calculate (total) cost OR process to divide court hire or refreshment cost by 6 OR to find cost per pair	1 or	D	$4.5 \times 3 (=13.5)$ or $4.5 \times 3 + 15 (=28.5)$ OR $15 \div 6 (=2.5)$ OR $4.5 \div 6 (=0.75)$ OR $(3 \times 4.5 \div 6 (=2.25))$ OR $15 \div 3 + 4.5 (=9.5)$
	shows process to divide total cost by 6 OR process to add one person's refreshment cost to one person's court hire cost OR to find cost per pair and halve it	2 or	DE	' $28.5 \div 6$ ' OR ' 2.5 ' + ' 2.25 ' or ' 2.5 ' + $3 \times$ ' 0.75 ' OR ' $9.5 \div 2$ '
	finds correct cost per person	3	DEF	(£)4.75 cao
Q4 (c)	valid decision with reason based on likelihood	1	G	e.g. Cove because they have more wins OR impossible to tell as you don't know if Cove and Fleet were playing teams of the same skill level OR 'don't know, the sample is too small' OR Cove 4 Fleet 2 and chooses Cove OR condone 'Cove beat Fleet 4 times and Fleet beat Cove twice' with Cove identified as more likely
Total marks for question		7		

Q5	extracts price(s) from table	1	H	11.5(0) or 8.95 seen
	finds difference in cost for 1 tube OR finds total cost of feathers or nylon	1 or	J	'11.50' – '8.95'(=2.55) OR 40×'11.50'(=460) OR 40×'8.95'(=358)
	shows a correct process for total difference in cost	2 or	JK	40×'2.55' OR '460' – '358'
	finds difference in cost or both costs	3	JKL	(£)102 OR 460 AND 358
	valid (ft) decision must have scored process marks J and K	1	M	Correct decision for their figures
Total marks for question		5		
Q	Process	Mark	Mark Grid	Evidence
Q6	understands problem begins to prepare team lists	1 or	N	1 team of 6 players
	improved lists	2 or	NP	2 teams where at least 1 team are all available on the day of the match OR 3 teams and every player gets a game
	fully correct teams but not all people get a game	3 or	NPQ	3 teams where all people are available on the day of the match but not every player gets a game OR 3 teams where at least 2 teams are all available on the day of the match AND every player gets a game
	fully correct meeting all constraints	4	NPQ R	all teams correct and all people get at least 1 game and all teams labelled with day or date
Total marks for question		4		

Q	Process	Mark	Mark Grid	Evidence
SECTION C: The fruit farm				
Q7 (a)	understands problem uses 60 in formula	1 or	A	$60 \div 10 \times 8 (=48)$ OR $60 \div 10(=6)$ OR $60 \times 8(=480)$
	calculates pay	2	AB	(£)48
Q7 (b)	process to calculate bottles this year OR kg from last year	1 or	C	$2 \times 15000(=30000)$ OR $36000 \div 2(=18000)$ OR 17000×2
	finds bottles this year OR kg from last year	2	CD	18000(bottles) OR 30000(kg) OR 34000(kg)
	makes correct (ft) decision with valid reason	1	E	e.g. yes and extra 3000 (bottles) OR yes and exceeds target by 1000 (bottles) OR yes and 17000 and 18000 seen OR yes and extra 6000(kg) but only need 4000(kg)
Total marks for question		5		
Q8	understands problem, begins to prepare time plan	1 or	F	at least 2 tasks linked to start times and finish times, OR start times and durations
	improves time plan	2 or	FG	tasks not ordered sequentially but all tasks present and linked to appropriate start times and finish times or appropriate start times and durations OR fully ordered sequentially linked time plan with one error or one omission - start times appropriate (finish times may be implicit), ignore extra activities that candidate has put in to fill up the day provided all required activities are correct
	fully accurate time plan	3	FGH	fully ordered sequentially linked time plan with all start times appropriate (finish times may be implicit but must not create overlap errors), ignore extra activities that candidate has put in to fill up the day provided all required activities are correct.
Total marks for question		3		

Q9 (a)	Process to check total spend	1	J	$475+550+375+425+650+925+975(=4375)$
	process to achieve 2 values that can be checked or compared	1	K	'4375' \div 7 OR $7 \times 625(=4375)$
	correct decision from a valid method and correct answers only	1	L	Yes, and full mean calculation process and 625 OR Yes, and 4375 seen twice
Q9 (b)	any correct check of a bill item	1	M	cream teas e.g. $4+4+4=12$ or $3 \times 4=12$ or $12 \div 3=4$ OR extras $3 \times 50+75=2.25$ or $0.50+0.50+0.50+0.75=2.25$ OR $3 \times 4.50=13.50$ OR $3 \times 4.50+0.75$ OR 14.25
	states bill is wrong with a valid reason	1	N	Clear statement that bill is wrong (e.g. 'yes' or 'undercharged') and or 14.25 seen OR too little charged for extras or extra cream not charged 0.75 missing
Q9 (c)	converts between units or works out number of $\frac{1}{2}$ kg in 4 $\frac{1}{2}$ kg or process to find price per kg or per gram	1 or	P	4500(g) or 9 seen or $500\text{g} = 0.5 \text{ kg}$ OR $15.75 \div 4.5(=3.5)$ or $1575 \div 4500(=0.35)$ o.e.
	process to work out cost for $\frac{1}{2}$ kg	2 or	PQ	e.g. $15.75 \div 4500 \times 500 (=1.75)$ OR '3.5' \div 2(=1.75)
	correct answer for 500g	3	PQR	£1.75 or 175p correct money notation
Total marks for question		8		

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