

# Mark Scheme (Results)

July 2014

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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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 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, )	<b>1</b> <b>or</b>	1 of linear scale(s), labels, plotting (2mm tolerance)
	<b>2</b> <b>or</b>	2 of linear scale(s), labels, plotting (2mm tolerance)
	<b>3</b>	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: America**

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1a	R1	Works out difference	1 or	A	$49.95 - 33.56 (=16.39)$ <b>OR</b> $2 \times 49.95 - 2 \times 33.56 (=32.78)$ <b>OR</b> $49.95 \div 3$ <b>or</b> $0.33... \times 49.95 (=16.65)$
	A4	Works with fraction	2 or	AB	$49.95 \div 3 (=16.65)$ <b>and</b> $49.95 - 33.56 (=16.39)$ <b>OR</b> $'16.39' \div 49.95 (=0.32(8...))$ <b>OR</b> $'32.78' \div (2 \times 49.95) (=0.32(8...))$ <b>OR</b> $2 \times 49.95 \div 3 (=33.3)$ <b>OR</b> $49.95 - '16.65' (=33.3)$ <b>OR</b> $33.56 + '16.65' (=50.21)$ <b>OR</b> $'16.39' \times 3 (=49.17)$
	I7	Decision from correct figures	3	ABC	No <b>and</b> $0.32(8...)$ <b>oe and</b> $0.33(3...)$ <b>oe OR</b> No <b>and</b> (\$)16.39 <b>and</b> (\$)16.65 <b>OR</b> No <b>and</b> (\$)32.78 <b>and</b> (\$)33.3(0) <b>OR</b> No <b>and</b> (\$)50.21 <b>OR</b> No <b>and</b> (\$)49.17

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1b	A4	Begins to substitute into formula	1 or	D	$65 - 32 (=33)$ <b>OR</b> $16 \times 9 (=144)$ <b>OR</b> $16 \div 5 (=3.2)$ <b>OR</b> $16 \times \frac{9}{5}$ oe (=28.8)
	R1	Full process for substitution	2 or	DE	$'33' \times \frac{5}{9} (=18.3)$ <b>OR</b> $'33' \times 0.5(5\dots)$ <b>OR</b> $'28.8' + 32 (=60.8)$
	I7	Decision from correct figures	3	DEF	Williamsburg <b>AND</b> $[18, 18.48]$ ( $^{\circ}\text{C}$ ) <b>OR</b> $60.8(^{\circ}\text{F})$
<b>Total marks for question</b>			<b>6</b>		



Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q2	R3	Process to convert currency <b>or</b> convert between litres and gallons	1 or	G	Eg. $3.15 \div 1.6 (=1.96875)$ <b>OR</b> $1.37 \times 1.6 (=2.192)$ <b>OR</b> $3.15 \div 3.875 (=0.8129..)$ <b>OR</b> $1.37 \times 3.875 (=5.3.....)$ NB. Allow use of 4 for 3.875
	A4	Process to convert currency <b>and</b> convert between litres and gallons	2 or	GH	Eg. ' $1.96875$ ' $\div 3.875 (= (£)0.508...)$ <b>OR</b> ' $2.192$ ' $\times 3.875 (= (\$)8.494)$ <b>OR</b> ' $0.8129$ ' $\div 1.6 (= (£)0.508...)$ <b>OR</b> ' $5.30..$ ' $\times 1.6 (= (\$)8.494)$ <b>OR</b> $1.37 \times 3.875 (=5.3.....)$ <b>and</b> $3.15 \div 1.6 (=1.96875)$ <b>OR</b> $1.37 \times 1.6 (=2.192)$ <b>and</b> $3.15 \div 3.875 (=0.8129..)$ NB. Allow use of 4 for 3.875
	I6	Finds correct figure to compare	3	GHJ	(\$)[8.49, 8.50] (£)[0.5, 0.51] <b>OR</b> (£)[5.3, 5.31] <b>and</b> (£)[1.96, 1.97] <b>OR</b> (\$)[2.1, 2.2] <b>and</b> (\$)[0.81, 0.82]
	R2	Process to use given scale factor	1 or	K	' (£)0.508' $\times 2 (= (£)1.016..)$ <b>OR</b> (£)1.37 $\div 2 (= (£)0.68..)$ <b>OR</b> ' (\$)8.494' $\div 2 (= (\$)4.24..)$ <b>OR</b> (\$)3.15 $\times 2 (= (\$)6.3)$ <b>OR</b> '8.494' $\div 3.15 (=2.6965..)$ <b>OR</b> ' (£)1.96...' $\times 2 (=3.9...)$ <b>OR</b> '5.3...' $\div$ '1.96...' $(=2.6965..)$ <b>OR</b> '2.1...' $\div$ '0.81...' $(=2.6965..)$
	A4	Correct figures	2	KL	(£)[1.01, 1.02] <b>OR</b> (£)[0.68, 0.69] <b>and</b> (£)[0.5, 0.51] <b>OR</b> (\$)[4.24, 4.25] <b>OR</b> (\$)6.3 <b>and</b> (\$)[8.48, 8.50] <b>OR</b> [2.6, 2.7] (times more) <b>OR</b> (£)[3.92, 3.94] <b>and</b> (£)[5.3, 5.31] NB. Working could be in pence or pounds / cents or dollars
	I7	Correct decision from their figures provided marks H and K awarded	1	M	Yes ft. their figures provided marks H and K awarded <b>OR</b> Yes with (\$)[8.49, 8.50] <b>and</b> eg 'more than double'
<b>Total marks for question</b>			<b>6</b>		

<b>Q3</b>	R1	Process to find time for drive to museum	1	N	$140 \div 60 (=2.333\dots)$ accept 2h 33 mins <b>OR</b> 140 mins
	A4	Converts between hours and minutes	1	P	E.g. 2 hr 20 mins May be seen in subsequent working or correct final answer
	A4	Process to find total time or starts to find leaving time	1 or	Q	subtracts at least two times from 15:30 <b>OR</b> adds two times to a start time <b>OR</b> '2:20' + 3 + 0:45 (=6h 5min) (award N and P if 6h 5min seen)
	I6	Correct leaving time	2	QR	09:25(am) oe Award full marks for correct answer
<b>Total marks for question</b>			<b>4</b>		

**Section B: Book shop**

<b>Q4</b>	R1	Begins to make scale drawing	1 or	A	Two of : Right-angled triangle Isosceles triangle One side adjacent to right angle 5 cm
	I7	Correct scale drawing	2	AB	Right-angled triangle with two 5 cm sides adjacent to right angle
	A4	Finds length of longest side	1	C	[6.9, 7.3] (cm) (can be implied by [138, 146]) <b>OR</b> ft. from their diagram
	R3	Starts process to find figures to compare	1 or	D	$20 \times '7.1'$ (=142) <b>OR</b> $60 \times 2$ (=120) <b>OR</b> $60 \div 20$ (=3) <b>OR</b> Correct Pythagoras statement (with [6.9, 7.3] <b>or</b> [138, 146]) as far as square and add
	A4	Complete process	2 or	DE	'142' $\div 2$ (=71) <b>OR</b> $20 \times '7.1'$ (=142) <b>and</b> $60 \times 2$ (=120) <b>OR</b> '120' $\div 20$ (=6) <b>OR</b> '3' $\times 2$ (=6) <b>OR</b> Correct Pythagoras statement (with [6.9, 7.3] <b>or</b> [138, 146]) as far as square, add and square root
I6	Decision with correct figures	3	DEF	Yes <b>and</b> [69, 71] (cm) (per chair) <b>OR</b> Yes <b>and</b> [138, 146] (cm) <b>and</b> 120(cm) Yes <b>and</b> [6.9, 7.3] (cm) <b>and</b> 6 (cm)	
<b>Total marks for question</b>			<b>6</b>		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5a	R2	Process to find number of tickets for sale	1	G	$450 - 4 \times 20 (=370)$
	A4	Completes process to find amount to be charged	1 or	H	$(725 + 260) \div '370' (=2.6621..)$
	I6	Correct figure with correct money notation	2	HJ	£[2.67, 2.70] with correct money notation
	A5	Shows a check	1	K	Any reverse calculation <b>OR</b> Estimation <b>OR</b> Shows a profit
Q5b	A4	Uses consistent units	1	L	E.g. 1500 ml <b>or</b> 0.2 litres May be seen in subsequent working or correct final answer
	R1	Process to work with total amount of orange	1 or	M	$200 \times 450(=90000)$ <b>OR</b> $50 \times '1500'(=75000)$ <b>OR</b> $'1500' \div 200 (=7.5)$
	A4	Full process to find figures to compare	2 or	MN	$'90000' \div '1500'(=60)$ <b>OR</b> $50 \times '1500'(=75000)$ <b>and</b> $200 \times 450(=90000)$ <b>OR</b> $'75000' \div 200(=375)$ <b>OR</b> $'75000' \div 450(=166...)$ <b>OR</b> $'7.5' \times 50 (=375)$
	I6	Correct decision with correct figures	3	MNP	No <b>and</b> 60 (bottles needed) <b>OR</b> No <b>and</b> 75000 <b>and</b> 90000 (ml) <b>OR</b> No <b>and</b> 75 <b>and</b> 90 (litres) <b>OR</b> No <b>and</b> 375 (glasses) <b>OR</b> No <b>and</b> [166, 167] ml) <b>OR</b> 15 litres more needed <b>OR</b> 10 more bottles needed
<b>Total marks for question</b>			<b>8</b>		

<b>Q6</b>	R3	Work with probability or chance	1 or	Q	$\frac{6}{450}$ <b>OR</b> $\frac{7}{450}$ <b>OR</b> $450 \div 60 (=7.5)$ <b>OR</b> $6 \times 60 (=360)$ <b>OR</b> $450 \div 6 (=75)$ <b>OR</b> 6 in 450 <b>or</b> 6 out of 450 <b>or</b> 6:450 <b>or</b> 6:444 <b>or</b> 7 in 450 <b>or</b> 7 out of 450 oe
	17	Compares probabilities or number of people	2	QR	No <b>and</b> $\frac{1}{75}$ <b>or</b> 0.0166... <b>or</b> 1 in 75 <b>OR</b> No <b>and</b> 7.5 (people) <b>or</b> 8 (people) <b>OR</b> No <b>and</b> $\frac{7}{450}$ <b>or</b> 0.0133... <b>OR</b> No <b>and</b> 360 (people)
<b>Total marks for question</b>			<b>2</b>		

**Section C: Home Maintenance**

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q7a	R1	Works with percentage	1 or	A	$0.2 \times 525$ oe (=105)
	A4	Find percentage increase	2 or	AB	'105' + 525 <b>OR</b> $1.2 \times 525$ oe
	I6	Correct figure	3	ABC	(£)630
Q7b	R1	Uses flow chart	1 or	D	$1270 \times 3$ (=3810) <b>OR</b> $6104 \div 3$ (=2034.6) <b>OR</b> $3502 \div 3$ (=1167.3)
	A4	Correct figure	2	DE	3810 (BTUs) <b>OR</b> [2034, 2035] (cubic feet)
	I7	Decision from correct figures	1	F	Yes <b>and</b> 3810 <b>OR</b> Yes <b>and</b> [2034,2035]
<b>Total marks for question</b>			<b>6</b>		

<b>Q8</b>	R1	Uses given information	1	G	$8177 + 5741 + 2033 + 8400 (=24351)$ <b>OR</b> $8177 \div 3(=2725.6..)$ <b>OR</b> $5741 \div 3(=1913.6..)$ <b>OR</b> $2033 \div 3(=677.6..)$ <b>OR</b> $8400 \div 3(=2800)$ <b>OR</b> $1352 \times 3 (=4056)$
	A4	Works with mean average	1 or	H	$'24351' \div 12 (=2029.25)$ <b>OR</b> $1352 \times 12 (=16224)$ <b>OR</b> $8177 \div 3(=2725.6..)$ <b>and</b> $5741 \div 3(=1913.6..)$ <b>and</b> $2033 \div 3(=677.6..)$ <b>and</b> $8400 \div 3(=2800)$ <b>OR</b> $'24351' \div 4(=6087.75)$ <b>and</b> $1352 \times 3(=4056)$ <b>OR</b> 4056 <b>and</b> comparison with 1 quarter
	I6	Correct figures	2	HJ	2029(.25) <b>OR</b> 16224 <b>and</b> 24351 <b>OR</b> [2725, 2726] <b>and</b> [1913, 1914] <b>and</b> [677, 678] <b>and</b> 2800 <b>OR</b> 6087.75 <b>and</b> 4056 <b>OR</b> 4056 <b>and</b> comparison with 2 quarters
	I7	Decision ft from their figures	1	K	Comparison (ft if G and H scored) Eg. Mrs Smith used more than the mean average for her area <b>OR</b> Mrs Smith used less in July to Sept and more in all the other quarters <b>OR</b> compares each quarter separately <b>OR</b> 4056 <b>and</b> comparison with 4 quarters
<b>Total marks for question</b>			<b>4</b>		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q9	A4	Process to find a missing length	1	L	2.1 + 1.9(=4) <b>OR</b> 3.5 – 1.7(=1.8)
	R2	Process to start to find area	1 or	M	2.1 × 3.5 (=7.35) <b>OR</b> 1.9 × '1.8' (=3.42) <b>OR</b> '4' × '1.8' (=7.2) <b>OR</b> 2.1 × 1.7 (=3.57) <b>OR</b> 3.5 × '4' (=14) <b>OR</b> 1.7 × 1.9 (=3.23)
	A4	Complete process to find area	2 or	MN	'7.35' + '3.42' (=10.77) <b>OR</b> '7.2' + '3.57' (=10.77) <b>OR</b> '14' – '3.23' (=10.77)
	I6	Correct area	3	MNP	10.77 (m <sup>2</sup> ) <b>OR</b> 7.35 <b>and</b> 3.42 <b>OR</b> 7.2 <b>and</b> 3.57 <b>OR</b> 14 <b>and</b> 3.23
	R3	Uses coverage for any relevant area	1 or	Q	E.g. '10.77' ÷ 0.88 (=12.2...) must come from an area method <b>OR</b> 15 × 0.88(=13.2)
	I6	Decision and correct figure	2	QR	Yes <b>and</b> [12.2, 13] (packs) <b>OR</b> Yes <b>and</b> 13.2 (m <sup>2</sup> ) <b>and</b> 10.77 (m <sup>2</sup> )
<b>Total marks for question</b>			<b>6</b>		



