Mark Scheme (Results)

October 2017

Functional Skills Mathematics Level 1

FSM01

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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1	R2	Identifies correct figures to work with	1	A	31, 25.95, 24, 19.95 May be seen in subsequent working
	R3	Process to work with total or finds an appropriate difference	1 or	B	e.g. '31' + '24' + '24' (=79) **OR** '25.95' + '19.95' + '19.95' (=65.85) **OR** e.g. '31' – '25.95' (=5.05) **OR** '24' – '19.95' (=4.05)
	A4	Full process to find saving	2 or	BC	e.g. '79' – '65.85' (=13.15) **OR** e.g. '5.05' + '4.05' + '4.05' (=13.15) Award BC marks for correct processes with incorrect figures
	I6	Correct answer ft in correct money notation	3	BCD	£13.15 in correct money notation **OR** Ft '£13.15' supported by working and in correct money notation
Total marks for question			**4**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q2(a)	R2	Begins process to work with formula	1 or	E	96×3 (=288) **OR** $310 - 8$ (=302)
	A4	Full process to find figures to compare	2 or	EF	'288' + 8 (=296) **OR** '302' ÷ 3 (=100.666…) **OR** '302' ÷ 96 (=3.145…) **OR** 96×3 (=288) **and** $310 - 8$ (=302)
	I6	Correct decision with accurate figures	3	EFG	No **AND** 296(m) **OR** No **AND** 100.(66… , 7) **or** 101 **OR** No **AND** 3.1(45…) **OR** No **AND** 288 **and** 302 No **AND** $96 \times 3 + 22$ oe

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q2(b)	R3	Begins process to work with fraction	1 or	H	$96 \div 4$ (=24) oe **OR** 96×3 (=288) **OR** $\dfrac{64}{96}\left(=\dfrac{32}{48}\right)$ **OR** $64 \div 96$ (=0.66…) oe **OR** $3 \div 4$ (=0.75) **OR** $64 \div 3$ (=21.33…) **OR** 64×4 (=256) **OR** $96 - 64$ (=32)
	A4	Full process to find figures to compare	2 or	HJ	'24' $\times 3$ (=72) **OR** '288' $\div 4$ (=72) **OR** $\dfrac{64}{96}\left(=\dfrac{2}{3}\right)$ **OR** $64 \div 96$ (=0.66…) oe **AND** $3 \div 4$ (=0.75) **OR** '21.33…' $\times 4$ (=85.33…) **OR** '256' $\div 3$ (=85.33…) **OR** 32×4 (=128) **OR** 32×3 (=96) **OR** $96 - 64$ (=32) **AND** $96 \div 4$ (=24) oe
	I6	Correct conclusion with consistent accurate figures	3	HJK	No **AND** 72 **OR** No **AND** $\dfrac{2}{3}$ No **AND** 0.66… **or** 0.67 or 0.7 **and** 0.75 oe **OR** No **AND** 85.33… **or** 85.3 or 85 **OR** No **AND** 128 (compared with 96) **OR** No **AND** 96 (compared with 64) **OR** No **AND** 32 **and** 24

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q2(c)	R3	Extracts height of Clock Tower to appropriate degree of accuracy	1	L	95(m) **or** e.g. 'less than 100(m)' stated Allow 94 **or** 96
	A4	Full process to find figures to compare	1 or	M	e.g. '95' × 3 (=285) **OR** 310 ÷ 3 (=103.33…) **or** 310 ÷ 3 (is above 100) **OR** 310 ÷ '95' (=3.26..) Condone use of 305 for height of SkyPoint for this mark only
	I6	Correct conclusion with appropriate supporting figures	2	MN	e.g. Yes **AND** 285(m) **and** 310(m) **OR** Yes **AND** less than 100(m) **and** 103(m) **OR** Yes **AND** less than 300(m) **and** 310(m) **OR** Yes **AND** 3.2(6..) If exactly 100 or exactly 90 is used throughout allow e.g. It is 3.1 or 3.4 (times bigger) respectively **or** clear statement supported by correct working for MN mark
		Total marks for question	**9**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q3	A4	Process to work out the mean	1 or	P	e.g. 800000 ÷ 366 (=2185.7..) **OR** 800000 ÷ 365 (=2191.7..) **OR** 800000 ÷ 364 (=2197.8..) **OR** 800000 ÷ 365.25 (=2190.2..)
	I6	Correct answer	2	PQ	e.g. [2185, 2186] **OR** [2190, 2192] **OR** [2197, 2198]
	A5	Valid check	1	R	Valid check e.g. reverse process or estimation
Total marks for question			**3**		

Section B: The toy shop

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q4(a)	R1	Starts to process scale diagram	1 or	A	1 rectangle anywhere on grid with width 2 sq lengths **or** length 8 sq lengths **OR** 2 identical rectangles with lengths in ratio 1:4 **AND** **1 of:** at least 3 sq lengths away from counter or door at least 2 sq lengths between them at least 2 sq lengths away from any wall **OR** indicates 1 relevant prohibited area for constraints
	R1	Starts to develop solution	2 or	AB	Rectangle with width 2 sq lengths **and** length 8 sq lengths **OR** Rectangle with width 2 sq lengths **or** length 8 sq lengths **AND** at least 3 sq lengths away from counter or door **and** at least 2 sq lengths away from any wall **OR** 2 identical rectangles with width 2 sq lengths **or** length 8 sq lengths **AND** **1 of:** at least 3 sq lengths away from counter or door at least 2 sq lengths between them at least 2 sq lengths away from any wall **OR** 2 identical rectangles with lengths in ratio 1:4 **AND** **2 of:** at least 3 sq lengths away from counter or door at least 2 sq lengths between them at least 2 sq lengths away from any wall **OR** indicates all relevant prohibited areas for constraints

	A4	Improves solution	3 or	ABC	2 rectangles with length 2 sq lengths **and** length 8 sq lengths **AND** 2 of: at least 3 sq lengths away from counter or door at least 2 sq lengths between them at least 2 sq lengths away from any wall
	I6	Fully correct solution	4	ABCD	2 rectangles with width 2 sq length **and** with length 8 sq length **AND** at least 3 sq length away from counter and door **and** at least 2 sq length between them **and** at least 2 sq length away from any wall

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q4(b)	R1	Uses consistent units	1	E	e.g.1.8 (m) **or** 1.25 (m) **or** 0.3 (m) **or** 5.5 (m) **OR** 4000 (mm) **or** 6000 (mm) **or** 8000 (mm) or equivalent figures in cm May be seen in subsequent working
	R2	Process to find width of glass or works with perimeter	1 or	F	'1.25' – '0.3' (=0.95) oe May be seen in subsequent working **OR** 1250 + 1800 + 1250 + 1800 (=6100) oe
	A4	Complete process to work with perimeter	2 or	FG	e.g. '0.95' + '0.95' + '1.8' + '1.8' (=5.5m) oe **OR** '6000' – 1800 – 1800 – '950' – '950' (=500mm) oe
	I6	Correct conclusion with accurate figures	3	FGH	e.g. 6 (m) **and** 5.5 (m) oe **OR** 6 (m) **and** 0.5 (m) (left over) oe NB Allow comparison with any accurate figure e.g. 2500
Total marks for question			**8**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5	R2	Uses consistent units	1	J	e.g. 30 mins **or** 45 mins **or** 90 mins May be seen in any subsequent working
	R1	Starts process to work with driving times or work with available time	1 or	K	e.g. adds 2 times e.g. '30' + 35 (=65 mins) oe **OR** subtracts one time from 10(am) e.g. 10(am) – 35(mins) (=9.25 am) oe **OR** adds one time to 8.30(am) e.g. 8.30(am) + '30'(mins) (=9am) **OR** 10(am) – 8.30(am) (=1 hr 30 mins) oe **OR** Shows 2 times on time plan
	A4	Full process to find figures to compare	2 or	KL	e.g. '9'(am) + 35 (mins) + 20 (mins) (=9.55 am) **OR** '90' (mins) oe **AND** '65' + 20 (=85 mins) oe **OR** '9.25'(am) – '30' – 20 (=8.35 am) **OR** Completes time plan
	I6	Correct conclusion with accurate figures	3	KLM	Yes **AND** 9.55(am) Yes **AND** 90(mins) **and** 85(mins) oe **OR** Yes **AND** 8.35(am)
Total marks for question			**4**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q6a	I6	Interprets likelihood	1	N	Ticks impossible
Q6b	A4	Process to work with scale	1 or	P	25×18 (=450) Allow complete build up method with 1 error
	I6	Correct answer with correct units	2	PQ	450 cm oe correct units
	A5	Valid check	1	R	Valid check e.g reverse calculation or alternative method or approximation
Total marks for question			**4**		

Section C: Living on a budget

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q7a	A4	Process to work with percentage	1 or	A	30 ÷ 160 × 100 (=18.75…) oe **OR** 160 × 20 ÷ 100 (=32) oe **OR** 30 × 100 ÷ 20 (=150) oe
	I6	Correct conclusion with accurate figures	2	AB	No **AND** 18(.75..) (%) oe **OR** No **AND** (£)32 **OR** No **AND** (£)150
Q7b	R3	Process to find mean	1 or	C	2.48 + 4.7 + 4.66 + 5.81 (=17.65) **OR** 3.7 × 5 (=18.5)
	A4	Completes process	2	CD	'17.65' ÷ 5 (=3.53) **OR** 2.48 + 4.7 + 4.66 + 5.81 (=17.65) **and** 3.7 × 5 (=18.5)
	I6	Correct conclusion from their accurate figure	1	E	e.g. Yes **AND** (£)3.53 **OR** Yes **AND** (£)17.65 **and** (£)18.5(0) **OR** Ft No **AND** '17.65' ÷ 4 **and** (£)4.41..
	A5	Valid check	1	F	Valid check e.g. reverse process or alternative method
Total marks for question			**6**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q8a	I6	Interprets table	1	G	25 (days)
Q8b	R2	Works with edges of rows	1	H	110 – 10 – 10 (=90) May be seen in subsequent working or on a diagram
	R3	Starts process to work with number of seeds	1 or	J	e.g. '90' ÷ 15 (=6) **OR** 110 ÷ 15 (=7.3..) **OR** 15 + 15 + 15 + 15 (+ 15 + 15) **or** on a diagram **OR** 10 + 15 + 15 + 15 (+ 15 + 15 + 15 + 10) **or** on a diagram
	A4	Process to find number of seeds in a row	2	JK	e.g. '6' + 1 (=7) **OR** Full process to find number of seeds in a row may be seen on a diagram
	A4	Process to find total number of seeds	1	L	'7' × 4 (=28)
	I6	Accurate figure from fully correct processes	1	M	28 (seeds)
Total marks for question			**6**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q9	R3	Uses consistent units	1	N	e.g. 6000(g) **OR** 0.75(kg) May be seen in subsequent working
	R2	Begins process to work with proportion	1 or	P	e.g.'6000' ÷ 750 (=8 times using recipe) oe **OR** 45 ÷ 5 (=9 times using recipe) **OR** '0.75' ÷ 5 (=0.15 kg of tomatoes per bowl) oe **OR** '6000' ÷ 45 (=13.3.. g of tomatoes per bowl) oe **OR** Allow complete build up method with 1 error
	A4	Full process to find figures to compare	2 or	PQ	e.g. '8' × 5 (=40 bowls) **OR** '6000' ÷ 750 (=8 times using recipe) oe **AND** 45 ÷ 5 (=9 times using recipe) **OR** '0.75' ÷ 5 (=0.15) **and** 6 ÷ 45 (=0.133..) (kg toms per bowl) oe **OR** '9' × '0.75' (=6.75 kg needed) oe **OR** 6 ÷ '0.15' (=40 bowls) oe **OR** 45 × '0.15' (=6.75 kg needed)
	I6	Correct conclusion with accurate figures	3	PQR	e.g. No **AND** 40 (bowls) **OR** No **AND** 8 (times) **and** 9 (times) **OR** **No AND** 0.15 (kg) **and** 0.13(3..) (kg) (of toms per bowl) oe **OR** No **AND** 6.75 (kg) **OR** No **AND** 6000(g) **and** 6750(g) **OR** No **AND** 750(g) (more needed)
Total marks for question			**4**		

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