Mark Scheme (Results)

October 2017

Functional Skills Mathematics Level 2

FSM02

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Guidance for Marking Functional Skills Maths 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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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 his or her answer.
- You will often see correct working followed by an incorrect decision, showing that the candidate can calculate but does not understand the functional demand of the 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 in a written paper); mark the better answer.
- **Incorrect method** if it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review for your Team Leader to check.
- **Follow through marks (ft)** 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 **oe** 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
- **Parts of questions:** because most FS questions are unstructured and open, you should be prepared to award marks for answers seen in other parts of a question, even if not explicit in the expected part. E.g. checks in on earlier answer box.
- **Graphs**
  The mark schemes for most graph questions have this structure:

Process	Mark	Evidence
Appropriate graph or chart – (e.g. bar, stick, line graph)	1 or	1 of: linear scale(s), labels, accurate plotting (2 mm tolerance)
	2 or	2 of: linear scale(s), labels, accurate plotting (2 mm tolerance)
	3	all of: linear scale(s), labels, accurate 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,** and use consistent intervals. The scale may not start at 0 and not all intervals must be labelled. Thus a graph that is 'fit for purpose' is one where 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. Candidate's scale must be in numerical order. Award the mark for plotting if you can read the values, even if the scale is not linear.
The mark schemes for **Data Collection and/ or summary 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.

Discuss any queries with your Team Leader.

Section A: Commercial centre

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1(a)	R1	Full process to find monthly rent	1 or	A	1.18 × 1240 (=1463.2)
	I6	Correct answer	2	AB	£1463.20 in correct money notation
	A5	Valid check	1	C	Valid check e.g. reverse calculation or estimation
Q1(b)	A4	Full process to find figures to compare	1 or	D	(169 400 + 195 600 + 231 100 + 198 300) ÷ 4 (=198 600) **OR** 169 400 + 195 600 + 231 100 + 198 300 (=794 400) **AND** 200 000 × 4 (=800 000)
	I7	Correct conclusion with accurate figures	2	DE	No **AND** (£)198 600 **OR** No **AND** (£) 794 400 **and** (£) 800 000
		Total marks for question	**5**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q2(a)	R2	Begins to create a data collection sheet	1 or	F	Input opportunities **AND** at least 2 of: Heading for unit size (small, medium, large) Heading for length of rental (3 months, 6 months, 12 months) Heading for rating (poor, good, excellent)
	A4	Improves data collection sheet	2 or	FG	Input opportunities **AND** all of: Heading for unit size (small, medium, large) Heading for length of rental (3 months, 6 months, 12 months) Heading for rating (poor, good, excellent) May not be efficient or questionnaire
	I6	Efficient data collection sheet	3	FGH	Efficient input opportunities **AND** all of: Heading for unit size (small, medium, large) Heading for length of rental (3 months, 6 months, 12 months) Heading for rating (poor, good, excellent) Allow 2 tables with efficient input opportunities Example of a fully correct answer.

Length of rental	3 months			6 months			12 months		
Unit size	S	M	L	S	M	L	S	M	L
Excellent									
Good									
Poor									

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q2(b)	R2	Process to find the value of N	1	J	$2 \times 3 + (1\times) 6 + 11 \times 12$ (=144)
	A4	Full process to find figures to compare	1 or	K	$100 \times$ '144' $\div 168$ (=85.71..) **OR** $85 \div 100 \times 168$ (=142.8) Allow $14 \div 168 \times 100$ (=8.33…) for this mark only
	I7	Correct conclusion with accurate figures	2	KL	Yes **AND** [85(.71..),86](%) **OR** Yes **AND** 144 **and** 142(.8) **or** 143
		Total marks for question	6		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q3	R1	Process to find missing length	1	M	17.1 – 7.5 (=9.6) **OR** 16.3 – 8.4 (=7.9)
	R3	Process to find a relevant area	1 or	N	17.1 × 16.3 (=278.73) **OR** '9.6' × '7.9' (=75.84) **OR** 17.1 × 8.4 (=143.64) **OR** 7.5 × '7.9' (=59.25) **OR** 7.5 × 16.3 (=122.25) **OR** '9.6' × 8.4(=80.64)
	A4	Full process to find the total area	2	NP	'278.73' – '75.84' (=202.89) **OR** '143.64' + '59.25' (=202.89) **OR** '122.25' + '80.64' (=202.89)
	A4	Process to convert between m² and sq ft	1 or	Q	e.g. '202.89' × 10.76 (=2183.0964) **OR** 2200 ÷ 10.76 (=204.46..) May be seen in previous working
	I7	Correct conclusion with accurate figures	2	QR	Yes **AND** 2183(.09..) (sq ft) **OR** Yes **AND** 204(.46..) **and** 202(.89) (m²)
		Total marks for question	5		

Section B: Business trip

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q4	R2	Converts between currencies	1	A	e.g. 1599 × 1.16104 (=1856.50..) **OR** 495 × 1.16104 (=574.71..) **OR** 8000 ÷ 1.16104 (=6890.37..) **OR** '6777'× 1.16104 (=7868.36..) **OR** '7037.91..' × 1.16104 (=8171.30..) May be seen at any stage of their calculations
	R3	Begins to work with percentage	1 or	B	e.g. '6777' × 0.0385 (=260.91..) oe **OR** 1599 × 0.0385 (=61.56..) oe **OR** 495 × 0.0385 (=19.05..) oe
	A4	Full process to work with percentage	2	BC	e.g. '6777' + '260.91..' (=7037.91..) **OR** 1599 + '61.56.. '(=1660.56..) **OR** 495 + '19.05..' (=514.05..) May be seen at any stage of their calculations
	R1	Begins to process total cost	1 or	D	e.g. 1599 × 3 (=4797) **and** 495 × 4 (=1980) **OR** '1660.56..' × 3 (=4981.68..) **and** '514.05..' × 4 (=2056.20..) **OR** '1856.50..' × 3(= 5569.50..) **and** '574.71..'× 4 (=2298.85..)
	A4	Full process to find figures to compare	2 or	DE	e.g. '4797' + '1980' (= £6777) (before surcharge) **OR** '4981.68..' + '2056.20..' (=£7037.88..) (with surcharge) **OR** '5569.50.. + '2298.85..'(=7868.35..euros) (before surcharge)
	I7	Correct conclusion with accurate figures	3	DEF	e.g. Yes **AND** (£) 6890(.37) **and** (£)[7037, 7038] **OR** Yes **AND** 8171(.30.. euros) Allow reasonable accuracy of figures that allow comparison e.g. rounding exchange rate to 2dp or better (=8163.980..)
Total marks for question			6		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5	R1	Process to find the total excess weight	1 or	G	17.8 + 10.6 – 23 (=5.4) oe
	A4	Full process to find figures to compare	2 or	GH	'5' × 16.5(=82.5) **OR** 80 ÷ 16.5 (=4.84) Allow '6'× 16.5(=99)
	I7	Correct conclusion with accurate figures	3	GHJ	No **AND** (£)82.5(0) **OR** No **AND** 5(.4) **and** 4(.84) (kg)
		Total marks for question	**3**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q6(a)	I6	Engages with train times or relevant time periods	1 or	K	Selects any train to Naples departing after 09:25 **AND** any train to Rome departing at least 5.5 hours after arrival in Naples **or** arriving before 19.35 (trains can be identified by ticket prices) **OR** Identifies two of: 09.25 as earliest departure 5.5 hours the total time in Naples 19.35 as latest arrival time in Rome **OR** Selects 10.10 train to Naples **OR** Selects 17.55 train to Rome
	R2	Full process to find time constraints or works with ticket costs and omits one time constraint	2 or	KL	shows full build up method but disregards ticket prices e.g. 9.00, 9.25, 9.28, 11.32, 15.32, 17.02, 17.10, 18.20, 18.45 (allow some missing/combined stages) **OR** Selects 10:10 train **and** 11:20 + 5.5 hrs =16:50 **OR** Selects 17:55 train **and** 17:55 – 5.5 hrs = 12:25 **OR** e.g. selects 10:10 train **and** `selects 18:30 train (omits 25 min walk to hotel)
	I6	Correct answer	3	KLM	Selects 10:10 train to Naples **and** 17:55 train to Rome No incorrect working should be seen

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q6(b)	R2	Process to find number of bottles needed.	1 or	N	e.g. '2500'÷ 750 (=3.3) **OR** '2500'÷ 500 (=5) **OR** '2500'÷ 250 (=10) Allow adding on to get 2.5 litres or subtracting from 2.5 litres Allow working out a cost of comparable quantities of oil to find the best value e.g. cost of 1 ml in each bottle
	A4	Process to find total cost of bottles totalling 2.5 litres	2 or	NP	e.g. $2 \times 3.59 + 2 \times 2.46 (=12.1)$ **OR** $3 \times 3.59 + (1\times)1.36 \ (=12.13)$ **OR** $2 \times 3.59 + (1\times) \ 2.46 + 2 \times 1.36 \ (=12.36)$ **OR** $5 \times 2.46 \ (= 12.3)$ **OR** $10 \times 1.36 (=13.6)$ Other combinations are possible
	I6	Correct answer with units	3	NPQ	12.1(0) euros
	A5	Valid check	1	R	Valid check e.g. reverse calculation or alternative method
Total marks for question			**7**		

Section C: Housewarming dinner

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q7	R1	Interprets diagram for length	1 or	A	14 squares **or** 7 cm oe
	R3	Converts units or uses length in the practical situation	1	B	e.g. 1500(mm) = 1.5(m) oe **OR** 1500(mm) + 1(m) + 1(m) (=3.5m) oe **OR** 1500 ÷ 50 (=30mm) oe **OR** '7' × 50 (=350) **OR** 1500 mm in the room is 3 cm on the grid oe **or** 100 cm in the room is 2 cm on the grid oe (may be shown on the diagram) NB Accept any method of relating scale
	A4	Full process to find figures to compare (may be expressed diagrammatically)	1 or	C	'350' – '200' (=150 cm) oe **and** 1500 ÷ 10 (=150 cm) oe **OR** ('350' – '150') ÷ 100 (=2 m) oe **OR** (7 – 4) × 50 × 10 (=1500) **OR** Draws a concentric circle with diameter 3 cm inside the shaded space
	I7	Correct conclusion with accurate figures in consistent units	2	CD	Yes **AND** 150 (cm) oe **OR** Yes **AND** 2 (m) oe **OR** Yes **AND** 1500 (mm) oe **OR** Yes **AND** concentric circle with diameter 3 cm drawn (must come from correct processes in the same units of length)
		Total marks for question	**4**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q8(a)	R2	Full process to find total roasting time	1	E	(30 × 7.5) + 15 (=240) oe May be seen in subsequent working
	R3	Begins the process to find total time needed	1 or	F	'150'+ '240' + 20 (=410) oe **OR** '17.30' − 10.30 (=7 hours) oe **OR** Adds times for at least two different activities to 10.30 **OR** Subtracts times for at least two different activities from 5.30
	A4	Full process to find times to compare	2 or	FG	10.30 + '6h 50' (=17.20) oe **OR** 17.30 – '6h 50' (=10.40) oe **OR** '150'+ '225' + 15 + 20 (=410) **and** '17.30' − 10.30 (=420) (must be in the same time units) Full time plan leading to 17.20 **OR** Full time plan working back to 10.40
	I7	Correct conclusion with accurate figures	3	FGH	Yes **AND** 17.20 oe **OR** Yes **AND** 10.40 **OR** Yes **AND** 410 (mins) **and** 420 (mins) **OR** Yes **AND** 6 (h) 50 (min) **and** 7 (h)

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q8(b)	R3	Begins to work with proportion	1 or	J	e.g. $600 \div 11 (=54.54..)$ **OR** $360 \div 8 (=45)$ **OR** $11 \div 8 (=1.375)$ **OR** $600 \div 360 (=1.6..)$
	A4	Full process to find figures to compare	2 or	JK	e.g. '54.54..' $\times 8 (=436.36..)$ **OR** '45' $\times 11 (=495)$ **OR** $600 \div 11(=54.54..)$ **and** $360 \div 8 (=45)$ **OR** $360 \div$ '54.54..' $(=6.60..)$ **OR** $11 \div 8 (=1.375)$ **and** $600 \div 360 (=1.6..)$
	I7	Correct conclusion with accurate figures	3	JKL	e.g. No **AND** 436(.36..g) **(and 360 (g))** **OR** No **AND** 495 (g) **(and 600 (g))** **OR** No **AND** 54(.54..) (g) **and** 45 (g per person) **OR** No **AND** 6(.6)(people)
Total marks for question			**7**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q9(a)	I6	Selects correct ornament	1	M	Selects E or (£)75.90 used in subsequent working
	A4	Begins to work with fraction	1 or	N	$75.9(0) \div 5 \ (=15.18)$ oe **OR** $1 - \frac{1}{5} \ (=\frac{4}{5})$ oe Allow ft from their price
	A4	Full process to find discounted price	2 or	NP	$75.9(0) - '15.18' \ (=60.72)$ oe **OR** $75.9(0) \div 5 \times 4 \ (=60.72)$ oe Allow ft from their price
	I6	Correct answer	3	NPQ	(£) 60.72
Q9(b)	A5	Valid explanation	1	R	e.g. because it leaves less than 5 inches for the flowers. Not enough space for the flowers. ft valid comment relating to height for their chosen vase e.g. height of cheapest vase is more than the height of the cabinet
Total marks for question			**5**		

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