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Mark Scheme (Results)

January 2012

Functional Skills Mathematics (FSM01) Level 1

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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1a	A1	Counts tally marks or adds pay	1 or	A	8 **OR** 4 **OR** 6 **OR** 0 OR £170
	R2	Co-ordinates tally and pay	2 or	AB	8 ×40(=320) **OR** 4×50(=200) **OR** 6×20(=120) **OR** 6×25(=150)
	A1	Finds total	3	ABC	(£)790
Q1b	R1	Understands problem, begins to consider constraints	1 or	D	At least 2 activities or names linked to times, **OR** correct reordering of jobs and lunch included (times may have errors or be omitted)
	R2	Improves time plan	2 or	DE	For their job order, the timings are shown correctly and lunch is included but the job order is inappropriate **OR** Correct reordering of jobs and times correct but lunch is missing **OR** Correct reordering of jobs, lunch is included but one time is missing or incorrect
	I	Fully accurate time plan	3	DEF	Fully ordered sequentially linked time plan, appropriate start times, finish times either but not both may be implicit **AND** allows time for lunch break **AND** would finish by 5 pm
		Total marks for question	**6**		

Q2a	R2	Process to find pay per week for either job or hours per day job advert	1 or	G	5×45(=225) allow 6×45(=270) or 7×45(=315) **OR** 30×7.3(=219) **OR** 30÷5(=6)
	A1	Process to find two figures to compare for pay per week or pay per day for the job advert	2 or	GH	5×45(=225) allow 6×45(=270) or7×45(=315)**AND** 30×7.3(=219) **OR** '6'×7.30(=43.8)
	I	Correct decision from accurate comparable figures	3	GHJ	Work for brother(Rob) **AND (£)**219 **AND (£)**225 **OR** Work for brother (Rob) **AND (£)**43.8(0)
Q2b	A2	Checks a pay calculation or uses a different method	1	K	e.g. 219÷7.30(=30) **OR** 225÷5(=45) **OR** 43.8×5(=219) **OR** 43.8÷6(=7.3) **OR** estimation
		Total marks for question	**4**		
Q3	A1	Uses consistent units	1	L	5000 (ml) **OR** 0.75 (litres) **OR** 4500(ml) or 5250 (ml) calculated **OR** 1000 ml = 1 litre **AND** 6 bottles
	R1	Calculates full bottles	1 or	M	'5000'÷750(=[6.6,6.7]) **OR** 5÷**'**0.75'(=[6.6,6.7]) **OR** 6×750(=4500) **OR** 7×750(=5250) **OR** repeated addition, at least 3, of 750 **OR** repeated subtraction, at least 2, of 750 from '5000'
	I	Interprets answer	2	MN	6
		Total marks for question	**3**		
Q4	I	Makes logical statement or selects a correct month	1 or	P	e.g. go when earnings are low **OR** June or July without reason
	I	Decision based on reason that meets only one aspect	2 or	PQ	Aug **or** Sept with reason related to temperature **OR** Feb **or** May with reason related to wages
	I	Decision that meets both aspects and reason from at least one aspect	3	PQR	Jun **or** Jul only with at least 1 explicit reason related to temperature or wages
		Total marks for question	**3**		

Section B: The May fair

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5a	I	Decision and valid reason	1	A	Dry, the last 10 years have been dry 6 times and wet 4 times **OR** dry, because it has been dry more often **OR** wet, as in the last 5 years it has been wet 3 times & dry twice **OR** Cannot tell, the sample size is too small **OR** cannot tell, weather is unpredictable Do not accept: answers relating to sequences or patterns
Q5b	R1	Begins to calculate perimeter or to calculate metres available or to annotate diagram	1 or	B	75+25+75+25(=200) **OR** 50×5(=250) **OR** marks off lots of 50 on diagram
	A1	Process to find comparable figures or to calculate netting needed or netting left over	2 or	BC	75 + 25 + 75 + 25(=200) **AND** 50 × 5(=250)**OR** '200'÷50(=4) **OR** 250 − 75 − 25 − 75 − 25(=50) **OR** clearly indicates how rolls are used
	I	Correct decision and accurate working	3	BCD	Yes **AND** 200 **AND** 250 **OR** yes **AND** 4 rolls needed **OR** yes **AND** 50 m left **OR** yes **AND** 1 roll left
Total marks for question			**4**		
Q6	R1	Considers multiples of 10 or 8	1 or	E	4 × 10 (=40) **OR** 8 × 19 (=152)
	A2	Process to find amount of money taken or additional vehicles required	2 or	EF	4 × 10 (=40) **AND** 8 × 19 (=152) **OR** '40' + '152' (=192) **OR** 196 – '152' (=44) **OR** 196 – '40' (=156)
	I	Finds the amount of money taken or additional vehicles required and makes decision	3	EFG	No **AND** 192 **OR** No **AND**£4 more needed **OR** No **AND** 20 Cars or 1 more car **OR** No **AND** 5 Vans or 1 more van
Total marks for question			**3**		

Q7a	R1	Process to find grams per person or multiplier to scale up food	1 or	H	450 ÷ 6 (=75) **OR** 0.45 ÷ 6 (=0.075) **OR** 30 ÷ 6 (=5) **OR** 6×5=30
	A1	Calculates mince required	2 or	HJ	30 × '75' (=2250) **OR** 30 × '0.075' (= 2.25) **OR** '5' × 450 (=2250)
	A1	Correct weight in grams or kilograms	3	HJK	2250 g **OR** 2.25 kg units required with answer
Q7b	R1	Begins to access criteria	1 or	L	2 of: rota completed to cover 12 noon to 5 pm at least 2 people on duty at all times no-one works more than 2 hours Beth's duty must finish by 3 pm Cam starts 2 pm or later Donna and Eddy not on duty at same time Note: if only 1 person is on duty throughout the max mark is 1
	I	Develops rota	2 or	LM	rota completed to cover 12 noon to 5 pm **AND** 2 or 3 people on duty at all times **AND** 2 of: no-one works more than 2 hours Beth's duty must finish by 3 pm Cam starts 2 pm or later Donna and Eddy not on duty at same time
	I	Improves rota	3 or	LMN	Rota with 1 error or omission only rota completed to cover 12 noon to 5 pm at least 2 people on duty at all times no-one works more than 2 hours Beth's duty must finish by 3 pm Cam starts 2 pm or later Donna and Eddy not on duty at same time If Anya also appears she can be ignored. Note having only 1 person on duty throughout would be 5 omissions not 1

	I	Fully correct and clearly presented rota	4	LMN P	fully correct, clearly presented rota e.g. 12 - 1 Beth and Donna 1 - 2 Beth and Donna (and Gez) 2 - 3 Cam and Eddy 3 - 4 Cam and Eddy (and Fran) 4 - 5 Fran and Gez
		Total marks for question	**7**		

Question	**Skills Standard**	**Process**	**Mark**	**Mark Grid**	**Evidence**
Q8	R1	Process to calculate 25%	1 or	Q	0.25×260(=65) oe **OR** 260÷4(=65) oe **OR** 0.75×260(=195) o.e.
	A1	Correct amount	2	QR	(£)65 allow (£)195 left
		Total marks for question	**2**		
Section C: The design company					
Q9a	A1	Counts or calculates to find area	1 or	A	6×4(=24) **OR** draws on diagram to count squares
	A1	Finds area to substitute	2	AB	24 do not allow isw
	R1	Begins to substitute in formula or to reverse calculate	1 or	C	'24'×3 **OR** '24'÷4(=6) **OR** 11×4(=44) **OR** 11÷3(=3.66…)
	A1	Full substitution or full reverse calculation	2 or	CD	'24'×3÷4(=18) **OR** 11×4÷3(=14.6…)
	I	Valid decision and correct ft answers from use of '24'	3	CDE	e.g. yes **AND** 18 **OR** correct decision and correct evaluation from '24' **OR** e.g. yes **AND** '24' **AND** [14.6,14.7]
Q9b	R1	Draws refreshments space on grid	1 or	F	2 of correct length, correct width, suitable position
	I		2	FG	All of correct length, correct width, suitable position
	R1	Draws cabinet on grid	1 or	H	2 of correct length, correct width, suitable position
	I		2	HJ	All of correct length, correct width, suitable position

		Total marks for question	**9**		
Q10a	R1	Totals profit or reverse calculates or uses difference from mean	1 or	K	130000+155000+180000+165000+145000(=775000) **OR** 154000×5(=770000) **OR** −24000, 1000, 26000, 11000, −9000 condone missing signs
	A2	Finds figures to compare	2 or	KL	130000+155000+180000+165000+145000(=775000) **AND** 154000×5(=770000) **OR** '775000'÷5(=155000)
	A2	Valid decision and correct answers	3	KLM	Yes **AND** 770000 **AND** 775000 **OR** Yes **AND** total differences of 5000 Yes **AND** full mean process to reach 155000 **OR** Yes **AND** 1000 over
Q10b	R3	Draws appropriate graph (appropriate graphs include bar chart, barline chart, line graph)	1 or	N	One of: linear scale, labels, plotting
	R3	Improves graph	2 or	NP	Two of: linear scale, labels, plotting
	I	Fully correct graph	3	NPQ	All of: linear scale, labels, plotting
Q10c	I	Interprets graph or table	1	R	e.g. Yes because the profits are increasing **OR** Yes because the numbers are increasing **OR** graph is going up
		Total marks for question	**7**		

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