FUNCTIONAL SKILLS (MATHEMATICS)
MARK SCHEME – LEVEL 1 – SAMs 2015

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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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

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- 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 (2 mm tolerance)
	2 or	2 of: linear scale(s), labels, plotting (2 mm tolerance)
	3	all of: linear scale(s), labels, plotting (2 mm 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: Job centre

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1(a)	R3	Process to find percentage	A	1 or	0.4×140 (=56) oe **OR** $60 \div 140 \times 100$ (=42.8...) oe
	I6	Correct conclusion with accurate figures	AB	2	Yes **AND** 56 (people) **OR** Yes **AND** 42.8..(%)
Q1(b)	R2	Starts to work with 35 hours	C	1 or	7×35 (=245)
	A4	Completes calculation	CD	2	'245' – 16 – 147.4(=81.6)
	I6	Correct answer in correct money notation	E	1	£81.60 (Correct money notation required)
Total marks for question is				5	

FUNCTIONAL SKILLS (MATHEMATICS)
MARK SCHEME – LEVEL 1 – SAMs 2015

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q2(a)	R1	Process to calculate total	F	1 or	140 + 157 + 115 + 144 + 137 (=693) **OR** 135 × 5 (=675)
	A4	Completes process to find figures to compare	FG	2 or	'693' ÷ 5 (=138.6) **OR** 140 + 157 + 115 + 144 + 137 (=693) **and** 135 × 5 (=675)
	I6	Correct decision and correct answer	FGH	3	No **AND** the mean average is 138.(6) **OR** No **AND** 675 **and** 693
Q2(b)	R3	Process to find number of CV workshops or total numbers of hours for all people	J	1 or	350 ÷ 12 (=29.16) **OR** 350 × 2(=700)
	A4	Correctly rounds number of workshops to find total number of workshop hours or total number of workshop hours without rounding	JK	2 or	30 × 2 (=60) oe **OR** '29.16' × 2 (=58.33…) **OR** '700' ÷ 12(=58.33)
	I6	Correct rounding and correct answer	JKL	3	60 (hours) (for 30 CV workshops)
	A5	Shows a valid check	M	1	E.g. 60 ÷ 2 =30
Total marks for question is				**7**	

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q3(a)	R1	Starts to create a graph or chart	N	1 or	1 of: Linear scale, labels (Unemployment/people, Jan– Mar, Apr – Jun, Jul– Sep, Oct– Dec), plotting (2 mm tolerance) (accept 000s in title or accept plotting in 000s if not in labels)
	I6	Develops graph or chart	NP	2 or	2 of: Linear scale, labels (Unemployment/people, Jan– Mar, Apr – Jun, Jul– Sep, Oct– Dec), plotting (2 mm tolerance) (accept 000s in title or accept plotting in 000s if not in labels)
	A4	Completes correct graph or chart	NPQ	3	3 of: Linear scale, labels (Unemployment/people, Jan– Mar, Apr – Jun, Jul– Sep, Oct– Dec), plotting (2mm tolerance) (accept 000s in title or accept plotting in 000s if not in labels)
Q3(b)	I6	Selects valid comment	R	1	Selects B **or** F **or** both
Total marks for question is				**4**	

Section B: Weekend visit

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q4(a)	R3	Process to compare quantities for salt or water	A	1 or	65×6 (=390) **or** $390 \div 6$(=65) **OR** ¼ + ¼ + ¼ + ¼ + ¼ + ¼ (=1 ½ pints) oe
	A4	Process to compare quantities for salt and water	AB	2 or	65×6 (=390) **or** $390 \div 6$(=65) **AND** ¼ + ¼ + ¼ + ¼ + ¼ + ¼ (=1 ½ pints) oe
	I6	Correct conclusion from correct calculations	ABC	3	Yes **and** All correct figures from correct working
Q4(b)	R2	Starts process to draw diagram using shape and measure	D	1 or	Draws a rectangle 6 squares by 3 squares **OR** Draws a rectangle with 1 side 6 squares or 1 side 3 squares **and** 1 of: At least 4 squares away from the pond, At least 1 square of clear space all the way round the tent
	A4	Considers constraints	DE	2 or	Draws a rectangle with 3 of: 1 side 6 squares 1 side 3 squares, At least 4 squares away from the pond, At least 1 square of clear space all the way round the tent
	I6	Correct solution	DEF	3	All of: A rectangle with 6 squares by 3 squares, At least 4 squares away from the pond, At least 1 square of clear space all the way round the tent, Not on the patio
Total marks for question is			6		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5(a)	R1	Starts to work with information from the TV programme list or the constraints	G	1 or	3 of: Chooses a film after 9.30 **OR** Chooses the news at 7.00 or 10.00 or 11.00 or 9.20 **OR** Orders meal at 6.15 **OR** Plans to watch Star Factor at 8.00 **OR** Puts the children to bed at 9.00 (May be seen on the TV listing)
	I6	Presents time plan including all information.	GH	2	All of: Chooses a film after 9.30 **AND** Chooses the news at 7.00 or 10.00 or 11.00 **AND** Orders meal at 6.15 **AND** Plans to watch Star Factor at 8.00 **AND** Plans to put the children to bed at 9.00 **and** allows 30 minutes
	A5	Checks constraints for the news and film.	J	1 or	Plans to watch the news at 7.00 **or** 10.00 **and** the film at 11.00 **OR** Plans to watch the film at 9.30 **and** the news at 7.00 **or** 11.00
	I6	Fully correct solution.	JK	2	Fully correct and ordered time plan

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5(b)	I6	Gives a correct conclusion and explains likelihood	L	1	E.g. Yes he is correct because there are more higher cards (than there are lower cards) **OR** Yes because a higher card is more likely
Q5(c)	R1	Correct process for adding their starters or their main courses or correct process for side orders or considers most expensive options	M	1	E.g. 3.50 + 4.60 (=8.10) **OR** E.g. 4.90 + 5.20 + 5.10 (=15.20) **OR** 1.5 + 1.5 + 1.4 + 1.4 + 1.4 (=7.20) oe **OR** E.g. 40 – 3.5 – 4.6 (=31.9) **OR** 2 × 4.6(=9.2) **OR** 3 × 5.2(=15.6)
	A4	Correct process for delivery charge	N	1	5 × 120 (=600) oe
	R2	Process to find total cost	P	1 or	E.g. '8.1' + '15.2' + '7.2' + '6.00'(=36.5) **OR** E.g. '31.9' – '15.2' – '7.2' – '6'(=3.5) '9.2' + '15.6' + '7.2' + '6'(=38)
	I6	Correct conclusion from accurate figures	PQ	2	E.g. Yes **and** (£)36.5(0) (from their choices) **OR** E.g. Yes **and** (£)3.5(0) (change from their choices) **OR** Yes **and** (£)38(.00) (with everything most expensive)
	A5	Shows a valid check of their answer	R	1	Reverse calculation or alternative method
Total marks for question is				**10**	

Section C: Thailand trip

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q6(a)	R2	Starts to substitute into formula	A	1 or	900 – 2 (=898)
	A4	Completes substitution	AB	2 or	'898' × 49.56 (=44504.88)
	I6	Correct answer	ABC	3	44 504.88 (Thai Baht)
	A5	Valid check of their working	D	1	E.g. Reverse calculation or estimation
Q6(b)	R1	Converts time correctly	E	1 or	¾ hour is 45 (mins) **OR** May be seen in subsequent working
	A4	Full process to compare times	EF	2 or	11.00 + '45' + 50 (=12:35) **OR** 12:30 – 50 – '45'(=10:55) **OR** '45' + 50(=95) **and** 11:00 to 12:30(=90) oe **OR** 11.00, 11.45, 12.35 oe **OR** 12:30, 11:40, 10:55 oe
	I6	Finds correct time	EFG	3	No **AND** 12:35 **OR** No **AND** 95 minutes **and** 90 minutes **OR** No **AND** 10:55 **OR** No **AND** 5 minutes late
Total marks for question is				**7**	

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q7	R2	Starts to find a route	H	1 or	E.g. E, B, D, M, E **OR** 3 + 10.5 + 9 + 6 **OR** Indicates any route on diagram
	I6	Finds the shortest route	HJ	2	E, B, D, M, P, E **OR** E, P, M, D, B, E
	A4	Finds the correct distance for a complete route	K	1	E.g. 3 + 10.5 + 9 + 5 + 4.5 = 32
		Total marks for question is	**3**		

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Q8(a)	I6	Makes a valid comment about the data	L	1	Valid comments include: Rubber production is greater in 2014 **OR** Exports have increased from 2012 to 2014
Q8(b)	R1	Starts to work with area	M	1 or	3×2 (=6)
	R3	Uses their area or finds the number of trees for their area or number of trees per km^2	N	1 or	'6' $\times$ 247 (=1482) **OR** '6' $\times$ 170 (=1020) **OR** 170 $\times$ 247(=41990)
	A4	Completes process to find number of trees	NP	2	'1482' $\times$ 170 (=251940) **OR** '1020' $\times$ 247 (=251940) **OR** '41990'$\times$ 6(=251940)
	I6	Correct answer from a correct area	Q	1 or	251940 (trees)
	I6	Correctly rounds answer to give correct conclusion	QR	2	Yes **and** 250 000 = 1/4 million oe NB There are other approaches to this multistage problem e.g. comparing the number of acres needed or the number of rubber trees per acre
Total marks for question is				**6**	