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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1(a)	A4	Marks both points correctly on graph	1	A	(0, 9) **and** (18,22) ± 1 square
Q1(b)	I7	Makes correct statement from graph.	1 or	B	One of E.g. Weight was above average at birth **OR** Weight is below average Do not accept giving weights at birth and 18mths
	I7	Makes two correct or 1 complex statement.	2	BC	one complex statement E.g. He has not put on as much weight as expected **OR** He has not put on weight as fast as expected **OR** He more than doubled his birth weight at 18 months **OR** Weight has increased by 13 pounds since birth **OR** Two simple comments E.g. Weight was above average at birth. Weight is below average Do not accept giving weights at birth and 18 months Maximum 1 mark if state weight drops

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1(c)	R1	Begins to use formula or reverse calculation	1 or	D	155 + 170(= 325) **OR** 160 – 6.5 (=153.5)
	A4	Complete process	2 or	DE	$H = \frac{155+170}{2} + 6.5(=169)$ **OR** F = (160 – 6.5) × 2 – 155(=152) **OR** F = (160 – 6.5) × 2 – 170(=137) **OR** H= 162.5 +6.5
	I6	Decision from accurate figures	3	DEF	No **and** 169 (cm) **OR** No **and** Father 152 (cm) **OR** No **and** Ruby 137 (cm) **OR** No **and** 162.5 (cm) + anything > 160 cm
		Total marks for question	**6**		
Q2(a)	R2	Draws a representation of a cube or cuboid	1 or	G	Draws a cube or cuboid.
	I6	Draws correctly labelled cuboid	2	GH	Cuboid labelled with base sides 20 x 40 and height 30
Q2(b)	R2	Interprets information to draw net of a cuboid.	1 or	J	5 or 6 correctly connected rectangles of any size **OR** 5 or 6 correct rectangles need not be connected
	A4	Draws net of cuboid	2 or	JK	Any 5 or 6 connected rectangles with adjacent edges equal. Do not accept net of cube
	I6	Draws correct net of cuboid	3	JKL	Draws net of an open cuboid with 4 squares by 2 squares by 3 squares which fits on the grid. Condone missing fold lines Ignore tabs
		Total marks for question	**5**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q3	R3	Begins to process time in locations	1 or	M	Shows start times for at least 2 of: arrives at toddler group at or before 9 am **OR** lunch at 12 noon **OR** nap time **OR** Clinic at or before 3:15 pm Finish times may be implicit but should not be incorrect
	A5	Shows correct time in all locations with sufficient elapsed time for activities.	2	MN	Shows start all of: arrives at toddler group at or before 9 am **AND** lunch at 12 noon **AND** nap time **AND** Clinic at or before 3:15 pm Finish times may be implicit but should not be incorrect
	R2	Begins to process travelling time	1 or	P	Shows sufficient explicit travelling time for at least 1 journey
	A4	Correct travelling time	2	PQ	Shows sufficient explicit travelling time for all journeys Journey times must be explicit for P & Q
	I6	Clearly presented schedule	1	R	Sequentially ordered schedule showing at least arrival time in all places and finishes at home by 5pm may combine travel with activity time. Dependent on marks M and P
Total marks for question			**5**		

Section B: Landscape gardening

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q4	R1	Process to work with cost of soil or wages	1 or	A	$2 \times 6 \times 8.25$ (=99) **OR** 8×35 (= 280) Allow $2 \times 3 \times 8.25$ (=49.5)
	R3	Complete process to find total cost	2	AB	'99' + '280'(=379) Allow '49.5' + '280' (=329.5)
	A4	Process to find costs to compare	1	C	500 − '379'(=121) **OR** '379' + 121 (=500) **OR** 500 – 121(=379)
	I6	Decision based on comparison of correct figures	1	D	Yes **AND** 379 provided mark B and C are awarded
Total marks for question			**4**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5(a)	A4	Uses consistent units	1	E	e.g. 0.61 **OR** 1.64 **OR** 16000 **OR** 12000 **OR** uses cm correctly and consistently Conversions may be implicit
	R2	Process to calculate number of rolls along one side or area	1 or	F	e.g. '16000' ÷ 610(= 26.2...) **OR** '12000' ÷ 1640(=7.3...) **OR** '12000' ÷ 610 (= 19.6...) **OR** '16000' ÷ 1640 (=9.7...) **OR** '16' × '12' (=192) **OR** 0.61 × 1 .64(= 1.0004) Begins build up e.g. 1.64 × 10 = 16.4 (>16m) or 0.61 × 10 = 6.1 (Not >12m) Do not allow 12 x 0.61= 7.32 or 16 x 1.64=26.24
	R3	Complete process to calculate number of rolls or area	2	FG	e.g. '16000' ÷ 610(= 26.2..) **and** '12000' ÷ 1640 (= 7.3...) **OR** '16000' ÷ 1640 (=9.7...) **and** '12000' ÷ 610 (= 19.6...) **OR** '16' × '12' (=192) **and** '0.61 × 1 .64'(= 1.0004) **OR** Complete build up e.g. 1.64 × 10 = 16.4 (>16m) 0.61 × 10 = 6.1 (Not >12m) 0.61 ×20 = 12.2 (> 12m) Do not allow 12 x 0.61= 7.32 or 16 x 1.64=26.24
	A4	Rounds appropriately	1	H	27 **and** 8 **OR** 20 **and** 10 **OR** 1 and 192 from working
	I6	Finds number of rolls	1 or	J	'27' × '8' (= 216) **OR** '20' × '10'(= 200) **OR** '192' ÷ '1.0004'(=191.9...)
	I7	Correct answer	2	JK	216 **OR** 200 **OR** 192 If this mark is awarded, also award mark E

Q5b	R1	Interprets negative numbers	1	L	Wed **OR** Thu **OR** Fri with explanation $T^0 C > 0$
	A5	Chooses a day with low rainfall	1 or	M	Mon **OR** Wed **OR** Thu with explanation low probability of rain **OR**
					Mon **OR** Thu with explanation high probability of rain next day
	I7	Chooses a day which fits both rainfall and temp constraints	2	MN	Thu $T^0 C > 0$ **and** rain probability 20% (low) **and** high 80% probability rain for Friday
Total marks for question			**9**		
Q6	R2	Process to work with ratios	1 or	P	$750 \div 30 (= 25)$ **OR** $450 \div 30 (= 15)$
	A4	Complete process to work out fertiliser required	2 or	PQ	'25' $\times 450 (= 11250$ g) **OR** '15' $\times 750 (= 11250)$
	I7	Accurate answer with units	3	PQR	11250 g **OR** 11.25 kg units must be given
Total marks for question			**3**		

Section C: Cricket

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q7 (a)	R1	Begins to produce data collection sheet	1 or	A	Input opportunities **AND** Headings for at least 2 of Name, Sat/Sun, Transport needed/offered
	A4	Improves data collection sheet	2 or	AB	Input opportunities **AND** Headings for at all of Name, Sat/Sun, Transport needed/offered. Accept questionnaire
	I6	Fully correct efficient data collection sheet	3	ABC	Data collection sheet with all categories in a table (May be list of names for 1 cat)**AND** with efficient input opportunities
Q7 (b)	R2	Starts process to apply rule to find a batting average	1or	D	33+11+18+12+21 (=95) **OR** 12+17+32+19+9 (=89)
	A4	Full process to calculate a batting average	2 or	DE	(33+11+18+12+21) ÷ 5 (=19) **OR** (12+17+32+19+9) ÷ 5 (=17.8)
	I7	Correct decision with correct figures	3	DEF	Yes **and** 19 **and** 17.8
Total marks for question			**6**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q8	R2	Process to work with percentage or fraction.	1 or	G	$\frac{20}{100} \times 270$ (= 54)oe **OR** $\frac{1}{3} \times 270 (= 90)$
	A4	Process to find price with VAT or price with $\frac{1}{3}$ off	2	GH	$\frac{120}{100} \times 270$ (= 324) **OR** 270+ '54'(=324) **OR** $\frac{2}{3} \times 270(= 180)$ **OR** 270 – '90' (= 180)
	A4	Works with discount and VAT	1 or	J	$'324' \times \frac{2}{3}(= 216)$ **OR** '324' ÷ 3 (=108) **OR** $'180' \times \frac{120}{100}(= 216)$ **OR** '180' × 0.2 (=36) Allow use of 0.66.... or 0.33....
	I7	Correct answer from full processes for both discount and VAT	2	JK	(£) 216
Total marks for question			**4**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q9	A4	Process to work with consistent units.	1	L	e.g. 2000 or 6000 or 8.160 or 0.03 may be implicit
	R2	Process to calculate number of cups of tea	1 or	M	$(22+14) \times 2 + 200 (=272)$ **OR** $2000 \div 30 \ (=66.6...)$
	R3	Process to calculate amount of milk	2 or	MN	'272' $\times 30 (=8160)$ **OR** '6000' $\div 30 \ (=200)$
	I6	Full process to find figures to compare	3	MNP	'8160' $\div 2000 \ (=4.14)$ **OR** $(22+14) \times 2 + 200 (=272)$ **and** '6000' $\div 30 \ (=200)$ **OR** '272' $\times 30 (=8160)$ **and** $30 \times$ '200' $(=6000)$ **OR** $6000 \div 272 (=22.058...)$
	I7	Correct conclusion with accurate figures	1	Q	No **and** 4 **or** 5 (bottles needed) **OR** No **and** 272 **and** 200 (cups) **OR** No **and** 8160 **and** 6000 oe **OR** No **and** 22.058... (ml per cup) **OR** No **and** 72 cups short or only sufficient for spectators
	A5	Check by reverse calculation or approximation	1	R	Valid check – alternate method or reverse calculation or estimation
Total marks for question			**6**		

Ofqual

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