

Mark Scheme (Results)

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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1a	R1	Starts to substitute or to reverse process	1 or	A	$4 \times 9 \div 5 + 32 (=39.2)$ or at least 4×9 OR $[38, 41] - 32 \times 5 \div 9(=[3.3.., 5])$ or at least $[38, 41] - 32$
	I6	Valid decision and accurate figures	2	AB	Yes and 39.2 ($^{\circ}\text{F}$) OR Yes and 39 ($^{\circ}\text{F}$) and working seen OR Yes and 3.3 and 5 ($^{\circ}\text{C}$)
Q1b	R1	Uses percentage	1 or	C	$150 \div 100 \times 5(=7.5)$ o.e OR $150 \div 100 \times 95(=142.5)$
	I6	Accurate figures with correct notation	2	CD	£7.50 correct money notation
	A5	Shows a valid check of a valid method	1	E	Uses a reverse check e.g. 7.5×100 or uses a different method at least mark C must have been awarded
Total marks for question			5		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q2	R2	Process to find number of boxes ordered or number of kg in a box or number of bags in an order	1 or	F	25 + 35 + 30(=90) OR 10 × 2(=20) OR 25 × 10(=250) OR 35 × 10(=350) OR 30 × 10(=300)
	A4	Process to find number of boxes ordered and number of kg in a box or total number of bags ordered or number of kg in one order	2	FG	25 + 35 + 30(=90) and 10 × 2(=20) OR '90' × 10(=900) OR '250' × 2(=500) OR '350' × 2(=700) OR '300' × 2(=600)
	A4	Converts between tonnes and kg	1	H	3000 (kg) OR 1.8 or 1 t(onne) 800 kg OR 0.5 or 0.7 or 0.6
	I6	Process to find figures to compare	1 or	J	'90' × '20' (=1800) OR '500'+ '700'+ '600'(=1800) OR '3000' - '500' - '700' - '600'(=1200) OR '3000' ÷ '20' (=150) OR '3000 ÷ '90'(=33.33..) OR '250' + '350' + '300' (=900) and '3000' ÷ 2 (=1500)
	I6	Valid decision and accurate figures	2	JK	Yes and 1800 (kg) and 3000 (kg) OR Yes and 1200 (left) OR Yes and 1.8 (tonnes) or 1 t(onne) 800 kg OR Yes and 90 and 150 (boxes) OR Yes and [33, 34] (kg) and 20 (kg) OR Yes and 900 and 1500 (bags)
Total marks for question			5		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q3a	R2	Describes a route with at least 3 stages by place names or miles	1 or	L	e.g. 17 + 31 + 21 (=69) OR Farm to Dalton to Mere to Bow
	A4	Finds the total miles for any complete route (visits 3 places and starts and ends at farm). The route may be described by place names or miles	2 or	LM	17 + 15 + 21 + 18 (=71)(miles) OR e.g. 17 + 31 + 21 + 16 =85 (miles) OR e.g. Farm to Dalton to Mere to Bow to Farm = 85 (miles)
	I6	Finds the total miles for the shortest route and describes it	3	LMN	Farm to Dalton to Bow to Mere to Farm = 71 (miles) OR describes in reverse direction
Q3b	R1	Starts to make graph or chart	1 or	P	One of: linear scale, accurate plotting, suitable labelling
	A4	Improves graph or chart	2 or	PQ	Two of: linear scale, accurate plotting, suitable labelling
	I6	Fully correct graph or chart	3	PQR	All of: linear scale, accurate plotting, suitable labelling Tolerance on plotting $\pm 2\text{mm}$ Labels one axis Jan – Mar, Apr – Jun, Jul – Sep, Oct – Dec Other axis or title (Farm) income or £ Reference to thousands in either title or labels or used in scale
Total marks for question			6		

Section B: The rugby tournament

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q4a	R2	Process to find total needed or total available	1 or	A	$45 + 12.6 (=57.6)$ OR $5 \times 12 (=60)$
	A4	Process for figures to compare	2 or	AB	$45 + 12.6 (=57.6)$ and $5 \times 12 (=60)$ OR '60' - 45 - 12.6 (=2.4) OR '60' - 45 (=15) OR '60' - 12.6 (=47.4) OR '57.6' \div 12(=4.8) OR '57.6' \div 5(=11.52)
	A4	Finds accurate figures	3	ABC	(£)57.6(0) and (£)60 OR (£)2.4(0) left OR (£)15 (for expenses) OR (£)47.4(0) (for entry fee) OR (£)4.8(0) (charge needed per player) OR 11.5...(people)
	I6	Valid decision ft provided marks A and B are awarded	1	D	E.g. Yes OR he collects enough to cover these (total) costs OR he has (£)2.4(0) left OR he has (£)15 for expenses OR he has (£)47.4(0) for the entry fee OR he has 20p per person left OR he can do it with under 12 people ft their figures provided marks A and B are awarded

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q4b	R1	Begins to design data collection sheet	1 or	E	Input opportunities and headings for at least 2 of: Name, emergency contact, medical information (May be a questionnaire or a form for 1 person only, or a consistently completed form for at least 2 people with implicit headings)
	R2	Improves data collection sheet	2 or	EF	Input opportunities and headings for all of: Name, emergency contact, medical information (May be a questionnaire or a form for 1 person only, or a consistently completed form for 6 people with implicit headings)
	I6	Fit for purpose data collection sheet	3	EFG	Input opportunities and headings for all of: Name, emergency contact, medical information and a form to collect information for 6 or more people
Total marks for question			7		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5a	A4	Converts $\frac{3}{4}$ hour to minutes	1	H	45 (minutes) seen or used
	R3	Begins to calculate with time	1 or	J	$10 \times 20 (=200)$ oe OR At least 2 correct durations of time added on e.g. 11, 11:20, 11:40 OR e.g. 4, 3:15, 3..... OR 5 (hours available) or 300 (minutes)
	A4	Full process to find time needed or to time plan forwards or backwards	2 or	JK	$'200' + 15 + '45' (=260)$ oe OR E.g. 11, 11:20, 11:40, 12, 12:20, 12:40, 1, 1:20, 1:40, 2, 2:20, 2:35, 3:20 OR E.g. 4, 3:15, 3, 2:40, 2:20, 2, 1:40, 1:20, 1, 12:40, 12:20, 12, 11:40 ft. their 45 mins Condone 1 error or omission in time planning
	I6	Valid decision and accurate figures	3	JKL	Yes and 260 (minutes) and 300 (minutes) OR Yes and 4 hours 20 mins (needed) and 5 hours (available) OR Yes and 3:20 (pm finished) OR Yes and 11:40 (am could start) Accept any standard time format
Q5b	I6	Makes decision and gives a reason based on likelihood	1	M	e.g. Simon's team and they have won more of the games OR Simon's team and they have won 5 of the games OR Impossible to tell and an answer based on sample size, e.g. there are only 8 results OR Impossible to tell and an answer based on not equally likely outcomes, e.g. the team may not be the same as before

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5c	R1	Begins process for mean or median	1 or	N	$3 + 5 + 6 + 7 + 4 + 3 + 10 + 2 (=40)$ OR $5 \times 8 (=40)$ OR $\pm 2, 0, \pm 1, \pm 2, \pm 1, \pm 2, \pm 5, \pm 3$ OR Rewrites numbers in order 2, 3, 3, 4, 5, 6, 7, 10
	A4	Complete process for mean or differences or median	2 or	NP	$(3 + 5 + 6 + 7 + 4 + 3 + 10 + 2) \div 8 (=5)$ OR $3 + 5 + 6 + 7 + 4 + 3 + 10 + 2 (=40)$ and $5 \times 8 (=40)$ OR (differences are) 8 under and 8 over OR $(4 + 5) \div 2 (=4.5)$
	I6	Correct answer	3	NPQ	5 from full mean process OR 40 from two methods and yes OR sum of differences =0 and yes OR 4.5 from full median process
Total marks for question			8		
Q6	I6	Considers criteria	1	R	It is on Thursday OR It is not on Saturday OR He needs the course at Egham
Total marks for question			1		

Section C: The college student

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q7a	R3	Considers Gloria D or Mr James	1 or	A	Gloria D - 2 of: Monday, start time 3 pm, complete 5 boxes OR Mr James - 2 of: Monday or Tuesday, start no later than 4 pm, complete 4 boxes
	I6	Develops solution	2 or	AB	Gloria D - All of: Monday, start time 3 pm, complete 5 boxes OR Mr James - All of: Monday or Tuesday, start no later than 4 pm, complete 4 boxes
	A5	Correctly checked against constraints	3	ABC	Gloria D - All of: Monday, start time 3 pm, complete 5 boxes AND Mr James - All of: Tuesday, start no later than 4 pm, complete 4 boxes
	R2	Considers Ms Ash	1 or	D	Ms Ash - 2 of: Wednesday or Thursday , start time 4 pm or later, complete 6 boxes
	A4	Correct solution for Ms Ash	2	DE	Ms Ash - All of: Thursday, start time 4 pm or later, complete 6 boxes
Q7b	R3	Finds total number of hours for each work type or process to calculate pay for at least one work type	1 or	F	4 and 12 OR $(1.5 + 2.5) \times 7 (=28)$ or $(5 + 3 + 4) \times 8(=96)$ or $6 \times 9.5 (=57)$ OR $1.5 \times 7 (=10.5)$ and $2.5 \times 7 (=17.5)$
	A4	Full process for total pay	2 or	FG	'4' $\times 7 +$ '12' $\times 8 + 6 \times 9.5 (=181)$ OR '28' + '96' + '57'(=181)
	I6	Correct answer	3	FGH	(£)181
Total marks for question			8		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q8a	R1	Process to find area	1 or	J	$14 \times 10 (=140)$ OR Counts squares to find area
	A4	Process to find number of boxes	2	JK	'140' \div 80(=1.75) OR '140' - 80 (=60) '140' and $2 \times 80 (=160)$
	I6	Finds number of boxes needed from correct working	1	L	2 (boxes) and 140
Q8b	R1	Uses ratio	1 or	M	$2 \times 5 (=10)$
	I6	Finds correct quantity of water and gives correct units	2	MN	10 l(itres) units must be given
Total marks for question			5		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q9	R1	Uses scale	1 or	P	Rectangle with 2 of: Correct length 3 squares Correct width 2 squares Sides in the ratio 3:2 At least 1 square from each tree At least 2 squares from the greenhouse Not on the lawn
	I6	Improves solution	2 or	PQ	Rectangle with 4 of: Correct length 3 squares Correct width 2 squares At least 1 square from each tree At least 2 squares from the greenhouse Not on the lawn
	A5	Fully correct solution	3	PQR	Rectangle with all of: Correct length 3 squares Correct width 2 squares At least 1 square from each tree At least 2 squares from the greenhouse Not on the lawn
Total marks for question			3		

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