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Mark Scheme (Results)

November 2013

Pearson Edexcel Functional Skills Mathematics Level 2 (FSM02)

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November 2013
Publications Code FC037510

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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1	R1	Begins to produce data collection sheet	1 or	A	Input opportunities **AND** headings for at least 2 of : areas visitors use (or shop, restaurant, zoo), male/female
	R2	Improves data collection sheet	2 or	AB	Input opportunities **AND** headings for all of shop, restaurant, zoo (may not be efficient- could be a questionnaire or suitable for 1 persons input), male/female.
	I6	Fully correct efficient data collection sheet.	3	ABC	Data collection sheet showing all categories in a two way table with efficient input opportunities. See possible solutions at the end.
Total marks for question			**3**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q2a	R1	Process for amount of decrease or Begins to use percentage	1 or	D	3.4 – 2.95(=0.45) oe **OR** 0.15 × 3.4(=0.51) oe
	A4	Full process for figures to compare	2 or	DE	3.4 – 2.95(=0.45) **and** 0.15 × 3.4(=0.51) oe **OR** 0.85 × 3.4(=2.89) oe **OR** (3.4 – 2.95) ÷ 3.4 (=0.13…)
	I7	Valid conclusion and accurate figures	3	DEF	No **and** 45(p) **and** 51(p) oe **OR** No **and** (£)2.89 **OR** No **and** [13,14] (%) Candidate may work in pounds or pence throughout. Answer must be in consistent units.
Q2b	I6	Makes one comparative statement	1 or	G	Acceptable statements include Plum jam sales are least in both years Bramble jam sales go up from 2011 to 2012 Total sales go down from 2011 to 2012
	I6	Makes two comparative statements	2	GH	See list above
Total marks for question			**5**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q3	R1	Begins to use formula by substitution or reverse processing	1 or	J	Substitutes at least 2 of 0.785, 40^2, 125 correctly **OR** Begins to reverse process e.g. 950000 ÷ 0.785(=1210191.083) **OR** 950000 ÷ 40^2(=593.75) **OR** 950000 ÷ 125(=7600)
	A4	Full substitution or full reverse processing to enable comparison	2 or	JK	0.785 × 1600 × 125(=157000) **OR** 950000 ÷ (0.785 × 40^2 × 125) (=6.05..) **OR** 950000 ÷ (0.785 × 40^2) (=756.36..) **OR** 950000 ÷ (0.785 × 125) (=9681.52..) **OR** 950000 ÷ (40^2 × 125) (=4.75)
	I7	Valid decision **and** accurate figures	3	JKL	No **and** 157000 (cm^3) **OR** No **and** 6(.05) times too small oe **OR** No **and** [750, 760] (height cm) **OR** No **and** [9600, 9700] **and** 1600 (diameter squared) **OR** No **and** [98, 99] (diameter cm) **OR** No **and** 4.75 (compare with 0.785)
Total marks for question			**3**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q4	A4	Uses consistent units	1	M	Uses e.g. 0.25 or 150000 or 500000 or 1600000 Working may be in ml or litres Note units conversion may be seen anywhere in the response. Candidates who use mixed units may still access marks N, P &Q
	R3	Process to find total volume of juice required in (milli)litres	1	N	500 + '0.25' × 700(=675) oe
	A4	Process to find scale factor for (milli) litres or for kg/(milli)litre or for kg	1 or	P	'675' ÷ 150(=4.5) oe **OR** 330 ÷ 150(=2.2) oe **OR** 1600 ÷ 330 (=4.84…) **OR** 110 (kg) for 50(litres) **OR** (Build up) process to reach either 1320 (kg) for 600 (litres) **or** 1650 (kg) for 750 (litres)
	A4	Process to find kg of apples needed or litres of juice available	2 or	PQ	'4.5' × 330(=1485) oe **OR** '675' × '2.2'(=1485) oe **OR** '4.84..'× 150 oe (=727.27…) **OR** (Build up) process to reach 1540 (kg) for 700 (litres) **OR** (Build up) processes to reach both 1320 (kg) for 600 (litres) **and**1650 (kg) for 750 (litres)
	I7	Valid conclusion and accurate figures	3	PQR	Yes **and** 1485 (kg) **OR** Yes **and** 1485000(g) **and** 1600000 (g) **OR** Yes **and** 675 **and** [720, 730] (litres) oe **OR** Yes **and** 675 **and** 700 (litres) **and** 1540 (kg) Note There are many acceptable comparisons that can be made e.g. Yes **and** 175 **and** [220,230] with the 500 (litres) subtracted during the earlier processes
Total marks for question			**5**		

Section B: The party

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5a	R2	Process to find cost at Party tents	1 or	A	735 ÷ 3(=245) **or** 735 ÷ 3 × 2(=490) **OR** Allow 0.33 × 735(=242.55) **OR** Allow [0.66,0.67] × 735(=[485.1, 492.45])
	A4	Correct cost at Party tents	2	AB	(£)490
	R2	Process to find cost at Occasions	1 or	C	0.2 × 395(=79) **or** 1.2 × 395(=474)
	A4	Correct cost at Occasions	2	CD	(£)474
	I7	Valid ft decision provided marks A and C are awarded	1	E	Valid ft decision provided marks A and C are awarded E.g. Occasions

Q5b	A4	Begins to consider marquee constraints	1 or	F	Rectangle with **2** of: Length 18 squares Width 12 squares In a corner **OR** Rectangle with Length: width ratio 3:2 **and** in a corner
	I6	Marquee drawing meets all constraints	2	FG	Rectangle with **all** of: Length 18 squares Width 12 squares In a corner
	R1	Begins to consider dance floor area	1 or	H	Rectangle with an area of 20 squares **or** 40 squares Allow inside marquee
	I6	Draws dance floor with correct area	2	HJ	Rectangle with an area of 80 squares Allow inside marquee
		Total marks for question	**9**		

Q6a	R2	Process to find number of packs needed	1	K	85 ÷ 10(=8.5) **OR** Full build up showing 9 packs needed **OR** 9
	A4	Process to find number of packs to be paid for or effective cost per pack in the deal	1 or	L	'9' ÷ 4 × 3(=6.75) or 7 **OR** 1.4 ÷ 4 × 3(=1.05) **OR** '9' × 1.4(=12.6) **and** 2× 1.4(=2.8) **OR** Build up method showing how '9' packs should be bought using special offer e.g. 2 × 4 + 1 needed
	A4	Process for full cost	2 or	LM	'7' × 1.4(=9.8) **OR** 8 × '1.05'+ 1.4(=9.8) **OR** '12.6' – '2.8'(=9.8)
	I6	Finds cost in correct money notation	3	LMN	£9.80 correct money notation

Q6b	R1	Begins to work with proportion	1 or	P	30 ÷ 12(=2.5) **OR** 500 ÷ 175(=2.85…) **OR** 175 ÷ 12(=14.58..) **OR** 500 ÷ 30(=16.66…) **OR** 2 batches make 24 cakes **and** 3 batches make 36 cakes
	A4	Full process for figures to compare	2 or	PQ	'2.5' × 175(=437.5) **OR** '14.58..' × 30(=437.5 **or** 420 **or** 435 **or** 450 **OR** 30 ÷ 12(=2.5) **and** 500 ÷ 175(=2.85…) **OR** 175 ÷ 12(=14.58..) **and** 500 ÷ 30(=16.66…) **OR** 500 ÷ '14.58'(=34.29..) **OR** '2.85'× 12 (=34.2) **OR** 2× 175 (=350) **and** 3× 175(=525)
	I7	Valid decision and accurate figures	3	PQR	Yes **and** 437.5 or 420 or [435,438] or 450 (total grams sugar needed) **OR** Yes **and** 2.5 **and** [2.8, 2.9] (scale factor comparison) **OR** Yes **and** [14.5, 15] **and** [16.6, 16.7] (grams sugar per cake) **OR** Yes **and** [34, 35] (cakes)) **OR** No **and** (2 batches make) 24 (cakes) using 350 (g) **and** (3 batches make) 36 (cakes) using 525 (g)
Total marks for question			**7**		

Section C: Soft toys

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q7a	R2	Process to convert between units	1	A	5 × 2.5(=12.5) **OR** 148 ÷ 2.5(=59.2) **OR** 300 ÷ 2.5(=120)
	A4	Process to consider number of squares across the width or down the length or allow process for area of square or of material	1 or	B	148 ÷ '12.5'(=11.84) **OR** 300 ÷ '12.5'(=24) **OR** '59.2' ÷ 5(=11.84) **OR** '120' ÷ 5(=24) **OR** Allow '59.2' × '120'(=7104) or 148 × 300(=44400) **OR** Allow 5 × 5(=25) or '12.5' × '12.5'(=156.25)
	A4	Process to find number of squares	2 or	BC	'11' × '24'(=264) **OR** Allow '7104' ÷ '25'(=284.16) or '44400' ÷ '156.25'(=284.16)
	I6	Finds correct number of squares	3	BCD	264 (squares)
Q7b	I6	Sketches net for cube (6 squares)	1	E	Sketches net for cube (6 squares)
Q7c	R1	Starts to work with probability or expresses chance	1 or	F	Fraction with numerator 3 or denominator 6 **OR** 3 out of 6, 3 in 6, 3:6 oe **OR** even
	A4	Gives correct probability using correct notation	2	FG	½ oe **or** 0.5 **or** 50%
		Total marks for question	**7**		

Q8	R1	Begins mean process	1 or	H	6 × 500(=3000) **OR** 420 + 450 + 345 + 525 + 495(=2235) **OR** ±80, ±50, ±155, ±25, ±5
	A4	Process to find figures to compare	2 or	HJ	'3000' – '2235'(=765) **OR** Sum of differences = 265 accept 270 under **and** 5 over
	I6	Finds October figure needed	3	HJK	(£)765
	A5	Shows a suitable check	1	L	Reverse process Eg 765 + 2235 = 3000 **or** uses different method
Total marks for question			**4**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q9	R3	Begins to process time in locations	1 or	M	Shows start and finish times for at least **2** of: Home, Grove, Dale, Lyme (elapsed time correct) **OR** Consistently combines time in location and travel time **and** shows start and finish times (elapsed time correct) for at least **2** of these
	I6	Correct time in all locations	2	MN	Shows start and finish times for **all** of: Home, Grove, Dale, Lyme (elapsed time correct) **and** starts no earlier than 8 (am) and in Lyme at 2.15 or 2.30 (pm) and leaves Lyme at 4.30pm **OR** Consistently combines time in location and travel time **and** shows start and finish times (elapsed time correct) for **all** of these **and** starts no earlier than 8 (am) and in Lyme at 2.15 or 2.30 (pm) and leaves Lyme at 4.30pm
	R2	Begins to process travelling time	1 or	P	Correct travelling time for at least **one** journey
	A5	Correct travelling time	2	PQ	Correct travelling time for **all** journeys
	I6	Clearly presented schedule	1	R	Sequentially ordered schedule showing at least time in all places, has a 30 minute lunch break, finished and at home by 5 (pm)
Total marks for question			**5**		

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