Mark Scheme (Results)

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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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

(e.g. bar, stick, line graph,)	**or**	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: Recycling

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1	R1	Schedules collections on Fridays	1	A	Only Fridays used.
	R2	Starts schedule	1	B	Gives sequence for at least 3 bins
	I6	Develops schedule	1 or	C	Offsets Paper (fortnightly) and Bottles (Four weekly)
	A5	Checks that all constraints are met.	2	CD	Fully correct schedule.
		Total marks for question	**4**		
Q2(a)	R1	Starts graph e.g. line graph or bar chart	1 or	E	1 of: linear scale, plotting ± 2mm, labels (NW, England, % and dates)
	R2	Develops graph	2 or	EF	2 of: linear scale, plotting ± 2mm, labels (NW, England, % and dates)
	I6	Completes correct graph to display figures	3	EFG	All of: linear scale, plotting ± 2mm, labels (NW, England, % and dates)
Q2(b)	I7	Makes 1 comparative statement	1 or	H	1 of: NW does not recycle as much waste as the rest of England, Both England and NW are improving their recycling rates, NW is not improving as quickly as England.
	I7	Makes 2 comparative statements	2	HJ	2 of: NW does not recycle as much waste as the rest of England, Both England and NW are improving their recycling rates, NW is not improving as quickly as England.
		Total marks for question	**5**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q3(a)	R2	Processes information from graph and condition for fine	1	K	Identifies fine to be paid in 2008 and 2009 and not 2010 **OR** 75640 − 66180 **AND** 69840 − 62847
	A4	Starts to use formula	1 or	L	F=150(75640 − 66180) **or** F=150 × 9460(=1419000) **OR** F=150(69840 − 62847) **or** F=150 × 6993(=1048950) **OR** F=150(49540 − 59290) **or** F= 150 × −9750(=−1462500) o.e.**OR** 2000000 ÷ 150(=13333.33..) **OR** Uses rounded values
	A4	Complete process	2	LM	F= 150(75640 − 66180) + 150(69840 − 62847)(=2467950) **OR** F= 150(75640 − 66180) + 150(69840 − 62847)(=2467950) + 150(49540 − 59290)(=1005450) **OR** 2000000 ÷ 150(=13333.33..) **AND** Total difference (=16453)**OR** Completes calculation using rounded values
	I6	Decision from valid working	1	N	Yes **AND** (£)2467950 **OR** No **AND** (£)1005450 **OR** Yes **AND** 16453 **AND** 13333.33..**OR** Correct decision with appropriate rounded values
Q3(b)	R3	Works with percentage	1 or	P	1647917 ÷ 2712680 × 100(=60.7%) **OR** 0.6 × 2 712 860(=1627716 tonnes)
	A4	Finds comparative figures	2	PQ	60.7% **OR** 1627716 tonnes
	I6	Correct ft decision based on valid working provided mark P is awarded	1	R	Decision ft their figures provided mark P is awarded
Total marks for question			**7**		

Section B: Cub Camp

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q4(a)	R1	Considers number of tents needed	1 or	A	Sufficient tents for at least 25 cubs **OR** for the leaders e.g. $2 \times 8 + 1 \times 3 + 1 \times 6$
	I6	Orders sufficient tents to accommodate cubs and leaders	2	AB	All of: sufficient tents for cubs, leaders, males and females e.g. $2 \times 3 + 5 \times 5$ **OR** $2 \times 5 + 3 \times 9$
	R2	Process to find cost of their combination of tents	1 or	C	e.g. $2 \times 25 + 5 \times 37$ mark A must be awarded
	I7	Finds cheapest option	2	CD	$2 \times 3 + 2 \times 8 + 1 \times 9$ **AND** £198
Q4(b)	A5	Starts to identify alternate valid solutions or approaches	1 or	E	E.g. $2 \times 3 + 2 \times 9 + 1 \times 8 (=202)$ **OR** Works with cost per camper **OR** reverse calculation for their solution to part (a)
	A5	Evaluates effectiveness of solution	2	EF	198 **AND** 202 **AND** 206 **OR** 198 **AND** 202 **AND** explanation e.g. biggest tents are cheapest per camper
		Total marks for question	6		
Q5	R3	Starts to find amount of cereal needed. Independently chooses to work with fractions or whole people	1 or	G	'29'$\times 5 (=145)$ **OR** '29'$\times \frac{2}{3} (=19.3\ldots$or 19 or 20)
	A4	Complete process to find cereal needed	2	GH	'29' $\times \frac{2}{3} \times 5 (=96.6\ldots$ or 95 or 100)
	R2	Process to find number of packets	1 or	J	'96.6…'$\div 26 (=3.71$ or 3.65 or 3.84..)
	I6	Rounds appropriately to whole number of packets	2	JK	'4'
	I7	Finds cost	1	L	£10.12
	A5	Checks calculation	1	M	E.g. appropriate reverse check or estimation
		Total marks for question	6		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q6	R1	Begins to schedule activities	1	N	2 of: 11:15am start, swimming before lunch or more than 1 hour after lunch or evening meal, bed at 8:00pm,
	A4	Begins to produce time plan	1 or	P	Start and finish times given correctly for at least 3 activities
	I6	Develops time plan	2 or	PQ	Start and finish times given correctly for at least 5 activities
	A5	Complete efficient time plan with all constraints checked	3	PQR	Complete ordered time plan with start times including story time; finish times may be implicit.
Total marks for question	4				

Section C: The Roofer

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q7	R2	Identifies need to complete the diagram with at least one missing length	1	A	8 – 3 = 5 **OR** 3.7 + 4.5 = 8.2
	R1	Starts to find area of compound shape	1 or	B	Indicates by line(s) on diagram **OR** Finds area of at least 1 rectangle by multiplying 8 or '5' or 3 by '8.2' or 4.5 or 3.7 e.g. 4.5 × '5'(=22.5) **or** 3.7 × 8(=29.6) **or** 8 × '8.2'(=65.6) **or** 3 × 4.5=(13.5) etc.
	A4	Complete process to work out total area	2 or	BC	e.g. '22.5' + '29.6' **OR** '11.1' + '41' **OR** '18.5' + '22.5' + '11.1' **OR** '65.6' −'13.5'(=52.1)
	A4	Correct total area	3	BCD	52.1 (m^2)
	I6	Process to calculate price for the roof	1 or	E	'52.1' × 46(=2396.60)
	I7	Valid decision and accurate figures	2	EF	No **AND** £2396.60 cao in correct money notation
		Total marks for question	**6**		
Q8	R2	Uses consistent units	1	G	Uses 0.040 or 0.035 (tonnes) **OR** 750 (kg) in a calculation (conversion alone is insufficient)
	A4	Process to find the mass of rolls **OR** mass of felt	1or	H	35 × 9(= 315) or 40 × 12(=480) **OR** 0.035 × 9(=0.315) or 0.040 × 12(=0.48)
	A4	Process to find total load mass	2	HJ	795 kg **OR** 0.795 tonnes
	I7	Comparison ft with limit and decision.	1	K	Compares '795'kg with 750kgs or '0.795' tonne with 0.75 tonne (mark P must be awarded)
		Total marks for question	**4**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q9(a)	A4	Process to convert to cm	1 or	L	16 ×2.54(=40.64)
	I6	Gives distance less than 16"	2	LM	40(cm) **OR** 40.6(4)(cm)
Q9(b)	R2	Starts to process cost or number of beams or distances	1 or	N	300 ÷ beam cost **OR** 800 or 795 ÷ (gap + beam width) or gap only **OR** Clear attempt to mark diagram to work out the number of beams **OR** Repeated addition, allow appropriately rounded values
	A4	Develops solution	2	NP	300 ÷ beam cost **AND** 800 or 795 ÷ (gap + beam width) or gap only **OR** use their number of beams to work towards a cost or a distance
	I6	Process to allow for width of beam or gap or end point	1	Q	Adds 5 cm to gaps **OR** Reduces a gap to less than 16 inches **OR** Adds or subtracts 1 beam appropriately Can buy 20 (or 21) beams, need 19 beams 21 **OR** £257.04
	I7	Valid decision from accurate figures	1	R	Andy is correct. Can buy 20 (or 21) beams **AND** needs 19 beams **OR** Total cost £271.32 **OR** can afford £15.79 per beam **OR** beams can cover more than 8 metres (can cover 9 metres) **OR** gap only needs to be [34, 35] cm **OR** 13.8 inches
Total marks for question			6		