Functional Skills Level 2
MATHEMATICS
8362/2

Paper 2 Calculator

Mark scheme

June 2023

Version: 1.0 Final

236A8362/2/MS

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 $a \leq$ 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	D	B1	
	Additional Guidance		
	If option line is blank accept D indicated on the graph		

Q	Answer	Mark	Comments
2	0.804, 0.8074, 0.84, 0.847	B2	oe eg accept trailing zeros or no leading zeros B1 one value in the wrong place B1 for descending order
	Additional Guidance		
	eg 0.84, 0.804, 0.8074, 0.847		B1
	eg 0.804, 0.84, 0.847, 0.8074		B1

Q	Answer	Mark	Comments
3	Cuboid 2 cm by 4 cm by 5 cm correctly drawn on isometric paper	B2	any orientation B1 any cuboid correctly drawn on isometric paper
	Additional Guidance		
	Ignore any attempt at shading of faces		
	No horizontal lines allowed		
	No right angles between edges allowed		
	Allow visible edges and 'invisible' edges or a combination for B1 or B2		
	Mark intention for B1 and B2		

Q	Answer	Mark	Comments
4	0.06	B1	accept .06
	$\frac{6}{100}$	B1	oe fraction eg $\frac{3}{50}$ SC1 $\frac{6}{100}$ and 0.06 on wrong answer lines SC1 0.6 and $\frac{6}{10}$
	Additional Guidance		
	Ignore subsequent incorrect simplification after a correct fraction seen		

Q	Answer	Mark	Comments
5	$0.5 \times 9.6 \times 14.2$	M1	oe eg $136.32 \div 2$
	68.16 or 68.2	A1	SC1 68 without 68.16 or 68.2 seen
	Additional Guidance		
	68 on answer line with 68.16 or 68.2 seen in working		M1A1

Q	Answer	Mark	Comments
6	At least one of 600 or 60 or 40	M1	
	Bracket attempted first, then squared before the second subtraction	M1	
	200 with 600, 60 and 40 seen	A1	
	Additional Guidance		
	eg $600 - (60 - 40)^2 = 560$		M1M1A0
	eg $600 - 23^2 = 600 - 20^2 = 200$ (60 and 40 not seen)		M1M1A0
	eg $600 - 20 \times 2 = 560$ (indicates brackets and attempt to square first)		M1M1A0
	eg $600 - (60 - 40)^2 = 600 - (120 - 80) = 600 - 40 = 560$		M1M0A0
	eg $597 - 20 \times 2 = 557$ (20 does not imply 60 and 40)		M0M1A0
	eg 68		M0M1A0

Section B

Q	Answer	Mark	Comments
7(a)	**Alternative method 1**		
	55 ÷ (9 + 2) or 5	M1	implied by 45 or 10
	9 × their 5 or 45 **and** 2 × their 5 or 10	M1dep	oe 45 : 10 scores M2
	their 45 ÷ 15 or 3 (packs) or their 10 ÷ 2 or 5 (packs)	M1	oe their 45 > 9 and ≠ 55 their 10 > 2 and ≠ 55 implied by 33.69 or 6.5(0)
	their 3 × 11.23 + their 5 × 1.3(0) or 33.69 + 6.5(0)	M1dep	dep on previous M1 their 3 and their 5 must be integers
	40.19	A1	
	Alternative method 2		
	55 ÷ (9 + 2) or 5	M1	implied by 45 or 10
	9 × their 5 or 45 **and** 2 × their 5 or 10	M1dep	oe 45 : 10 scores M2
	11.23 ÷ 15 or 0.74… or 0.75 or 1.3(0) ÷ 2 or 0.65	M1	price per burger
	their 45 × their 0.74… + their 10 × their 0.65	M1dep	dep on M3
	40.19	A1	
	Additional Guidance		
	eg $\frac{9}{11} \times 55 = 45$ and $\frac{2}{11} \times 55 = 10$		M1M1
	Award the first mark even if not used		

Q	Answer	Mark	Comments
7(b)	**Alternative method 1**		
	6 + 11 + 3 + 5 + 7 or 32	M1	implied by 224 or the digits 384(0)
	their 32 × 120 (÷ 100) or 3840 or 38.4	M1	oe their 32 must be from at least four lengths added
	their 32 × 7 or 224	M1	oe their 32 must be from at least four lengths added
	38.4 and 224	A1	
	Alternative method 2		
	At least 4 of 6 × 120 (÷ 100) or 720 or 7.2 or 11 × 120 (÷ 100) or 1320 or 13.2 or 3 × 120 (÷ 100) or 360 or 3.6 or 5 × 120 (÷ 100) or 600 or 6 or 7 × 120 (÷ 100) or 840 or 8.4	M1	oe implied by the digits 384(0)
	720 + 1320 + 360 + 600 + 840 or 3840 or 7.2 + 13.2 + 3.6 + 6 + 8.4 or 38.4	M1dep	oe sum of at least 4 values from previous M1
	6 × 7 + 11 × 7 + 3 × 7 + 5 × 7 + 7 × 7 or 224	M1	oe
	38.4 and 224	A1	

Q	Answer	Mark	Comments
7(c)	180 – 71 – 78 or 31 or 180 – 71 – 32 and 180 – 71 – 28 or 77 and 81 or 180 – 78 – 32 and 180 – 78 – 28 or 70 and 74	M1	oe
	31 and Yes or 77 and 81 and Yes or 70 and 74 and Yes	A1	
	Additional Guidance		
	eg 71 + 78 + 28 = 177 and 71 + 78 + 32 = 181 and Yes		M1A1
	eg 71 + 78 + 28 = 177 and 28 + (180 – 177) = 31		M1A1

Q	Answer	Mark	Comments
8(a)	**Alternative method 1**		
	$\frac{4}{3} \times \pi \times 0.8^3$ or [2.1, 2.145]	M1	oe uses volume formula
	their [2.1, 2.145] × 270 or [567, 579.15]	M1	oe their [2.1, 2.145] must be from a calculation involving π
	their [567, 579.15] × 2.6	M1	their [567, 579.15] can not be 1400
	[1474, 1512] and No or [74, 112] over	A1	
	Alternative method 2		
	$\frac{4}{3} \times \pi \times 0.8^3$ or [2.1, 2.145]	M1	oe uses volume formula
	their [2.1, 2.145] × 2.6 or [5.46, 5.6]	M1	their [2.1, 2.145] must be from a calculation involving π
	1400 ÷ 270 or 5.18(…) or 1400 ÷ (their [2.1, 2.145] × 2.6) or [251, 257] or their [5.46, 5.6] × 270 or [1474, 1512]	M1	oe their [2.1, 2.145] must be from a calculation involving π their [5.46, 5.6] can not be 1400
	[5.46, 5.6] and 5.18(…) and No or [251, 257] and No or [1474, 1512] and No	A1	

Mark scheme continues on the next page

8(a) cont.	**Alternative method 3**		
	$\frac{4}{3} \times \pi \times 0.8^3$ or [2.1, 2.145]	M1	oe uses volume formula
	1400 ÷ 2.6 or 538(…)	M1	
	1400 ÷ 2.6 ÷ 270 or 1.99… or their [2.1, 2.145] × 270 or [567, 579.15]	M1	oe their [2.1, 2.145] must be from a calculation involving π
	[2.1, 2.145] and 1.99… and No or 538(…) and [567, 579.15] and No	A1	
	Additional Guidance		
	Award up to M2 even if not used		

Q	Answer	Mark	Comments
8(b)	**Alternative method 1**		
	78 ÷ 12 × 2.5 or 16.25	M2	oe M1 78 ÷ 12 or 6.5 could be seen in a ratio eg 6.5 : 78 or 78 × 2.5 or 195
	1.1 × 100 or 110 or their 16.25 ÷ 100 or 0.1625	M1	their 16.25 must be from a calculation involving 78
	their 110 ÷ their 16.25 or 1.1 ÷ their 0.1625 or 6.7… or 6.8	M1	their 110 can be 11 or 1100 their 16.25 or 0.1625 can not be a value from the question
	6 with 6.7… or 6.8 seen	A1	
	Alternative method 2		
	78 × 2.5 or 195	M1	
	their 195 ÷ 100 or 1.95	M1dep	
	their 1.95 ÷ 12 or 0.1625	M1	their 1.95 must be from a calculation involving 78
	1.1 ÷ their 0.1625 or 6.7… or 6.8	M1	their 0.1625 can not be a value from the question
	6 with 6.7… or 6.8 seen	A1	

Mark scheme continues on the next page

8(b) cont.	**Alternative method 3 – converting to inches**		
	78 ÷ 12 or 6.5	M1	oe could be seen in a ratio 6.5 : 78
	1.1 × 100 or 110 or 2.5 ÷ 100 or 0.025	M1	
	their 110 ÷ 2.5 or 1.1 ÷ their 0.025 or 44	M1	their 110 can be 11 or 1100 their 0.025 can be 0.25 or 0.0025
	their 44 ÷ (78 ÷ 12) or their 44 × 12 ÷ 78 or 528 ÷ 78 or 6.7… or 6.8	M1dep	dep on previous M1
	6 with 6.7… or 6.8 seen	A1	

Q	Answer	Mark	Comments
8(c)	**Alternative method 1**		
	99 ÷ 3 or 33	M1	oe
	99 + their 33 or their 33 × 4 or 132	M1dep	oe
	132 and Yes	A1	
	Alternative method 2		
	99 ÷ 75 or 1.32	M1	oe
	their 1.32 × 100 or 132	M1dep	oe eg 99 ÷ 0.75 M2
	132 and Yes	A1	
	Alternative method 3		
	0.25 × [130, 132] or [32.5(0), 33]	M1	oe
	[130, 132] – their [32.5(0), 33] or [97.5(0), 99]	M1dep	oe eg [130, 132] × 0.75 M2
	[97.5(0), 99] and Yes	A1	with M2 scored
	Additional Guidance		
	Trial and improvement methods do not score until the use of [130, 132]		
	eg 99 × 1.25 or 123.75 and No		M0M0A0
	eg 0.25 × 130 = 32.5 32.5 + 99 = 131.5 and Yes as 131.5 > 130		M1M0A0

Q	Answer	Mark	Comments
9(a)	**Alternative method 1**		
	2.4(0) × 72 or 172.8(0)	M1	
	22.5(0) × 9 or 202.5(0)	M1	
	their 202.5(0) + their 172.8(0) or 375.3(0)	M1dep	dep on M2
	their 375.3(0) ÷ 3 × 2 or 125.1(0) × 2 or their 375.3(0) – 125.1(0) or 250.2	M1	oe eg their 375.3(0) – (their 375.3(0) ÷ 3)
	250.20	A1	correct money notation accept £250.20p
	Alternative method 2		
	2.4(0) × 72 or 172.8(0)	M1	
	22.5(0) × 9 or 202.5(0)	M1	
	their 172.8(0) ÷ 3 × 2 or 115.2(0) or their 202.5(0) ÷ 3 × 2 or 135	M1	oe
	their 115.2(0) + their 135 or 250.2	M1dep	dep on the first M2
	250.20	A1	correct money notation accept £250.20p
	Additional Guidance		
	A third as a decimal must be 0.33 or better		

Q	Answer	Mark	Comments
9(b)	$\pi \times 100^2$ or $10\,000\pi$ or [31 400, 31 429]	M1	oe
	their [31 400, 31 429] ÷ 8 or 1250π or [3925, 3929]	M1	oe their [31 400, 31 429] must be from a product including π
	$\frac{3\sqrt{3}}{2} \times 90^2$ or [20 655, 21 045]	M1	oe
	their [20 655, 21 045] ÷ 6 or [3442, 3508]	M1dep	dep on previous M1
	[3925, 3929] and [3442, 3508] and A	A2	A1 [3925, 3929] and [3442, 3508] or A1ft one correct value and correct ft decision for their two values SC3 [31 400, 31 429] and [20 655, 21 045] and A
	Additional Guidance		
	$\frac{3\sqrt{3}}{2} \times 90\,\text{cm}^2$ does not score third M1 unless recovered		
	$\frac{3\sqrt{3}}{2} \times (90\,\text{cm})^2$ scores third M1		

Q	Answer	Mark	Comments
10(a)	2, 5, 8	B1	correct midpoints may be implied
	their 2 × 29 + their 5 × 35 + their 8 × 11 or 58 + 175 + 88 or 321	M1	condone their midpoints on or between the class boundaries
	their 321 ÷ 75 or 4.2… or 4.3 or 5.2 × 75 or 390	M1	their 321 must come from correct method for total of their midpoints × frequencies
	4.2… or 4.3 and No or 321 and 390 and No	A1	accept 4 and No with 321 ÷ 75 seen
	Additional Guidance		
	First two marks can be awarded even if not used		

Q	Answer	Mark	Comments
10(b)	$46 + 65 + 20 + 19$ or 150	M1	
	$\frac{65}{\text{their } 150}$ or their 150×0.4 or 60	M1dep	oe 43.(…)% implies M2
	0.43(…) or 43.(…)% and 40% or 60 and 65	A1	oe may be seen as fractions with a common denominator eg $\frac{60}{150}$ and $\frac{65}{150}$ or $\frac{12}{30}$ and $\frac{13}{30}$
	Additional Guidance		
	eg $150 \times 0.4 = 60$ and 65 circled in the table		M1M1A1

Q	Answer	Mark	Comments
10(c)	**Alternative method 1**		
	$26\,059 - 25\,300$ or 759 or $19\,344 - 18\,600$ or 744	M1	
	$\frac{26\,059 - 25\,300}{25\,300}$ $(\times 100)$ or 0.03 or 3 or $\frac{19\,344 - 18\,600}{18\,600}$ $(\times 100)$ or 0.04 or 4	M1dep	oe
	$\frac{26\,059 - 25\,300}{25\,300}$ $(\times 100)$ or 0.03 or 3 **and** $\frac{19\,344 - 18\,600}{18\,600}$ $(\times 100)$ or 0.04 or 4	M1dep	oe
	3(%) and 4(%) and waiters or 0.03 and 0.04 and waiters	A1	oe equivalent fractions with common denominator

Mark scheme continues on the next page

10(c) cont.	**Alternative method 2**		
	26 059 ÷ 25 300 (× 100) or 1.03 or 103(%)	M1	oe
	19 344 ÷ 18 600 (× 100) or 1.04 or 104(%)	M1	oe
	their 1.03 (– 1) and their 1.04 (– 1) or 0.03 and 0.04 or their 103 (– 100) and their 104 (– 100) or 3 and 4	M1dep	oe dep on M2
	1.03 and 1.04 and waiters or 0.03 and 0.04 and waiters or 103(%) and 104(%) and waiters or 3(%) and 4(%) and waiters	A1	oe eg equivalent fractions with common denominators

Mark scheme and Additional guidance continue on the next page

10(c) cont.	**Alternative method 3**		
	$26\,059 - 25\,300$ or 759 or $19\,344 - 18\,600$ or 744	M1	
	$\frac{26\,059 - 25\,300}{25\,300} \times 100$ or 3 or $\frac{19\,344 - 18\,600}{18\,600} \times 100$ or 4	M1dep	oe
	$18\,600 \times \left(1 + \frac{\text{their } 3}{100}\right)$ or $19\,158$ or $25\,300 \times \left(1 + \frac{\text{their } 4}{100}\right)$ or $26\,312$	M1dep	oe their 3 and their 4 must come from correct method
	$19\,158$ and waiters or $26\,312$ and waiters	A1	
	Additional Guidance		
	A comparison of the original salary as a percentage of the new salary may lead to correct conclusion		

Q	Answer	Mark	Comments
10(d)	Appropriate line of best fit passing through (10, [48, 65]) and (25, [5, 20])	B1	intended single straight line
	Draws a vertical line from 18 to their line of best fit	M1	implied by mark at the correct place on their line of best fit or on the vertical axis or the correct reading from their line of best fit their line of best fit must be decreasing throughout and go from at least 15 to 21 horizontally allow a curve or dotted line but not zig-zags
	Correct reading for 18 from their line of best fit	A1ft	$\pm\frac{1}{2}$ a small square ft their line of best fit which must be decreasing throughout allow a curve or dotted line but not zig-zags
	Additional Guidance		
	No line of best fit drawn		B0M0A0