



Functional Skills

Functional Mathematics

Level 2
Mark scheme

4368
March 2018

Version: 1.0 Final



1 8 3 G 4 3 6 8 / M S

Mark schemes are prepared by the Lead Assessment Writer and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same correct way. As preparation for standardisation each associate analyses a number of students' scripts. Alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Assessment Writer.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this mark scheme are available from aqa.org.uk

Glossary for Mark Schemes

Examinations are marked to award positive achievement.

Marks are awarded for demonstrating the following interrelated **process skills**.

Representing Selecting the mathematics and information to model a situation.

R.1 Candidates recognise that a situation has aspects that can be represented using mathematics.

R.2 Candidates make an initial model of a situation using suitable forms of representation.

R.3 Candidates decide on the methods, operations and tools, including ICT, to use in a situation.

R.4 Candidates select the mathematical information to use.

Analysing Processing and using mathematics.

A.1 Candidates use appropriate mathematical procedures.

A.2 Candidates examine patterns and relationships.

A.3 Candidates change values and assumptions or adjust relationships to see the effects on answers in models.

A.4 Candidates find results and solutions.

Interpreting Interpreting and communicating the results of the analysis.

I.1 Candidates interpret results and solutions.

I.2 Candidates draw conclusions in light of situations.

I.3 Candidates consider the appropriateness and accuracy of results and conclusions.

I.4 Candidates choose appropriate language and forms of presentation to communicate results and solutions.

In particular, individual marks are mapped onto the following **skills standards**.

- Representing** Making sense of the situations and representing them.
A learner can:
- Ra** Understand routine and non-routine problems in familiar and unfamiliar contexts and situations.
 - Rb** Identify the situation or problems and identify the mathematical methods needed to solve them.
 - Rc** Choose from a range of mathematics to find solutions.
- Analysing** Processing and using the mathematics.
A learner can:
- Aa** Apply a range of mathematics to find solutions.
 - Ab** Use appropriate checking procedures and evaluate their effectiveness at each stage.
- Interpreting** Interpreting and communicating the results of the analysis.
A learner can:
- la** Interpret and communicate solutions to multistage practical problems in familiar and unfamiliar contexts and situations.
 - lb** Draw conclusions and provide mathematical justifications.

To facilitate marking, the following categories are used:

- M** Method marks are awarded for a correct method which could lead to a correct answer.
- A** Accuracy marks are awarded when following on from a correct method. It is not necessary to always see the method. This can be implied.
- B** Marks awarded independent of method.
- ft** Follow through marks. Marks awarded following a mistake in an earlier step.
- SC** Special case. Marks awarded within the scheme for a common misinterpretation which has some mathematical worth.
- oe** Or equivalent. Accept answers that are equivalent.
eg, accept 0.5 as well as $\frac{1}{2}$

MARK SCHEME – FUNCTIONAL SKILLS MATHEMATICS – 4368 – MARCH 2018

Question	Answer	Mark	Comments
1(a)	£300	B1 Rb	
	Additional Guidance		
1(b)	Alternative method 1		
	(£)200	B1 Rb	winter fuel payment may be seen in working
	10.5(0) × 12 or 126 or 326 or 194	M1 Aa	
	326 and Yes or 200 and 194 and Yes	A2ft lb lb	ft B0M1 and a winter fuel payment used A1ft 326 or 200 and 194 ft B0M1 and a winter fuel payment used A1ft correct conclusion for their value(s) ft B1M1 and a winter fuel payment used or ft B0M1 and a winter fuel payment used
	Alternative method 2		
	(£)200	B1 Rb	winter fuel payment may be seen in working
	$\frac{320 - \text{their } 200}{12}$ or $\frac{120}{12}$	M1 Aa	
	10 and Yes	A2ft lb lb	ft B0M1 A1ft 10 ft B0M1 A1ft correct conclusion for their value ft B0M1 or B1M1

Question	Answer	Mark	Comments
1(b)	Alternative method 3		
	(£)200	B1 <i>Rb</i>	winter fuel payment may be seen in working
	10.5(0) × 12 or 126 and 320 – their 200 or 120	M1 <i>Aa</i>	
	126 and 120 and Yes	A2ft <i>lb lb</i>	ft B0M1 A1ft 126 and 120 ft B0M1 A1ft correct conclusion for their values ft B0M1 or B1M1
	Additional Guidance		

Question	Answer	Mark	Comments
1(c)	$11 \times 3 + 7.5 \times 5 = 70.5$ or $8 \times 7.5 + 3 \times 3.5 = 70.5$ or $11 \times 8 - 5 \times 3.5 = 70.5$ or $3 \times 3.5 + 3 \times 7.5 + 5 \times 7.5 = 70.5$	B2 Ra la	B1 11×3 or 33 or 7.5×5 or 37.5 or 8×7.5 or 60 or 3×3.5 or 10.5 or 11×8 or 88 or 5×3.5 or 17.5 or 3×7.5 or 22.5
	Additional Guidance		
	$11 \times 3 + 7.5 \times 5 = 33 + 30.5$ (error seen) = 70.5		B1
1(d)	$0.1 \times$ their 70.5 or 7.05	$1 - 0.1$ or 0.9	M1 Rc correct or ft their 70.5 from (c)
	63.45		A1ft Aa correct or ft their 70.5 from (c)
	Additional Guidance		
	$10\% \times 70.5$ not evaluated or evaluated incorrectly		M0

Question	Answer	Mark	Comments	
1(e)	their $63.45 \div 11$ or 5.7... or 5.8 or 6 (rolls) or $5 \times 11 = 55$	M1 Rc	correct or ft their 63.45 from (d) their 63.45 cannot be 70.5	
	6 (rolls)	M1 lb	rounds their 5.7... up to nearest integer M2 6×11	
	their $6 \times 26 \times 0.5$ or 78	M1 Ra	their 6 does not have to be an integer but must be > 5	
	$70.5 \div 6.5$ or 10.8... or 11 (rolls)	M1 Rb	must use 70.5	
	their $11 \div 4$ rounded down to nearest integer or 2 (packs)	M1 lb	their 11 must be a rounded up integer from calculation or decimal value seen 2 packs and 3 single rolls may be implied by calculation seen	
	$80 \times$ their 2 + $24.75 \times$ their 3 or $160 + 74.25$ or 234.25	M1 Ra	cost using special offer their 2 and their 3 must both be positive integers	
	312.25 with 6 (rolls) and 11 (rolls)	A1ft Aa	ft their 63.45 from (d)	
	Additional Guidance			
	Using 6 rolls for bottom layer and 3 packs for top layer $\rightarrow 78 + 3 \times 80 = 318$			M4M0M0
	Using 63.45 for 70.5 $\rightarrow 287.50$			M3M0M1M1
Using 70.5 for 63.45 $\rightarrow 325.25$			M0M5	
Using 63.45 for 70.5 and using 70.5 for 63.45 $\rightarrow 300.50$			M0M1M1M0M1M1	

Question	Answer	Mark	Comments
2(a)	Alternative method 1		
	5 × 35 × 2 or 350 or 6 × 20 × 2 or 240 or 4 × 8.5 or 34	M1 <i>Ra</i>	
	Any 2 of 5 × 35 × 2 or 350 6 × 20 × 2 or 240 4 × 8.50 or 34	M1 <i>Rc</i>	
	2 × 51 + their 350 + their 240 + 2 × 54.50 + their 34 or 102 + their 350 + their 240 +109 + their 34	M1 <i>Aa</i>	must add 5 different categories allow their 34 to be 8.50 must be at least 2 of each other amount from the table with at least 5 overnight stays
	835 and No	A2 <i>lb lb</i>	A1 835 A1ft correct conclusion for their value with 3rd M1 scored

Question	Answer	Mark	Comments
2(a) cont.	Alternative method 2		
	5 × 35 or 175 or 6 × 20 or 120 or 4 × 8.5 or 34	M1 <i>Ra</i>	
	Any two of 5 × 35 or 175 6 × 20 or 120 4 × 8.50 or 34	M1 <i>Rc</i>	
	2 × 51 + 2 × their 175 + 2 × their 120 + 2 × 54.5 + their 34 or 102 + 2 × their 175 + 2 × their 120 + 109 + their 34	M1 <i>Aa</i>	must add 5 different categories allow their 34 to be 8.50 must be at least 2 of each other amount from the table with at least 5 overnight stays
	835 and No	A2 <i>lb lb</i>	A1 835 A1ft correct conclusion for their value with 3rd M1 scored
	Additional Guidance		
	635 and Yes (other costs 2 × 20 = 40)		M3A1ft
	843.50 and No (baggage 5 × 8.50 = 42.50)		M3A1ft
	643.50 and Yes (other costs 2 × 20 = 40 and baggage 5 × 8.50 = 42.50)		M1M0M1A1ft

Question	Answer	Mark	Comments			
2(b)	Fully correct plan with all entries in table completed	B3 <i>Ra la la</i>	B2 Keswick and 50 and (Keswick and) Melmerby and 53 or Keswick and 50 and Melmerby (and Stanhope) and 53 B1 Keswick and 50 or $156 \div 3$ or 52			
	<table border="1"> <tr> <td>Whitehaven</td> <td>Keswick</td> <td>50</td> </tr> </table>		Whitehaven	Keswick	50	
	Whitehaven		Keswick	50		
	<table border="1"> <tr> <td>Keswick</td> <td>Melmerby</td> <td>53</td> </tr> </table>		Keswick	Melmerby	53	
	Keswick		Melmerby	53		
<table border="1"> <tr> <td>Melmerby</td> <td>Stanhope</td> <td>53</td> </tr> </table>	Melmerby	Stanhope	53			
Melmerby	Stanhope	53				
Additional Guidance						
B2 or B1 may be seen in working						

Question	Answer	Mark	Comments
2(c)	Alternative method 1		
	225 – 156 or 69	M1 Ra	
	their 69 ÷ 30 or 2.3(0) (h) or 2 h 18 min	M1 Rb	2 h 30 min or (actual travel time =) 2 h 20 min or $2\frac{1}{3}$ (h) with no method seen is M0M0
	11.00 + their 2 h 18 min + 2	M1 Aa	
	3.18 and Yes	A2 lb lb	A1 3.18 A1ft correct conclusion for their value with M3 scored
	Alternative method 2		
	225 – 156 or 69	M1 Ra	
	their 69 ÷ 30 or 2.3(0) (h) or 2 h 18 min	M1 Rb	2 h 30 min or (actual travel time =) 2 h 20 min or $2\frac{1}{3}$ (h) with no method seen is M0M0
	2 h + their 2 h 18 min or 4 h 18 min and 3.20 – 11.00 or 4 h 20 min	M1 Aa	
	4 h 18 min and 4 h 20 min and Yes	A2 lb lb	A1 4 h 18 min and 4 h 20 min A1ft correct conclusion for their values with M3 scored

Question	Answer	Mark	Comments	
2(c) cont.	Alternative method 3			
	225 – 156 or 69	M1 Ra		
	their 69 ÷ 30 or 2.3(0) (h) or 2 h 18 min	M1 Rb	2 h 30 min or (actual travel time =) 2 h 20 min or $2\frac{1}{3}$ (h) with no method seen is MOM0	
	11.00 + their 2 h 18 min or 1.18 and 3.20 – 2 or 1.20	M1 Aa		
	1.18 and 1.20 and Yes	A2 lb lb	A1 1.18 and 1.20 A1ft correct conclusion for their values with M3 scored	
	Alternative method 4			
	225 – 156 or 69	M1 Ra		
	their 69 ÷ 30 or 2.3(0) (h) or 2 h 18 min	(available travel time =) 3.20 – 11.00 – 2 or 2 h 20 min	M1 Rb	2 h 30 min or (actual travel time =) 2 h 20 min or $2\frac{1}{3}$ (h) with no method seen is MOM0
	(available travel time =) 3.20 – 11.00 – 2 or 2 h 20 min	their $2\frac{20}{60} \times 30$ or 70	M1 Aa	
	2 h 18 min and 2 h 20 min and Yes	69 and 70 and Yes	A2 lb lb	A1 2 h 18 min and 2 h 20 min or 69 and 70 A1ft correct conclusion for their values with M3 scored

Question	Answer	Mark	Comments
2(c) cont.	Alternative method 5		
	206 – 156 or 50 or 225 – 206 or 19	M1 <i>Ra</i>	
	their 50 ÷ 30 or 1.66... (h) or 1.67 (h) or 1 h 40 min or their 19 ÷ 30 or 0.63... (h) or 38 min	M1 <i>Rb</i>	
	11.00 + their 1 h 40 min + 2 + their 38 min	M1 <i>Aa</i>	
	3.18 and Yes	A2 <i>lb lb</i>	A1 3.18 A1ft correct conclusion for their value with M3 scored
	Alternative method 6		
	206 – 156 or 50 or 225 – 206 or 19	M1 <i>Ra</i>	
	their 50 ÷ 30 or 1.66... (h) or 1.67 (h) or 1 h 40 min or their 19 ÷ 30 or 0.63... (h) or 38 min	M1 <i>Rb</i>	
	their 1h 40 min + their 38 min + 2 or 4 h 18 min and 3.20 – 11.00 or 4 h 20 min	M1 <i>Aa</i>	
	4 h 18 min and 4 h 20 min and Yes	A2 <i>lb lb</i>	A1 4 h 18 min and 4 h 20 min A1ft correct conclusion for their values with M3 scored

Question	Answer	Mark	Comments
2(c) cont.	Alternative method 7		
	206 – 156 or 50 or 225 – 206 or 19	M1 <i>Ra</i>	
	their 50 ÷ 30 or 1.66... (h) or 1.67 (h) or 1 h 40 min or their 19 ÷ 30 or 0.63... (h) or 38 min	M1 <i>Rb</i>	
	11.00 + their 1 h 40 min + their 38 min or 1.18 and 3.20 – 2 or 1.20	M1 <i>Aa</i>	
	1.18 and 1.20 and Yes	<i>A2</i> <i>lb lb</i>	A1 1.18 and 1.20 A1ft correct conclusion for their values with M3 scored
	Alternative method 8		
	206 – 156 or 50 or 225 – 206 or 19	M1 <i>Ra</i>	
	their 50 ÷ 30 or 1.66... (h) or 1.67 (h) or 1 h 40 min or their 19 ÷ 30 or 0.63... (h) or 38 min	M1 <i>Rb</i>	
	their 1 h 40 min + their 38 min or 2 h 18 min and 3.20 – 11.00 – 2 or 2 h 20 min	M1 <i>Aa</i>	
	2 h 18 min and 2 h 20 min and Yes	<i>A2</i> <i>lb lb</i>	A1 2 h 18 min and 2 h 20 min A1ft correct conclusion for their values with M3 scored

Question	Answer	Mark	Comments
2(c) cont.	Alternative method 9		
	206 – 156 or 50 or 225 – 206 or 19	M1 <i>Ra</i>	
	their 50 ÷ 30 or 1.66... (h) or 1.67 (h) or 1 h 40 min	M1 <i>Rb</i>	
	3.20 – 11.00 – their 1 h 40 min – 2 or 40 min and their $\frac{40}{60} \times 30$ or 20	M1 <i>Aa</i>	
	19 and 20 and Yes	A2 <i>lb lb</i>	A1 19 and 20 A1ft correct conclusion for their values with M3 scored
	Additional Guidance		
	Allow 24-hour clock notation throughout		
	Ignore am/pm		
	Allow decimal times for up to M3		

MARK SCHEME – FUNCTIONAL SKILLS MATHEMATICS – 4368 – MARCH 2018

Question	Answer	Mark	Comments
3(a)	1.8 × 43 + 32 or 77.4 + 32	M1 Rc	
	109.4	A1 Aa	
	Additional Guidance		
	Mark holistically with 3(a) Check		
3(a) Check	Reverse method eg $(109.4 - 32) \div 1.8 = 43$ or check by rounding eg $2 \times 40 + 30 = 110$	B1ft Ab	must reverse to 43 or 1.8 or 32 or 0
	Additional Guidance		
	Mark holistically with 3(a)		
	$109.4 - 32 \div 1.8 = 43$		B0

MARK SCHEME – FUNCTIONAL SKILLS MATHEMATICS – 4368 – MARCH 2018

Question	Answer	Mark	Comments
3(b)	15	B1 Rb	
	Additional Guidance		
3(c)	60 ÷ 12 or 5 (across) or 25 ÷ 8 or 3.(1...) (back) or 40 ÷ 19 or 2.(1...) (up)	M1 Rb	allow 5 × 12 or 3 × 8 or 2 × 19
	their 5 and their 3 and their 2	M1 lb	must be integers, rounded down when necessary
	their 5 × their 3 × their 2	M1 Aa	do not have to be integers
	30	A1 Aa	
	Additional Guidance		
	Division of volumes (60 × 25 × 40) ÷ (2 × 8 × 19) = 32.89... or 32 or 33		Zero
	5 + 3 + 2 = 10		M1M1M0
	Answer only of 10		Zero

MARK SCHEME – FUNCTIONAL SKILLS MATHEMATICS – 4368 – MARCH 2018

Question	Answer	Mark	Comments
3(d)	$65 \times 1.6(0)$ or 104 or $(98 - 65) \times 1.25$ or 33×1.25 or 41.25 or 145.25	M1 <i>Ra</i>	
	$\frac{2}{3} \times 54$ or 36	M1 <i>Rc</i>	allow $0.66... \times 54$ or 0.67×54 do not allow 0.6×54 or 0.7×54
	their $36 \times 3.5(0) +$ $(54 - \text{their } 36) \times 2.5(0)$ or their $36 \times 3.5(0) + 18 \times 2.5(0)$ or 126 + 45 or 171 or 316.25	M1 <i>Aa</i>	their 36 must be an integer < 54
	their 104 + their 41.25 + their 126 + their 45 – 150 or their 145.25 + their 171 – 150 or their 316.25 – 150 or their 104 + their 41.25 + their 126 + their 45 – 180 or their 145.25 + their 171 – 180 or their 316.25 – 180 or their 104 + their 41.25 + their 126 + their 45 or their 145.25 + their 171 or their 316.25 and 180 +150 or 330	M1 <i>Aa</i>	must add 4 components and subtract 150 or subtract 180 or must add 4 components and add 150 and 180
	166.25 and No (less than 180) or 136.25 and No (less than 150) or 330 and 316.25 and No	A2 <i>lb lb</i>	A1 166.25 or 136.25 or 330 and 316.25 A1ft correct conclusion for their value(s) with 4th M1 scored
Additional Guidance			

Question	Answer	Mark	Comments
4(a)	163 ÷ 5 or 32.6 or 165 ÷ 5 or 160 ÷ 5 = 32 or 32 × 5 = 160 or 33 × 5 = 165	M1 Aa	
	33	A1 Ib	
	Additional Guidance		
	Mark holistically with 4(a) Check		
4(a) Check	Reverse calculation eg 32.6 × 5 = 163 or alternative method	B1ft Ab	
	Additional Guidance		
	Mark holistically with 4(a)		
	33 × 5 = 163 or 32 × 5 = 163		B0

Question	Answer	Mark	Comments
4(b)	Alternative method 1 Using means		
	61 + 50 + 54 + 53 + 63 + 56 + 50 + 55 or 442 or 51 + 54 + 62 + 57 + 60 + 55 or 339	M1 <i>Rb</i>	
	their 442 ÷ 8 or 55.25 or their 339 ÷ 6 or 56.5	M1 <i>Aa</i>	allow 55 or 55.2 or 55.3 with 442 seen allow 56 or 57 with 339 seen
	55.25 and 56.5 and Yes	A2 <i>lb lb</i>	allow 55 or 55.2 or 55.3 with 442 seen allow 56 or 57 with 339 seen A1 55.25 and 56.5 A1ft correct conclusion for their means with M2 scored
	Alternative method 2 Using medians		
	50, 50, 53, 54, 55, 56, 61, 63 or 51, 54, 55, 57, 60, 62	M1 <i>Rb</i>	
	(54 + 55) ÷ 2 or 54.5 or (55 + 57) ÷ 2 or 56	M1 <i>Aa</i>	
	54.5 and 56 and Yes	A2 <i>lb lb</i>	A1 54.5 and 56 A1ft correct conclusion for their medians with M2 scored

Question	Answer	Mark	Comments	
4(b) cont.	Alternative method 3 Scaling totals			
	61 + 50 + 54 + 53 + 63 + 56 + 50 + 55 or 442 or 51 + 54 + 62 + 57 + 60 + 55 or 339	M1 <i>Rb</i>		
	their $442 \times \frac{6}{8}$ or 331.5	their $339 \times \frac{8}{6}$ or 452	M1 <i>Aa</i>	allow 331 or 332 with 442 seen
	339 and 331.5 and Yes	442 and 452 and Yes	A2 <i>lb lb</i>	A1 339 and 331.5 or 442 and 452 A1ft correct conclusion for their values with M2 scored
	Additional Guidance			
	393.875 and 293(.1...) or 293.2			M1M1
	393.875 and 293(.1...) or 293.2 and Yes			M1M1A1ft

4(c)	$\frac{4}{5}$ or 0.8 or 80%	B1 <i>Aa</i>	
	Additional Guidance		
	4 out of 5 or 4 : 5		B0
	Ignore words eg $\frac{4}{5}$ and 4 out of 5		B1
	$\frac{4}{5}$ and 4 : 5		B0
	Ignore change of form between fraction, decimal and percentage if correct answer seen		B1

Question	Answer	Mark	Comments
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4(d)	Alternative method 1		
	(Score for questions 1 to 5) 5, 5, 0, 5, 5 or 4×5 or 20	M1 Ra	Zeros may be blanks or dashes
	(Score for questions 6 to 10) -1, 6, 6, -1, 0 or $2 \times 6 + 2 \times -1$ or $12 - 2$ or 10	M1 Rb	Zeros may be blanks or dashes
	(Score for questions 11 to 15) -2, 0, 0, 6, -2 or $1 \times 6 + 2 \times -2$ or $6 - 4$ or 2	M1 Aa	Zeros may be blanks or dashes
	32	A1 Aa	
	Alternative method 2		
	4×5 or 20	M1 Ra	
	3×6 or 18	M1 Rb	
	2×-1 and 2×-2 or -2 and -4 or -6	M1 Aa	
	32	A1 Aa	
	Additional Guidance		

Question	Answer	Mark	Comments
4(e)	Alternative method 1		
	84 000 × 0.15 or 12 600	M1 Ra	working out 85% is M0
	their 12 600 ÷ (1 + 4) or 2520	M1 Rc	
	their 12 600 ÷ (1 + 4) × 4 or their 12 600 – their 12 600 ÷ (1 + 4)	M1 Aa	$12\,600 \times \frac{4}{5}$ scores M3
	10 080 and Yes	A2 lb lb	A1 10 080 A1ft correct conclusion for their value with 2nd and 3rd M1 scored
	Alternative method 2		
	84 000 × 0.15 or 12 600	M1 Ra	working out 85% is M0
	10 000 ÷ 4 or 2500	M1 Rc	
	10 000 ÷ 4 × 5 or 10 000 + 10 000 ÷ 4 or 12 500	M1 Aa	
	12 500 and 12 600 and Yes	A2 lb lb	A1 12 500 and 12 600 A1ft correct conclusion for their values with 2nd and 3rd M1 scored

Question	Answer	Mark	Comments
4(e) cont.	Alternative method 3		
	84 000 \div (1 + 4) or 18 800	M1 <i>Ra</i>	
	84 000 \div (1 + 4) \times 4 or 67 200	M1 <i>Rc</i>	
	their 67 200 \times 0.15	M1 <i>Aa</i>	working out 85% is M0
	10 080 and Yes	<i>A2</i> <i>lb lb</i>	A1 10 080 A1ft correct conclusion for their value with 1st and 2nd M1 scored
	Additional Guidance		