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Mark Scheme (Results)

March 2011

FS

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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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 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 2 or 3	1 of linear scale(s), labels, plotting (2mm tolerance) 2 of linear scale(s), labels, plotting (2mm tolerance) 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: Preparing a meal

Question	Process	Mark	Mark Grid	Evidence
Q1(a)	Any valid method to work out proportion	1 or	A	e.g. divide by 4 and multiply by 6, divide by 2 and add **OR** finds for 1 person or 2 people etc, for one food item **OR** one correct value
	Correct amounts evaluated	2	AB	600 (g), 750 (g), **AND** 300 (ml)
Q1(b)	Process to find one part	1 or	C	6 × 250 ÷ 5(=300) **OR** 250 ÷ 5(=50)
	Process to find one share	2 or	CD	'300' × 2(=600) or 3(=900) **OR** '50' × 2(=100) or 3(=150)
	Identifies correct amounts for each	3	CDE	600 (ml) mango **AND** 900 (ml) orange
Q1(c)	Starts to compare costs by weight or price	1 or	F	e.g. one of 1.25 ÷ 1.5 (=0.83..), 1.69 ÷ 2 (=0.84..) 2.00 ÷ 2.5(=0.8), 1.5÷1.25(=1.2), 2÷1.69(=1.18), 2.5÷2.00(=1.25)
	Compares at least 2 costs by weight or price	2 or	FG	two of 1.25 ÷ 1.5 (=0.83..), 1.69 ÷ 2 (=0.84..), 2.00 ÷ 2.5(=0.8) **OR** two of 1.5÷1.25(=1.2), 2÷1.69(=1.18), 2.5÷2.00(=1.25) **OR** any two equivalent comparisons
	Correct conclusion from 3 correct figures	3	H	Correct statement **AND** 3 correct figures 2.5 kg or £2
		Total marks for question		**8**

Question	Process	Mark	Mark Grid	Evidence
Q2	Works with percentages – shows a full method Or works with proportion	1 or	J	e.g. 0.75 × 2200(=1650) or 0.75×2800(=2100) **OR** 1900÷ 2200(=0.8636..) or 1900÷ 2800(=0.6785..)
	Correct percentages	2	JK	1650 or 2100 or [86, 87]% or [67, 68]%
	Makes valid decision from their working	1 or	L	e.g. Men are inside target **OR** women are not inside target from their working
	Makes valid decision from correct figures	2	LM	Clear statement, minimum implying women outside target and 1650 or [86, 87]% seen
		Total marks for question		**4**

Q3(a)	Understands problem begins to prepare time plan	1 or	N	two times linked to activities **OR** sequential list of times **OR** sequential list of activities
	Improves time plan	2 or	NP	All activities linked to times and sequentially ordered allow one error or omission
	Full time plan	3	NPQ	Fully correct time plan
Q3(b)	Works with views	1	R	Indicates place
		Total marks for question		**4**

SECTION B: Buying a House

Question	Process	Mark	Mark Grid	Evidence
Q4	Interprets information	1 or	A	identifies 3%
	Any valid method to calculate 3% of 284000	2 or	AB	e.g. 0.03 × 284000 condone 1.03×284000(=292520)
	Calculates stamp duty	3	ABC	(£)8520
		Total marks for question		**3**
Q5	Finds total amount of paint needed or cost per litre or coverage per tin	1 or	D	750 ÷ 12(= 62.5) **OR** 19.90 ÷ 5(=3.98) **OR** 5×12(=60)
	Finds total number of tins or cost per m^2	2	DE	'62.5' ÷ 5(=12.5 or 13) **OR** '3.98'÷ 12(=0.3316..) **OR** 750÷ '60'(=12.5 or 13) o.e.
	Works with total cost of paint	1 or	F	19.90 × '12.5' (or rounded or truncated) '0.3316'× 750 (= 248.75)
	Works with whole tins	2	FG	19.90 × 13 = £258.70 in correct notation
		Total marks for question		**4**

Question	Process	Mark	Mark Grid	Evidence
Q6	Starts to find rent or works with total months	1 or	H	850 + 950 (=1800) **OR** 850×12(=10200) **or** 950×12(=11400) **OR** 16×12=192
	Considers total length of time by month or income per year	2 or	HJ	335000 ÷ '1800' **OR** '1800' ×12(=21600) **OR** 850×12(=10200) **and** 950×12(=11400) **OR** 192 ×850(=163200) **or** 192×950 (=182400)
	Finds total rent or total months	3	HJK	186(.111..) **OR** 335000 ÷ '21600' **OR** 192×1800(=345600)
	Correct answer and valid working – at least mark J scored	1	L	[186, 187] months **OR** [15, 16] years **OR** 345600
	Correct comment from correct process	1	M	e.g. Yes, it takes between 15 and 16 years, or No, it takes less than 16 years
Total marks for question				**5**
Q7	Uses scale	1 or	N	At least one dimension correctly drawn
		2	NP	At least one unit with both dimensions correctly drawn
	Communicates placement clearly	1	Q	Both units in suitable position, at least one labelled
	Communicates placement clearly	1	R	Fully correct plan
Total marks for question				**4**

SECTION C: The pet Shop

Question	Process	Mark	Mark Grid	Evidence
Q8(a)	Attempts to convert one length from inches to cm	1 or	A	18×2.5(=45) **or** 24×2.5(=60)
	Converts dimensions correctly	2	AB	45, 45, 60
Q8(b)	Attempts to convert between m and cm	1	C	3 × 100(=300) **or** 4×100(=400) **or** 2 × 100(=200) **or** 5000 ÷ (100 × 100)(=0.5) **or** 2500 ÷ (100 × 100)(=0.25)
	Finds area of floor space	1	D	300×400(=120000) **or** 3×4(=12)
	Uses area needed for 1 bird	1	E	'120000'–5000(=115000) **or** '12' – '0.5'(=11.5)
	Uses area for additional birds	1 or	F	'115000'÷2500 (= 46) **or** '11.5' ÷ '0.25' (=46) **OR** repeated additions of 2500 or 0.25 to at least 3 birds **OR** trial and improvement
	Correct number of birds calculated	2	FG	47
Total marks for question				**7**
Q9	substitutes in formula		H	45 = 0.75×3.14× (diameter) **OR** 0.75 × 3.14(=2.355) **OR** attempts trial and improvement. (One trial)
	works with formula		HJ	45 ÷ 0.75 **OR** 45 ÷3.14 **OR** at least three improving trials
	Rearranges formula		HJK	45 ÷ '2.355' **OR** 45 ÷ (0.75× 3.14)
	Correct diameter calculated		L	19.1(082828025) accept [19, 20]
Total marks for question				**4**

Q10(a)	Attempts to find total or Monthly differences from £1400	1 or	M	One of: 1400+1250+1050+1550+1650 (= 6900) **OR** 1400 × 6 (=8400) **OR** 1400 × 5 (=7000) **OR** 1400 – 1400, 1400 – 1250, 1400 – 1050, 1400 – 1550, 1400 – 1650
	Attempts to find total income needed for 6 months or income made in 5 months or totals monthly differences (must consider positive and negative)	2 or	MN	1400+1250+1050+1550+1650 (= 6900) **AND** 1400 × 6 (=8400) **or** 1400 × 5 (=7000) **OR** 0+-'150'+-'350'+'150'+'250'(= –100)
	Uses result to work out difference	3	MNP	'8400' – '6900' **OR** '7000' – '6900' +1400 **OR** 1400 + '100'
	Correct profit calculated	1	Q	1500
Q10(b)	Appropriate check	1	R	A reverse calculation or estimation to check an aspect of their calculation e.g. 8400 ÷ 6 = 1400 or use an alternative method for any part of the calculation
Total marks for question				**5**

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