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Mark Scheme (Results)

January 2018

Functional Skills Mathematics Level 1

FSM01

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FUNCTIONAL SKILLS (MATHEMATICS)
MARK SCHEME – LEVEL 1 – JANUARY 2018

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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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

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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.

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Section A: Rowing

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1(a)	R1	Begins to work with mean	1 or	A	54 + 52 + 47 + 51 + 45 + 42 (= 291) **OR** 50 × 6 (= 300)
	A4	Full process to find mean or finds figures to compare	2 or	AB	'291' ÷ 6 (= 48.5) **OR** 54 + 52 + 47 + 51 + 45 + 42 (= 291) **and** 50 × 6 (= 300)
	I6	Valid decision with accurate figures	3	ABC	Yes **AND** 48.5 (mins) oe **OR** Yes **AND** 291 (mins) **and** 300 (mins) oe
	A5	Valid check	1	D	Valid check e.g. reverse calculation or alternative method
Q1(b)	R2	Begins to substitute into formula or reverse substitutes	1 or	E	67 × 8 (=536) **OR** 110 × 5 (= 550)
	A4	Full substitution or reverse substitution	2 or	EF	'536' ÷ 5 (=107.2) **OR** 550 ÷ 8 (= 68.75) **OR** 67 × 8 (=536) **and** 110 × 5 (= 550)
	I6	Valid decision with accurate figure	3	EFG	No **AND** 107(.2) (km) **OR** No **AND** 68(.75) (miles) **OR** No **AND** 536 **and** 550
		Total marks for question	**7**		

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Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q2	R2	Works with consistent units	1	H	e.g. 2000(g) **or** 0.28(kg) **or** 0.03(kg) **or** 0.12(kg) may be seen in subsequent calculations
	R3	Begins to work with proportion	1 or	J	e.g. 30 × 4 (=120) oe **OR** 280 ÷ 8 (=35) oe **OR** 50 ÷ 8 (=6.25)
	A4	Develops solution	2 or	JK	e.g. '2000' – '120' (=1880) oe **OR** '35' × 50 (=1750) oe **OR** '6.25' × 280 (=1750) Allow 6 or 7 from rounding or truncating 6.25 for this mark only
	A4	Full process to find figures to compare	3 or	JKL	e.g. '1750' + '120' (=1870) oe **OR** '35' × 50 (=1750) **and** '2000' – '120' (=1880) oe **OR** '2000' – '1750' – '120' (=130) oe **OR** '2000' – '1750' (=250) **and** 30 × 4 (=120) oe **OR** ('2000' – '120') ÷ 50 (= 37.6) **and** 280 ÷ 8 (=35) oe **OR** ('2000' – '120') ÷ 280 (=6.7..) **and** '6.25' **OR** ('2000' – '120') ÷ 35 (=53.7..)
	I6	Valid decision with accurate figures	4	JKLM	e.g. Yes **AND** 1870(g) oe **OR** Yes **AND** 1750(g) **and** 1880(g) oe **OR** Yes **AND** 130(g) oe **OR** Yes **AND** 250(g) **and** 120(g) oe **OR** Yes **AND** 37.6(g) **and** 35(g) oe **OR** Yes **AND** 6.7(..) **and** 6.25 (batches) **OR** Yes **AND** 53(.7..) (bars)
Total marks for question			**5**		

FUNCTIONAL SKILLS (MATHEMATICS)
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Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q3(a)	R3	Totals amount raised or works with fraction	1	N	2347 + 3862 + 3581 + 1954 (=11744) **OR** 2347× 5 (=11735)
	A4	Full process to find figures to compare	2 or	NP	'11744' ÷ 5 (=2348.8) oe **OR** 2347 + 3862 + 3581 + 1954 (=11744) **and** 2347 × 5 (=11735)
	I6	Valid decision and accurate figures	3	NPQ	No/Yes (nearly/almost) **AND** (£)2348.8(0) **OR** No/Yes (nearly/almost) **AND** (£)11744 **and** (£)11735
Q3(b)	I6	Correct figure	1	R	12096(.00) written. Accept in any appropriate format.
		Total marks for question	**4**		

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Section B: Keeping rabbits

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q4(a)	A4	Full process to find figures to compare	1 or	A	4500 × 2 (=9000) **OR** 9500 ÷ 2 (=4750) **OR** 9500 – 4500 (=5000)
	I6	Valid decision with accurate figures	2	AB	Yes **AND** 9000 (cm^2) **OR** Yes **AND** 4750 (cm^2) **OR** Yes **AND** 5000 (cm^2)
Q4(b)	R3	Process to find area	1 or	C	5 × 6 (=30) **OR** Diagram and counting squares seen
	I6	Correct figure with units	2	CD	30 m^2
Total marks for question			**4**		

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Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5(a)	R1	Works with scale or considers constraint for rabbit run	1 or	E	Square with one of: Side length 7 squares **or** 1 square space all around
	I6	Fully correct solution for rabbit run	2	EF	Square with all of: Side length 7 squares **and** 1 square space all around
	R1	Works with scale or considers constraint for rabbit hutch	1 or	G	Rectangle with one of: Side length 4 squares **or** side length 1 square **or** in a corner inside the rabbit run **OR** Rectangle with side lengths in ratio of 4:1 **and** in a corner inside the rabbit run
	I6	Fully correct solution for rabbit hutch	2	GH	Rectangle 4 squares by 1 square **and** in a corner inside the rabbit run (See example at end of Mark Scheme)

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Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5(b)	R3	Works in consistent units	1	J	e.g. 600 (cm) **or** 3.5 (m) may be seen in subsequent working
	R2	Full process to find perimeter or calculates with wire fencing available	1 or	K	e.g. '3.5' + '3.5' + '3.5' + '3.5' (=14) oe **OR** 3 × 6 (=18) (available) oe **OR** 6 – '3.5' (=2.5) oe shown for at least 2 sides
	A4	Full process to find figures to compare	2 or	KL	e.g. '14' ÷ 6 (=2.3..) oe **OR** 3 × 6 (=18) **and** '3.5' + '3.5' + '3.5' + '3.5' (=14) oe **OR** '18' – '3.5' – '3.5' – '3.5' – '3.5' (=4)
	I6	Valid decision with accurate figures	3	KLM	e.g. Yes **AND** 2.3.. (rolls needed) **OR** Yes **AND** 18 (m available) **and** 14 (m needed) oe **OR** Yes **AND** 4 (m left over) oe
Total marks for question			**8**		

FUNCTIONAL SKILLS (MATHEMATICS)
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Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q6	R1	Process to work with percentage or doubles amount of fibre in dried food	1 or	N	30 ÷ 100 × 500 (=150) oe **OR** 90 × 2 (=180) Allow complete build up method
	A4	Full process to find figures to compare	2 or	NP	'150' ÷ 2 (=75) oe **OR** 30 ÷ 100 × 500 (=150) oe **and** 90 × 2 (=180) **OR** (90 × 2) – (30 ÷ 100 × 500) (= 30)
	I6	Valid decision with accurate figures	3	NPQ	No **AND** 75(g) **OR** No **AND** 150 (g) **and** 180 (g) **OR** No **AND** 30 (g less)
	A5	Valid check	1	R	Valid check e.g. reverse calculation or alternative method
		Total marks for question	**4**		

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Section C: Eye care centre

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q7(a)	R2	Begins process to find difference in lens strength	1 or	A	2.75 – 2.25 (=0.5) **OR** 1.5 – 1.25 (=0.25) **OR** 2.25 – 2.75 (= –0.5) **OR** 1.25 – 1.5 (= –0.25)
	A4	Full process to find figures to compare	2 or	AB	e.g. 2.75 – 2.25 (=0.5) **and** 1.5 – 1.25 (=0.25) **OR** 2.25 – 2.75 (= –0.5) **and** 1.25 – 1.5 (= –0.25)
	I6	Valid decision with accurate figures	3	ABC	e.g. Right **AND** 0.5 **and** 0.25 Right **AND** –0.5 **and** –0.25
Q7(b)	R3	Begins to add costs	1 or	D	e.g. 155 + 39.5 (=194.50) **OR** 155 + 39.5 + 25 (=219.50)
	R2	Identifies correct insurance cost for total of frames and lenses	2	DE	(£)19 identified **and** 155 + 39.5 (=194.50) Ft correct insurance price identified for '194.5' May be indicated on table or shown in subsequent calculations
	A4	Full process to find the correct answer for their insurance choice	1 or	F	155 + 39.5(0) + 25 + insurance (=238.5) NB previous working may be reused and insurance must be from the table
	I6	Accurate figure and correct money notation	2	FG	£238.50
		Total marks for question	**7**		

FUNCTIONAL SKILLS (MATHEMATICS)
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Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q8(a)	I6	Identifies correct eye	1	H	Identifies –4.00 **OR** Right lens
Q8(b)	A4	Process to find figures to compare	1	J	108 ÷ 90 (=1.2) **OR** 1.15 × 90 (=103.5)
	I6	Valid decision with accurate figures	2	JK	(Option) B **AND (**£)1.2(0) **OR** (Option) B **AND (**£)103.5(0)
	A5	Valid check	1	L	Valid check e.g. reverse calculation or estimation
Total marks for question			**4**		

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<table>
<tr><th>Question</th><th>Skills Standard</th><th>Process</th><th>Mark</th><th>Mark Grid</th><th>Evidence</th></tr>
<tr><td rowspan="3">Q9(a)</td><td>R1</td><td>Starts data collection sheet</td><td>1 or</td><td>M</td><td>Input opportunities AND heading or at least 2 options for 1 of the criterion
Age (< 20, 20-60, 60+)
Eyewear (G(lasses), C(ontact lenses), B(oth))</td></tr>
<tr><td>A4</td><td>Improves data collection sheet</td><td>2 or</td><td>MN</td><td>Input opportunities and headings for all of options with or without eyewear/age
NB data collection sheet may not be efficient.
Accept questionnaire</td></tr>
<tr><td>I6</td><td>Fully correct and efficient data collection sheet</td><td>3</td><td>MNP</td><td>Efficient input opportunities and all of:
Age (< 20, 20-60, 60+)
Eyewear (G(lasses), C(ontact lenses), B(oth)

Example of a fully correct answer

<table>
<tr><td>Age</td><td>G(lasses)</td><td>C(ontact lenses)</td><td>B(oth)</td></tr>
<tr><td><20</td><td></td><td></td><td></td></tr>
<tr><td>20-60</td><td></td><td></td><td></td></tr>
<tr><td>60+</td><td></td><td></td><td></td></tr>
</table>
</td></tr>
</table>

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Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q9(b)	R2	Interprets pie chart **or** works with equivalency	1 or	Q	e.g. 20(%) **or** 0.2 **or** $\frac{1}{5}$ **OR** 1 ÷ 4(=0.25) oe **or** 25(%)
	I6	Valid decision with accurate figures	2	QR	No **AND** 0.2 **and** 0.25 **OR** No **AND** $\frac{1}{5}$ **OR** No **AND** 25(%) **and** 20(%) 20% could be identified on diagram
Total marks for question			**5**		

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Example of Q5a