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Mark Scheme (Results)

January 2016

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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1	R1	Process to find cooking time	1 or	A	6.7 × 40 (=268) OR 4 hr 28 min **OR** 7 × 40 (=280) OR 4 hr 40 min
	A4	Full process to find start time	2 or	AB	e.g. 1300 − 25 − 4hr 28 min Allow 1300 – 293 (Mins)
	I6	Correct start time	3	ABC	08:07 o.e. **OR** 07:55 o.e.
		Total marks for question	**3**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q2(a)	R3	Process to use information	1 or	D	2 ½ × 52(=130) o.e. **OR** 135÷2.5 (=54) **OR** 135÷52 (=2.59...)
	I7	Correct conclusion and accurate figures	2	DE	Yes **and** 130 (cm) **OR** Yes **and** 54 (cm) **OR** Yes **and** [2.59, 2.6]
	A5	Valid check	1	F	Uses reverse calculations, estimation or an alternative calculation to check their work e.g. 130 ÷ 2.5 **or** 2½ × 50
Q2(b)	R2	Starts to process information	1 or	G	22 + 1.9(=23.9) **OR** 120 − 1.9(=118.1) **OR** 5 gaps **OR** 6 × 1.9(=11.4) **OR** starts to show gaps and supports with dimensions (at least 2 more supports) to diagram
	A4	Full process to find figures to compare	2 or	GH	5 × '23.9'+ 1.9(=121.4) **OR** 5 × 22 + 6 × 1.9 (=121.4) **OR** '118.1'÷ '23.9'(=4.94..) **OR** (120 − '11.4') ÷ 5 (=21.72) NB Calculations may be seen on diagram
	I6	Valid decision based on correct figures	3	GHJ	Yes **AND** 121.4 (cm) **OR** 4.9..(supports needed) **OR** 21.72 (cm gap could have) NB May work with 2 cm for supports
		Total marks for question	6		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q3(a)	I7	Probability of not raining	1	K	88% o.e
Q3(b)	A4	Works with formula	1 or	L	3.14 × 80 × 80 × 28
	I6	Correct volume	2	LM	562688 (cm^3)
	R2	Process to find number of bags	1	N	E.g. '562688' ÷ 1000 ÷ 50 (=11.2…) **OR** 50 × 1000 (=50000) and '562688' ÷ '50000' (=11.2…)
	R3	Works with cost	1 or	P	'12' × (5.69) (=68.28) **OR** '12' × '0.50' (=6)
	A4	Process to apply discount	2 or	PQ	'12' × (5.69 – 0.50) (=62.28) **OR** '68.28' – '6'(=62.28)
		Correct price	3	PQR	£62.28 with correct money notation
Total marks for question			7		

Section B: Sales People

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q4(a)	R2	Starts chart or graph	1 or	A	1 of: Correct labels on graph including £/amount, quarters, target and actual Correct plotting within ±2 mm tolerance Linear scale
	A4	Develops chart or graph	2 or	AB	2 of: Correct labels on graph including £/amount, quarters, target and actual Correct plotting within ±2 mm tolerance Linear scale
	I6	Completes chart of graph	3	ABC	All of: Correct labels on graph including £/amount, quarters, target and actual Correct plotting within ±2 mm tolerance Linear scale
Q4(b)	I7	Makes a simple comparative comment	1 or	D	e.g. Rick reaches his target in quarter 3
	I7	Makes a good comparative comment over the year	2	DE	e.g. Rick only reaches his target in quarter 3
		Total marks for question	**5**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5	R2	Decision to work with months or years	1	F	E.g. 37200 ÷ 12 (=3100) **OR** 21500 × 12 (=258000) May be seen in a later calculation
	A4	Process to work with percentages	1	G	21500 × 0.18 (=3870) **OR** '258000' × 0.18 (=46440)
	R3	Process to work with fraction	1 or	H	21500 ÷ 8 (=2687.5) **OR** '258000' ÷ 8 (=32250)
	A4	Full process to find figures to compare	2 or	HJ	'2687.5' + 1000 (=3687.5) **OR** '32250' + 12 × 1000 (=44250)
	I7	Decision with correct figures	3	HJK	Option B **and** (£)3100 **and** (£)3870 **and** (£)3687.5(0) **OR** Option B **and** (£)46440 **and** (£)44250
Total marks for question			**5**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q6(a)	R3	Process to begin to use ratio	1 or	L	3 + 2 (=5) **OR** 3 : 2 built up to at least 3 steps **OR** 60 : 40
	A4	Complete process to find answer for either type of staff	2 or	LM	160 ÷ '5' × 3 (=96) **OR** 160 ÷ '5' × 2 (=64) **OR** 96 : n **OR** m : 64
	I7	Correct figures attributed to correct staff	3	LMN	96 morning staff **and** 64 afternoon staff
Q6(b)	R1	Process to find average or total	1or	P	(18600+19120+14160+21650+20300+15940) ÷ 6(=18295) **OR** 18600+19120+14160+21650+20300+15940 (=109770) **and** 19065 × 6(=114390)
	I6	Decision with correct figures	2	PQ	Amra **AND** 18295 **OR** Amra **AND** 109770 and 114390
	A5	Valid check	1	R	Check by reverse calculation or alternative method or by estimation
Total marks for question			**6**		

Section C: Camping

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q7(a)	R2	Begins to find area	1 or	A	E.g. 2.4 × 1.5(=3.6) **OR** 1.8 × 1.2 (=2.16) **OR** 1.8 × 1.2 ÷ 2 **oe** (=1.08)
	A4	Complete process to find total area to be sprayed	2 or	AB	'3.6'+ '3.6'+ '1.08'+ '1.08' (=9.36)
	I6	Correct area	3	ABC	9.36 (m^2)
	A4	Process to work with spray	1 or	D	16 × 0.75(=12) **OR** '9.36'÷16(=0.585) **OR** 1000 ÷ 16 × '9.36'(=585)
	I7	Correct decision from their figures provided AB awarded	2	DE	E.g. Yes **AND** 12(m^2) **and** 9.36(m^2) **OR** Yes **AND** 0.585 (litres) **and** 0.75(0) (litres) **OR** Yes **AND** 585(ml) NB Award this mark provided mark AB is awarded May work in ml or litres.

Q7(b)	R3	Works with consistent units	1	F	2.54 ×10 (=25.4) **OR** 12 ÷ 10 (=1.2) or 14 ÷ 10 (=1.4) or 16 ÷ 10 (=1.6) **OR** 5 ÷ 8(=0.625) or better NB Award this mark if mark H is awarded.
	A4	Process to find figures to compare	1 or	G	⅝ × '25.4' (=15.875) oe **OR** 12 ÷ '25.4' (=0.47..) **or** '1.2'÷ 2.54 (=0.47..) **OR** 14 ÷ '25.4' (=0.55..) **or** '1.4'÷ 2.54 (=0.55..) **OR** 16 ÷ '25.4' (=[0.62, 0.63]) **or** '1.6'÷ 2.54 (=[0.62, 0.63])
	I6	Correct conclusion from accurate working	2	GH	16 mm spanner **AND** 15.8(75) or 15.9 or 16 from correct calculations **OR** 16 mm spanner **AND** [0.62, 0.63] **AND** 0.625
		Total marks for question	8		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q8(a)	R2	Process to convert currencies	1 or	J	85 ×1.39(=118.15) **OR** 20 ÷1.39(=14.38…) **OR** 12 ÷1.39(=8.63..) **OR** 24 ÷1.39(=17.26..) **OR** 11 ÷1.39(=7.91..) **OR** 22 ÷1.39(=15.82..) **OR** 30 ÷1.39(=21.58..) **OR** 8 ÷1.39(=5.75..) **OR** their euros ÷ 1.39
	I6	Begins to find nightly amounts	2 or	JK	At least 2 correct amounts. Le Lac 20 (euros) **OR** (£)[14.38, 14.39] Les Granges 24(euros) **OR** (£)[17.26, 17.27] La Maine 30(euros) **OR** (£)[21.57, 21.59]
	I7	Finds correct total within budget	3	JKL	3 nights at Le Lac and 1 night at Les Granges and 1 night at La Maine **AND** 114 euros or £[81.97, 82.03] **OR** 2 nights at Le Lac and 2 nights at Les Granges and 1 night at La Maine **AND** 118 euros or £[84.85, 84.91]
Q8(b)	A5	Valid approximation	1	M	Uses estimation to check their work. E.g. 90 × 1.4 = 126
	A5	Evaluation of their check	1	N	Comments on their check E.g. My estimate is close to the original, My check is above the original because of my rounding M must be awarded to award this mark.
		Total marks for question	**5**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q9	R1	Begins to work with constraints	1 or	P	Makes a square **OR** Mark a line 3 squares from any fence
	R1	Develops working with constraints and uses scale	2 or	PQ	Makes a square shape 8 squares by 8 squares **OR** Square shape at least 3 squares from all fences
	A4	Fully correct diagram	3	PQR	Square shape 8 squares by 8 squares and at least 3 squares from all fences
Total marks for question			**3**		

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