

Mark Scheme (Results)

May 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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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 $£12 \div 5$,
 - 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: Floors

		Process	Mark	Mark Grid	Evidence
Q1a	R1	Interprets and reads the graph	1	A	[2400,2800] OR [2.4,2.8] ignore units Accept an indication on the vertical axis or a horizontal line that cuts the vertical axis.
	A2	Converts 'their' kg of sand to tonnes	1	B	[2.4,2.8] (tonnes) e.g. 2 tonnes 400 kg OR ft Accept sensible contextual decisions. e.g: rounding up 2600kg = 3tonnes.
Q1b	R3	Process to find number of bags	1 or	C	850÷40(= 21.25) OR trial and error OR successive subtractions from 850 (at least two) OR At least two additions of 40 OR 21
	I	Correct number of bags	2	CD	22 (bags)
Q1c	I	Begins to interpret instructions or partially interprets instructions	1 or	E	7×2(=14) or 4×1(=4 weeks) or 3×2(=6) or 7 – 4 (=3) or 7×1 or 7 weeks or successive addition of 2
	R1	Interprets Instructions – both elements of rule	2 or	EF	3×2+4 OR 3×2+1 o.e
	A1	Correct number of weeks	3	EFG	10(weeks)
		Total marks for question		7	

		Process	Mark	Mark Grid	Evidence
Q2	A1	Begins to work with the cost of floorboards	1or	H	eg $4 \times 10.37 (=41.48)$ OR $35 \times 19.55 (=684.25)$ OR $2000 \div 19.55 (=102.3..)$ OR $35 \times 4 (=140)$ OR $2000 \div 35 (= 57.1...)$ OR $2000 \div 4 (=500)$
	R2	Calculates a cost of floorboards OR number of floorboards that can be afforded	2 or	HJ	$4 \times 35 \times 10.37 (=1451.80)$ OR $4 \times 35 \times 12.75 (=1785)$ OR $4 \times 35 \times 19.55 (=2737)$ OR $(2000 \div 10.37) \div 4 (=48.2..)$ OR $(2000 \div 12.75) \div 4 (=39.2..)$ OR $(2000 \div 19.55) \div 4 (=25.575..)$ Accept sensible contextual decisions. Eg: $4 \times 35 \times 13 (=1820)$ rounding up OR $2000 \div (35 \times 4) (=14.28)$
	A1	Complete correct calculation	3	HJK	1451.8 OR 1785 OR 2737 OR 14.28 (allow rounding) OR 48.2.. OR 39.2.. OR 25.575..
	I	Correct decisions on affordability of floorboards.	1	L	Pine OR oak, allow f.t.
		Total marks for question		4	

		Process	Mark	Mark Grid	Evidence
Q3	A1	Process to find floor area	1	M	$5 \times 8 (=40)$ or counting squares or 120
	R1	Uses number of coats	1	N	eg: $3 \times '40'$ (=120)
	R2	Links area of floor with amount of varnish OR starts to link tins with floor coverage	1 or	P	'40' \div 15 (=2.6...) OR '120' \div 15 (=8) OR At least one of $1 \times 15 (=15)$, $2.5 \times 15 (=37.5)$, $5 \times 15 (=75)$
	I	Finds a cost of covering the floor with varnish once or 3 times. OR links tins with covering the floor with varnish once or 3 times. In both cases the floor must be covered.	2	PQ	Different sized tin combinations or use of a single tin. eg: $14 \times 8 = (\pounds)112$ or $14 \times 2.6 = (\pounds) 36.40$ or better. 15×8 (small tins) = (120) or 15×3 will cover an area of 40m^2
	I	Finds the cheapest way to cover the floor with varnish.	1	R	One tin of each type ($\pounds 87$)
Total marks for question			5		

Section B: Free Range Egg Farm

		Process	Mark	Mark Grid	Evidence
Q4		Calculates time for 1 route	1	A	Calculates the time for at least three stages e.g. $10 + 15 + 20 (=45)$
		Starts to find solution	1 or	B	visit B C D once only
		Develops solution	2 or	BC	start and finish at farm and visit B C D once only
		Chooses a route with the shortest time	3	BCD	eg: FCDBF or FDCBF or FBDCF or FBCDF (50 min)
		Total marks for question		4	

		Process	Mark	Mark Grid	Evidence
Q5a	R1	Starts to work with eggs and trays At least two trials using both trays. Divides the number of eggs by the number of eggs either tray A or B can hold	1 or	E	eg: $2 \times 20 (=40)$ or $7 \times 20 (=140)$ or $3 \times 50 (=150)$ OR eg: $6 \times 20 + 2 \times 50$ and $1 \times 20 + 2 \times 50$ OR . $190 \div 20 (=9.5)$ or $190 \div 50 (=3.8)$
	I	Indicates correct number of trays	2	EF	2 type A and 3 type B OR 7 type A and 1 type B
Q5b	R3	Finds perimeter of enclosure OR Finds the correct number of large posts OR Considers number of small posts	1 or	G	$70 \times 4 (=280)$ OR 4 (large posts) OR $7 \times 4 (=28)$ or $6 \times 4 (=24)$ or $5 \times 4 (=20)$
	A1	Finds the correct number of large posts Considers number of small posts.	2	GH	4 (large posts) AND $7 \times 4 (=28)$ or $6 \times 4 (=24)$ or $5 \times 4 (=20)$
	I	Correct amount of large and small posts.	3	GHJ	4 large posts and 24 small posts
		Total marks for question		5	

		Process	Mark	Mark Grid	Evidence
Q6a	R1	Starts to use the rule	1 or	K	$122-32(=90)$ or $122-32\div 9\times 5=104.2$
	A1	Processes first two stages of the rule	2 or	KL	'90' $\div 9 (=10)$
	A1	Correct temperature	3	KLM	50 ($^{\circ}\text{C}$)
Q6b	A1	Begins to convert the width of the tray or the space	1 or	N	63.3 or 0.633 or 0.63 OR 70 or 700
	I	Units chosen enable a direct comparison between the width of the tray and the space and a correct decision is made.	2	NP	Conversions to mm or cm or m and YES
Total marks for question			5		
		Process	Mark	Mark Grid	Evidence
Q7	R1	Starts to process.	1or	Q	eg: $50\ 000\times 0.1(=5000)$ or $50\ 000\div 1000$ 10(litres) for 1p
	A1	Correct answer in correct money units.	2	QR	5000p or £50 accept £50.00p
Total marks for question			2		

Section C: Car Sales

		Process	Mark	Mark Grid	Evidence
Q8a	1	Writes one comparison	1 or	A	Accept comparisons within Jeeva's sales or the company's sales. eg: Jeeva sold more Saloons. Do not accept Statements that cannot be verified by the pie charts. eg: Jeeva and the company sell the same amount of saloons. To gain full marks at least one comment must be about proportions or categories
	1	Writes two comparisons	2 or	AB	
	1	Writes Three comparisons	3	ABC	
Q8b	1	Gives a percentage	1	D	Accept [23,27] (%) Accept $\frac{1}{4}$
		Total marks for question		4	

		Process	Mark	Mark Grid	Evidence
Q9a	R2	Plan A process to find bonus for one price category OR calculations from both schemes A and B that would enable comparison	1 or	E	One of $100 \times 17 (=1700)$, $150 \times 12 (=1800)$, $250 \times 16 (=4000)$ OR $17 \times (150 - 100) (=850)$ or $16 \times (250 - 150) (=1600)$
	A1	Plan A Bonus OR compares A and B in one category	2	EF	$100 \times 17 (=1700) + 150 \times 12 (=1800) + 250 \times 16 (=4,000) (= 7500)$ OR $1700 - 2550 = (\pm)850$ or $4000 - 2400 = 1600$
	R3	Plan B Number of cars OR compares A and B in two categories	1 or	G	$17 + 12 + 16 (= 45)$ OR eg: $1700 - 2550 = (\pm)850$ and $4000 - 2400 = 1600$
	A1	Plan B bonus OR compares A and B in all categories	2	GH	$45 \times 150 (=6750)$ OR $1600 - 850 (=750)$
	I	Compares correct figures	1	J	Bonus plan A pays more
Q9b		Draws a suitable graph or chart.	1 or	K	1 of linear scale, plotting, labels
			2 or	KL	2 of linear scale, plotting, labels
			3	KLM	All of linear scale, plotting, labels
		Total marks for question		8	
Q10a	A2	Identifies relevant cost	1 or	N	Identifies one cost : £100 or £0 or £30
	A2	Links car to cost	2 or	NP	A with £100 OR B with £0 or £30
	I	Explains why cost for car B is incorrect	3	NPQ	Explanation with evidence e.g. she read Car B date wrong she read the wrong column for car B total cost should be £100 car A is £100 but car B should not cost anything
Q10b	I	Selects a range from the table between 101 and 150 inclusive.	1	R	eg: [121,130] [101,150]
		Total marks for question		4	

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