AQA

Functional Skills Level 2
MATHEMATICS
8362/2

Paper 2 Calculator

Mark scheme

November 2021

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	$\dfrac{2}{5}$	B1	

Q	Answer	Mark	Comments
2	(+)10.24 seen or $(-3.2)^2$ attempted before adding to 5 or $5 + (-3.2)^2$	M1	condone without brackets
	15.24	A1	SC1 −5.24

Additional Guidance	
$(5 - 3.2)^2$	M0A0

Q	Answer	Mark	Comments
3	$(-2, -3)$	B2	B1 for $(-2, y)$ or $(x, -3)$ where x and y can be any numbers or $x = -2$ or $y = -3$ or position of point B unambiguously marked on the grid SC1 $(-3, -2)$

Q	Answer	Mark	Comments
4	−5 in the first box	B1	
	−6 in the second box	B1	
	−1 in the third box	B1	

Q	Answer	Mark	Comments
5	8 : 5	B2	B1 for an equivalent ratio that is not fully simplified eg 72 : 45
	Additional Guidance		
	A correct simplified ratio from 144 : 90 followed by an incorrect simplified ratio eg 72 : 45 followed by 9 : 5		B1
	An incorrect simplified ratio from 144 : 90 followed by a correct simplified ratio eg 70 : 45 followed by 14 : 9		B0
	Condone ratio not in integer form eg 1.6 : 1 or 1 : 0.625		B1
	eg equivalent ratios 16 : 10, 24 : 15, 48 : 30, 72 : 45		B1

Q	Answer	Mark	Comments
6	$180 - 42 - 42$	M1	oe eg $180 - 84$
	96	A1	

Section B

Q	Answer	Mark	Comments
7(a)	3 or 40 or 2000 or 0.03 or 0.4 or 2000	M1	
	3 × 2000 or 6000 or 0.03 × 2000 or 60	M1dep	
	40 × 30 or 1200 or 0.4 × 30 or 12	M1dep	dep on 1st M1 condone use of 28, 29 or 31 for 30 condone 40 × 30 rounded to 1000 condone 0.4 × 30 rounded to 10
	their 6000 + their 1200 or 7200 or their 60 + their 12	M1dep	dep on M1M1M1
	72(.00)	A1	

Additional Guidance	
If a student rounds the 1200 or 12 in the third mark to 1000 or 10 they can score a maximum of	M1M1M1M1A0
3 × 2000 = 6000 40 × 28 = 1120 6000 + 1120 = 7120 71.20	M1M1M1M1A0
3 × 2000 = 6000 40 × 30 = 1200 6000 + 1200 = 7200 70	M1M1M1M1A0

Q	Answer	Mark	Comments
	Alternative method 1		
	$360 - 198$ or 162	M1	may be seen on diagram
	$\dfrac{\text{their }162}{360}$ ($\times$ 100) or 0.45 or $45(\%)$	M1dep	oe
	$45\,(\%)$ and Yes or 0.45 and 0.43 and Yes	A1	
	Alternative method 2		
	$100 - 43$ or $57(\%)$	M1	
	$\dfrac{198}{360}$ ($\times$ 100) or 0.55 or $55(\%)$	M1	oe
	$55(\%)$ and $57(\%)$ and Yes or 0.57 and 0.55 and Yes	A1	
7(b)	**Alternative method 3**		
	$\dfrac{198}{360}$ ($\times$ 100) or 0.55 or $55(\%)$	M1	oe
	$100 -$ their 55 or 45 or $1 -$ their 0.55 or 0.45	M1dep	
	$45(\%)$ and Yes or 0.45 and 0.43 and Yes	A1	
	Alternative method 4		
	0.43×360 or $[154,\ 155]$	M1	oe eg 43×3.6
	$360 - 198$ or 162	M1	may be seen on diagram
	$[154,\ 155]$ and 162 and Yes	A1	

Mark scheme and Additional guidance continue on the next page

Q	Answer	Mark	Comments
7(b) cont	**Alternative method 5**		
	$100 - 43$ or $57(\%)$	M1	
	0.57×360 or [205, 206]	M1dep	oe
	[205, 206] and Yes	A1	
	Additional Guidance		
	Switch or MixGas is sufficient to imply Yes		
	Check diagram for working		

Q	Answer	Mark	Comments
7(c)	$100 - 27$ or 73 or $1 - 0.27$ or 0.73	M1	
	$4803.4(0) \div$ their 73×100 or $4803.4(0) \div$ their 0.73	M1dep	oe
	6580	A1	
	Additional Guidance		
	1296.92 or 6100.32 or 3506.48		M0M0A0

Q	Answer	Mark	Comments
8(a)	**Alternative method 1**		
	$\pi \times 30$ or [94.2, 94.3] or $\pi \times 30 \times 0.5$ or [47.1, 47.15]	M1	
	$120 + 120 +$ their [94.2, 94.3] or $120 + 120 + 2 \times$ their [47.1, 47.15] or [334.2, 334.3] or $4 \times$ their [94.2, 94.3] or [376.8, 377.2]	M1dep	oe
	$4 \times$ their [334.2, 334.3] or $(120 + 120) \times 4 +$ their [376.8, 377.2] or [1336.8, 1337.2]	M1	oe their [334.2, 334.3] must be their length of one lap their total straights + their total curves
	their [1336.8, 1337.2] $\div$ 5000 ($\times$ 100)	M1	oe their [1336.8, 1337.2] must be their length of walk
	[26.7, 26.8] or 27	A1	

Mark scheme continues on the next page

Q	Answer	Mark	Comments
8(a) cont	**Alternative method 2**		
	$\pi \times 30$ or [94.2, 94.3] or $\pi \times 30 \times 0.5$ or [47.1, 47.15]	M1	
	$120 + 120 +$ their [94.2, 94.3] or $120 + 120 + 2 \times$ their [47.1, 47.15] or [334.2, 334.3]	M1dep	oe
	their [334.2, 334.3] $\div$ 5000 ($\times$ 100) or [0.066, 0.067] ($\times$ 100) or [6.6, 6.7]	M1	oe their [334.2, 334.3] must be their length of one lap
	their [6.6, 6.7] $\times$ 4	M1	their [6.6, 6.7] must be their percentage for one lap
	[26.7, 26.8] or 27	A1	

Q	Answer	Mark	Comments
	Alternative method 1		
	$420 \div (2 + 5)$ or $420 \div 7$ or 60 or 420×5 or 2100	M1	oe
	their 60×5 or 300 or their $2100 \div 7$ or 300	M1dep	oe
	$12 \times 1000 \div$ their 300 or $12\,000 \div$ their 300	M1	oe eg $12 \div 0.3$ their 300 must be < 420
	40	A1	
	Alternative method 2		
	$12 \div 5$ or 2.4	M1	
8(b)	$2 \times$ their 2.4 : $5 \times$ their 2.4 or 4.8 : 12 or $2 \times$ their $2.4 + 5 \times$ their 2.4 or $4.8 + 12$ or 16.8	M1dep	oe
	their $16.8 \times 1000 \div 420$ or $16\,800 \div 420$	M1dep	oe
	40	A1	

Additional Guidance	
Award first M1 for $420 \div 7 = 60$ even if not used unless contradicted by $420 \div 2$ and/or $420 \div 5$	
$420 \div 5 = 84$ and $12\,000 \div 84$	M0M0M1A0
$420 \div 7 = 60$ and $60 \times 2 = 120$ and $12\,000 \div 120 = 100$	M1M0M1A0
Beware 60 coming from 12×5	M0

Q	Answer	Mark	Comments
8(c)	2.4 × 2.25 or 5.4 or 2.4 ÷ 6 or 0.4 or 2.25 ÷ 6 or 0.375	M1	
	their 5.4 ÷ 6 or their 0.4 × 2.25 or their 0.375 × 2.4 or 0.9	M1dep	
	their 0.9 ÷ 0.72	M1dep	
	1.25	A1	oe 125 cm

	Answer	Mark	Comments
9(a)	**Alternative method 1 – comparing speed**		
	$\dfrac{50 \times 25}{38 \times 60}$ or [0.5, 0.55]	M3	M2 for 50×25 and 38×60 or 1250 and 2280 or $50 \times 25 \div 38$ or 32.89… or $38 \div 50 \times 60$ or 45.6 or $25 \div (38 \times 60)$ or 0.01… M1 for 50×25 or 1250 or 38×60 or 2280 or $38 \div 50$ or $50 \div 38$
	[0.5, 0.55] and No	A1	
	Alternative method 2 – comparing times in minutes		
	$50 \times 25 \div 0.7$ or [1785, 1786]	M2	M1 for 50×25 or 1250 or $25 \div 0.7$ or 35.7…
	their [1785, 1786] $\div$ 60 or [29, 30]	M1dep	dep on at least M1 scored
	[29, 30] and No	A1	
	Alternative method 3 – comparing times in seconds		
	$50 \times 25 \div 0.7$ or [1785, 1786]	M2	M1 for 50×25 or 1250 or $25 \div 0.7$ or 35.7…
	38×60 or 2280	M1	
	[1785, 1786] and 2280 and No	A1	

Mark scheme and Additional guidance continue on the next page

Q	Answer	Mark	Comments
9(a) cont	**Alternative method 4 – using lengths from swimming at 0.7 m/s**		
	38 × 60 or 2280	M1	
	their 2280 × 0.7 or 1596	M1dep	
	50 × 25 or 1250 or their 1596 ÷ 25 or 63.84 or their 1596 ÷ 50 or 31.9(2)	M1	their 1596 must be from correct method
	1250 and 1596 and No or 63.84 (lengths) and No or 31.9(2) (metres) and No	A1	actual total length and total length at 0.7 m/s number of lengths at 0.7 m/s length of pool at 0.7 m/s
	Alternative method 5 – comparing metres/minute		
	50 × 25 or 1250	M1	
	their 1250 ÷ 38 or 32.89…	M1dep	
	0.7 × 60 or 42	M1dep	
	32.89… and 42 and No	A1	
	Additional Guidance		
	Allow equivalent working using one length		

Q	Answer	Mark	Comments
9(b)	**Alternative method 1**		
	$35 \times \dfrac{6}{7}$ or 30	M1	oe
	their 30 × 0.25 or 7.5(0) or their 30 × 1.25 or 37.5(0) or 42.5	M1	oe their 30 must be their $\dfrac{6}{7}$ of 35 implied by 10 ⩽ their 30 < 35
	42.50	A1	correct money notation
	Alternative method 2		
	$\dfrac{25}{100} \times 35$ or 8.75	M1	
	their $8.75 \times \dfrac{6}{7}$ or 7.5(0)	M1dep	
	42.50	A1	correct money notation

Q	Answer	Mark	Comments
	Alternative method 1		
	5, 15, 25, 35, 45	B1	correct midpoints, allow one error
	their 5 × 7 + their 15 × 4 + their 25 × 6 + their 35 (×1) + their 45 × 2 or 35 + 60 + 150 + 35 + 90 or 370	M1	condone their midpoints on or between the class boundaries
	their 370 ÷ 20 or 18.5(0)	M1dep	dep on previous mark
	14.85 + 3 or 17.85 or their 18.5(0) − 3 or 15.5(0) or their 18.5(0) − 14.85 or 3.65	M1	their 18.5(0) must come from correct method
9(c)	18.5(0) and 17.85 or 15.5(0) or 3.65	A1	
	Alternative method 2		
	5, 15, 25, 35, 45	B1	correct midpoints, allow one error
	their 5 × 7 + their 15 × 4 + their 25 × 6 + their 35 (× 1) + their 45 × 2 or 35 + 60 + 150 + 35 + 90 or 370	M1	condone their midpoints on or between the class boundaries
	14.85 + 3 or 17.85	M1	
	their 17.85 × 20 or 357	M1dep	dep on previous mark
	357 and 370	A1	

Mark scheme and Additional guidance continue on the next page

Q	Answer	Mark	Comments
9(c) cont	**Alternative method 3**		
	5, 15, 25, 35, 45	B1	correct midpoints, allow one error
	their 5 × 7 + their 15 × 4 + their 25 × 6 + their 35 (× 1) + their 45 × 2 or 35 + 60 + 150 + 35 + 90 or 370	M1	condone their midpoints on or between the class boundaries
	14.85 + 3 or 17.85	M1	
	their 370 ÷ their 17.85	M1dep	dep on previous two marks
	20.7(…)	A1	accept 21 with correct working
	Additional Guidance		
	Alt 1 condone their 18.5(0) coming from midpoints on or between the class boundaries		

Q	Answer	Mark	Comments
10(a)	**Alternative method 1**		
	One correct area towards calculating the total area	M1	eg 3×4 or 12 or 3.4×4.5 or 15.3 or 4.5×4 or 18 or $(4.5 - 3) \times 3.4$ or 5.1 or $(3.4 + 4) \div 2 \times (4.5 - 3)$ or 5.55 or $(3 + 4.5) \div 2 \times (4 - 3.4)$ or 2.25 or $(4 - 3.4) \times 3$ or 1.8 or 0.6×3 or 1.8 or $(4 - 3.4) \times (4.5 - 3) \div 2$ or 0.45 or $0.6 \times 1.5 \div 2$ or 0.45
	Complete method to calculate area	M1	
	17.55	A1	
	their 17.55×0.1	M1	oe can be implied their 17.55 must be from an area calculation
	1.755	A1ft	ft their 17.55
	m³ or cubic metres	B1	accept cm³ or cubic centimetres if working in cm

Mark scheme and Additional guidance continue on the next page

Q	Answer	Mark	Comments
10(a) cont	**Alternative method 2**		
	One correct area towards calculating the total area	M1	could be implied eg 3×4 or 12 or 3.4×4.5 or 15.3 or 4.5×4 or 18 or $(4.5 - 3) \times 3.4$ or 5.1 or $(3.4 + 4) \div 2 \times (4.5 - 3)$ or 5.55 or $(3 + 4.5) \div 2 \times (4 - 3.4)$ or 2.25 or $(4 - 3.4) \times 3$ or 1.8 or 0.6×3 or 1.8 or $(4 - 3.4) \times (4.5 - 3) \div 2$ or 0.45 or $0.6 \times 1.5 \div 2$ or 0.45
	Multiplying at least one correct area by 0.1	M1	eg $3 \times 4 \times 0.1$ or 1.2
	One correct volume calculated	A1	one correct volume of concrete for their section of floor with working shown eg 1.2 or 1.53, etc
	Complete method for calculating the volume of concrete	M1	
	1.755	A1	
	m³ or cubic metres	B1	accept cm³ or cubic centimetres if working in cm

Additional Guidance	
Accept working in cm throughout	
For first M1 allow attempt to find a volume at this stage. Do not accept a multiplication seen as part of a multiplication string involving another length or seen in a number of multiplications eg1 $3.4 \times 4.5 \times 4$ eg2 $3.4 \times 4.5 = 15.3$ followed by 15.3×4 eg3 $3.4 \times 4.5 \times 10 = 153$ (condone × by 10 as attempt at volume) eg4 17.55 followed by $17.55 \times 0.1 \times 4 = 7.02\text{m}^3$	M0 M0 M1 M1M1A1M0A0B1
1.8 without working $4.5 \times 4 = 18$ followed by 1.8 implies	M1 M1M1A1

Q	Answer	Mark	Comments
10(b)	**Alternative method 1**		
	23.4 × 50 ÷ 3 or 390 or 0.234 × 50 ÷ 3 or 3.9	M2	M1 for 23.4 × 50 or 1170 or 0.234 × 50 or 11.7 or 23.4 ÷ 3 or 7.8 or 0.234 ÷ 3 or 0.078 or 50 ÷ 3 or [16.6, 16.7]
	390 and 400 and Yes or 3.9 and Yes	A1	implied by 10 cm less or 0.1 less or 3.9 < 4
	Alternative method 2		
	4 × 100 ÷ 50 or 8	M1	
	their 8 × 3 or 24	M1dep	oe
	24 and Yes	A1	
	Additional Guidance		
	If 50 ÷ 3 is calculated before multiplication by 23.4, allow [388.4, 390.8] for 390		
	Accept a correct value in cm rounded or truncated when converted to metres		

Q	Answer	Mark	Comments
10(c)	**Alternative method 1**		
	12 ÷ 3 or 4	M1	oe
	their 4 × 14.73	M1dep	oe
	58.92	A1	SC2 117.84
	Alternative method 2		
	12 × 14.73 or 176.76	M1	oe
	their 176.76 ÷ 3	M1dep	oe
	58.92	A1	SC2 117.84
	Additional Guidance		
	12 ÷ 2 or 6 and 14.73 × their 6 or 88.38		M0M0A0