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Mark Scheme (Results)

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Functional Skills Mathematics
Level 1 (FSM01)

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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1a	A1	Finds total paid	1	A	£ 1675 CAO correct units
Q1b	R1	Begins to draw and position table	1 or	B	2 of: Correct width, correct length, correct position using 50cm scale **OR** Correct width, correct length, correct position using 100cm scale (labels may be implicit)
	I	Correctly draws and positions table to correct scale	2	BC	All of: Correct width, correct length, correct position using 50cm scale (labels may be implicit)
	R2	Begins to draw and position plant	1 or	D	2 of: Correct width, correct length, correct position using 50cm scale **OR** Correct width, correct length, correct position using 100cm scale (labels may be implicit)
	I	Correctly draws and positions plant to correct scale	2	DE	All of: Correct width, correct length, correct position using 50cm scale (labels may be implicit)
Total marks for question			5		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q2	R2	Starts to schedule correct patient with correct dentist	1	F	Di Pilling with David **AND** Rob Gamble with Maria (may be in any slot including Emergency Appointments or greyed out area, but not double booked with another person)
	A2	Starts to work with time of booking constraint	1	G	Joan Andrews appointment [930am,10:30am] (may be in any slot including Emergency Appointments or greyed out area, but not double booked with another person)
	I	Starts to work with consecutive booking constraint	1	H	Nina & Sam follow consecutively with the same dentist **OR** Nina & Sam booked into a 1 hour time slot at the same time with the same dentist
	A2	Develops schedule	1 or	J	2 of: Di Pilling 30 minutes **OR** Rob Gamble 45 minutes **OR** Joan Andrews 30 minutes **OR** Nina 30 mins **OR** Sam 30 mins **OR** Nina & Sam 1 hour
	I	Completes diary	2	JK	All of: Di Pilling 30 minutes **AND** Rob Gamble 45 minutes **AND** Joan Andrews 30 minutes **AND** Nina 30 mins **AND** Sam 30 mins **AND** Nina & Sam 1 hour
Total marks for question			5		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q3a	R3	Starts to work with the special offer	1 or	L	125 × 5 (= 625) **OR** 545 ÷ 5 (=109)
	A1	Completes calculation	2	LM	(£)80 **OR** (£)16
Q3b	A1	Converts hours to minutes	1	N	30(mins) **OR** 15(mins) **OR** 70(mins) **OR** 1 hour and 10 minutes
	R1	Begins to add times	1 or	P	e.g. 10:25 + 25 (mins) = (10:50 (am)) **OR** adds at least 2 of: 25(mins), 30(mins), 15(mins)
	A1	Process to find finish time	2 or	PQ	10:25 + 25 (mins) + 30 (mins) + 15 (mins) (= 11:35 (am)) **OR** 10.25 **AND** 10.50 **AND** 11.20 **OR** 1 hour and 10 minutes **OR** 70 minutes
	I	Finds finish time	3	PQR	11:35 (am)
Total marks for question			**6**		

Section B: Leisure Centre

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q4	I	Responds to bar chart	1 or	A	Makes one simple statement e.g Monday had the most visitors **OR** Friday had the least visitors
	I	Develops a correct response	2	AB	Makes two simple statements e.g. Monday had the most visitors during the week **"and"** Saturday was the quietest day during the weekend. **OR** Monday was the busiest **AND** Friday was the least busiest **OR** Monday was the busiest day during the whole week with 400 visitors
Total marks for question			**2**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5(a)	R2	Starts to work with a solution	1 or	C	Horizontal axis **and** vertical axis labelled with Sat **and** Sun **AND** Temperature **or** linear scale **OR** **Two of:** Input opportunities **OR** Headings for days (at least Sat & Sun) **OR** Headings for times of the day (at least 4) **OR** Starting at 8am oe (must have am if not in 24 hour clock) **OR** Headings for time periods (at least 4) e.g. 08:00 – 11:00
	I	Develops a solution	2 or	CD	**Three of:** Input opportunities **OR** Headings for days (at least Sat & Sun) **OR** Headings for times of the day (at least 4, am or pm can be implied) **OR** Starting at 8am oe (must have am if not in 24 hour clock)
	I	Completes solution	3	CDE	Efficient input opportunities **AND All of:** Headings for days (at least Sat & Sun) **AND** 5 headings for times of the day (am or pm can be implied) **AND** Starting at 8am oe (must have am if not in 24 hour clock)
Q5(b)	R1	Works with ratio	1 or	F	4 × 25 (=100) **OR** Uses build up method at least 3
	A1	Completes calculation	2	FG	100(ml) **OR** 25:100(ml)
Total marks for question			**5**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q6a	R2	Starts to work with formula	1 or	H	72 ÷ 3 (= 24) **OR** [19,25] × 3 (=[57,75]) Condone 72 ÷ 3 as part of a wrong calculation e.g. 19 × 72 ÷ 3
	A1	Calculates figure to compare	2	HJ	24 **OR** 57 **AND** 75
	I	Decision ft from valid working with either Simon's BMI or weight range of fitness goal	1	K	Yes oe (Decision ft from valid working with either Simon's BMI or weight range of fitness goal)
Q6b	A1	Process to calculate total distance	1 or	L	10.3+11+17+12.8 (=51.1)
	I	Correct addition of decimals with correct decision	2	LM	Yes **and** 51.1 (km) CAO
Q6c	I	Compares distances	1	N	Eg 12.8 is less than 17 **OR** week 4 is less than week 3 **OR** Week for dropped down by 5.4 OR makes a comparative statement
Q6d	R2	Draws graph	1 or	P	**1 of**: labels, linear scale, plotting (± 2mm)
	R2	Improves graph	2 or	PQ	**2 of**: labels, linear scale, plotting (± 2mm)
	R3	Completes	3	PQR	**All of**: labels, linear scale, plotting (± 2mm)
Total marks for question			**9**		

Section C: Being green at home

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q7a	R1	Process to find percentage	1 or	A	190 ÷ 10 (=19) **OR** 190 × 0.1 (=19) o.e
	A1	Finds 10%	2	AB	(£)19
Q7b	R2	Works with months or years	1 or	C	200 ÷ 12 (= 16.66) **OR** 200 × 10 (=2000) **OR** 15 × 12 (=180) **OR** 5000 ÷ 10 (=500) **OR** 10 × 12 (=120) **OR** 5000 ÷ 12 (=416.66...)
	R3	Process to find total for saving and cash	2 or	CD	2 of: 200 ÷ 12 (= 16.66) **OR** 200 × 10 (=2000) **OR** 15 × 12 (=180) **OR** 5000 ÷ 10 (=500) **OR** 10 × 12 (=120) **OR** 416.66 ÷ 10 (=41.66)
	A1	Works with figures to compare cost to purchase solar panels with savings over time period	3	CDE	'180' + 200 (=380) **AND** 5000 ÷ 10 (=500) **OR** '180' × 10 (=1800) **AND** 200 × 10 (=2000) **OR** 416.66 ÷ 10 (=41.66) **AND** '16.66' + 15 (= 31.66) **OR** 5000 ÷ '380' = '(13.15)'
	I	Finds correct figures to compare	1	F	380 **and** 500 **OR** 3800 (and 5000) **OR** 120 (from $\frac{3800}{31.66}$)**and** 157.92... (from $\frac{5000}{31.66}$)**OR** 13.15 (and 10) or 13 + years (and 10) **OR** 1800 **and** 2000 (compares 1 year's savings) **OR** 41.66 **and** 31.66 (compares monthly target)
	I	Makes decision ft their figures	1	G	No oe **AND** at least process mark E scored
Total marks for question			**7**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q8a	A1	Full process to find perimeter of a window	1 or	H	90 + 90 + 120 + 120 (=420) **OR** 90 × 2 **and** 120 × 2 (=420)
	A1	Finds perimeter of a window	2	HJ	420 (cm)
Q8b	R3	Converts their figures to consistent units	1	K	4.2 **OR** 500 seen (can be seen in H or J)
	R1	Works with 6 windows or 4 strips	1 or	L	'420' × 6 (=2520) **OR** 4 × 5 (=20) **OR** 4 × 500 (=2000) **OR** 500 − '420' (=80) remainder from one window using one strip
	A1	Works with 6 windows and 4 strips	2 or	LM	'4.2' × 6 (=25.20) **AND** 4 × 5 (=20) **OR** '420' × 6 (2520) **AND** 500 × 4(=2000) **OR** 4 × '80' (=320)
	I	Makes a valid decision based on correct calculations	3	LMN	520 (cm) more needed **OR** He needs more than 4 strips **OR** He needs another 2 strips **OR** No **AND** correct M
Total marks for question			**6**		
Q9	R1	Starts to work with costs	1 or	P	2 correct tallies given (3, 17, 9, 15) **OR** 3 × 17 (=51) **or** 17 × 2 (=34) **or** 9 × 7 (=63) **or** 15 × 11 (=165) **OR** 17 + 2 + 7 + 11 = 37(p)
	A1	Full process for total cost	2 or	PQ	[3 × 17 (=51)] + [17 × 2 (=34)] + [9 × 7 (=63)] + [15 × 11 (=165)] (=313)
	I	Decision from correct figure	3	PQR	Yes **AND** (£)3.13 **or** 313 **or** (£)6.87 **or** 687
Total marks for question			**3**		

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