

Mark Scheme (Results)

March 2018

Functional Skills Mathematics Level 1

FSM01

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## FUNCTIONAL SKILLS (MATHEMATICS) MARK SCHEME – LEVEL 1 – MARCH 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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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.

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- **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 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: The beehive**

<b>Question</b>	<b>Skills Standard</b>	<b>Process</b>	<b>Mark</b>	<b>Mark Grid</b>	<b>Evidence</b>
<b>Q1(a)</b>	R1	Begins to engage with constraints	1 or	A	Sun (windspeed <15) <b>OR</b> Wed (temperature > 10°) <b>OR</b> 13, 11, 14 written
	I6	Indicates correct day	2	AB	Th(ursday) only
<b>Q1(b)</b>	R2	Process to find percentage	1 or	C	$15 \div 100 \times 6000 (= 900)$ oe <b>OR</b> $900 \div 6000 \times 100 (= 15)$ <b>OR</b> $900 \div 15 \times 100 (= 6000)$
	I6	Valid decision with accurate figures	2	CD	Yes <b>AND</b> 900 <b>OR</b> Yes <b>AND</b> 15 <b>OR</b> Yes AND 6000  Figures must come from correct process
<b>Total marks for question</b>			<b>4</b>		

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<b>Question</b>	<b>Skills Standard</b>	<b>Process</b>	<b>Mark</b>	<b>Mark Grid</b>	<b>Evidence</b>
<b>Q2(a)</b>	R3	Begins process to find mean	1 or	E	$440 + 460 + 465 + 455 + 450 (= 2270)$
	A4	Complete process to find mean	2 or	EF	$(440 + 460 + 465 + 455 + 450) \div 5 (= 454)$
	I6	Accurate figure with correct units	3	EFG	454 g(rams) <b>or</b> 0.454 kg
	A5	Valid check	1	H	Valid check eg reverse calculation or alternative method
<b>Q2(b)</b>	R3	Process to find range	1 or	J	Identifies 440 <b>and</b> 465
	I6	Accurate figure	2	JK	25
<b>Total marks for question</b>			<b>6</b>		

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Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q3	R1	Process to begin to work with weight	1 or	L	$2 \times 625 + 70 (= 1320)$ oe <b>OR</b> $2 \times 625 (= 1250)$ oe <b>OR</b> $1000 - 625 (=375)$ oe <b>OR</b> $1000 - (625 + 70)(=305)$ <b>OR</b> $2000 - (2 \times 625 + 70) (= 680)$ Allow $625 + 70 (=695)$ <b>OR</b> $2 \times (625 + 70) (=1390)$
	I6	Indicates correct postage cost	2	LM	$(\pounds) 5.5(0)$ <b>AND</b> 1320 <b>OR</b> $(\pounds) 5.5(0)$ <b>AND</b> 1250 <b>OR</b> $(\pounds) 5.5(0)$ <b>AND</b> 375 <b>OR</b> $(\pounds) 5.5(0)$ <b>AND</b> 305 <b>OR</b> $(\pounds) 5.5(0)$ <b>AND</b> 680
<b>Total marks for question</b>			<b>2</b>		

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Question	Skills Standard	Process	Mark	Mark Grid	Evidence
<b>Q4</b>	R3	Works in consistent units	1	N	e.g. 240 (cm) <b>or</b> 0.43 (m) <b>or</b> 0.35 (m) <b>or</b> 0.14 (m) <b>OR</b> 2400 (mm) <b>and</b> 430 (any one side length in mm)
	A4	Begins to work with lengths	1 or	P	e.g. Any two side lengths added together <b>OR</b> Any length $\times 2$ <b>OR</b> '240' $\div 2$ (= 120) oe
	A4	Full process to find figures to compare	2 or	PQ	(43 + 14 + 14 + 35) $\times 2$ (= 212) oe <b>OR</b> '120' <b>and</b> 43 + 14 + 14 + 35 (= 106) oe
	I6	Valid decision with accurate figures	3	PQ\R	Yes <b>AND</b> 212 (cm) oe <b>OR</b> Yes <b>AND</b> 120 (cm) <b>and</b> 106 (cm) oe
<b>Total marks for question</b>			<b>4</b>		

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**Section B: Beach Office**

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
<b>Q5</b>	R1	Begins substitution into word formula	1 or	A	$6 \times 30 (=180)$ <b>OR</b> $30 \div 100 (=0.3)$
	A4	Complete substitution into word formula	2 or	AB	$6 \times 30 \div 100 (=1.8 \text{ or } 9/5)$ oe
	I6	Accurate figure	3	ABC	1.8 (metres) oe
	A5	Valid check	1	D	Valid check e.g. reverse calculation or alternative method
<b>Total marks for question</b>			<b>4</b>		

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Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q6	A4	Process to work with fractions	1 or	E	$4 \times 24 (=96)$ <b>OR</b> $96 \div 4 (=24)$ oe <b>OR</b> $1 \div 4 (=0.25)$ or $24 \div 96 (=0.25)$ oe <b>OR</b>  $\frac{24}{96}$
	I6	Valid decision with accurate figures	2	EF	Yes <b>AND</b> $4 \times 24 = 96$ <b>OR</b> Yes <b>AND</b> $96 \div 4 = 24$ <b>OR</b>  Yes <b>AND</b> $1 \div 4 = 0.25$ <b>and</b> $24 \div 96 = 0.25$ oe  Yes <b>AND</b> $\frac{24}{96} = \frac{1}{4}$
<b>Total marks for question</b>			<b>2</b>		

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Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q7(a)	R2	Begins to work with opening times	1 or	G	e.g. 6:30 (pm) – 9:30(am) (= 9) (hours) oe <b>OR</b> 3:30(pm) – 9:30(am) (= 6) (hours) oe <b>OR</b> 6:30(pm) – 3:30(pm) (= 3) (hours) oe
	A4	Works with both opening hours and relevant number of days	2 or	GH	e.g. '9' × 7 (= 63) <b>OR</b> '6' × 5 (= 30) <b>OR</b> '3' × 5 (= 15) <b>OR</b> 2 × '9' (= 18) <b>OR</b> '3' × 7 (=21) <b>OR</b> 2 × '6' (=12)
	R2	Full process to find difference between seasons	3 or	GHJ	'63' – '30' (= 33) <b>OR</b> '15' + '18' (= 33) <b>OR</b> (2 × '6') + ('3' × 7) (=33)
	I6	Accurate figure	4	GHJK	33 (hours)

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<b>Question</b>	<b>Skills Standard</b>	<b>Process</b>	<b>Mark</b>	<b>Mark Grid</b>	<b>Evidence</b>
<b>Q7(b)</b>	R1	Begins to find number of tiles along one length or works with one area	1 or	L	$400 \div 50 (= 8)$ <b>or</b> $200 \div 50 (= 4)$ <b>OR</b> $400 \times 200 (= 80000)$ <b>or</b> $50 \times 50 (= 2500)$ May be seen on diagram
	A4	Process to find number of tiles along both lengths or area of one hut floor and one tile	2 or	LM	$400 \div 50 (= 8)$ <b>and</b> $200 \div 50 (= 4)$ <b>OR</b> $400 \times 200 (= 80000)$ <b>and</b> $50 \times 50 (= 2500)$
	I6	Full process to find number of tiles needed for one beach hut floor	3	LMN	'8' $\times$ '4' (= 32) <b>OR</b> '80000' $\div$ '2500' (= 32)
	R2	Process to work with number of beach huts or cost of tiles or budget	1 or	P	'32' $\times$ 3 (= 96) <b>OR</b> '32' $\times$ 8.99 (= 287.68) <b>OR</b> $850 \div 3 (= 283.3..)$ <b>OR</b> $850 \div 8.99 (= 94.5..)$
	A4	Process to work with number of huts and number of tiles to find figures to compare	2 or	PQ	'96' $\times$ 8.99 (= 863.04) <b>OR</b> '287.68' $\times$ 3 (= 863.04) <b>OR</b> '283.3..' $\div$ 8.99 (= 31.5..) <b>OR</b> '94.5..' $\div$ '32' (=2.9..) <b>OR</b> '32' $\times$ 3 (= 96) <b>and</b> $850 \div 8.99 (= 94.5..)$ <b>OR</b> '32' $\times$ 8.99 (= 287.68) <b>and</b> $850 \div 3 (= 283.3..)$
	I6	Valid decision with accurate figures	3	PQR	No <b>AND</b> (£)863(.04) <b>OR</b> No <b>AND</b> 32 <b>and</b> 31(.5) (tiles per hut) <b>OR</b> No <b>AND</b> 2(.9..) (huts can be tiled) <b>OR</b> No <b>AND</b> 96 (tiles) <b>and</b> 94(.5..) <b>or</b> 95 (tiles) <b>OR</b> No <b>AND</b> (£) 287(.68) <b>and</b> (£) 283(.33..) (costs per hut)
<b>Total marks for question</b>			<b>10</b>		

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**Section C: The cinema**

<b>Question</b>	<b>Skills Standard</b>	<b>Process</b>	<b>Mark</b>	<b>Mark Grid</b>	<b>Evidence</b>
<b>Q8(a)</b>	R1	Starts to draw a graph or chart	1 or	A	one of: linear scale, accurate plotting ( $\pm 2\text{mm}$ ) labels could be seen in title
	A4	Improves their chart or graph	2 or	AB	two of: linear scale, accurate plotting ( $\pm 2\text{mm}$ ) labels could be seen in title
	I6	Fully correct chart or graph	3	ABC	all of: correct linear scale displaying data appropriately, accurate plotting ( $\pm 2\text{mm}$ ) labels, Min labels: (Number of) sales and R, C, L and O

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Question	Skills Standard	Process	Mark	Mark Grid	Evidence
<b>Q8(b)</b>	R3	Works with consistent units	1	D	e.g 7000 (ml) <b>OR</b> 0.5 (litres) <b>OR</b> 1000 ml=1 litre May be seen in subsequent working
	R2	Begins to engage with ratio	1 or	E	e.g. $5 \times 7 (=35)$ <b>or</b> $5 \times '7000' (=35000)$ <b>OR</b> $1 + 5 (=6)$ <b>OR</b> $'7000' \div 85 (=82.35..)$ <b>OR</b> $500 \times 85 (=42500)$ oe <b>OR</b> $'7000' \div 500 (=14)$ Partial build up method
	A4	Develops solution	2 or	EF	e.g. $'35' + 7 (=42)$ <b>or</b> $'35000' + '7000' (=42000)$ <b>OR</b> $'6' \times 7 (= 42)$ <b>or</b> $'6' \times '7000' (=42000)$ <b>OR</b> $'82.35..' \times 5 (=411.7..)$ <b>OR</b> $1 + 5 (=6)$ <b>and</b> $'7000' \div 85 (=82.35..)$ <b>OR</b> $500 \div '6' (=83.33..)$ <b>OR</b> $1 + 5 (=6)$ <b>and</b> $'7000' \div 500 (=14)$
	A4	Full process to find figures to compare	3 or	EFG	e.g. $'42000' \div 500 (= 84)$ oe <b>OR</b> $'7000' \div '83.3..' (=84)$ <b>OR</b> $'6' \times '14' (=84)$ <b>OR</b> $'411.7..' + '82.35..' (=493.35..)$ <b>OR</b> $'82.35..' \text{ and } 500 \div '6' (=83.33..)$ <b>OR</b> $'83.33..' \times 85 (=7083.33..)$ <b>OR</b> $'42000' \text{ and } 500 \times 85 (=42500)$ oe
	I6	Valid decision from accurate figures	4	EFGH	No <b>AND</b> 84 (drinks) <b>OR</b> No <b>AND</b> 493(.35..) (ml) <b>OR</b> No <b>AND</b> 82(.35..) (ml) <b>and</b> 83(.33..) (ml) <b>OR</b> No <b>AND</b> 7083 (.33..)(ml) ( <b>and</b> 7000)(ml)) <b>OR</b> No <b>AND</b> 42500 (ml) <b>and</b> 42000 (ml) oe
<b>Total marks for question</b>			<b>8</b>		

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Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q9(a)	A4	Process to find total cost or remaining money	1 or	J	3.99 + 4.49 (= 8.48) <b>OR</b> 7.50 – 4.49 (= 3.01) <b>OR</b> 7.50 – 3.99 (= 3.51)
	A4	Full process to find difference between full price and special offer	2 or	JK	'8.48' – 7.50 (= 0.98) <b>OR</b> 3.99 – '3.01' (= 0.98) <b>OR</b> 4.49 – '3.51' (= 0.98)
	I6	Accurate answer with correct money notation	3	JKL	£0.98 <b>OR</b> 98p correct money notation
	A5	Valid check	1	M	Valid check e.g reverse calculation or alternative method or appropriate estimation

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Question	Skills Standard	Process	Mark	Mark Grid	Evidence
<b>Q9(b)</b>	R3	Uses 60 minutes in an hour	1	N	e.g. Converts 135 mins to hours (2 hrs 15 mins) oe <b>OR</b> works in minutes throughout (time for film and journey to bus stop is 145 mins) <b>OR</b> Uses 60 in a build-up method for time or time line
	A4	Begins to process times: adds one time to 3.30 or film time to journey time or subtracts one time from bus time	1 or	P	e.g. 3.30 + '2 hrs 15' (= 5.45) <b>OR</b> '2 hrs 15 mins' + 10 mins (= 2 hrs 25 mins) oe <b>OR</b> 3.30 + 10 (=3.40) <b>OR</b> 5.50 – 10 mins (=5.40) <b>OR</b> 5.50 – '2 hrs 15' (= 3.35) <b>OR</b> 5.50 – 3.30 (= 2 hrs 20) oe
	R3	Full process to find total time or time of arrival at bus stop or figures to compare	2 or	PQ	e.g. 3.30 + '2 hrs 15' + 10 mins (= 5.55) <b>OR</b> '2 hrs 20 mins' oe <b>and</b> '2 hrs 25 mins' oe <b>OR</b> 5.50 – '2 hrs 15 mins' – 10 mins (= 3.25)
	I6	Valid decision with accurate figures	3	PQR	e.g. No <b>AND</b> 5.55 (pm) <b>OR</b> No <b>AND</b> 2 hrs 20 mins oe <b>and</b> 2 hrs 25 mins oe <b>OR</b> No <b>AND</b> 3.25 (pm) NB if PQR awarded, award mark N
<b>Total marks for question</b>			<b>8</b>		

Ofqual



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