edexcel

Mark Scheme (Results)

February 2017

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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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 mark the working leading to the answer given in the answer box or working box. If there is no definitive answer then marks should be awarded for the 'lowest' scoring method shown.
- 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, 2.40£ 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	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.
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: Charity Work

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1(a)	R2	Finds amount for 24 miles	1 or	A	30 × 24(=720) oe
	A4	Full process to find total amount in consistent units	2 or	AB	0.3 × 24 + 24 + 48 + 19.2 + 14.4 (=112.80) o.e.
	I6	Correct answer in correct money notation	3	ABC	£112.80 (in correct money notation)
Q1(b)	R1	Begins to work with fraction	1 or	D	48 ÷ 4 (=12) **or** 48 × 3 (=144) **OR** 32 × 4 (=128) **or** 32 ÷ 3 (=10.6..) **OR** 32 ÷ 48 (=0.66..) **OR** ¾ = 0.75 oe **OR** 2 × 3 ÷ 4 (=1.5) **OR** 48 ÷ 24 (=2) **OR** 3 ÷ 4 × 24 (=18)
	A4	Full process to find figures to compare	2 or	DE	48 × 3 ÷ 4 (=36) oe **OR** 32 ÷ 3 × 4 (=42.66…) oe **OR** 32 ÷ 48 (=0.66..) **and** ¾ = 0.75 oe **OR** 32 ÷ 48 (=2/3) **OR** '1.5' × 24 (=36) **OR** '2' × 3 ÷ 4 × 24 (=36)
	I6	Correct conclusion with accurate figures	3	DEF	No **and** (£)36 **OR** No **and** [42.66, 43] **OR** No **and** [0.6, 0.7] **and** 0.75 oe **OR** No **and** 2/3
	A5	Valid check	1	G	E.g. reverse process or alternative method
Total marks for question			**7**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q2(a)	R2	Starts process to work with instructions	1 or	H	2.75 + 1.25 + 1.95 + 2.25 + 1 + 1.45 (=10.65) **OR** 140 ÷ 80 (=1.75)
	A4	Continues to work with instructions	2 or	HJ	'10.65' ÷ 6 (=1.775) **OR** '1.75' × 6 (=10.5) **OR** '10.65' × 80 (=852) **OR** 140 × 6 (=840)
	R3	Completes process to work with instructions	3	HJK	'1.775' × 80 (=142) **OR** 2.75 + 1.25 + 1.95 + 2.25 + 1 + 1.45 (=10.65) **and** '1.75' × 6 (=10.5) **OR** '10.65' ÷ 6 (=1.775) **and** 140 ÷ 80 (=1.75) **OR** '10.65' × 80 (=852) **and** 140 × 6 (=840)
	I6	Correct decision with accurate figures	1	L	Yes **and** (£)[141.6, 142.4] **OR** Yes **and** (£)10.5 **and** (£)10.65 **OR** Yes **and** (£)[1.77, 1.78] **and** (£)1.75 **OR** Yes **and** (£) 852 **and** (£) 840

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q2(b)	R2	Starts process to find amount	1 or	M	400 + 100 + 250 + 50 (=800) **OR** 600 ÷ 4 (=150) **OR** 400 ÷ 5 (=80) **OR** 100 ÷ 5 (=20) **OR** 250 ÷ 5 (=50) **OR** 50 ÷ 5 (=10)
	A4	Continues process	2 or	MN	'800' ÷ 5 (=160) **OR** '150' × 5 (=750) **OR** '80' × 4 (=320) oe **OR** '20' × 4 (=80) oe **OR** '50' × 4 (=200) oe **OR** '10' × 4 (=40) oe **OR** '80' + '20' + '50' + '10'(=160)
	A4	Completes process	3	MNP	'160' × 4 (=640) oe **OR** '150' × 5 (=750) **and** 400 + 100 + 250 + 50 (=800) **OR** '80' + '20' + '50' + '10' (=160) **and** 600 ÷ 4 (=150)
	I6	Correct decision with accurate figures	1	Q	No **and** (£)640 **OR** No **and** (£)750 **and** (£)800 **OR** No **and** (£)160 **and** (£)150
Total marks for question			**8**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q3	I6	Indicates likelihood	1	R	Indicates evens
Total marks for question			**1**		

Section B: Hairdressing

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q4	R3	Selects shortest route between the clients	1	A	10 and 20 used **OR** CKS indicated May be seen in subsequent working
	R2	Adds or subtracts any two relevant times	1 or	B	E.g.11:30 (am) + 2 (hr) 30 (min) (=2:00 pm) oe **OR** 3:30 (pm) – '20'(=3:10 pm) oe **OR** 2 (hr) 30 (min) + 45(=3 hr 15 min) oe **OR** 3:30 (pm) – 11:30 (am)(=4 hr)
	A4	Develops solution to within 1 step of the correct answer (allow 1 error or omission)	2 or	BC	E.g. '2:00' + 40 + 45(=3:25 pm) oe **OR** '3:10' – 45 – 20 – 10(=1:55 pm) **OR** '3 (hr) 15 (min)' + 20 + 20(=3 hr 55 min) oe
	A4	Completes process with time	3 or	BCD	E.g. 11:30 (am) + 2 (hr) 30 (min) + 20 (min) + 10(min) + 45 (min) + 20(min) (=3:35 pm) **OR** 11:30 (am) + 2 (hr) 30 (min) + 40 (min) + 45 (min) + 20(min)(=3:45 pm) **OR** 3:30 (pm) – 11:30 (am)(=4 hr) and 2 (hr) 30 (min) + 45 (min) + 20 (min) + 20 (min) + 10(min)(=4 hrs 5 min)
	I6	Correct decision with accurate figures	4	BCDE	No and 3:35 (pm) oe **OR** No and 3:45 (pm) oe (must come from fully correct time calculations) **OR** No and 4 (hr) 5 (min) oe and 4 (hrs) **OR** No and 11:25 (am) oe **OR** No and 11:15 (am) oe (must come from fully correct time calculations) NB May round to 3:30pm and decide Yes, credit can be given if explained
		Total marks for question	**5**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5(a)	R1	Starts to process area	1 or	F	E.g. Shows evidence of counting squares **OR** 4 × 5 (=20) **OR** 3 × 3 (=9) **OR** 8 × 4 (=32) **OR** 1 × 3 **OR** 8 × 3 (=24) **OR** 1 × 5
	A4	Completes process to find the required area	2 or	FG	Completes counting squares **OR** '20' + '9' (=29) **OR** '32' – '3' (=29) **OR** '24' + '5' (=29)
	I6	Correct answer with correct units	3	FGH	29 m^2 (in correct units)
	A5	Valid check	1	J	E.g. reverse calculation or alternative method e.g. 29 – 20 = 9
Q5(b)	I6	Selects style	1	K	Indicates N(atural walnut)
Q5(c)	A4	Process to find length	1 or	L	4 – 2.4 (=1.6)
	I6	Correct answer	2	LM	1.6(m)
		Total marks for question	**7**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q6a	R1	Draws an appropriate graph or chart (bar chart, bar line chart, line graph)	1 or	N	One of: Accurate plotting Correct linear scale Correct labels
	A4	Improves graph or chart	2 or	NP	Two of: Accurate plotting Correct linear scale Correct labels
	I6	Fully correct graph or chart	3	NPQ	All of: Accurate plotting (± 2 mm tolerance) Correct linear scale displaying data appropriately Correct labels (minimum labels Profit or £, (Year) (20)11, (20)12, (20)13, (20)14, (20)15)
Q6b	I6	Interprets graph	1	R	E.g. profits increase from year to year, except from 2012 to 2013
Total marks for question			**4**		

Section C: Home cinema

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q7(a)	R1	Works with percentage	1 or	A	3200 × 0.15 (=480) oe 2720 seen implies this mark
	I6	Correct answer	2	AB	(£)480
	A5	Valid check	1	C	Reverse process or alternative method or estimation E.g. 480 ÷ 3200 = 0.15
Q7(b)	R3	Starts to process formula	1 or	D	7.25 + 3.75 (=11) **OR** 44 ÷ 4 (=11) **OR** (7.25 + 3.75) × 4 (condone missing brackets)
	A4	Full process to work with formula	2 or	DE	'11' × 4 (=44) **OR** '11'– 3.75 (=7.25) **OR** '11' – 7.25 (=3.75) **OR** 7.25 + 3.75 (=11) **and** 44 ÷ 4 (=11)
	I6	Correct answers with accurate figures	3	DEF	Yes **and** 44(m) with correct working **OR** Yes **and** 7.25(m) with correct working **OR** Yes **and** 3.75(m) with correct working **OR** Yes **and** 11 (m) seen from two processes
Total marks for question			**6**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q8	R3	Uses consistent units	1	G	e.g. 200 cm **OR** 100 cm **OR** 300cm **OR** 0.25 m May be implied in subsequent working or on the diagram
	R1	Starts to process scale diagram	1 or	H	One of: A rectangle 4 sq side by 8 sq side A rectangle at least 3 sq side from any wall A rectangle at least 12 sq side from the screen 2 rectangles at least 2 sq side apart
	I6	Develops process to use scale diagram	2 or	HJ	A rectangle 4 sq side by 8 sq side **AND o**ne of: at least 3 sq side from any wall at least 12 sq side from the screen at least 2 sq side from the other rectangle
	A5	Correct checked solution with accurate drawing	3	HJK	2 rectangles 4 sq side by 8 sq side **AND** all of: at least 3 sq side from any wall at least 12 sq side from the screen at least 2 sq side apart long side facing screen
Total marks for question			**4**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q9	R1	Works with consistent units	1	L	3000(g) **OR** 0.05(kg) **OR** 750 (g) May be seen in subsequent working
	A4	Develops process	1 or	M	'3000' ÷ 50 (=60) oe **OR** 75 × 50 (=3750) oe **OR** '3000' ÷ 75 (=40)
	I6	Correct answers with accurate figures	2	MN	No **and** 60 (servings) **OR** No **and** 3750(g) **and** 3000(g) **OR** No **and** 3750(g) **and** 750(g) over **OR** No **and** 3.75 (kg) **OR** No **and** 40 (g per person available)
Total marks for question			**3**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q10(a)	R2	Uses form correctly	1	P	Puts a tally mark in the drama column for the 18 and over row
Q10(b)	I6	Completes one statement correctly	1 or	Q	One of: 4, s(cience fiction), 5 in correct statement
	I6	Completes all statement correctly	2	QR	All statements completed correctly
		Total marks for question	**3**		

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