Functional Skills Level 1
MATHEMATICS
8361/2

Paper 2 Calculator

Mark scheme

January 2022

Version: 1.0 Final

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 Examiner.

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

Functional Skills examinations are marked in such a way as to award positive achievement wherever possible. Thus, for Functional Skills Mathematics papers, marks are awarded under various categories.

If a student uses a method which is not explicitly covered by the mark scheme the same principles of marking should be applied. Credit should be given to any valid methods. Examiners should seek advice from their senior examiner if in any doubt.

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 for correct working following a mistake in an earlier step.
SC	Special case. Marks awarded for a common misinterpretation which has some mathematical worth.
M dep	A method mark dependent on a previous method mark being awarded.
B dep	A mark that can only be awarded if a previous independent mark has been awarded.
oe	Or equivalent. Accept answers that are equivalent. eg accept 0.5 as well as $\frac{1}{2}$
[a, b]	Accept values between a and b inclusive.
[a, b)	Accept values a ≤ value < b
3.14 …	Accept answers which begin 3.14 eg 3.14, 3.142, 3.1416
Use of brackets	It is not necessary to see the bracketed work to award the marks.

Examiners should consistently apply the following principles.

Diagrams

Diagrams that have working on them should be treated like normal responses. If a diagram has been written on but the correct response is within the answer space, the work within the answer space should be marked. Working on diagrams that contradicts work within the answer space is not to be considered as choice but as working, and is not, therefore, penalised.

Responses which appear to come from incorrect methods

Whenever there is doubt as to whether a student has used an incorrect method to obtain an answer, as a general principle, the benefit of doubt must be given to the student. In cases where there is no doubt that the answer has come from incorrect working then the student should be penalised.

Questions which ask students to show working

Instructions on marking will be given but usually marks are not awarded to students who show no working.

Questions which do not ask students to show working

As a general principle, a correct response is awarded full marks.

Misread or miscopy

Students often copy values from a question incorrectly. If the examiner thinks that the student has made a genuine misread, then only the accuracy marks (A or B marks), up to a maximum of 2 marks are penalised. The method marks can still be awarded.

Further work

Once the correct answer has been seen, further working may be ignored unless it goes on to contradict the correct answer.

Choice

When a choice of answers and/or methods is given, mark each attempt. If both methods are valid then M marks can be awarded but any incorrect answer or method would result in marks being lost.

Work not replaced

Erased or crossed out work that is still legible should be marked.

Work replaced

Erased or crossed out work that has been replaced is not awarded marks.

Premature approximation

Rounding off too early can lead to inaccuracy in the final answer. This should be penalised by 1 mark unless instructed otherwise.

Continental notation

Accept a comma used instead of a decimal point (for example, in measurements or currency), provided that it is clear to the examiner that the student intended it to be a decimal point.

Section A

Q	Answer	Mark	Comments
1	0.069	B1	

Q	Answer	Mark	Comments
2	c	B1	

Q	Answer	Mark	Comments
	3200	B1	
3	**Additional Guidance**		
	Ignore units		

Q	Answer	Mark	Comments
	$\frac{1}{6}$	B1	oe fraction decimal or percentage
	Additional Guidance		
4	decimal-accept 0.166(66666..) or 0.167 percentage-accept 16.6(666…) or 16.7 or 0.16̇ etc		
	Ignore probability words if $\frac{1}{6}$ seen		
	1 out of 6		B0
	1 in 6		B0
	1 : 6		B0
	eg 1 in 6 and $\frac{1}{6}$ is choice		B0

Q	Answer	Mark	Comments
5	2.5 × 8 or 20 or 2.5 × 800 000 or 2 000 000	M1	oe eg 16 + 4
	20 kilometres or 20 km or 2 000 000 cm	A1	

Q	Answer	Mark	Comments
6	10 + 6 + 4 + 12 + 5 + 17 or 54	M1	
	their 54 ÷ 6	M1dep	
	9	A1	
	Additional Guidance		
	39.8(3…) implies M1		

Q	Answer	Mark	Comments
7	**Alternative method 1**		
	1600 × 0.2 or 320	M1	oe
	1600 − their 320	M1dep	1600 × 0.8 implies M2
	1280	A1	
	Alternative method 2		
	1 – 0.2 or 0.8 or $\frac{80}{100}$ or 80%	M1	
	their 0.8 × 1600	M1dep	oe
	1280	A1	
	Additional Guidance		
	Ignore any units eg £ for answer		
	1600 ÷ 20 = 80		M0M0A0

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Section B

Q	Answer	Mark	Comments
	Alternative method 1		
	35 × 14 or 490	M1	may be implied
	their 490 + 130 or 620	M1dep	
	their 620 + 872 + £1980 or 3472 or 3500 − 872 − 1980 or 648	M1	oe their 620 may be 2310 or from 165 × 14 their 620 cannot be 130 or 490
	3472 and Yes or 620 and 648 and Yes or She has 28 spare	A1	
	Alternative method 2		
	3500 − 872 − 1980 or 648	M1	
	their 648 − 130 or 518	M1dep	
8 (a)	their 518 ÷ 35 or 14.8 or their 518 ÷ 14 or 37 or 35 × 14 or 490	M1	oe their 518 must be less than 3500
	14.8 and Yes or 37 and Yes or 518 and 490 and Yes or She has 28 spare	A1	
	Additional Guidance		
	Yes can be implied eg she has enough		
	Alt 1 130 + 35 × 14 = 165 × 14 (= 2310) but may pick up the 3rd M1		M0M0
	Alt 1 3500 − 872 − 1980 − 130 + 35 × 14 = 1008 comes from omitted brackets but correct multiplication of 35 and 14		M1M0M0M0

Q	Answer	Mark	Comments
	Alternative method 1		
	$200 \times 14 - 192$ or $2800 - 192$ or 2608	M1	euros needed
	their $2608 \div 1.16$ or $2248.(2…)$ or 2248.3	M1	their 2608 can be 2800 or from $200 \times 14 - 192$
	$2248.(2..)$ and No or 2248.3 and No	A1	
	Alternative method 2		
	$200 \times 14 - 192$ or $2800 - 192$ or 2608	M1	euros needed
	2200×1.16 or 2552	M1	
	2608 and 2552 and No	A1	
8 (b)	**Alternative method 3**		
	$200 \times 14 - 192$ or $2800 - 192$ or 2608	M1	
	their $2608 \div 2200$ or $1.18(…)$ or 1.19	M1	their 2608 can be 2800 or from $200 \times 14 - 192$
	$1.18(…)$ and No or 1.19 and No	A1	
	Alternative method 4		
	2200×1.16 or 2552	M1	
	(their $2552 + 192) \div 14$ or 196 or (their $2552 + 192) \div 200$ or $13.(72)$	M1	
	196 and No or $13(.72)$ and No	A1	

8(b) cont'd	**Alternative method 5**		
	2200 × 1.16 or 2552	M1	
	their 2552 + 192 or 2744 **and** 200 × 14 or 2800	M1	
	2744 and 2800 and No or She will be 56 short	A1	
	Alternative method 6		
	200 ÷ 1.16 or 172.41 and 192 ÷ 1.16 or 165.52	M1	
	14 × their 172.41 − their 165.52 or 2248.(2…) or 2248.3	M1	
	2248.(2…) and No or 2248.3 and No	A1	
	Additional Guidance		
	Ignoring the 192 can score a maximum of 1 mark		
	Ignore fw eg finding the shortfall if correct values and decision have been seen		

Q	Answer	Mark	Comments
8(c)	98 × 2 × 15 or 2940(p) or 98 × 2 × 0.15 or (£)29.4(0)	M2	full calculation M1 one correct product 98 × 2 or 196 or 98 × 15 or 1470 or 98 × 0.15 or 14.7(0) or 2 × 15 or 30 or 2 × 0.15 or 0.3(0)
	145 − (their 29.40 + 85) or 145 − 114.4(0) or 30.6	M1	must be consistent units
	30.60	A1	correct money notation condone £30.60p SC2 45.3(0)

Q	Answer	Mark	Comments
9 (a)	16 − 6 or 10 or 6 + 13 or 19	M1	missing length - may be implied may be on diagram
	6 + 6 + their 19 + 16 + 13 + their 10 or 70	M1dep	oe perimeter of shape implies first M1 adds all six sides
	their 70 ÷ 20 or their 70 ÷ 3.5 or 20 × 3.5	M1	oe eg full build-up of 20s to their total
	70 ÷ 20 = 3.5 or 70 ÷ 3.5 = 20 or 20 × 3.5 = 70 with correct method to get to 70 seen	A1	may be shown by build-up if 70 already seen

Additional Guidance		
20 × 3.5 = 70 with no method seen for perimeter gains 3rd M1 only		
16 + 13 + 6 + 6 = 41 41 ÷ 20 = 2.05	M0M0M1A0	
build-up eg perimeter = 70 seen then 20 = 1hr, 20 = 1hr, 20 = 1hr, 10 = ½ hr = 3.5 hours	M1M1M1A1	
Ignore units		
In the third mark their 70 is whatever they think the perimeter should be -which may be area		

Q	Answer	Mark	Comments
	Alternative method 1		
	3 hours 30 mins or 210 minutes seen or used	B1	changing 3.5 hours to hours and minutes may be implied
	40 (mins) + 40 (mins) + 20 (mins) + their 3 hours 30 minutes or 100 minutes + 3.5 × 60 or 310 minutes or 5 hours 10 minutes	M1	oe their 3 hours 30 minutes cannot be 3.5 310 mins or 5 h 10 mins implies B1 condone 5.10 for 5h 10
	4 pm − their 5 hours 10 minutes	M1dep	
9 (b)	10.50 (am)	A1ft	oe allow in any format eg 10 to 11 ft their minutes for 0.5 hours SC3 10.50 pm
	Alternative method 2		
	3 hours 30 mins or 210 minutes seen or used	B1	changing 3.5 hours to hours and minutes may be implied
	4 pm − 40 (mins) − their 3 hours 30 minutes − 20 (mins) − 40 (mins)	M2	oe M1 subtracts at least two times from 4 pm eg 4 pm − 40 (mins) − their 3 hours 30 minutes (= 11.50) eg 3pm may imply 4 pm – 20 mins – 40 mins
	10.50 (am)	A1ft	oe allow in any format eg 10 to 11 ft their minutes for 0.5 hours SC3 10.50 pm

Additional Guidance is on the next page

	Additional Guidance	
9 (b) cont'd	Use of 3 hours 50 minutes for 3.5 hours can gain max 3 marks eg 40 (mins) + 40 (mins) + 20 (mins) + 3 hours 50 minutes = 5 hours 30 mins 4 pm − 5 hours 30 mins = 10.30 (am)	B0 M1 M1A1ft
	40 + 3.5 + 20 + 40 = 103.5 4 pm − 103.5	B0M0 M0depA0
	Choosing a random start time and adding the 4 times can score the first M1 for implied addition of the 4 times (Alt 1) but not the second M1. The B1 may also be awarded for 3 hrs 30 seen or used eg 10 am, 10.40, 2.10, 2.30, 3.10 (added 40 mins then 3h 30 then 20 mins then 40 mins)	B1M1M0

Q	Answer	Mark	Comments
9 (c)	(Area of deer park) 6 × 6 or 36	M1	may be on diagram
	(Area of sheep field) 16 × 13 or 208	M1	may be on diagram
	5 × their 36 or 180 or their 208 ÷ 5 or 41(.6) or their 208 ÷ their 36 or 5.7(7…) or 5.8	M1dep	oe dep on M2
	180 and 208 and Yes or 36 and 41(.6) and Yes or 5.7(7…) or 5.8 and Yes	A1	
	Additional Guidance		
	Allow 42 for 41.(6) for 42 if 208 seen		
	Allow 6 for 5.7(7..) if 208 seen		
	Yes can be implied eg it is more than 5 times bigger		

Q	Answer	Mark	Comments
10 (a)	**Alternative method 1**		
	$\dfrac{2}{5000}$ or $\dfrac{1}{2500}$ or 2500 seen	M1	
	$\dfrac{1}{2500}$ and No	A1	
	Alternative method 2		
	$\dfrac{1}{250}$ × 5000 or 20 or $\dfrac{20}{5000}$	M1	
	20 and No	A1	
	Alternative method 3		
	Explains that if two are faulty a probability of $\dfrac{1}{250}$ would mean there were only 500 badges made, not 5000	B2	B1 $\dfrac{2}{500}$

Q	Answer	Mark	Comments
10 (b)	**Alternative method 1**		
	5000 + 5000 + 1400 or 11 400 or 25 000 − at least two of the three values	M1	
	25 000 − (5000 + 5000 + 1400) or 25 000 − 11 400 or 13 600 or 6800	M1dep	oe implied by their Thursday + their Friday = 13 600 implies M2
	6800 in each of Thursday and Friday	A1	
	Alternative method 2		
	5000 − 1400 or 3600	M1	extra badges needed
	their 3600 ÷ 2 (+ 5000) or 1800 (+ 5000) or 6800	M1dep	
	6800 in each of Thursday and Friday	A1	

	Additional Guidance	
Mark table first. 6800 in Thurs and Fri is full marks		
Award up to M2 for method in working lines even if the table contradicts eg 13 600 in working lines then 6300 in Thursday and Friday		M1M1A0
If table is blank all 3 marks can be gained from method and correct values stated for Thurs and Fri in the working lines If table is incorrect then up to two method marks can be gained from working lines		

Q	Answer	Mark	Comments
10 (c)	**Alternative method 1**		
	5000 × 17 or 85 000 (p) or 5000 × 0.17 or (£)850	M1	
	their 850 + 265 or 1115	M1dep	oe must be consistent units
	their 1115 × 0.4 or 446	M1	oe their 1115 × 1.4 is M2 dep on previous M1
	their 1115 + their 446 or 1561	M1dep	
	their 1561 ÷ 5000 or 0.312(2)	M1	
	32	A1	
	Alternative method 2		
	(£)265 ÷ 5000 or 0.053	M1	machine costs per badge in pounds
	their 0.053 × 100 or 5.3 (p)	M1dep	machine costs per badge in pence 5.3 p implies first M1
	their 5.3 + 17 or 22.3	M1	must be consistent units
	their 22.3 × 0.4 or 8.92	M1	their 22.3 × 1.4 is M2
	their 22.3 + their 8.92 or 31.2(2)	M1dep	dep on previous M1
	32	A1	

Additional Guidance is on the next page

	Additional Guidance	
	Students can work in pence throughout or pounds throughout or convert at any point However an answer in pounds loses the accuracy mark	
10 (c) cont'd	The two marks for increasing a value by 40% are independent of other work eg 5000 ÷ 17 = 294.12 294.12 + 265 = 559.12 559.12 × 0.4 = 223.65 559.12 + 223.65 = 778.77 778.77 ÷ 5000 = 0.156… 16 p per badge	M0 M0 dep M1 M1 dep M1 A0
	Example of converting incorrectly leading to inconsistent units 5000 × 17 = 85 000 (p) = £85 85 + 265 = 350 350 × 0.4 = 140 350 + 140 = 490 490 ÷ 5000 = 0.098 9.8 = 10 p per badge	M1 M0 M1 M1dep M1 A0
	Using 85 000 with 265 can score up to 4 marks 5000 × 17 = 85 000 85 000 + 265 = 85 265 85 265 × 0.4 = 34 106 82 565 + 34 106 = 119 371 119 371 ÷ 5000 = 23.8(7) 24 p per badge	M1 M0 M1 M1 M1 A0

Q	Answer	Mark	Comments
11 (a)	**Alternative method 1**		
	5 + 4 + 7 or 16	M1	
	their 16 × 8.85 or 141.6(0)	M1	
	230 − their 141.6(0) or 88.4(0)	M1dep	oe dep on M2
	2 × 8.85 or 17.7(0) or their 88.4(0) ÷ 8.85 or 9.9(…) or 10 or their 88.4(0) ÷ 2 or 44.2(0)	M1	oe their 88.4(0) cannot be 141.6(0)
	their 88.4(0) ÷ their 17.7(0) or 4.99(…) or their 9.9(..) ÷ 2 or their 44.2(0) ÷ 8.85 or 4.99(…)	M1dep	oe dep on previous M1
	5 with correct method seen and no arithmetical errors	A1	

Mark scheme and Additional Guidance continue on the next page

	Alternative method 2		
	5 × 8.85 or 44.25 or 4 × 8.85 or 35.4(0) or 7 × 8.85 or 61.95	M1	
	5 × 8.85 + 4 × 8.85 + 7 × 8.85 or 44.25 + 35.4(0) + 61.95 or 141.6(0)	M1	
11 (a) cont'd	230 − their 141.6(0) or 88.4(0)	M1dep	oe dep on M2
	2 × 8.85 or 17.7(0) or their 88.4(0) ÷ 8.85 or 9.9(…) or 10 or their 88.4(0) ÷ 2 or 44.2(0)	M1	oe their 88.4(0) cannot be 141.6(0)
	their 88.4(0) ÷ their 17.7(0) or 4.99(…) or their 9.9(..) ÷ 2 or their 44.2(0) ÷ 8.85 or 4.99(…)	M1dep	oe dep on previous M1
	5 with correct method seen and no arithmetical errors	A1	

Additional guidance continues on the next page

	Additional Guidance	
11 (a)	Condone misplacement of zero eg 17.70 being 17.07 for all method marks	
	The minimum correct method that must be seen to award full marks are the first 3 marks or a value of 88.4(0) from there they may not show the division, or may do build up, or may compare 88.4(0) with 88.5 (double time for 5 hours) with answer 5 However, any arithmetical error which may still lead to an answer of 5 will lose the accuracy mark	
	5 with no working	zero
	Build up to 230.10 for 5 hours double pay or 10 hours single pay can be used instead of subtracting 141.6(0) from 230 eg 16 × 8.85 = 141.6(0) 2 × 8.85 = 17.7(0) 141.6(0) + 17.70 = 159.3(0) 1hour not enough try 3 hrs 141.6(0) + 17.7 × 3 = 194.7(0) not enough try 5 hours 141.60 + 17.70 × 5 = 230.10 just enough answer 5 hours	6 marks

Q	Answer	Mark	Comments
11 (b)	**Alternative method 1**		
	72.9(0) ÷ 2 or 36.45	M1	oe
	72.9(0) ÷ 5 or 14.58	M1	51.03 implies M2
	72.9(0) − (their 36.45 + their 14.58) or 72.9(0) − 51.03	M1dep	dep on gaining at least one M1 may be implied by answer
	21.87	A1	SC2 29.16
	Alternative method 2		
	$\dfrac{5}{10} + \dfrac{2}{10}$ or $\dfrac{7}{10}$ or 0.5 + 0.2 or 0.7	M1	oe common denominators or percentages
	$1 - \text{their } \dfrac{7}{10}$ or $\dfrac{3}{10}$ or 1 − 0.7 or 0.3	M1dep	
	72.9(0) ÷ 10 × 3 or 72.9(0) × 0.3	M1	oe
	21.87	A1	SC2 29.16

Q	Answer	Mark	Comments
	Alternative Method 1		
	Chooses bar chart or vertical line graph	B1	
	Suitable linear scale with sufficient labelling starting from zero up to at least 11	B1	may be on vertical or horizontal axis
	All bars/lines correct height and equal gaps or no gaps between them Must be just 3 bars of equal width or three lines	B1ft	ft their scale condone different width before first bar
11 (c)	Fully correct labelling for their choice of diagram	B1	must be a diagram (number of) nights and (number of) guests and values
	Alternative Method 2		
	Chooses pictogram	B1	
	Suitable key shown with an icon and scale	B1	A suitable key is one that can be split equally into 3, 6 and 11
	Fully correct pictogram with all rows correct and equal spaces between rows and icons	B2ft	ft their scale mark intention to align icons B1ft at least one row drawn correctly
	Additional Guidance		
	A bar chart may be horizontal or vertical but a vertical line graph must be vertical		
	Using 2, 3 and 4 for the heights and 11, 6 and 3 for the labels can score up to B3		
	If no diagram is drawn the 2nd mark may be awarded for either axis with a correct linear scale		
	Plotting just crosses for the heights and joining these heights loses the 1st and 3rd marks A vertical line graph drawn with heights also joined loses the 3rd mark		