

# Mark Scheme (Results)

October 2015

Pearson Edexcel Functional Skills  
Mathematics Level 2 (FSM02)

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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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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 mark the working leading to the answer given in the answer box or working box. If there is no definitive answer then marks should be awarded for the 'lowest' scoring method shown.
- 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 indicates 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 2.40£

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 or	1 of: linear scale(s), labels, plotting (2mm tolerance)
	2 or	2 of: 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.

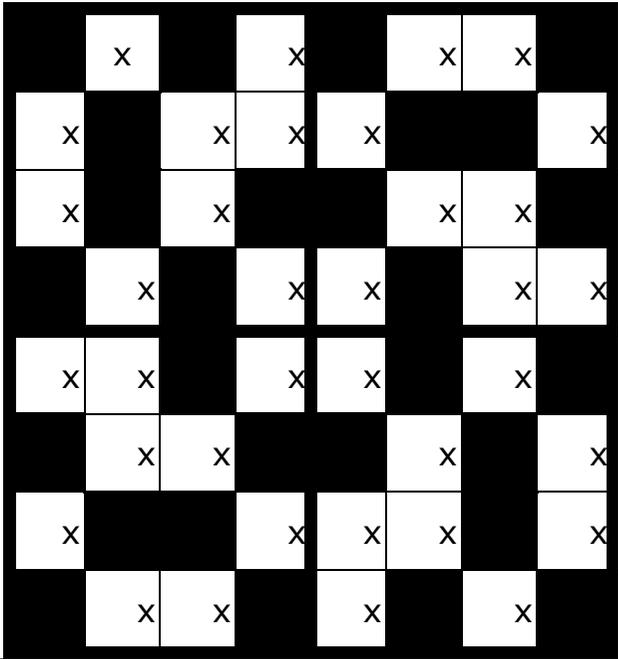
The mark schemes for **Data Collection Sheets** refer to **input opportunities** and to **efficient input opportunities**.  
When a candidate gives an input opportunity, it is likely to be an empty cell in a table, it may be an instruction to 'circle your choice', or it may require writing in the data 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: Gardening**

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1	R1	Works with scale	1 or	A	Rectangle with 2 of Length 10 squares Width 7 squares Ratio length to width of 10:7 (E.g. 5 by 3.5 or 2.5 by 1.75 etc) In a corner
	I6	Works with scale and position	2	AB	Rectangle with all of Length 10 squares Width 7 squares In a corner
	A4	Works with area	1 or	C	Rectangle 8 squares by 3 squares <b>OR</b> 4 squares by 6 squares <b>OR</b> 12 squares by 2 square <b>OR</b> 4 squares by 1.5 squares <b>OR</b> 2 squares by 3 squares <b>OR</b> 6 squares by 1 square
	I6	Works with area and scale	2	CD	Rectangle 12 squares by 8 squares <b>OR</b> 16 squares by 6 squares
<b>Total marks for question</b>			<b>4</b>		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q2a	R3	One appropriate area process OR one appropriate dimension division	1 or	E	$6000 \times 4500 (=27\ 000\ 000)$ or $610 \times 1640 (=1\ 000\ 400)$ <b>OR</b> $6000 \div 1640 (=3.65..)$ or $4500 \div 610(=7.37..)$ or $6000 \div 610(=9.83..)$ or $4500 \div 1640(=2.74..)$
	A4	Process for turf and garden areas OR process for two dimension division	2 or	EF	$6000 \times 4500 (=27\ 000\ 000)$ <b>AND</b> $610 \times 1640 (=1\ 000\ 400)$ <b>OR</b> $6000 \div 1640 (=3.65..)$ <b>AND</b> $4500 \div 610(=7.37..)$ <b>OR</b> $6000 \div 610(=9.83..)$ <b>AND</b> $4500 \div 1640(=2.74..)$
	A4	Full process to find number required	3	EFG	'27 000 000' $\div$ '1 000 400'(=26.98..) <b>OR</b> '3.65..' $\times$ '7.37..' (=26.98..) <b>OR</b> '4' $\times$ '8'(=32) '9.83..' $\times$ '2.74..' (=26.98...) <b>OR</b> '10' $\times$ '3'(=30)
	I6	Works with multiples of 10	1	H	Rounds to 30 (this must come from an area method)
	R2	Finds total cost of turf required	1 or	J	'30' $\times$ 3.35(=100.5) <b>OR</b> $110 \div 3.35(=32.83..)$ <b>OR</b> '40' $\times$ 3.35(=134) Allow $27 \times 3.35(=90.45)$ Allow $32 \times 3.35(=107.02)$
	I7	Conclusion with accurate figures	2	JK	e.g. Yes <b>AND</b> (£)100.5 Yes <b>AND</b> 30 and 32.83.. This mark can only be awarded for true area methods.

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
<b>Q2b</b>	R1	Starts to work with ratio	1 or	L	3 + 1 + 1 (= 5) <b>OR</b> 4.5 ÷ 3 (=1.5)
	A4	Full process to find the amount of nitrogen needed or amount of fertiliser than can be made	2 or	LM	7 ÷ 5 × 3(=4.2) <b>OR</b> 4.5 ÷ 3 × 5(=7.5) <b>OR</b> 4.5 + 1.5 + 1.5 (=7.5)
	I7	Correct answer with accurate figures	3	LMN	Yes <b>AND</b> 4.2 (lb of nitrogen) <b>OR</b> Yes <b>AND</b> 7.5 (lb of fertiliser)
	A5	Valid check	1	P	Valid check – reverse calculation or alternative method
<b>Total marks for question</b>			<b>10</b>		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q3	R2  I6	Begins to work with symmetry  Finds correct solution	1 or  2	Q  QR	<p data-bbox="1317 357 2047 432">Completes at least 7 slabs correctly <b>OR</b> Completes shape with two lines of symmetry</p> <p data-bbox="1317 512 2024 587">Correct answer with patterned slabs clearly identified</p> 
<b>Total marks for question</b>			<b>2</b>		

**Section B: Holiday**

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
<b>Q4a</b>	R1	Begins to work with discount	1 or	A	$4719 \times 15 \div 100 (=707.85)$ <b>OR</b> $2099 \div 5(=419.8)$
	A4	Full process to find total for offer with percentage discount	2	AB	$4719 \times 85 \div 100 (=4011.15)$ oe <b>OR</b> $4719 - 707.85 (=4011.15)$
	R2	Begins to find total for offer with fraction discount	1 or	C	$2099 \times 4 \div 5(=1679.2)$ oe <b>OR</b> $(2099 + 2299) \times 4 \div 5(=3518.4)$
	A4	Full process to find total for offer with fraction discount	2	CD	'1679.2' + 2299 (=3978.2) <b>OR</b>
	I7	Correct answer with accurate figures	1	E	sunnyhols.com clearly identified <b>AND</b> (£) 4011.15 <b>and</b> (£)3978.2
<b>Q4b</b>	R3	Full process to find figures to compare	1 or	F	$11.69 \times 2 \times 4 (=93.52)$ oe <b>OR</b> $90 \div (2 \times 4) (=11.25)$ oe
	I6	Correct answer with accurate figures	2	FG	No <b>AND</b> (£)93.52 <b>OR</b> No <b>AND</b> (£)11.25
	A5	Appropriate check	1	H	Valid check by reverse calculation or alternative method (or estimation)
<b>Total marks for question</b>			<b>8</b>		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5	R2	Finds total allowed weight or excess he can afford	1 or	J	$23 \times 4 (=92)$ <b>OR</b> $10\ 000 \div 1800 (=5.5\dots)$
	I6	Finds excess weight or total weight he can afford to carry	2 or	JK	$97.4 - '92' (=5.4)$ <b>OR</b> $23 \times 4 (=92)$ <b>and</b> $10\ 000 \div 1800 (=5.5\dots)$
	A4	Full process to find figures to compare	3	JKL	'5' $\times 1800(=9000)$ <b>OR</b> '5.4' $\times 1800(=9720)$ <b>OR</b> (Their '5' must be a whole number from correctly rounded down answer in previous mark) <b>OR</b> $97.4 - '92' (=5.4)$ <b>and</b> $10\ 000 \div 1800 (=5.5\dots)$
	I7	Correct answer with accurate figures	1	M	Yes <b>and</b> 9000 (loyalty points) <b>or</b> 9720 (loyalty points) <b>OR</b> Yes <b>and</b> 5.4 <b>and</b> 5.5...(kg)
<b>Total marks for question</b>			<b>4</b>		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q6	A4	Begins to process information	1 or	N	$10 + (20 \div 60)$ (=10.33..) <b>OR</b> $(10 \times 60 + 20) \div 60$ (=10.33..) <b>OR</b> $4944 \div (10 \times 60 + 20)$ (=7.97) <b>OR</b> $4944 \div 500$ (=9.88..) <b>OR</b> $4944 \div '10h 20m'$
	R3	Works with formula	2 or	NP	$4944 \div '10.33.'$ (=478.60...) or $4944 \times 3 \div 31$ (=478.45..) <b>OR</b> $500 \times '10.33.'$ (=5166.66...) <b>OR</b> $500 \div '7.97.'$ $\div 60$ (=1.045..) <b>OR</b> [9.8, 9.9] (hours)
	I7	Correct figures	3	NPQ	[478,479](miles per hour) <b>OR</b> [5166, 5167](miles) <b>OR</b> 1.045..(hours) <b>OR</b> [9.8, 9.9] hours <b>or</b> 9 hours [48, 54] minutes
	A5	Makes evaluative statement ft from their figures	1	R	Evaluation statement ft from their figures provided mark N awarded E.g. Total flight time will be less than pilot says
<b>Total marks for question</b>			<b>4</b>		

### Section C: Designing apps

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
<b>Q7a</b>	I6	Selects correct answer or price	1	A	B indicated or (£)265.45
	R2	Works with discount	1 or	B	283.05 – '265.45' (=17.6)
	A4	Correct answer	2	BC	£17.60 correct money notation
	A5	Appropriate check	1	D	Reverse calculation <b>OR</b> Evidence of checking constraints
<b>Q7b</b>	A4	Works consistently with time	1 or	E	45 (min) seen <b>OR</b> 11:30 + 55 <b>OR</b> 1:15 – 55 <b>OR</b> 1:15 – 11:30
	R1	Full process	2 or	EF	Eg 1.15 – '45' (min) – 55 (min) (=11.35) oe <b>OR</b> 11.30 + '45' + 55'(=1.10) <b>OR</b> 1:15 – 11:30 (= 1:45) <b>and</b> '45' + 55 (= 1:40)
	I6	Correct answer	3	EFG	Yes <b>AND</b> 11.35(am) or 1.10(pm) or 5 min spare <b>OR</b> Yes <b>AND</b> 1:45 and 1:40 (hours) oe Accept any correct time format
<b>Total marks for question</b>			<b>7</b>		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q8a	R1	Begins to produce summary table	1 or	H	Input opportunities <b>AND</b> headings for two of game/shopping low (under 10), high (10 and over) (number of apps downloaded) under 25 and 25 – 50 and over 50 (age)
	R2	Improves summary table	2 or	HJ	Input opportunities <b>AND</b> headings for all of game/shopping low (under 10), high (10 and over) (number of apps downloaded) under 25 and 25 – 50 and over 50 (age)
	I6	Efficient summary table	3	HJK	Efficient summary table with headings for all game/shopping low (under 10), high (10 and over) (number of apps downloaded) under 25 and 25 – 50 and over 50 (age)
	A4	Uses given information	1 or	L	Starts to complete their summary table with given information (E.g. total for shopping – 8 people) <b>OR</b> Allocating low and high (may be seen in information table)

	A5	Fully efficient completed summary table	2	LM	<p>Completes an efficient table correctly with 12 cells e.g.</p> <table border="1"> <thead> <tr> <th>Age</th> <th colspan="2">Under 25</th> <th colspan="2">25-50</th> <th colspan="2">Over 50</th> </tr> <tr> <th>Number of apps</th> <th>low</th> <th>high</th> <th>low</th> <th>high</th> <th>low</th> <th>high</th> </tr> </thead> <tbody> <tr> <td>Game</td> <td>3</td> <td>3</td> <td>3</td> <td>1</td> <td>2</td> <td>0</td> </tr> <tr> <td>Shopping</td> <td>2</td> <td>0</td> <td>3</td> <td>2</td> <td>1</td> <td>0</td> </tr> </tbody> </table> <p>NB. Ignore totals, Accept tallies</p>	Age	Under 25		25-50		Over 50		Number of apps	low	high	low	high	low	high	Game	3	3	3	1	2	0	Shopping	2	0	3	2	1	0
Age	Under 25		25-50		Over 50																												
Number of apps	low	high	low	high	low	high																											
Game	3	3	3	1	2	0																											
Shopping	2	0	3	2	1	0																											
<b>Q8b</b>	I7	Evaluates effectiveness of their solution	1	N	<p>Evaluation of their table e.g. I can see that more people download games so she should do games <b>or</b> Most popular app can be easily identified <b>or</b> Few people over 50 use shopping apps so she might fill this gap</p>																												
<b>Q8c</b>	R2	Works with the mean	1 or	P	<p><math>5.99 + 4.79 + 3.59 + 2.99 (=17.36)</math> <b>OR</b>  <math>3.99 \times 4 (=15.96)</math> <b>OR</b>  <math>\pm 2, \pm 0.8, \pm 0.4, \pm 1 (= -1.4)</math></p>																												
	A4	Full process to find figures to compare	2 or	PQ	<p><math>(5.99 + 4.79 + 3.59 + 2.99) \div 4 (=4.34)</math> <b>OR</b>  <math>3.99 \times 4 (=15.96)</math> <b>and</b> <math>5.99 + 4.79 + 3.59 + 2.99 (=17.36)</math> <b>OR</b>  <math>'-1.4' \div 4 (= -0.35)</math></p>																												
	I7	Correct decision with accurate figures	3	PQR	<p>Yes <b>and</b> (£)4.34 <b>OR</b>  Yes <b>and</b> (£)15.96 <b>and</b> (£)17.36 <b>OR</b>  Yes <b>and</b> 35p</p>																												
<b>Total marks for question</b>			<b>9</b>																														

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