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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1(a)	R1	Process to find percentage	1 or	A	560 × 0.2 oe (=112) **OR** 560 × 1.2 **OR** uses a complete correct build up method (e.g. 56 + 56)
	I7	Correct conclusion	2	AB	(£)672 **AND** Parties R Us
Q1(b)	R2	Process to find perimeter	1	C	10 + 10 + 6 + 6 (=32) **OR** 2 × 10 × [2, 3] **and** 2 × 6 × [2, 3] (their number in [2, 3] **must** be consistent)
	A4	Works with perimeter or lengths of bunting	1 or	D	70 ÷ '32'(=2.1875) **OR** '32' × [2, 3] **OR** 2 × 10 × [2, 3] + 2 × 6 × [2, 3] **OR** 70 ÷ 2 (=35) **OR** 70 ÷ 3 (=23.3…)
	I7	Correct conclusion with correct figures	2	DE	**For example :** Yes **and** 64 **OR** Yes **and** 2.1(875) **OR** Yes **and** 32 **and** 35
Total marks for question			**5**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q2	R2	Process to find number of packs needed or number of 'offers'	1	F	80 ÷ 6 (=13.33…) **OR** 13.3 **OR** 14 **OR** repeated addition of 6 **or** 12 to at least 80 (may be arith. errors) **OR** 80 ÷ (6×2) (=6.66…) **OR** 6.6 **OR** 6.7 **OR** 7 **OR** 7 × 2 × 6 (=84)
	A4	Process to find normal price or offer price or finds difference between sale and cost price	1 or	G	'14'×3(=42) **OR** '7'×2×3(=42) **OR** '7' × 5 (=35) **OR** 3×2 – 5 (=1) **OR** 3 – 5÷2 (=0.5)
	A4	Complete process to find difference	2 or	GH	'42' – ('14'÷2)×5 (=7) **OR** (10 ÷ 1) × 2 (=20) **OR** 10 ÷ '0.5' (=20) **OR** (10 ÷ '0.5') × 6 (=120) **OR** '14'÷2 × 5 **or** '7' × 5 (=35) **AND** '14' × 3(=42)
	I6	Correct decision from correct figures	3	GHJ	**For example :** No she saves (£)7 **OR** No, she would need to buy 20 packs (or 120 burgers) (to save £10)
Total marks for question			**4**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q3(a)	R1	Converts units correctly	1	K	6 × 28 (=168) **OR** 2 × 6 × 28 (=336) **OR** 2 × 150 ÷ 28(=10.71) **OR** 300 ÷ 28 (=10.71) **OR** 150 ÷ 28 (=5.35..) NB: Unit conversion could occur after proportion so award K mark at that stage
	A4	Uses proportion	1 or	L	100 ÷ 40 (=2.5) oe **OR** 40 + 40 + 20 **OR** '10.71' ÷ 6(=1.78..) **OR** 2 × '5.35..'÷ 6(=1.78..) **OR** 2 × 150 (=300)
	A4	Process to find quantity needed or finds number of truffles that can be made	2 or	LM	'168' × '2.5'(=420) oe **OR** 6 × '2.5'(=15) **OR** 40 × '1.78..'(=71.4..) **OR** '300' ÷ '168' (=1.78...) **OR** 2 × 6 × 28 (=336) **and** 2 × 150 (=300)
	I6	Conclusion with evidence from correct figures	3	LMN	**For example :** No **and** 420 (g) **and** 300 (g) **or** extra 120 (grams) needed **OR** No **and** [71, 72] (truffles) **OR** No as not enough for 80 (truffles) **and** 300 (g) **and** 336 (g) **OR** No **and** (1.7(8) **or** 1.8) **and** need 2.5 times recipe oe **OR** No as not enough for 40 (truffles) **and** 168(g) **and** 100 more than 2 times 40 **OR** No **and** 15 (ounces) **and** 10.7(1) (oz) **or** 10 (oz) **or** 11 (oz)

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q3(b)	R1	Interprets information, begins to draw net	1 or	P	5 or 6 correctly connected rectangles – dimensions may not be correct (when cuboid is made, edges that meet may be of wrong lengths)
	I6	Net has at least 5 faces, 4 of which must be correct	2 or	PQ	5 or 6 connected rectangles that, ignoring 'lid', could form a cuboid; at least 2 cuboid dimensions must be correct) (when cuboid is made, edges that meet must be same lengths)
	A5	Correct net	3	PQR	Fully correct accurate net with 6 faces (ignore any flaps)
Total marks for question			**7**		

Section B: Decorating

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q4(a)	R1	Works in consistent units	1	A	0.85 **OR** 195 seen **OR** 1950 **and** 850 **OR** 200 **and** 100 **OR** 2 and 1 **OR** 2000 and 1000 **OR** maybe implied by correct answer with or without units
	A4	Calculates area	1 or	B	1.95 × '0.85' **OR** '195' × 85 **OR** '1950' × '850' **OR** 1.95 × 85 **OR** 2 × 1 **OR** 200 × 100 **OR** 2000 × 1000
	I7	Correct area with units	2	BC	1.6575 m^2 **OR** 1.7 m^2 **OR** 1.66 m^2 **OR** 1.658 m^2 **OR** 16575 cm^2 OR 1657500 mm^2 (Accept rounded or truncated values) **OR** 2 m^2 **OR** 20000 cm^2 **OR** 2000000 mm^2
Q4(b)	R2	Works with total area to be painted	1	D	6 × 2 × '1.6575' (=19.89 (m^2)) **OR** 6 × 2 × '1.6575' ÷ 9(=2.21 (tins)) **OR** 6 × 2 × '1.6575' ÷ 2 (=9.945 (m^2 each tin must cover))
	I7	Conclusion **ft** from correct working for one or two sides painted	1	E	Decision ft from supporting working in D for 1 or 2 sides painted provided B awarded **For example :** No **with** 19.89(m^2) (compared to 18) No **with** 2.21 (tins) (compared with 2 tins) No **with** 9.945 (m^2 in each tin) (compared with 9 m^2 in one tin) Yes **with** 9.945 (m^2) (compared to 18) Yes **with** 1.1 (tins) (compared with 2 tins) Yes **with** 4.9725(m^2 in each tin) (compared with 9 m^2 in one tin)
		Total marks for question	**5**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5 (a)	R1	Substitutes into formula	1	F	(2×5.6 + 2×4.8) ÷ 2.5 (condone missing brackets) **OR** 8.32 **OR** 11.2 **and** 9.6 **OR** 20.8 **OR** 15.04 **or** 15
	A4	Number of rolls of wallpaper	1	G	8.32 **or** 8 **or** 9
	I6	Rounds up number of rolls	1	H	9 **or** '8.32' ft rounded to next integer

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5 (b)	R3	Starts to find cost for 1, 3, 6 or 12 rolls for one shop	1 or	J	6.75 × 12 (=81) **OR** 12 ÷ 3 (=4) **OR** 10.20 ÷ 4(=2.55) **OR** 12 × 10.2 (= 122.4) **OR** 9.90 × 2 (=19.8) **OR** 9.9 × 12 (118.8)
	R3	Complete process for 1, 3, 6 or 12 rolls for either Wayne's or New Rooms	2 or	JK	**New rooms** '2.55' × 3 (=7.65) (cost per roll) **OR** '2.55' × 3 × 12 (=91.8) **OR** '122.4' × 3 ÷ 4 (91.8) **OR** **Wayne's Wallpaper** '19.8'÷ 3 (=6.6) (cost per roll) **OR** '118.8' ÷ 3 (=39.6) (total saving) **OR** '4' × 2 × 9.90 (=79.2) **OR** '118.8' × 2 ÷ 3 (=79.2)
	A4	Correct value for either Wayne's or New Rooms	3 or	JKL	79.2(0) **OR** 91.8(0) **OR** 6.6(0) **OR** 7.65
	A4	Correct values to compare all shops	4	JKLM	79.2(0) **and** 91.8(0) **and** 81 **OR** 6.6(0) **and** 7.65
	I7	Conclusion ft from equivalent figures	1	N	Decision ft from equivalent figures for all 3 shops At least JK must be scored.
Total marks for question			**8**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q6	R2	Process to find length of material needed or number of lengths in 12 m or 6 m	1 or	P	185 × 3 (=555) **OR** 185 × 2 (=370) **OR** 3 × 2 (=6) **OR** 12 ÷ 1.85 (=6.4…) **OR** 1200 ÷ 185 (=6.4…) **OR** 3 × 90 (=270)
	A4	Completes calculation	2 or	PQ	185 × 3 × 2 (=1110) **OR** 3 × 2 (=6) **and** 12 ÷ 1.85 (=6.4…) **OR** 12 ÷ '6' (=2) **OR** 1200 ÷ '6'
	I7	Correct decision	3	PQR	Eg. Yes with 1110 (cm) **or** 11.1 (m) **OR** Yes with 6 (pieces) **and** 6.4..(pieces) **OR** Yes with 2 (m) **and** 1.85 (m) **OR** Yes with 200 (cm)
Total marks for question			**3**		

Section C: School

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q7	R1	Interprets problem – 1 teacher	1 or	A	For 1 teacher: All three interviewers **OR** For 1 interviewer: All 3 teachers NB. Condone absence of name of interviewer / teacher
	I6	All 3 teachers	2	AB	All teachers: all three interviewers (it must be clear which teacher is with which interviewer)
	R2	Begins to consider timings and constraints	1 or	C	For 1 teacher or 1 interviewer: 3 interview start times with interviews all at least 30 minutes long (end time can be implied) NB. Condone absence of name of interviewer / teacher
	I6	Considers all timings and constraints	2	CD	Fully correct time plan with valid times for all 9 interviews **with** correct times for tour and lunch (it must be clear which teacher is with which interviewer) (valid interview - must not clash with another commitment)
Total marks for question			4		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q8 (a)	R1	Appropriate graph – bar graph(s) (accept line graph(s) or frequency polygon(s))	1 or	E	One of : Linear scale, clear labels, accurate plotting (±1 square) of points or bars
	R2		2 or	EF	Two of : Linear scale, clear labels, accurate plotting (±1 square) of points or bars
	I6		3	EFG	All of : Linear scale, clear labels, accurate plotting (±1 square) of points or bars
Q8(b)	A4	Calculates range	1	H	25
	R1	Process to find mean	1 or	J	(25 + 15 + 32 + 36 + 40) ÷ 5 **OR** 148 ÷ 5 **OR** (18 + 23 + 20 + 25 + 38) ÷ 5 **OR** 124 ÷ 5 **OR** 24.8 Condone missing brackets
	A4	Correct mean	2	JK	29.6 accept 30 from correct working
Q8(c)	A5	Appropriate check - carries out a reverse operation or an estimation	1	L	Any reverse operation from a mean calculation in (b) e.g. '29.6'× 5 **OR** works with difference from 29.6. An estimation e.g. (30 + 20 + 30 + 30 + 40) ÷ 5
Total marks for question	**7**				

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q9	R1	Process to find cost of tickets	1	M	9.50 × 138 (=1311) **OR** 2200 − 9.50 × 138(=889)
	A4	Process to find a possible combination of coaches	1 or	N	2 × 79(=158) **or** 150 ÷ 79 (=1.89…) **OR** 2 Rover **OR** 3 × 53(=159) **or** 150 ÷ 53 (=2.83…) **OR** 3 Traveller **OR** 79 + 2 × 53(=185) **OR** 1 Rover **and** 2 Traveller **OR** Finds number of seats in more than one coach
	A4	Process to find cost of coaches for any one combination	2	NP	'1311'+ 2 × 460(=2231) **OR** '1311' + 3 × 280(=2151) **OR** '1311'+ 460 + 2 × 280(=2331) **OR** 2 × 460(=920) **OR** 3 × 280(=840) **OR** 460 + 2 × 280(=1020)
	I6	Shows a total for cost of coaches	1 or	Q	920 **or** '2231' **or** '889' (2 Rover) **OR** 1020 **or** '2331' **or** '889' (1 Rover, 2 Traveller) **OR** 840 **or** '2151' **or** '889' (3 Traveller) NB. The total must be correct for the candidate's price of tickets which may be incorrect or come from tickets for 150 (£1425)
	I6	Shows a correct decision	1	QR	(3) Traveller **with** (£)2151 **OR** (3) Traveller **with** (£)840 **and** (£)889 **OR** (3) Traveller **with** (£)49
		Total marks for question	**5**		