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Mark Scheme (Results)

June 2011

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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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

Question	Process	Mark	Mark Grid	Evidence
Q1 (a)	Interprets problem	1 or	A	75 ÷ 50(=1.5) **OR** Build up rg 1hr = 50 miles and ½ hour = 25 miles **OR** 1.30 **OR** 1.3 **OR** 90 **OR** 1 and a half
	Works out correctly with units	2	AB	1.5 hrs **OR** 1hr 30min **OR** 1 and a half hours **OR** 90 mins
Q1 (b)	Uses correct times and calculates with time difference	1 or	C	Counting from 10.20 am to 11am (= 40(minutes)) **OR** From 11am or 12 pm to 6.45 pm **OR** 18.45 seen **OR** 8.25
	States correct time difference	2	CD	8 (hrs) 25 (min) **OR** 505 (mins)
	Total marks for question 1	**4**		
Q2 (a)	Starts to find cost of 2 adults or 2 children or 1 adult and 1 child OR cost per person	1 or	E	2 ×19.75(=39.5) **OR** 2 × 12.50(=25) **OR** 19.75+12.50(=32.25) **OR** 55÷4(=13.75) **OR** calculates using rounded or truncated values
	Works with total cost of two adults and two children OR states cost per person	2	EF	2 ×19.75(=39.5) **AND** 2 × 12.50(=25) **OR** '32.25' × 2 **OR** 13.75 **OR** only 3.00 left for second child **OR** calculates using rounded or truncated values
	Process to find total costs or cost per person	1	G	'39.5'+'25'(=64.5(0)) OR '32.25' × 2 ='64.5(0)' **OR** 64.50÷4(=16.125) **OR** 19.75−13.75(=6) **OR** 12.50−13.75(=1.25) OR correct total from rounded or truncated values
	Correct decision from valid working	1	H	Yes, with correct values from correct working

Q2 (b)	Interprets information and starts time plan	1 or	J	Indicates big cats at 10.45 and at least one other show with start time 11.15 or better
	Improves plan	2	JK	Indicates big cats and at least two other shows with non overlapping start times
	Coordinates timetable	1or	L	At least 15 minutes between finish and start times for at least one pair of shows **OR** includes 30 minutes lunch break (finish times need not be shown)
		2 or	LM	At least 15 minutes between finish and start times for at least one pair of shows **AND** includes 30 minutes lunch break (finish times need not be shown)
		3	LMN	Full correct time plan showing all shows, with start times at suitable intervals, (walk times can be implied) and finish times and lunch break indicated, in order
	Total marks for question 2	**9**		

Question	Process	Mark	Mark Grid	Evidence
Q3 (a)	Makes decision using likelihood	1	P	Yes, statement implying more males are being born **OR** No, reason implying always 50%
Q3 (b)	Works with money	1 or	Q	3.75+3.25+0.6(=7.6) OR Starts to show repeated subtraction from £10
	Finds change	2	QR	(£)2.40 or 240(p) cao
	Total marks for question 3	**3**		

Section B: The Restaurant

Question	Process	Mark	Mark Grid	Evidence
Q4 (a)	Starts to find how many days needed	1 or	A	9 ÷4(=2.25) Accept evidence of counting up in 4s, e.g. 4, 8,… or 2.25 or 2 r 1 **OR** shows combinations of 4,4,1
	Interprets answer and rounds correctly	2	AB	3 (days) **OR** shows allocations to 3 days
Q4 (b)	Uses appropriate check.	1	C	Appropriate reverse calculation or alternative method
Q4 (c)	Interprets problem and shows: 2 features	1 or	D	2 of: identifies candidates, four headings, total score, input opportunities, multiple rows or clearly indicates one sheet for each person
	3 features	2 or	DE	3 of: identifies candidates, four headings, total score, input opportunities, multiple rows or clearly indicates one sheet for each person
	All features	3	DEF	All of: identifies candidates, four headings, (total scores not required) efficient input opportunities, multiple rows or clearly indicates one sheet for each person
Total marks for question 4		**6**		

Question	Process	Mark	Mark Grid	Evidence
Q5	Selects starter, main and dessert	1 or	G	Selects starter, main and dessert meeting one dietary constraint (all vegetarian or no nuts)
	Selects starter, main and dessert within constraints	2	GH	Selects starter, main and dessert that meets dietary constraints (all vegetarian and no spicy and no nuts)
	Gives prices or finds total for their menu choices	1 or	J	Clearly states prices for all their choices **OR** Gives their total correctly
	States correct amount in budget	2	JK	correct total within £20 budget
	Total marks for question 5	**4**		
Q6 (a)	Converts tally to frequencies	1	L	At least one frequency added to tally table or shown on graph
	draws suitable graph or chart: bar chart, pictogram, line graph, pie chart	1 or	M	1 of: linear scales, labels, plotting (2mm tolerance)
		2 or	MN	2 of: linear scales, labels, plotting (2mm tolerance)
		3	MNP	3 of: linear scales, labels, plotting (2mm tolerance)
Q6 (b)	Works with 50%	1 or	Q	5.5×0.5(=2.75) **OR** 5.5÷2(=2.75) **OR** shows 10% = 55p oe
	States price	2	QR	(£)2.75 or 275(p)
	Total marks for question 6	**6**		

Guidance for question 5:

Starter	Main	Dessert	Total
Soup	Veggie pizza	Tiramisu	18.20
Soup	Veggie pizza	Fresh fruit salad	16.95
Soup	Veggie lasagne	Tiramisu	20
Soup	Veggie lasagne	Fresh fruit salad	18.75
Mushrooms	Veggie pizza	Tiramisu	18.70
Mushrooms	Veggie pizza	Fresh fruit salad	17.45
Mushrooms	Veggie lasagne	Fresh fruit salad	19.25
Mushrooms	Veggie lasagne	Tiramisu	20.50

Section C: The Living Room

Question	Process	Mark	Mark Grid	Evidence
Q7 (a)	Begins to find area of room	1 or	A	5 × 4(=20) **OR** shows evidence of counting squares
	States area of room	2	AB	20 (m^2)
Q7 (b)	Works with total cost or cost per metre	1 or	C	'20' × 10.95(=219) **OR** '20' × 2.50(=50) **OR** 45 ÷ '20'(=2.25) **OR** 11 × '20' (=0.55) **OR** 10.95+2.50(=13.45) '20' may be their value from Q7(a), or another value
	Finds one total cost or one cost per metre	2 or	CD	'219'+'50'(=269) **OR** '220'+45(=265) **OR** '2.25'+11(=13.25) **OR** 13.45 ft
	Finds both total costs or both costs per metre	3	CDE	269 **and** 265 **OR** 13.25 **and** 13.45
	Correct decision based on valid working process marks C and D must be awarded	1	F	Decision ft from valid working (C and D scored)
Total marks for question 7		**6**		
Q8	Positions rectangle in correct place	1 or	G	2 of: Correct length, correct width, horizontal position, vertical position within constraints
		2 or	GH	3 of: Correct length, correct width, horizontal position, vertical position within constraints
		3	GHJ	all of: Correct length, correct width, horizontal position, vertical position within constraints
Total marks for question 8		**3**		

Question	Process	Mark	Mark Grid	Evidence
Q9 (a)	Works with ratio	1 or	K	60 ÷ 3(=20) **OR** 40 seen **OR** shows diagrammatic evidence (at least 12 tiles in correct ratio) **OR** shows at least two more alternative equivalent ratios, e.g. red 2 blue 4, red 6 blue 12, red 10, blue 20 etc
	Shows answer clearly	2	KL	Clear statement: 20 red and 40 blue (tiles)
Q9 (b)	Works with days or weeks or months	1	M	30+31+31(=92) **OR** 3×[28, 31] (=[84,93]) **OR** 12 or 13 or 14 weeks o.e
	Process to calculate consumption using 2kg	1	N	Multiplies or divides by 2 appropriately 2 × '92' **OR** 25÷2(=12.5) **OR** 2×7
	Works with bags of coal	1or	P	10×25(=250) **OR** '92'÷12.5(=7.36) **OR** '92' ÷10(=9.2)
	Completes calculations	2	PQ	2 of: 2× '92'(=184) **OR** 10×25(=250) **OR** 25÷2(=12.5) **OR** 250÷2(=125) **OR** '92'÷12.5(=7.36) **OR** 250÷3(=83) **OR** '92' ÷10(=9.2) **OR** 250 ÷ '92'(=2.7) **OR** '14' ×14 (=196)
	Decision based on correct working	1	R	Yes they have enough bags with correct figures Comparison may be implicit: [168,186](kg) with 250(kg) OR [84,93](days) with 125 OR 7.36 bags (with 10 bags) OR Have 1 bag for 9.2 days, each bag last 12.5 days OR Have 2.7kg a day (with 2kg needed) OR Have 83kg per month but only need 60kg
Total marks for question 9		**7**		

Possible answers to support Q2 (b)

Show	**Start**	**Finish**
Big cats	10.45	11.15
African adv	12	12.45
Lunch	12.45	13.15
Dolphins	13.45	14.15
Reptiles	15.00	15.30
Show	**Start**	**Finish**
Big cats	10.45	11.15
Lunch	11.15	11.45
African adv	12.00	12.45
Reptiles	13.00	13.30
Dolphins	13.45	14.15
Show	**Start**	**Finish**
Big cats	10.45	11.15
Reptiles	13.00	13.30
Lunch	13.30	14.00
Dolphins	14.45 or 15.45	15.15 or 16.15
African adv	16.30	17.15

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