

Mark Scheme (Results)

October 2014

Pearson Edexcel Functional Skills
Mathematics Level 2 (FSM02)

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October 2014

Publications Code FC040329

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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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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	1	Evidence
Appropriate graph or chart – (e.g. bar, stick, line graph,)	or	1 of linear scale(s), labels, plotting (2mm tolerance)
	2	2 of linear scale(s), labels, plotting (2mm tolerance)
	or	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 Dinner Party

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1	R2	Begins to process information	1or	A	Starts an organised approach showing at least 2 days or 3 people correctly.
	A5	Processes information in an organised way	2	AB	Uses an organised approach to show all information correctly.
	I6	Chooses the night most people can attend	1	C	Thursday
Total marks for question			3		

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
I	1	x	1	1	x	x	x
M	1	1	x	1	1	x	x
J	1	1	x	1	1	x	x
F	x	1	1	1	x	x	x
B	x	x	1	x	x	x	x
C	x	x	1	x	x	x	x
D	x	1	x	1	x	x	x
P	x	1	x	1	x	x	x
	3	5	4	6	2	0	0

Q2(a)	R2	Process to convert units	1 or	D	$7 \times 2.25 = 15.75$ OR $20 \div 2.25 (= 8.8\dots)$ OR e.g. $12 \div 2.25 (= 5.3\dots)$ OR $16 \div 2.25 (= 7.1\dots)$
	A4	Finds figures to compare	2	DE	15.75 (pounds) OR 7.1kgs OR 8.(8 ...) pounds
	I6	Correct time provided mark D is awarded	1	F	3 - 4 days Allow [3,4] days provided mark D is awarded OR 5 days for an 8.8 kg turkey
Q2(b)	R1	Begins to substitute	1 or	G	$5(375 - 32)$ OR $(375 - 32) \div 9$
	A4	Begins to evaluate full substitution	2 or	GH	E.g. $(5 \times 343) \div 9$
	I6	Correct answer	3	GHJ	190 or 190.5... or 191 ($^{\circ}\text{C}$)
Q2(c)	R1	Process to find cooking time or begins to process time	1 or	K	$20 \times 7 + 90 + 20 (= 250)$ OR Repeated subtraction from 8:00pm (at least 8 correct)
	A4	Full process to find start time	2 or	KL	8:00 - '250' $\div 60 (= 3:50)$ oe OR 8:00, 7:40, 7:20, 7:00, 6:40, 6:20, 6:00, 5:40, 4:10, 3:50 allow 1 error or omission
	I6	Correct time	3	KLM	3:50 (pm) oe
Total marks for question			9		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q3	A4	Uses consistent units	1	N	0.03 or 0.06 or 0.01 or 0.36 or 75(p) May be seen in subsequent calculation
	R1	Full process to find cost of one cheese for 12 people or both cheeses for one person	1 or	P	'0.36' \times 7.5(=2.7) oe OR 12 \times 0.03 \times 7.5 (=2.7) OR 12 \times 0.3 \times 1.16 (=4.176) oe OR '0.03' \times 7.5 + 0.3 \times 1.16(=0.573) [Allow use of 400g]
	A4	Full process for total cost	2 or	PQ	'2.7' + '4.176'(=6.876) OR '0.573' \times 12(=6.876) [Allow use of 400g]
	I6	Finds correct answer using correct money notation	3	PQR	£6.87 or £6.88 using correct money notation Award Mark N if this Mark awarded. [Allow use of 400g]
Total marks for question			4		

Section B: Extending the clubhouse

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q4	R2	Process to work with area	1 or	A	Rectangle 3×4 OR 2×6 OR 1×12 OR 1.5×8
	A4	Process to work with scale and area	2	AB	6×8 OR 4×12 OR 2×24 OR 3×16
	R1	Works with positional constraints	1	C	Rectangle with one side adjacent to the club house and at least 8 squares from tree
	I6	Correctly positions door using scale	1	D	Draws door on wall between clubhouse and extension 2 squares wide
Total marks for question			4		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5 (a)	I6	Correct comparative comments	1 or	E	1 of: E.g. Most money raised in August Least money raised in July The Hawk team raised more than the Fox team. Hawk team raised an increasing amount each month whilst Fox team were less consistent. The biggest amount raised was by the Hawk team in September The least amount of money raised was by Foxes in July
	I7	2 Correct comparative comments	2	EF	2 of: E.g. Most money raised in August or Least money raised in July The Hawk team raised more than the Fox team. Hawk team raised an increasing amount each month whilst Foxes were less consistent. The biggest amount raised was by the Hawk team in September or The least amount of money raised was by Foxes in July
	A4	Begins to develop graph	1 or	G	1 of: Linear scale, accurate plotting (± 2 mm), labels (£, Fox, Hawk months)
	I6	Improves graph	2 or	GH	2 of: Linear scale, accurate plotting (± 2 mm), labels (£, Fox, Hawk months)
	R2	Correct line graph or bar chart suitable for comparison	3	GHJ	All of: Linear scale, accurate plotting (± 2 mm), labels (£, Fox, Hawk months) £ or money label may be seen in title

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5(b)	R3	Process to find average or to find total or work with difference	1 or	K	$1000 \times 5 (=5000)$ OR $1200 + 450 + 1350 + 1400 (=4400)$ OR $\pm 200, \pm 550, \pm 350, \pm 400$
	A4	Full process to find amount needed	2 or	KL	$5000 - 1200 - 450 - 1350 - 1400 (=600)$ OR $5000 - '4400' (=600)$ OR $\pm (200 - 550 + 350 + 400) (= \pm 400)$ and $1000 - 400 (=600)$
	I7	Correct answer	3	KLM	(£)600
Total marks for question			8		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q6	A4	Uses consistent units	1	N	0.15
	R2	Process to calculate volume	1 or	P	$12 \times '0.15' (= 1.8)$ OR $3 \times 1.6 (= 4.8)$
	A4	Process to find figures to compare	2 or	PQ	$'1.8' \times 1.6 (= 2.88)$ OR $3 \div 1.6 (= 1.875)$ OR $12 \times '0.15' (= 1.8)$ and $3 \times 1.6 (= 4.8)$
	I7	Correct conclusion and accurate figures	3	PQR	Yes and 2.88 (tonnes) OR Yes and 1.8 and 1.875 OR Yes and 1.8 and 4.8
Total marks for question			4		

Section C: Rock bands

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q7 (a)	R2	Begins to process costs	1 or	A	$1/3 \times 1075 (= 358.3333)$ OR $12 \times 48.3 (= 579.6)$ Allow use of 0.33
	A4	Complete process for either shops	2 or	AB	$1075 - '358.33' (=716.67)$ OR $2/3 \times 1075 (=716.66...)$ OR $'579.6' +100 (=679.6)$ Allow use of 0.33 or 0.66 or 0.67
	A4	Complete process for both shops	3 or	ABC	$1075 - '358.33' (=716.67)$ or $2/3 \times 1075 (=716.66...)$ AND $'579.6' +100 (=679.6)$ Allow use of 0.33 or 0.66 or 0.67 for a maximum of 3 marks.
	I7	Correct decision from accurate figures	4	ABC D	R&R Store AND £716.66 or £716.67 AND £679.60
Q7(b)	R1	Draws net of cuboid (open or closed)	1or	E	Net with 5 or 6 faces
	I6	Draws net showing correct dimensions	2	EF	Net with 5 or 6 faces AND sufficient dimensions to show joining edges are of equal length.
Total marks for question			6		

Q8(a)	R3	Process to find income from tickets	1 or	G	$480 \times 15 (=7200)$ OR $2000 \div 15 (=133.3..)$
	A4	Develops process to work with income and percentage.	2 or	GH	$0.7 \times '7200' (=5040)$ OR $2000 \div '7200' (=0.277...)$
	A4	Full process to find figures to compare	3 or	GHJ	$0.3 \times '7200' (=2160)$ OR $'7200' - '5040' (=2160)$ OR $2000 \div 0.3 (=6666.66...)$ OR $100 - '27.77...' (=72.2...(\%))$ OR $'134' \times 70 \div 30 + 134 (= 446.6..)$
	I7	Decision with correct amount for club from ticket sales.	4	GHJK	Yes and (£)2160 OR Yes and (£)160 over OR Yes and (£)6666.67 and (£)7200 OR Yes and 72(.2..)% for band OR Yes and 447 (tickets required)
	A5	Shows a valid check	1	L	Valid check e.g. reverse calculation or alternate method
Q8(b)	R2	Starts to work with fraction or expresses probability as chance	1 or	M	Fraction with numerator 6 or denominator 480 OR 6 in 480 or 6:480 OR 1 in 80
	I6	Correct probability	2	MN	6/480 or 1/80 or 0.0125 or 1.25%
Total marks for question			7		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q9	R1	Considers data needed	1 or	P	Data collection sheet with input opportunities AND headings for at least 2 of: acts, days, prices OR A questionnaire covering at least 2 categories
	R2	Improves data collection sheet	2 or	PQ	Data collection sheet with input opportunities AND headings for all of: acts, days, prices May be a questionnaire May not be efficient
	I6	Creates efficient data collection Sheet	3	PQR	Efficient data collection sheet with 12 cells for input AND headings for acts, days, prices.
Total marks for question			3		

Examples

		<10	£10-£20	>£20
Ace	Fri			
	Sat			
Why	Fri			
	Sat			

Full information & efficient (Only 1 tick needed)

(Full marks 3)

Information incomplete (1 mark)

	<10	£10-£20	>£20
Ace			
Why			

2 Marks - all information but not efficient.

	<10	£10-£20	>£20
Ace or Why			
Fri or Sat			

	Ace	Why	Fri	Sat
<10				
£10-£20				
>£20				

Ace	Why	Fri	Sat	<10	£10-£20	>£20

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