

# Mark Scheme (Results)

November 2014

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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1a	R1	Starts to substitute	1 or	A	$8 \times 3 (=24)$ <b>OR</b> $8 \times 3 \div 2 (=12)$ <b>OR</b> $8 \div 2 (=4)$
	I6	Finds overtime pay rate	2	AB	(£)12
Q1b	R1	Correctly converts between hours and minutes	1	C	E.g. 30 (mins) <b>OR</b> 0.5 (hrs) May be implied by subsequent calculation
	A4	Finds time available or adds at least 2 times together or starts to time plan forwards or backwards	1 or	D	11 (hrs) <b>OR</b> E.g. 5 (hrs)+4(hrs) 45 (mins) (=9 (hrs) 45 (mins)) <b>OR</b> 8, 1, 5:45, ..... <b>OR</b> 7, 6:40, 6:10, .....
	A4	Complete process to add time needed, or to time plan forwards or backwards	2 or	DE	E.g. 5(hrs)+4(hrs) 45(mins)+'30'(mins)+20(mins)(=10(hrs) 35(mins)) <b>OR</b> 8, 1, 5:45, 6:15, 6:35 condone 1 error ft <b>OR</b> 7, 6:40, 6:10, 1:25, 8:25 condone 1 error ft NB allow 1 error in calculating time to be carried forward (or backward).
	I6	Valid decision and accurate figures	3	DEF	Yes <b>and</b> 11(hrs) <b>and</b> 10(hrs) 35(mins) o.e. <b>OR</b> Yes <b>and</b> 6:35 <b>OR</b> Yes <b>and</b> 8:25 <b>OR</b> Yes <b>and</b> 25(mins) left Accept answers in 24-hour format throughout Award C if F awarded
<b>Total marks for question</b>			<b>6</b>		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q2a	R1	Begins to draw graph or chart	1 or	G	One of: linear scale, suitable labels, accurate plotting (2 mm tolerance)
	A4	Improves graph or chart	2 or	GH	Two of: linear scale, suitable labels, accurate plotting (2 mm tolerance)
	I6	Fully correct graph or chart	3	GHJ	All of: linear scale, suitable labels, accurate plotting (2 mm tolerance) Minimum labelling One axis N(athan), J(az), C(hris), A(li), S(am) Other axis or title: overtime or time or hours
Q2b	I6	Makes a valid comment	1	K	E.g. Highest overtime by Ali <b>OR</b> Lowest overtime by Chris <b>OR</b> Range of overtime is 35 (hours) <b>OR</b> The average overtime hours are 47.6
<b>Total marks for question</b>			<b>4</b>		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q3a	R1	Works with amount saved in 6 weeks or amount needed per week or number of weeks needed	1 or	L	$6 \times 50 (=300)$ <b>OR</b> $375 \div 6 (=62.5)$ <b>OR</b> $375 \div 50 (=7.5)$
	I6	Valid decision and accurate figures	2	LM	No <b>and</b> (£)300 <b>OR</b> No <b>and</b> (£)75 short <b>OR</b> No <b>and</b> (£)62.5(0) <b>OR</b> No <b>and</b> 7.5 or 8 (weeks)
Q3b	R2	Process for pay per week or hours per year in current job or job in advert	1 or	N	$8 \times 44 (=352)$ <b>OR</b> $44 \times 52 (=2288)$ <b>OR</b> $19\ 500 \div 8 (=2437.5)$ <b>OR</b> $19\ 500 \div 52 (=375)$ <b>OR</b> $19500 \div 44 (=443....)$
	A4	Full process for figures to compare per year, or per hour, or per week	2 or	NP	$8 \times 44 \times 52 (=18304)$ <b>OR</b> $19\ 500 \div 52 \div 44 (=8.52...)$ <b>OR</b> $44 \times 52 (=2288)$ <b>and</b> $19\ 500 \div 8 (=2437.5)$ <b>OR</b> $8 \times 44 (=352)$ <b>and</b> $19\ 500 \div 52 (=375)$ <b>OR</b> $375 \div 8 (=46.875)$
	A4	Finds accurate figures	3	NPQ	(£)18304 <b>OR</b> (£)[8.5, 8.53] <b>OR</b> 2288 (hours) <b>and</b> 2437.5 (hours) <b>OR</b> (£)352 <b>and</b> (£)375 <b>OR</b> [46, 47] (hours)

	I6	Valid ft decision provided marks N and P have been awarded	1	R	Valid statement provided marks N and P have been awarded
<b>Total marks for question</b>			<b>6</b>		



**Section B: Home improvements**

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
<b>Q4a</b>	R2	Process for coverage from 1 tin or for number of litres needed	1 or	A	$5 \times 12 (= 60)$ <b>OR</b> $150 \div 12 (=12.5)$ <b>or</b> repeated additions of 12 (to at least 156)
	A4	Full process for number of tins (need not be an integer)	2 or	AB	$150 \div '60' (=2.5)$ or $'12.5' \div 5 (=2.5)$ or repeated additions of 60 (to 180) or repeated additions of 5 (to 15)
	I6	Finds number of tins needed	3	ABC	3 (tins)
<b>Q4b</b>	I6	Begins to consider criteria	1 or	D	Meets 3 criteria so chooses Clare or Goodnight
	I6	Chooses suitable bed	2	DE	Chooses Kerry or Slumber or both May be seen in table
<b>Total marks for question</b>			<b>5</b>		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
<b>Q5a</b>	R1	Begins to consider bed constraints	1 or	F	Rectangle with two of: correct length, correct width, suitable position
	I6	Correctly draws and positions bed	2	FG	Rectangle 10 squares by 11 squares in a suitable position
	R2	Begins to consider wardrobe constraints	1 or	H	Rectangle with two of: correct width, correct depth, suitable position <b>OR</b> Width: depth in ratio 2:1 <b>and</b> suitable position
	A5	Correctly draws and positions wardrobe	2	HJ	Rectangle 6 squares by 3 squares in a suitable position
<b>Q5b</b>	I6	Starts to work with costs	1 or	K	E.g. $15+33=48$ <b>OR</b> $100-84=16$ <b>OR</b> $84+45=129$ <b>OR</b> Identify 3 suitable items
	A5	Communicates items to be bought with mathematical justification	2	KL	Chooses 3 items with accurate supporting figures E.g. Lamp, coffee table and bean bag <b>and</b> (£)66 or (£)34 over <b>OR</b> Lamp, bookcase and bean bag <b>and</b> (£)78 <b>or</b> (£)22 over <b>OR</b> Coffee table, bookcase and bean bag (£)96 <b>or</b> (£)4 over <b>OR</b> 3 Lamps, coffee table, bean bag <b>and</b>

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
					<p>(£)96 or (£)4 over <b>OR</b>  Lamp, coffee table, bookcase (£) 93 or  (£)7 over <b>OR</b>  Lamp, bookcase, 2 bean bags (£)84 or  (£)16 over</p>
<b>Total marks for question</b>			<b>6</b>		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q6	A4	Correctly converts to consistent units	1	M	e.g. 3500 (mm) <b>or</b> 11.7 (m) <b>or</b> 14000(mm) <b>or</b> 2.085 (m) <b>or</b> 0.84 (m) May be seen in subsequent working
	R2	Process for perimeter of a door	1	N	$2085+840+2085+840(=5850)$ o.e.
	R3	Process for total draught excluder needed or draught excluder packs needed for one door or total draught excluder available	1 or	P	$2 \times '5850' (=11700)$ o.e. <b>OR</b> $'5850' \div '3500'(=1.67...)$ o.e <b>OR</b> $4 \times '3500'(=14000)$ o.e NB do not accept area methods for the '5850'.
	A4	Full process to find figures to compare	2 or	PQ	$2 \times '5850' (=11700)$ <b>and</b> $4 \times '3500'(=14000)$ o.e. <b>OR</b> $'11\ 700' \div '3500'(=3.34...)$ o.e <b>OR</b> $'1.67...'$ $\times 2 (=3.34...)$
	I6	Valid conclusion and accurate figures	3	PQR	Yes <b>and</b> 11700 (mm) <b>and</b> 14000 (mm) oe <b>OR</b> Yes <b>and</b> 2300 (mm) spare <b>OR</b> Yes <b>and</b> 3.34.. (rolls) Award MN if R awarded
<b>Total marks for question</b>			<b>5</b>		

**Section C: Athletics club**

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q7a	R1	Process to find difference	1 or	A	$307.1 - 255.6 (=51.5)$
	I6	Finds correct figure with correct units	2	AB	51.5 cm units required
	A5	Shows a suitable check	1	C	Reverse or alternative method e.g. $307.1 - 51.5 (=255.6)$ or $255.6 + 51.5 (=307.1)$ <b>OR</b> uses an estimation method e.g. $307 - 256 (=51)$
Q7b	R1	Process to add 3 jump heights achieved or to find total required or uses differences	1 or	D	$53.8 + 57.5 + 56.7 (=168)$ <b>OR</b> $55.9 + 55.9 + 55.9 (=167.7)$ <b>OR</b> $\pm 2.1, \pm 1.6, \pm 0.8$
	A4	Full process for figures to compare	2 or	DE	'168' $\div 3 (=56)$ <b>OR</b> $53.8 + 57.5 + 56.7 (=168)$ <b>and</b> $55.9 + 55.9 + 55.9 (=167.7)$ <b>OR</b> 2.1 under <b>and</b> 2.4 over
	I6	Valid decision and accurate figures	3	DEF	Yes <b>and</b> 56 <b>OR</b> Yes <b>and</b> 168 <b>and</b> 167.7 <b>OR</b> Yes <b>and</b> 0.3 in total over
<b>Total marks for question</b>			<b>6</b>		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q8	A4	Uses consistent units	1	G	e.g. 2200 (g) or 2.4 (kg) or 0.12(kg) or 0.06 (kg) Note: The units conversion may be seen anywhere in the calculation
	R2	Process to find grams used per day or hours trained per month	1 or	H	60×2(=120) <b>OR</b> 2×20(=40)
	R3	Process to find total weight required or weight per day or per hour available or days powder will last	2 or	HJ	60×2×20(=2400) oe <b>OR</b> '2200'÷20(=110) oe <b>OR</b> 2.2 ÷ '40'(=0.055) oe <b>OR</b> '2200'÷120 (18.3....) oe
	A4	Finds accurate figures	3 or	HJK	2400 (g) oe <b>OR</b> 110 (g) oe <b>OR</b> 0.055 (kg) oe <b>OR</b> [18, 18.3...] (days)
	I6	Correct decision with accurate figures compared	4	HJKL	No <b>AND</b> 2200(g) <b>and</b> 2400 (g) <b>OR</b> No <b>AND</b> 120 (g) <b>and</b> 110 (g) o.e. <b>OR</b> No <b>AND</b> 0.06 (kg) <b>and</b> 0.055 (kg) <b>OR</b> No <b>AND</b> [18, 18.3...] (days) <b>OR</b> No <b>AND</b> 55 (g) <b>OR</b> No <b>AND</b> 2.4 (kg)
<b>Total marks for question</b>			<b>5</b>		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q9a	R1	Process to find actual total youth membership	1	M	$56+104(=160)$
	A4	Process to find figures to compare	1 or	N	$0.75 \times '160' (=120)$ o.e. <b>OR</b> $0.25 \times '160' (=40)$ o.e <b>OR</b> $104 \div '160' (=0.65)$
	I6	Communicates decision with accurate figures	2	NP	No <b>and</b> 120 <b>OR</b> No <b>and</b> 40 explicitly compared with 56 <b>OR</b> No <b>and</b> 65(%)
Q9b	R2	Identifies relevant information	1 or	Q	20(%) or 25(%) or 2/10 or 1/5 o.e. <b>OR</b> $360 \div 4 (=90)$ <b>OR</b> $[70, 74]^\circ$
	I6	Full explanation using a valid comparison	2	QR	E.g. 2/10 or 1/5 is not the same as $\frac{1}{4}$ <b>OR</b> 20(%) is not the same as 25(%) <b>OR</b> 0.2 is not the same as 0.25 <b>OR</b> The angle is not $90^\circ$ Accept clear indication on the diagram
<b>Total marks for question</b>			<b>5</b>		

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