

# Mark Scheme (Results)

June 2017

Functional Skills Mathematics Level 1

FSM01

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**FUNCTIONAL SKILLS (MATHEMATICS)  
MARK SCHEME – LEVEL 1 – JUNE 2017**

**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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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  $£12 \div 5$ ,

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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: Trip to Ireland**

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
<b>Q1(a)</b>	R2	Selects correct departure time or cheapest flight on given dates	1 or	A	Indicates departure time of 20:55 on any day <b>OR</b> Indicates 09:05 flight on 15 Jul
	I6	Full process to select correct flights	2	AB	20:55 on 14 Jul
<b>Q1(b)</b>	R1	Finds any route between Cork and Dublin could be on diagram, can miss out any places	1	C	e.g. C, M, G, T, D <b>OR</b> C, T, D <b>OR</b> 100, 46, 86, 113
	A4	Process to find the total distance of a correct route distances (can visit more than once, but must visit all places)	1 or	D	e.g. $100 + 46 + 86 + 113 (=345)$ <b>OR</b> $52 + 68 + 46 + 129 (=295)$ <b>OR</b> $100 + 68 + 86 + 129 (=383)$
	I6	Functional correct route with total distance visiting each place once Correct units	2	DE	C, M, G, T, D <b>and</b> 345 miles <b>OR</b> C, T, M, G, D <b>and</b> 295 miles <b>OR</b> C, M, T, G, D <b>and</b> 383 miles (in correct units)
<b>Total marks for question</b>			<b>5</b>		

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Question	Skills Standard	Process	Mark	Mark Grid	Evidence
<b>Q2</b>	R3	Starts process to work with rule	1 or	F	1.15 ÷ 5(=0.23) <b>OR</b> 1.15 × 6 (=6.9) <b>OR</b> 1.32 ÷ 6(=0.22) <b>OR</b> 1.32 × 5 (=6.6)
	A4	Complete process	2 or	FG	'0.23' × 6(=1.38) <b>OR</b> '6.9' ÷ 5(=1.38) <b>OR</b> '0.22' × 5(=1.1) <b>OR</b> '6.6' ÷ 6(=1.1)
	I6	Correct conclusion with accurate figures	3	FGH	Yes <b>and</b> (€)1.38 <b>OR</b> Yes <b>and</b> (£)1.1(0)
<b>Total marks for question</b>			<b>3</b>		

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Question	Skills Standard	Process	Mark	Mark Grid	Evidence
<b>Q3(a)</b>	R3	Uses consistent units	1	J	e.g. 3000(ml) <b>OR</b> 0.75(l) <b>OR</b> 0.5(l) <b>OR</b> 1(l) <b>OR</b> 1.5(l) <b>OR</b> 0.33(l) <b>OR</b> 0.66(l) May be seen in subsequent working
	R2	Starts process to add capacities or to subtract capacities from total	1 or	K	e.g. $750 \times 2 (=1500)$ oe <b>OR</b> $500 \times 2 (=1000)$ oe <b>OR</b> $330 \times 2 (=660)$ oe <b>OR</b> '3000' – 750 – 750 (=1500) oe <b>OR</b> $750 + 500 (=1250)$ <b>OR</b> $750 + 500 + 330(=1580)$
	A4	Complete process to find figures to compare	2 or	KL	e.g. '1500' + '1000' + '660' (=3160 ml) oe <b>OR</b> '3000' – '1500' – '1000' – '660' (= –160 ml) oe <b>OR</b> '(750 + 500 + 330)' $\times 2(=3160)$
	I6	Correct conclusion with accurate figures	3	KLM	Yes <b>and</b> 3160 (ml) <b>and</b> 3000 (ml) <b>OR</b> Yes <b>and</b> 3.16 (l) <b>OR</b> Yes <b>and</b> 160 (ml) (over) oe <b>OR</b> Yes and 3(l) 160 (ml)

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Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q3(b)	R2	Starts process to work with fraction	1 or	N	e.g. $24 \div 4 (=6)$ <b>OR</b> $3 \times 24 (=72)$ oe <b>OR</b> $16 \div 24 (=0.66\dots)$ oe <b>OR</b> $24 \div 16(=1.5)$ oe) <b>OR</b> $3 \div 4 (=0.75)$ <b>OR</b> $4 \div 3(=1.33\dots)$ <b>OR</b> $16 \div 3 (=5.33\dots)$ <b>OR</b> begins to work with equivalent fractions
	A4	Full process to work with fractions	2 or	NP	eg '6' $\times 3 (=18)$ <b>OR</b> '72' $\div 4 (=18)$ <b>OR</b> $16 \div 24 (=0.66\dots)$ oe <b>and</b> $3 \div 4 (=0.75)$ oe <b>OR</b> '5.33...' $\times 4 (=21.33\dots)$ <b>OR</b> '1.33..'oe and '1.5'oe
	I6	Correct conclusion with accurate figures	3	NPQ	No <b>and</b> 18 <b>OR</b> No <b>and</b> 0.6(6)... <b>and</b> 0.75 <b>OR</b> No <b>and</b> 3/4 <b>and</b> (needs to be deleted) 2/3 oe <b>OR</b> No <b>and</b> 21.(33)... <b>OR</b> No and 1.3(3).. and 1.5
	A5	Valid check	1	R	e.g. reverse process or alternative method
<b>Total marks for question</b>			<b>8</b>		



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**Section B: Cycle to work**

<b>Question</b>	<b>Skills Standard</b>	<b>Process</b>	<b>Mark</b>	<b>Mark Grid</b>	<b>Evidence</b>
<b>Q4(a)</b>	R1	Begins to prepare sheet	1 or	A	Input opportunities <b>AND</b> 1 of: Headings (S, F <b>and</b> HR) Headings (yes, no) Heading for total <b>OR</b> Provides correct total for yes or no or both
	R3	Improves sheet	2 or	AB	Input opportunities <b>AND</b> 2 of: Headings (S, F <b>and</b> HR) Headings (yes, no) Heading for total
	I6	Efficient data summary sheet	3	ABC	Efficient table with 3 of: Input opportunities Headings (S, F <b>and</b> HR) Headings (yes, no) Heading for total
	A4	Begins to complete sheet	1 or	D	At least 4 items of data entered correctly using tally marks or names <b>OR</b> at least 2 of: 4 in cell for yes and S 1 in cell for yes and HR 2 in cell for no and F 1 in cell for no and HR
	A5	Fills sheet correctly and total number of yes and no responses shown	2	DE	All items of data entered correctly <b>and</b> 5 in cell for yes and total <b>and</b> 3 in cell for no and total (see example table at the bottom of the mark scheme)

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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>Q4(b)</b>	R2	Works with monthly cost	1 or	F	$12 \times 56.85 (=682.2)$
	A4	Completes process to work with cost	2 or	FG	'682.2' + 750 (=1432.2)
	I6	Correct answer with correct money notation	3	FGH	£1432.20 (in correct money notation)
	A5	Valid check	1	J	Valid check, e.g. reverse process or estimation
<b>Total marks for question</b>			<b>9</b>		

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Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5	R2	Uses consistent units	1	K	75 (mins) <b>OR</b> 1 hr 12 mins <b>OR</b> (1hr) 15 mins May be seen in subsequent working
	A4	Process to work with time and distance	1 or	L	$4 \times 18$ (=72 mins) <b>OR</b> '75' $\div$ 4 (=18.75 miles) oe <b>OR</b> '75' $\div$ 18 (=4.16... mins)
	I6	Correct conclusion with accurate figures	2	LM	Decision <b>AND</b> 75(mins) <b>and</b> 72(mins) <b>OR</b> 1 hr 12 mins <b>and</b> 1 hr 15 mins oe <b>OR</b> [18.75, 19] (miles) <b>OR</b> (4.166..., 4.2] (mins) <b>OR</b> 3 mins less with 1 hr 12 mins <b>OR</b> 72 (mins)
<b>Total marks for question</b>			<b>3</b>		

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Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q6(a)	I6	Selects bike rack	1	N	Indicates C <b>or</b> E Award if indicates both
Q6(b)	R3	Starts to consider constraints	1 or	P	1 of: At least 1 rectangle drawn with side lengths 4 sq lengths by 1 sq length <b>or</b> 6 sq lengths by 1 sq length <b>or</b> in the ratio 4:1 <b>or</b> 6:1, At least 2 identical rectangles joined at shortest sides, At least 2 identical rectangles with longest sides joined to wall, $21 \times 50 (=1050)$ , $200 \div 50 (=4)$ <b>or</b> $300 \div 50 (=6)$ <b>or</b> Ft from N mark for their selection (they have lost N)
	A4	Develops diagram with constraints	2 or	PQ	At least 2 rectangles drawn with side lengths 4 sq lengths by 1 sq length <b>AND</b> joined at shortest sides <b>or</b> with longest sides joined to wall <b>OR</b> At least 2 rectangles drawn with side lengths 6 sq lengths by 1 sq length <b>AND</b> joined at shortest sides <b>or</b> with longest sides joined to wall Ft from N mark for their selection (they have lost N)
	I6	Correct diagram with full consideration of constraints	3	PQR	1 row of 5 rectangles 4 sq lengths by 1 sq length joined at shortest sides with longest sides joined to wall <b>OR</b> 1 row of 3 rectangles 6 sq lengths by 1 sq length joined at shortest sides with longest sides joined to wall
<b>Total marks for question</b>			<b>4</b>		

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**Section C: The farm**

<b>Question</b>	<b>Skills Standard</b>	<b>Process</b>	<b>Mark</b>	<b>Mark Grid</b>	<b>Evidence</b>
<b>Q7</b>	R2	Starts process to work with area or number of sheep	1 or	A	$200 \times 250 (=50000)$ <b>OR</b> $70 \times 800 (=56000)$
	A4	Full process to find figures to compare	2 or	AB	'50000' $\div$ 800 (=62.5) <b>OR</b> $200 \times 250 (=50000)$ <b>and</b> $70 \times 800 (=56000)$ <b>OR</b> '50000' $\div$ 70 (=714.28...) <b>OR</b> '56000' $\div$ 200 (=280) <b>OR</b> '56000' $\div$ 250 (=224)
	I6	Correct conclusion with accurate figures	3	ABC	No <b>and</b> 62 <b>or</b> 62.5 <b>or</b> 63 (sheep) <b>OR</b> No <b>and</b> 50000(m <sup>2</sup> ) <b>and</b> 56000(m <sup>2</sup> ) <b>OR</b> No <b>and</b> 714.(28...) (m <sup>2</sup> ) <b>OR</b> No <b>and</b> 280(m) <b>OR</b> No <b>and</b> 224(m)
<b>Total marks for question</b>			<b>3</b>		

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Question	Skills Standard	Process	Mark	Mark Grid	Evidence
<b>Q8(a)</b>	R1	Begins process to work with mean	1 or	D	$23 + 45 + 33 + 9 (=110)$ <b>OR</b> $26 \times 4 (=104)$
	A4	Completes process to find figures to compare	2 or	DE	'110' $\div 4 (=27.5)$ <b>OR</b> $23 + 45 + 33 + 9 \div 4$ <b>OR</b> $23 + 45 + 33 + 9 (=110)$ <b>AND</b> $26 \times 4 (=104)$
	I6	Correct conclusion with accurate figures	3	DEF	No <b>and</b> 27 or 27.5 or 28 <b>OR</b> No <b>and</b> 110 <b>and</b> 104
	A5	Valid check	1	G	Valid check e.g. reverse process or alternative method
<b>Q8(b)</b>	R1	Starts to draw bar chart	1 or	H	1 of: Labels for both axes (may be seen in title) Linear scale within range Plots 4 bars (with 2 mm tolerance)
	A4	Develops process	2 or	HJ	2 of: Labels for both axes (may be seen in title) Linear scale within range Plots 4 bars (with 2 mm tolerance)
	I6	Fully correct bar chart	3	HJK	All of: Labels for both axes (may be seen in title) Appropriate linear scale within range Plots 4 bars (with 2 mm tolerance) Minimum labels: week 1, 2, 3, 4, number (of lambs)
<b>Total marks for question</b>			<b>7</b>		

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Question	Skills Standard	Process	Mark	Mark Grid	Evidence
<b>Q9</b>	R3	Begins to find the price for farming supplies	1 or	L	$88 \times 2 (=176)$ <b>OR</b> $0.7 \times 88 (=61.6)$ oe
	A4	Full process to find the price for farming supplies	2	LM	'176' $\times$ 0.7 (=123.2) oe <b>OR</b> '61.6' $\times$ 2 (=123.2)
	R1	Begins to find the price for Hay Farm	1 or	N	e.g. $30 \div 6 (=5)$ <b>OR</b> $30 \times 6.3 (=189)$ <b>OR</b> $5 \times 6.3 (=31.5)$
	A4	Develops solution	2 or	NP	e.g. '5' $\times$ 5 (=25) <b>OR</b> $30 \div 6 (=5)$ <b>AND</b> '5' $\times$ 6.3 (=31.5)
	I6	Full process to find cost of 30 bales at Hay Farm	3 or	NPQ	e.g. '25' $\times$ 6.3 (=157.5) <b>OR</b> '189' – '31.5' (=157.5) <b>OR</b> '31.5' $\times$ 5 (=157.5)
	I6	Correct conclusion with accurate figures	4	NPQR	Farming Supplies <b>and</b> (£)123.2(0) <b>and</b> (£)157.5(0)
<b>Total marks for question</b>			<b>6</b>		

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Some examples data summary sheet Q4

dept	no	yes
S		
F		
HR		
Total	3	5

dept	no	yes
S		Bob Kam Shirley Mick
F	Des Katie	
HR	June	Abi
Total	3	5





Ofqual



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