Mark Scheme (Results)

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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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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 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,
  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	1 or	1 of:	

– (e.g. bar, stick, line graph)		linear scale(s), labels, plotting (2 mm tolerance)
	2 or	2 of: linear scale(s), labels, plotting (2 mm tolerance)
	3	all of: linear scale(s), labels, plotting (2 mm 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: Keeping fish

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1(a)	R3	Compares length, width and weight constraints	1	A	Selects coral
Q1(b)	R2	Starts to work with watts or litres	1 or	B	81 ÷ 4.5 (=18) **OR** 180 ÷ 10 (=18) **OR** 81 × 10 (= 810) **OR** 4.5 ÷ 10 (=0.45) Build up methods must be complete **OR** 125/10 × 4.5(=56.25)(litres can be heated)
	A4	Works with watts and litres	2 or	BC	81 ÷ 4.5 (=18) **and** 10 × '18' (=180) **OR** 180 ÷ 10 (=18) **and** '18' × 4.5(=81) o.e. **OR** 125 ÷ 10 (=12.5) **and** 81 ÷ 4.5 (=18) '810' ÷ 4.5(=180) **OR** '0.45' × 180 (=81) o.e. **OR** 56.25 (litres) (can be heated, not enough)
	I7	Correct decision with correct working	3	BCD	Yes **and** 180 from correct working **OR** Yes **and** 81 from correct working
	A5	Shows a valid check	1	E	e.g. reverse calculation **or** alternative method **OR** uses 125 to check 125 is not big enough **and** D is awarded

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1(c)	A4	Works in consistent units	1	F	E.g. 45cm **or** 25cm **OR** 90 000 mm^2 May be seen in subsequent working
	R1	Works with area of fish tank or starts to work with bags of gravel	1 or	G	'45' × '25' (= 1125) oe **OR** (112500 mm) 1.5 × 900 (=1350) oe **OR** 900 ÷ '45' (=20) oe **OR** 900 ÷ '25' (=36) oe **OR**
	A4	Full process for figures to compare	2 or	GH	'1125' ÷ 900 (=1.25) **OR** '45' × '25' (= 1125) oe **and** 1.5 × 900 (=1350) oe **OR** '25' − 20 = 5 **AND** 5 × '45' (=225) **OR** '45' − 36 =9 **AND** 9 × '25' (=225) **OR** '1350' ÷ '45'(=30) **OR** '1350' ÷ '25'(=54)

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1(c) (cont'd)	I6	Completes calculation	3	GHJ	Yes **and** 1.25 (bags needed) **OR** Yes **and** 1125 (cm^2) **and** 1350 (cm^2) **OR** Yes **and** 225 (cm² spare) **OR** Yes **and** 30 (cm) **and** 25 (cm) **OR** Yes **and** 54 (cm) **and** 45 (cm) **OR** No **and** 1125(cm^2) **and** 1350(cm^2) so it's too much If this Mark is awarded, award Mark F
Total marks for question				9	

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q2(a)	R1	Works with percentage	1 or	K	2 × 0.7(=1.4) oe **OR** 15 ÷ 0.7 (=21.4…) **OR**
	A4	Completes percentage calculation	2 or	KL	15 ÷ '1.4'(=10.714…) **OR** '21.4..' ÷ 2(=10.714…) **OR** 15 ÷ 2 (=7.5) **and** '7.5' ÷ 0.7 (=10.714…) **OR** Build-up methods to at least 10 × '1.4' (=14) **OR** 11 × '1.4' (=15.4)
	I6	Finds number of teaspoons required	3	KLM	[10.5, 11] (teaspoons) **NB** 15 × 70 ÷ 100 = 10.5 is incorrect, award K only

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q2(b)	R1	Creates a structure for the time plan by calculating time available and total for tasks or by identifying fixed points	1	N	6h 30 m **and** 5 h 50 m **OR** 40 minutes spare **OR** Correct lunch break **AND** starts at 9.30 am **and** finishes by 4 pm **OR** correct time and duration for ready for work
	I6	Starts to plan flexible time elements	1 or	P	1 of: Correctly allocates time for cleaning fish tanks **OR** Completes and uploads the video in correct order **and** allocates correct time **OR** Correctly allocates time for replies to 3 web messages
	A5	Develops time plan	2 or	PQ	2 of: Correctly allocates time for cleaning fish tanks **OR** Completes and uploads the video in correct order **and** allocates correct time **OR** Correctly allocates time for replies to 3 web messages
	I6	Completes time plan	3	PQR	Fully correct solution (getting ready for work must be last)
Total marks for question 2 is			**7**		

Section B: Elderly care

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q3(a)	R1	Starts to create ordering sheet	1 or	A	Table with input opportunities **and** headings for both meals **or** for meal choices (condone 2 omissions) **and** at least 2 people **OR** Headings for all meal choices **and** input opportunities for 1 person
	R2	Develops ordering sheet	2 or	AB	Table showing input opportunities for all meals or all choices for 5 people (5 by 6 table, may not be efficient) **OR** Complete table with input for less than 5 people with meal and meal choice headings – may be a questionnaire Condone 1 error or omission
	I6	Completes ordering sheet with efficient input opportunities	3	ABC	Table with efficient input opportunities for all meals and choices and for 5 people **AND** headings for meals and meal choices (**NB** Accept a key or the choices written in solution for patient to complete as alternative to headings for B or C mark)

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q3(b)	R2	Selects correct information from the table	1	D	Works with 5 days (Mon- Fri) **and** 2 days (Sat - Sun)
	A4	Starts to find hours	1 or	E	2 correct multiplication pairs, e.g. staff × hours **OR** 1 of: 7 × '5' × 10 (=350) (Staff × 'Days' × Hours) 5 × '5' × 14(=350) 8 × '2' × 10(=160) 6 × '2' × 14(=168)
	A4	Complete process to find hours	2 or	EF	E.g. 7 × '5' × 10 (=350) **and** 5 × '5' × 14(=350) **and** 8 × '2' × 10(=160) **and** 6 × '2' × 14(=168)
	A4	Process to find total hours for day and night	3 or	EFG	E.g. '350' + '350' + '160' + '168' (=1028) **OR** '350' + '350' + '160' + '168' + 70 (=1098)
	I7	Correct decision and number of hours	4	EFGH	No **and** 1028 (hours)
Total marks for question 3 is			8		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q4(a)	R1	Starts to process mean	1 or	J	5 + 10 + 30 + 20 + 0 (=65) **OR** 5 × 10 (=50) **OR** − 5 + 0 + 20 + 10 − 10(=15) (Differences from 10 minutes)
	A4	Completes process for mean	2 or	JK	'65' ÷ 5 (=13) **OR** 5 + 10 + 30 + 20 + 0 (=65) **AND** 5 × 10 (=50)
	I7	Calculates mean and makes correct decision	3	JKL	No **and** 13 minutes **OR** No **and** 50 **and** 65 Accept No **and** 08:13
Q4(b)	R1	Works with scale	1 or	M	Draws 1 bed **and** 1 locker correctly **OR** Draws 3 beds correctly **OR** 3 lockers correctly
	A4	Develops solution	2 or	MN	Draws at least 2 beds correctly, with heads against wall, same number of lockers.
	I6	Correct solution	3	MNP	Draws 3 **or** 4 beds correctly, with heads against wall, same number of correct lockers, and spaces between

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q4(c)	I6	Provides a simple interpretation	1 or	Q	The patients' weights have gone up
	I7	Provides a complex interpretation	2	QR	The first patient's weight increased by 3 kg and the second patient's weight increased by 2 kg. [means are 57.4 and 53.3 kg]
Total marks for question 4 is				8	

Section C: call centre

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5(a)	R2	Starts chart or graph	1 or	A	1 of: Correct labels on graph including: In(bound) calls, and Out(bound) calls, days of week Correct plotting within ±2 mm tolerance Linear scale
	A4	Develops chart or graph	2 or	AB	2 of: Correct labels on graph including: In(bound) calls, and Out(bound) calls, days of week Correct plotting within ±2 mm tolerance Linear scale
	I6	Completes chart of graph	3	ABC	All of: Correct labels on graph including, In(bound) calls, and Out(bound) calls, days of week Correct plotting within ±2 mm tolerance Linear scale

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5(b)	R1	Starts to work on problem	1	D	50 × 22 (=1100) **OR** 50 − 43.30 (=6.70) **OR** Starts to use trial and error to find free lunches using 7 **OR** States 20 to pay **or** 2 free lunches
	A4	Works with costs	1 or	E	43.30 × 20 or 19 (=866 or 822.7) **OR** '6.70' × 20 or 19 (=134 or 127.3) **and** '2'or '3' ×50(=100 or 150) **OR** '6.70' × 20 or 19 (=134 or 127.3) **and** '2'or '3' ×43.3(=86.6 or 129.9)
	A4	Completes calculation	2 or	EF	'1100' − '866'(=234) **OR** '134' + '100'(=234) **OR** 127.30 + 150 =277.30
	I6	Finds total amount left	3	EFG	(£)234
Q5(c)	I7	Gives clear explanation involving equal probability or chance	1	H	E.g. 50:50 chance **or** Even chance of each outcome **or** 1 ÷ 2 or 0.5

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5(d)	R2	Substitute values into formula or works with formula	1 or	J	$40 = (C \div 3) \times 0.5$ **OR** $C = 3B / 0.5$ **OR** $3 \times 40 = 0.5C$ **OR** 80 **or** 120 seen
	A4	Full process to find C	2 or	JK	$(40 \div 0.5) \times 3 (=240)$
	I6	Finds correct number of calls	3	JKL	240 (Calls)
Total marks for question 5 is	**11**				

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q6	R1	Starts to work with monthly fee	1 or	M	0.8 × 22 (=17.6) **OR** 0.2 × 6 × 22(=26.4) **OR** 3 × 12 − 6 (=30) **OR** 3 × 12 × 22(=792)
	A4	Develops calculation	2	MN	0.8 × 6 × 22(=105.6) **and** '30' × 22(=660) **OR** 3 ×12 × 22(=792) **and** 0.2 × 6 × 22(=26.4) **OR** 6 × ('17.6' + '7')(= 147.6) **and** 30 × (22 + '7') (=870)
	R1	Finds the total monthly printing fee	1	P	50 × 14 (=700) **or** 0.5 × 14 (=7)
	I6	Process total cost	1 or	Q	'105.6' + '660' + (36 × '7')(=1017.6) oe **OR** '792' + (36 × '7') − '26.4'(=1017.6) **OR** '147.6' + '870' (=1017.6)
	I7	Finds the total cost of the 3 year lease, correct money notation.	2	QR	£1017.60 correct money notation
Total marks for question 6 is			5		

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