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Mark Scheme (Results)

October 2013

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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
1a	R2	Starts to work with fees or number of people	1 or	A	920 ÷ 9.5(=96.84..) **OR** 87 × 9.5(=826.5) **OR** 920 ÷ 87(=10.57...)
	A4	Completes calculation	2	AB	'96.84..' – 87(=9.84..) **OR** 920 – '826.5' = (£)93.5 **OR** '10.57' – 9.5 = (£)1.07
	I6	Makes valid decision from correctly rounded figures	1	ABC	10 (additional people) **OR** 97 (people needed)
1b	R1	Full process to calculate the mean	1 or	D	(30 + 31 + 33 + 40 + 37 + 32 + 38 + 41) ÷ 8(=35.25)
	A4	Completes mean calculation	2	DE	35.25
	I7	Makes valid decision using the table to compare data ft. provided mark D is scored.	1	F	Identifies dogs D **and** E **and** G **and** H ft. provided mark D is scored.
	A5	Performs a valid check on their calculation or dog height against mean	1	G	E.g. 35.25 × 8 = 282 **or** 282 − 30 − 31 – 33 − 40 − 37 − 32 − 38 – 41 = 0 **or** 40 – '35.2' = 4.8(cm)
		Total marks for question 1	**7**		
2a	R1	Starts to substitute into formula	1 or	H	4 × 5 **or** 2 × 14 **or** 50 − 10
	A4	Complete process	2	HJ	10 + (4 × 5) + (2 × 14) (=58) **OR** 50 – (4 × 5) + (2 × 14) (= −8)
	I7	Correct decision and accurate figures	1	K	No **and** (£)58 **OR** No **and** (£)8 short

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
2b	R1	Starts to create a two way table or two separate tables	1 or	L	Input opportunities for 4 dogs **OR** Headings for all four grading criteria **OR** Heading for round 1 and heading for round 2
	R2	Develops solution	2 or	LM	Two of: Input opportunities for 4 dogs, Headings for all four grading criteria, Heading for round 1 and heading for round 2
	I6	Complete efficient solution as two way table or two separate tables	3	LMN	Efficient input opportunities for 4 dogs **and** Headings for all four grading criteria **and** Heading for round 1 and heading for round 2
Total marks for question 2			**6**		
3	R1	Works with scale	1 or	P	Rectangle with one: One side 3 squares **OR** One side 0.3 squares **AND** At least 2 squares away from the fence **OR** at least 1.5 squares away from any obstacle
	A5	Works with scale and position	2 or	PQ	Rectangle 3 by 0.3 squares, **AND** At least 2 squares away from the fence **OR** at least 1.5 squares away from any obstacle
	I7	Completes correct shape in correct position	3	PQR	Rectangle with all of: 3 by 0.3 squares **AND** At least 2 squares away from the fence **AND** at least 1.5 squares away from any obstacle
Total marks for question 3			**3**		

Section B: The cinema

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q4	R1	Starts to schedule films	1 or	A	4 of: Happy Hippo finishes by 18:00, Dark Shadow starts no earlier than 18:30, Sinking Ship in screen 1, HH film duration correct, DS film duration correct, ML film duration correct, SS film duration correct
	I6	Develops schedule	2 or	AB	5 of: Happy Hippo finishes by 18:00, Dark Shadow starts no earlier than 18:30, Sinking Ship in screen 1, HH film duration correct, DS film duration correct, ML film duration correct, SS film duration correct
	I7	Fully completes schedule	3	ABC	All of: Happy Hippo finishes by 18:00, Dark Shadow starts no earlier than 18:30, Sinking Ship in screen 1, HH film duration correct, U (2 and ¼) (9) DS film duration correct, 18 (1 and ½) (6) ML film duration correct, 12 (1 and ¾) (7) SS film duration correct PG (2 and ½) (10) **NB**: Films may be indicated by title, rating or duration.
	R2	Completes cleaning time for all films	1	D	15 minutes cleaning after all of Happy Hippo, Sinking Ship, Magic Lamp, Dark Shadow
	A5	Checks schedule	1	E	No films start simultaneously
		Total marks for question	**5**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5	R3	Works with cost of pick and mix	1 or	F	350 ÷ 100 (=3.5) **OR** (£)1.45 ÷ 100 = 1.45(p) for 1 g oe
	A4	Full process to calculate cost of pick & mix	2	FG	'3.5' × 1.45 (=5.075) **OR** '3.5' × 145 (=507.5) **OR** '1.45' × 350 (=507.5)
	A4	Process to find total cost	1	H	e.g. 3.2 + 3.7 + '5.075' (=11.975)
	I7	Valid decision from correct figures	1	J	e.g. No **AND** 11.97 or 11.98 or 11.975
		Total marks for question	**4**		
Q6a	R3	Starts to process proportion or percentage	1 or	K	1.5 × 150(= 225) **OR** 0.55 × 1.5 (=0.825) **OR** 1− 0.55=0.45 oe **OR** 130 ÷ 150 (= 0.866…) using g per portion
	A4	Processes both proportion and percentage	2 or	KL	0.55 × '225'(= 123.75) **OR** 1.5 × 150(= 225) **and** 1− 0.55=0.45 **OR** 0.45 × 1.5 (= 0.675) **OR** 1.5 – '0.825…'(= 0.675…) **OR** 0.55 × 1.5 (=0.825) **and** 130 ÷ 150 (= 0.866…)
	I6	Full process to find figures to compare	3 or	KLM	0.45 × '225'(= 101.25) **OR** '225'−'123.75'(=101.25) **OR** '0.675'×150 (=101.25) **OR** 0.633 ÷ 1.5(= 0.42...=42% less) **OR** '0.825' +'0.866'(=1.685) **OR** 1.5 – '0.825'(=0.675) **and** 130 ÷ 150 (= 0.866…)
	I7	Correct decision and accurate figures	4	KLMN	No **AND** [100, 102](g) **OR** No **AND** 42% **OR** No **AND** 0.185 (g too much)

Q6b	R1 I6	Starts to draw net of cuboid with or without lid Complete correct net	1 or 2	P PQ	At least 1 square and at least 3 rectangles connected correctly to demonstrate understanding of net Fully correct net with 5 faces (ignore any flaps) with sufficient dimensions labelled
Q6c	A4	Uses measurements to identify the most appropriate size of card to use	1	R	ft. their labelled net provided mark P is awarded
		Total marks for question	**7**		

Section C: Tower theme park

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q7	R1	Starts to work with ratio	1 or	A	2:14 **OR** 14 **OR** 1 + 7 (= 8) parts
	A4	Finds complete process for ratio	2 or	AB	e.g. 2 + 14 =16
	I7	Correct decision	3	ABC	Yes **AND** 2 + 14 =16 oe
		Total marks for question	**3**		
Q8a	R1	Begins to develop appropriate graph or chart	1 or	D	1 of Labels, plotting, linear scale
	A4	Improves graph or chart	2 or	DE	2 of Labels, plotting, linear scale
	I6	Completes graph or chart	3	DEF	All of Labels, plotting, linear scale Minimum labels: visitors, years, months. Plotting tolerance ±1 small square
Q8b	R2	Process to find number of hours in day	1	G	e.g. 12 – 1.5 hours (=10.5 hours) **OR** Build up method seen with noon dealt with
	R3	Starts to work with train time	1 or	H	Converts '10.5' hours into mins (=630 **or** 633) **OR** 60 ÷ 3 (=20) (trains per hour)
	A4	Process to find number of trains per day or people per hour	2	HJ	'633' ÷ 3 (=211) **OR** '630' ÷ 3 (=210) **OR** '20' × '10.5' (=210) + 1 (=211) **OR** '20' × '10.5' (=210) **OR** '20 × 36 (=720)
	A4	Process to find number people	1 or	K	'211' × 36 (=7596) **OR** '210' × 36 (=7560) **OR** '10.5' × '720' (=7560)
	I6	Correct number of people	2	KL	7596 accept 7560
Q8c	I7	Makes a comparative statement	1	M	e.g. In Tower theme park there were more visitors than in Manor theme park every month
		Total marks for question	**9**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q9	R1	Starts process to find number of visitors who travel by car	1 or	N	21 000 × 0.9 (=18 900) oe
	A4	Process to find number of cars or people	2 or	NP	'18 900' ÷ 4 (= 4725) **OR** '18 900' ÷ 400 (= 47.25)
	A4	Full process to find number of car park attendants	3 or	NPQ	'4725' ÷ 400 (=11.8…) **OR** '47.25' ÷ 4 (=11.8..)
	I6	Correct answer	4	NPQR	11.8 (full time equivalents) **OR** 12 (people)
Total marks for question			**4**		

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