Functional Skills Level 1
MATHEMATICS
8361/2

Paper 2 Calculator

Mark scheme

March 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

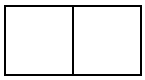
Rounding off too early can lead to inaccuracy in the final answer. This should be penalised by 1 mark unless instructed otherwise.

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	67 492, 92 836, 351 968, 472 410	B1	
	Additional Guidance		
	Ignore punctuation		

Q	Answer	Mark	Comments
2	C 	B1	accept diagram circled if no letter circled
	Additional Guidance		

Q	Answer	Mark	Comments
3	17.83	B1	
	Additional Guidance		
	17.830		B0

Q	Answer	Mark	Comments
4	$\frac{3}{4}$	B1	
	Additional Guidance		

Q	Answer	Mark	Comments
5	1945	B2	B1 576 or 1369
	Additional Guidance		

Q	Answer	Mark	Comments	
6	78 × 0.35 or 27.3	M1	oe	
	78 + their 27.3	M1dep	78 × 1.35 is M2	
	105.3	A1	SC1 50.7	
	Additional Guidance			
	Accept working and answer in money notation			
	For the first mark any build up method must be complete eg 1 10% = 7.8 5% = 3.9 7.8 + 7.8 + 7.8 + 3.9 = 26.3 eg 2 10% = 7.8 5% = 7.8 ÷ 2 = 3.4 35% = 7.8 × 3 + 3.4			M1 M1

Q	Answer	Mark	Comments	
7	7.2 × 4.5 × 3.8	M1	oe	
	123.12	A1		
	cm^3 or cubic centimetres	B1		
	Additional Guidance			
	Correct units mark is independent of the answer			
	Answer 123.12^2			M1A1B0
	Mark the units on the answer line. If no units are stated then credit can be given for correct units in the working.			

Q	Answer	Mark	Comments
8(a)	**Alternative method 1**		
	34 ÷ 8 or 4.25 or 5	M1	oe eg 8 = 1 teacher 8 = 1 teacher 8 = 1 teacher 8 = 1 teacher 2 = 1 teacher (implies 5)
	their 4.25 – 2 or 2.25 or their 5 – 2	M1dep	their 4.25 or their 5 cannot be 4
	3 with no incorrect working seen	A1	
	Alternative method 2		
	34 – 2 × 8 or 18	M1	oe
	their 18 ÷ 8 or 2.25	M1dep	
	3 with no incorrect working seen	A1	
	Alternative method 3		
	8 × 4 = 32 or 8 × 5 = 40	M1	
	5 – 2	M1	implies M2
	3 with no incorrect working seen	A1	

Q	Answer	Mark	Comments
8(b)	**Alternative method 1**		
	Adds all 3 times together eg 1 hour 30 + 20 (mins) + 45 (mins) or 90 + 20 + 45 or 155 or 2 hours 35 (mins)	M2	allow any format for 1 and a half hours M1 any two times added 1 hour 30 + 20 (mins) or 1 hour 50 (mins) or 90 + 20 or 110 or 1 hour 30 + 45 or 2 hour 15 (mins) or 90 + 45 or 135 or 20 + 45 or 65 or 1 hour 5 (mins)
	1 pm – their 2 hours 35 (mins)	M1dep	oe dep on at least M1 if working in mins they must convert their 155 mins to hours and mins
	10.25 (am)	A1	10.25 pm M3A0
	Alternative method 2		
	1 pm – 45 (mins) – 20 (mins) – 1 hour 30 (mins)	M3	for M2 or M1 allow any format for 1 and a half hours M2 subtracting two of the times from 1 pm 1 pm – 45 (mins) – 20 (mins) or 11.55 or 1 pm – 20 (mins) – 1 hour 30 (mins) or 11.10 or 1 pm – 45 (mins) – 1 hour 30 (mins) or 10.45 M1 subtracting one of the times from 1 pm 1 pm – 45 (mins) or 12.15 or 1 pm – 20 (mins) or 12.40 or 1 pm – 1 hour 30 (mins) or 11.30
	10.25 (am)	A1	10.25 pm M3A0

Additional Guidance follows on the next page

	Additional Guidance	
8(b) cont'd	Alt 1 Subtraction of their 2h 35 from 1 pm may be seen in chunks eg 1 pm – 2 hrs = 11 am, 11 am – 35 mins = 10.25 but the total of their 2h 35 must be subtracted for the 3rd M1	
	Alt 2 Errors in subtracting earlier times can still score marks for one or two times subtracted correctly eg 1 pm→12.20→12→10.30 shows 20 mins and 1h 30 mins subtracted correctly from their incorrect answer after first time subtracted	M2A0
	Alt 2 correct times may imply subtraction eg 1 pm→12.15 implies subtraction of 45 minutes	
	Choosing a random start time can gain up to M2 for implied addition of two(M1) or three times(M2) eg 9 am + 1 h 30 = 10.30 + 20 = 10.50 + 45 (= 11.35)	M2M0A0
	Conversion of their 155 minutes to the incorrect hours and minutes can still access the 3rd mark in Alt 1 eg 155 mins 155 = 1h 55 1 pm – 1h 55 11.05	M2 M1 A0

Q	Answer	Mark	Comments	
8(c)	**Alternative method 1**			
	3265 × 0.2 or 653	M1	oe	
	3265 – their 653 or 2612	M1dep	3265 × 0.8 M2	
	their 2612 ÷ 34	M1	calculation may be implied by answer	
	76.8(2…)	A1	may be implied by 77	
	77	B1ft	ft their 76.8(2…)	
	Alternative method 2			
	3265 ÷ 34 or 96.(0..)	M1		
	3265 ÷ 34 × 0.2 or 19.2…	M1		
	their 96.(0…) – their 19.2…	M1dep	dep on previous M1 their 96.(0…) × 0.8 M2 calculation may be implied by answer	
	76.8(2…)	A1	may be implied by 77	
	77	B1ft	ft their 76.8(2..)	
	Additional Guidance			
	Answer 77 with no working			M1M1M1A1 B1
	If their 76.8(2…) is an integer the B1ft cannot be accessed			
	If they do not show their decimal answer before rounding, then ft their 2612 ÷ 34 in Alt 1 and their 96.(0…) – their 19.2… in Alt 2 to award the rounding mark eg Alt 1 3265 × 0.2 = 653 Answer 19 (dividing 653 by 34 gives 19.2 which has been rounded to 19)			M1M0M1A0 B1ft

Q	Answer	Mark	Comments
9(a)	**Alternative method 1**		
	360 ÷ 36 or 10 or one correct angle (other than 180) in table	M1	implied by one correct angle drawn anywhere on pie chart ± 2°
	(180 and) 90 and 60 and 30	M1	seen in table or on pie chart implied by correct angles drawn anywhere on pie chart ± 2°
	All 3 angles drawn correctly	A1	± 2°
	4-sector pie chart labelled and in correct size proportion	B1	
	Alternative method 2		
	180 ÷ 2 or 90 or 180 ÷ 3 or 60 or 180 ÷ 6 or 30	M1	oe implied by one correct angle drawn ± 2°
	180 ÷ 2 or 90 and 180 ÷ 3 or 60 and 180 ÷ 6 or 30	M1	oe seen in table or on pie chart implied by correct angles drawn ± 2°
	All 3 angles drawn correctly	A1	± 2°
	4-sector pie chart labelled and in correct size proportion	B1	
	Additional Guidance		
	For the B1 the correct size proportion means starlings largest, sparrows next largest, blackbirds next largest and others smallest		
	For the B mark there must be labels for at least three of the four sectors		
	If lines for sectors are not straight then measure the angle to where the line joins the circumference		
	Fully correct labelled pie chart is full marks even if table is incorrect or blank		

Q	Answer	Mark	Comments	
9(b)	**Alternative method 1**			
	$\frac{9}{36}$ or $\frac{1}{4}$	M1	oe allow probability in words eg 9 in 36 eg 1 out of 4	
	$\frac{1}{4}$ and No	A1	allow 1 in 4 or 1 out of 4	
	Alternative method 2			
	$\frac{1}{3}$ × 36 or 12 or $\frac{1}{3}$ × 360 or 120	M1	oe 12 may be seen in $\frac{12}{36}$	
	12 and No or 120(°) and No	A1	12 may be seen in $\frac{12}{36}$	
	Alternative method 3			
	$\frac{9}{36}$ or 25%	M1	oe allow probability in words eg 9 in 36	
	25% and 33(.3..)% and No	A1		
	Additional Guidance			
	No may be implied eg the probability is less than a third			
	36 ÷ 4 = 9 or 36 ÷ 9 = 4 is insufficient for the method mark without $\frac{1}{4}$ seen			
	Using 30% for $\frac{1}{3}$ scores zero on Alt 2 In Alt 3 M1 can still be awarded for 25% and 30% and No			
	For Alt 2 if they are clearly comparing with a different bird then A0 eg 36 ÷ 3 = 12 No, 12 is greater than 6			M1A0

Q	Answer	Mark	Comments	
9(c)	**Alternative method 1**			
	36 + 25 + 30 + 42 + 44 + 26 + 56 or 259	M1		
	their 259 ÷ 7	M1dep		
	37	A1		
	decreased	A1 ft	ft their 37 with M2 awarded SC2 211 and increased SC1 211	
	Alternative method 2			
	36 + 25 + 30 + 42 + 44 + 26 + 56 or 259	M1		
	39 × 7 or 273	M1		
	259 and 273	A1		
	decreased	A1 ft	ft their 259 and their 273 with M2 awarded SC2 211 and increased SC1 211	
	Additional Guidance			
	Decreased with no working or value(s)			M0M0A0A0
	Condone 36 + 25 + 30 + 42 + 44 + 26 + 56 ÷ 7			M1M1
	Accept decreased written in working lines if boxes are blank			
	Ignore fw for calculating difference between means or totals			

Q	Answer	Mark	Comments
9(d)	**Alternative method 1**		
	21 (days) seen	B1	implied by 7 days seen and subsequent multiplication by 3 implied by 2625
	2.8 × 1000 or 2800	M1	
	125 × their 21 or 2625	M1	oe
	2625 and 2800 and Yes or 175 (g) left	A1ft	ft their 21 days ≥ 15
	Alternative method 2		
	21 (days) seen	B1	
	2.8 × 1000 or 2800 or 125 ÷ 1000 or 0.125	M1	
	their 2800 ÷ 125 (÷ 7) or 2.8 ÷ their 0.125 (÷ 7) or 22(.4) or 3.2	M1dep	oe 3.2 (weeks) implies first B1
	22(.4) (days) and 21 and Yes or 3.2 (weeks) and Yes	A1ft	ft their 21 days ≥ 15 accept one day left 3.2 (weeks) implies first B1

Mark scheme continues on the next two pages

9(d) cont'd	**Alternative method 3**		
	21 (days) seen	B1	implied by 7 days seen and subsequent multiplication by 3 implied by 133(.3…)
	2.8 × 1000 or 2800 or 125 ÷ 1000 or 0.125	M1	
	2.8 × 1000 ÷ their 21 or 133(.3…) or 2.8 ÷ their 21 or 0.133	M1	oe
	133(.3…) and Yes or 0.125 and 0.133 and Yes	A1ft	ft their 21 days ≥ 15
	Alternative method 4		
	21 (days) seen	B1	implied by 7 days seen and subsequent multiplication by 3 implied by 2625
	125 × their 21 or 2625	M1	oe
	their 2625 ÷ 1000 or 2.6(25)	M1	
	2.6(25) and Yes	A1ft	ft their 21 days ≥ 15

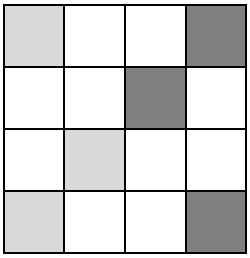
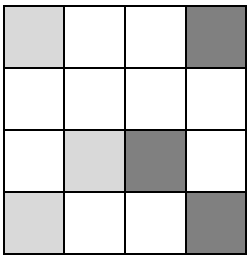
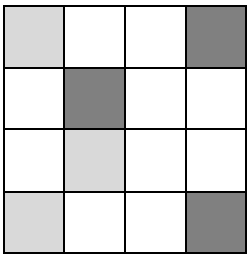
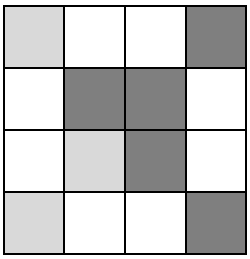
Mark scheme and Additional Guidance continue on the next page

9(d) cont'd	**Alternative method 5**		
	21 (days) seen	B1	implied by 2800 ÷ 3 and 125 × 7
	2.8 × 1000 or 2800	M1	
	2800 ÷ 3 or 933.(3…) and 125 × 7 or 875	M1	condone 5 used for 7 if 21 not seen
	933.(3…) and 875 and Yes	A1ft	ft if 15 days used
	Additional Guidance		
	Use of a different number of days in 3 weeks can score B0M1M1A1ft eg 1 15 days 2.8 × 1000 = 2800 15 × 125 = 1875 1875 and 2280 and Yes		 B0 M1 M1 A1ft
	In Alt 2 allow implied B1 for getting to 22(.4) and then stating it is just over 3 weeks A0 is awarded as they have not shown 3.2		B1M1M1 A0ft
	Accept use of 22 (more than 3 weeks) on all alternative methods eg Alt 1 125 × 22 = 2750 and 2800 yes		 B1M1M1A1

Q	Answer	Mark	Comments
10(a)	**Alternative method 1**		
	18 × 3.75 or 67.5(0)	M1	
	40 + their 67.5(0) or 107.5(0)	M1dep	
	6 × 20 – their 107.5(0) or 12.5	M1	oe implied by correct answer for their 107.5(0) their 107.5(0) < 120
	12.50	A1	correct money notation
	Alternative method 2		
	6 × 20 – 40 or 80	M1	oe
	18 × 3.75 or 67.5(0)	M1	
	their 80 – their 67.5(0) or 12.5	M1dep	dep on previous M1 their 80 > their 67.5(0)
	12.50	A1	correct money notation
	Additional Guidance		
	40 + 18 × 3.75 with no further work		M0
	Condone 12:50		
	Condone use of 107.05 for 107.5(0) for method marks only		
	40 + 18 × 3.75 = 217.5 120 – 217.5		M0M0M0

Q	Answer	Mark	Comments
10(b)	(Pack A) 22 and (Pack C) 6	B1	may be implied may be in table or in working lines
	their 6 × 4 or 24 or their 22 ÷ 4 or 5.5 or their 22 ÷ their 6 or 3.6… or 3.7	M1	pack C × 4 pack A ÷ 4 pack A ÷ pack C
	24 and (Pack A) 22 and No or 5.5 and (Pack C) 6 and No or 24 and (Pack A) 22 and needs 3 more of A or 3.6… and No or 3.7 and No	A1ft	oe ft their pack A and pack C totals and correct conclusion for their values
	Additional Guidance		
	Example 1 pack A total 18 pack C total 5 (ignoring the diagonal line) 18 ÷ 4 = 4.5 No (comparing with 5)		B0 M1A1ft
	Example 2 pack A total 27 pack C total 6 4 × 6 = 24 Yes		B0 M1A1ft
	Example 3 pack A total 22 pack C total 6 22 ÷ 6 = 4.7 Yes		B1 M1A0

Q	Answer	Mark	Comments
10(c)	One photo drawn 6 by 6	B1	
	Two photos drawn 3 by 4	B1	any orientation
	Three photos drawn 2.5 by 1.5	B1	any orientation
	All their rectangular photos correct orientation their 3 by 4 rectangles have width smaller than height (portrait) their 2.5 by 1.5 rectangles have width longer than height (landscape)	B1	must be at least one of each type of rectangular photo
	All their photos with at least a 1 cm space between them	B1	photos can be any size and orientation but there must be at least 3 of them
	Additional Guidance		
	For the first 4 marks, spaces between the photos are not required		
	Photos can be up against the edge of the grid		
	For the half squares mark intention		
	Allow shading or circles/ crosses in outside squares to indicate size		

Q	Answer	Mark	Comments
11(a)	Design with 3 more squares shaded and at least one line of symmetry eg   	B2	B1 a symmetrical design adding more than 3 shaded squares but less than 10 shaded squares eg 
	Additional Guidance		
	Allow any attempt at indicating the 3 extra squares-eg numbering 1,2 3 or ticks		
	Ignore any lines of symmetry		

Q	Answer	Mark	Comments
11(b)	**Alternative method 1**		
	correct method to work out the area of the cushion eg 58^2 or $14 \times 14 \times 16 + 4 \times 57$ or 3364	M3	M2 correct method to work out the area of the patchwork or length of the cushion eg 56^2 or $14 \times 14 \times 16$ or 3136 or 58 M1 14×14 or 196 or 14×4 (+ 1) or 56 or 57
	3364 and Yes or 236 spare	A1	
	Alternative method 2		
	14×4 or 56	M1	implied by 58
	their $56 + 1 + 1$ or 58	M1dep	adds two borders
	$\sqrt{3600}$ or 60	M1	
	58 and 60 and Yes	A1	
	Additional Guidance		
	Answer 3364^2 and Yes		M3A0
	Doubling 3364 (doing front and back) loses the accuracy mark		
	Ignore incorrect attempt to find the spare fabric if 3364 and Yes is seen		

Q	Answer	Mark	Comments	
11(c)	**Alternative method 1**			
	2 × 145 + 2 × 120 or 530	M1	oe	
	3.6 × 100 or 360 (cm)	M1	converting to cm	
	their 530 – their 360 or 170	M1dep	dep on M2	
	170 cm or 170 centimetres	A1	must have correct units	
	Alternative method 2			
	2 × 145 + 2 × 120 or 530	M1	oe	
	their 530 ÷ 100 or 5.3(0) (m)	M1	converting to m	
	their 5.3 – 3.6 or 1.7(0)	M1dep	dep on M2	
	1.7(0) m or 1.7(0) metres	A1	must have correct units	
	Alternative method 3			
	145 ÷ 100 or 1.45 or 120 ÷ 100 or 1.2(0)	M1	converting to m	
	145 ÷ 100 × 2 + 120 ÷ 100 × 2 or 5.3(0) (m)	M1	oe	
	their 5.3 – 3.6 or 1.7(0)	M1dep	dep on M2	
	1.7(0) m or 1.7(0) metres	A1	must have correct units	
	Additional Guidance			
	Answer 1 metre 70 centimetres or 1 m 70 cm			M1M1M1A1
	If the units are not stated on the answer line award A1 for 1.7(0) m or 170 cm seen in the working lines			