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Functional Skills Level 2
MATHEMATICS
8362/2

Paper 2 Calculator

Mark scheme

March 2020

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

Examinations are marked to award positive achievement. 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 $\frac{1}{2}$

dep If a mark is given as 'M1dep' it means that if the values used for the mark are incorrect a learner must have been awarded the previous mark(s) to gain this mark. However, the use of correct values for this mark implies the previous mark(s).

eg

17 ÷ 2 or 8.5	M1	
their 8.5 × 9 or 76.5	M1dep	

eg 1: a learner shows 17 ÷ 2 = 9.5, then 9.5 × 9 M1 for 17 ÷ 2 calculated, then M1dep for correct use of the result of that calculation; a correct method has been shown for the first mark, even though the result is incorrect.

eg 2: a learner shows 9.5 × 9 M0, as the first mark cannot be awarded because no method has been shown.

eg 3: a learner shows 76.5 M2, as the correct value gains the second mark and implies the first mark.

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.

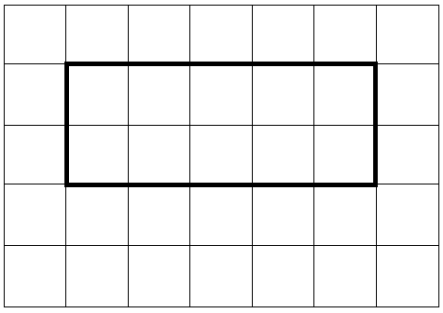
Continental notation

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	A	B1	
	Additional Guidance		
	More than one point is choice		B0

Q	Answer	Mark	Comments
2	(180 – 36) ÷ 2 or 72	M1	may be seen on diagram
	180 – their 72 or their 72 + 36	M1dep	
	108	A1	
	Additional Guidance		

Q	Answer	Mark	Comments
3(a)	Correct sketch 	B1	
	Additional Guidance		
	Ignore any dots or lines inside the correct rectangle		

Q	Answer	Mark	Comments
3(b)	Any correct calculation for a face 5 × 2 or 10 or 4 × 2 or 8 or 5 × 4 or 20 or 5 × 2 × 2 or 20 or 4 × 2 × 2 or 16 or 5 × 4 × 2 or 40	M1	may be seen on diagram implied by 38
	(2 ×) 5 × 2 + (2 ×) 4 × 2 + (2 ×) 5 × 4 or 2 × (10 + 8 + 20) or 10 + 8 + 20 or 20 + 16 + 40 or (2 ×) 38	M1	oe
	76	A1	
	Additional Guidance		
	Allow first M mark even if not subsequently used		
	Beware incorrect working leading to correct values		

Q	Answer	Mark	Comments
4	0.7 × 0.7	M1	oe fraction, decimal or percentage
	0.49	A1	oe fraction, decimal or percentage
	Additional Guidance		
	$\frac{49}{100}$ followed by incorrect cancelling M1A1		

Q	Answer	Mark	Comments
5	$\pi \times 3.2^2 \times 7.5$	M1	oe eg $\frac{384}{5}\pi$
	[241, 241.4]	A1	SC1 241.5
	Additional Guidance		

Section B

Q	Answer	Mark	Comments
6(a)	**Alternative method 1 using Mean**		
	0 × 1 (+) 1 × 2 (+) 1 × 3 (+) 4 × 4 (+) 6 × 5 or 0 (+) 2 (+) 3 (+) 16 (+) 30 or 51	M1	oe may be seen on table condone 1 (+) 2 (+) 3 (+) 16 (+) 30 condone 52
	(0 × 1 + 1 × 2 + 1 × 3 + 4 × 4 + 6 × 5) ÷ 12 or (0 + 2 + 3 + 16 + 30) ÷ 12 their 51 ÷ 12	M1dep	oe
	4.25	A1	
	Race B and 4.25 (> 4.1)	B1ft	ft their mean with M2 scored
	Alternative method 2 using Median		
	2, 3, 4, 4, 4, 4, 5, 5, 5, 5, 5, 5 or 2, 3, 4, 4, 4, 4, 5 or 4, 5, 5, 5, 5, 5, 5	M1	may be indicated on table or implied by 4 and 5
	4 and 5 identified	M1dep	
	4.5	A1	
	Race B and 4.5 (> 4)	B1ft	ft their median with M2 scored
	Additional Guidance		
	median = 4.25 only or mean = 4.5 only		M0M0A0B0ft
	Mean (=) 4.25 and Race B only		M1M1A1B1ft
	Median (=) 4.5 and Race B only		M1M1A1B1ft
	1 + 2 + 3 + 16 + 30 followed by 52 ÷ 12 = 4.3(3...) and Race B chosen		M1M1A0B1ft
	(0 +) 1 + 1 + 4 + 6 and (0 +) 2 + 3 + 16 + 30 with no further work		M1M0A0B0
	If mean = 4.25 is seen then rounded to 4.3 do not penalise.		
	If mean and median found then mark the best		
	Ignore any reference to the range		

Q	Answer	Mark	Comments
Q 6 (b)	**Alternative method 1**		
	1.2 seen or used	M1	oe eg 708 is 120%
	708 ÷ their 1.2 or 590	M1dep	oe eg 708 × 100 ÷ 120
	590 **and** Yes	A1	
	Alternative method 2		
	1.2 seen or used	M1	oe eg 708 is 120%
	600 × their 1.2 or 720	M1dep	oe eg 600 × 120 ÷ 100
	720 **and** Yes	A1	
	Alternative method 3		
	708 ÷ 600 (× 100)	M1	oe eg 708 ÷ 6
	1.18 (× 100) or 118	M1dep	
	1.2 **and** 1.18 **and** Yes or 120 **and** 118 **and** Yes	A1	
	Alternative method 4		
	$\frac{708-600}{600}$ $(\times 100)$	M1	oe
	0.18 (× 100) or 18	M1dep	
	18 **and** Yes or 0.2 **and** 0.18 **and** Yes	A1	
	Additional Guidance		
	566.40 and Yes		M0M0A0

Q	Answer	Mark	Comments
6(c)	60 ÷ 1.6 or 37.5 or 15 × 1.6 or 24	M1	converts 60 km to miles or converts 15 mph to kmph
	their 37.5 ÷ 15 or 60 ÷ their 24 or 2.5 (hours)	M1	oe eg 150 (mins), eg 2.5 × 15 = 37.5 their 37.5 must be from an attempt at conversion of 60 to miles their 24 must be from an attempt at conversion of 15 to km
	167 ÷ 60 or 2.78(…) or 2 h 47 or 167 – their 150 or 17 or their 2 h 30 + 10 or 2 h 40 or their 2.5 + 0.16(…) or 2.66(…) or their 150 + 10 or 160 or 167 – 10 or 157	M1	oe eg 160 minutes
	7 (minutes) (later) **and** Yes or (waits for) 17 (minutes) **and** Yes or 2 h 40 **and** 2 h 47 **and** Yes or 2.66(…) **and** 2.78(…) **and** Yes or 0.28 **and** 0.16(…) **and** Yes or 160 **and** Yes or 150 **and** 157 **and** Yes	A1	
	Additional Guidance		
	150 implies M2		
	2h 30 and 2h 47 and Yes		M1M1M1A0

Q	Answer	Mark	Comments
7(a)	**Alternative method 1**		
	50 – 12.5(0) or 37.5(0) or 12.5(0) × 3	M1	oe eg $\frac{37.5}{50}$
	$\frac{375}{500}$ or $\frac{3}{4}$	A1	or equivalent fraction eg $\frac{75}{100}$
	Alternative method 2		
	$\frac{125}{500}$ or $1-\frac{125}{500}$	M1	oe eg $\frac{1}{4}$, eg$\frac{12.5}{50}$, eg $1-\frac{1}{4}$, eg $\frac{37.5}{50}$, eg 0.75, eg 25%, eg 75%
	$\frac{375}{500}$ or $\frac{3}{4}$	A1	or equivalent fraction eg $\frac{75}{100}$
	Additional Guidance		
	Ignore incorrect simplification or conversion of a correct fraction		

Q	Answer	Mark	Comments
7(b)	**Alternative method 1**		
	$\frac{2}{36} \times 450$ or 25 or 450 ÷ 36 or 12.5 or 36 ÷ $\frac{450}{100}$ or 8	M1	oe
	26.4 ÷ their 8 × 2 or 6.6 or $\frac{\text{their } 25}{100} \times 26.4$ or 6.6 or 26.4 ÷ their 8 or 3.3 or their 12.5 × 26.4 ÷ 100 or 3.3	M1dep	oe
	$\frac{\text{their } 6.6}{30}$ (× 100) or $\frac{\text{their } 3.3}{30} \times 2$ (× 100)	M1dep	oe eg 0.22
	22	A1	
	Alternative method 2		
	26.4 × $\frac{450}{100}$ or 118.8	M1	oe
	their 118.8 ÷ 36 × 2 or 6.6 or their 118.8 ÷ 36 or 3.3	M1dep	oe
	$\frac{\text{their } 6.6}{30}$ (× 100) or $\frac{\text{their } 3.3}{30} \times 2$ (× 100)	M1dep	oe eg 0.22
	22	A1	
	Additional Guidance		

Q	Answer	Mark	Comments
7(c)	**Alternative method 1**		
	100 – 24 or 76 or 1 – 0.24 or 0.76	M1	oe $\frac{19}{25}$
	$\frac{\text{their } 76}{100} \times 70$ or their 0.76 × 70 or 53.2	M1dep	oe eg $\frac{19}{25} \times 70$
	their 53.2 × 126.8 (÷ 100) or 67.45(76) or 6745.76	M1dep	oe
	67.46 or 67.45	A1	
	Alternative method 2		
	100 – 24 or 76 or 1 – 0.24 or 0.76	M1	oe $\frac{19}{25}$
	70 × 126.8 (÷ 100) or 8876 or 88.76	M1	
	their 0.76 × their 8876 (÷ 100) or 67.45(76) or 6745.76	M1dep	oe eg 19/25 × 70 dep on M2
	67.46 or 67.45	A1	
	Alternative method 3		
	70 × 126.8 (÷ 100) or 88.76 or 8876	M1	
	0.24 × 70 × 126.8 (÷ 100) or 2130.24 or 21.30(24)	M1dep	oe eg $\frac{6}{25} \times 70 \times 126.8$
	their 8876 – their 2130.24 or 6745.76 or their 88.76 – their 21.30	M1dep	
	67.46 or 67.45	A1	
	Additional Guidance		
	Condone 1.26 (ans 67.032) or 1.27 (ans 67.564) used for 1.268 for method marks		
	First 2 marks may be awarded for work even if not used, provided not directly contradicted		

Q	Answer	Mark	Comments
8(a)	**Alternative method 1**		
	10.2 × 3.5 or 35.7 or 3 × 5.4 ÷ 2 or 8.1 or 4.8 × 3.5 or 16.8 or $\frac{3.5 + 6.5}{2}$ × 5.4 or 27	M1	oe
	(10.2 × 3.5) + (3 × 5.4 ÷ 2) or 43.8	M1	oe
	their 43.8 × 120	M1dep	dep on M2
	5256	A1	
	Alternative method 2		
	10.2 × 3.5 or 35.7 or 3 × 5.4 ÷ 2 or 8.1	M1	oe
	their 35.7 × 120 or 4284 and their 8.1 × 120 or 972	M1dep	oe
	their 4284 + their 972	M1dep	oe
	5256	A1	
	Alternative method 3		
	10.2 × 6.5 or 66.3 or 4.8 × 3(.0) or 14.4 or 3(.0) × 5.4 ÷ 2 or 8.1 or $3 \times \frac{10.2+4.8}{2}$ or 22.5	M1	oe
	(10.2 × 6.5) – (4.8 × 3(.0)) – (3(.0) × 5.4 ÷ 2) or 43.8	M1	oe
	their 43.8 × 120	M1dep	dep on M2
	5256	A1	
	Additional Guidance		

	First M mark may be awarded even if not subsequently used.	

Q	Answer	Mark	Comments
8(b)	**Alternative 1**		
	3 x 11 or 33 or 11 ÷ 7 (× 3) or 1.57… (× 3) or 1.6 (× 3)	M1	
	11 ÷ 7 × 3	M1	
	4.7(1…) or 5	A1	with full method seen
	2	A1ft	ft (their answer to 11 ÷ 7 × 3 rounded up) – 3 with M2 seen
	Alternative 2		
	1 (worker) (takes) 33 days or 6 workers (take) 5.5 days	M1	
	5 (workers) (take) 6.6 days	M1dep	implied by 33 ÷ 5 = 6.6
	5 (workers)	A1	with full method seen
	2	A1	with full method seen
	Alternative 3		
	3 × 11 or 33 or 3 × 7 or 21	M1	
	$\frac{3 \times 11 - 3 \times 7}{7}$	M1	
	1.7(1…)	A1	
	2	A1	with full method seen
	Additional Guidance		
	Any correct example of using inverse proportion eg 6 workers = 5.5 days	M1	
	Beware answer 2 from incorrect working.		

	Answer 5 only or answer 2 only	zero

Q	Answer	Mark	Comments
8(c)	**Alternative method 1**		
	$\frac{3 \times 35.75 \times 2}{11} \div 1.5$	M4	oe complete method M3 three correct steps seen with 35.75 in the first step $\frac{3 \times 35.75 \times 2}{11}$ $\frac{3 \times 35.75}{11} \div 1.5$ $\frac{35.75 \times 2}{11} \div 1.5$ $3 \times 35.75 \times 2 \div 1.5$ M2 any two correct steps seen with 35.75 in the first step $\frac{35.75 \times 2}{11}$ $\frac{3 \times 35.75}{11}$ $\frac{35.75}{11} \div 1.5$ $3 \times 35.75 \times 2$ $35.75 \times 2 \div 1.5$ $3 \times 35.75 \div 1.5$ M1 any one correct step with 35.75 seen or implied $\frac{35.75}{11}$ or 3.25 35.75×2 or 71.5 35.75×3 or 107.25 $35.75 \div 1.5$ or 23.8(3…)
	13	A1	
	Alternative method 2		
	1.5 ÷ 3 × 8 or 4	M1	amount of water needed for 1 bottle
	1.5 + their 4 or 5.5	M1dep	amount of coating from one bottle
	their 5.5 ÷ 2 or 2.75	M1dep	coverage from one bottle
	35.75 ÷ their 2.75	M1dep	number of bottles needed

	13	A1	

Mark scheme and guidance continue on next page

Q	Answer	Mark	Comments
	Alternative method 3		
	1.5 ÷ 3 × 8 or 4	M1	amount of water needed for 1 bottle
	1.5 + their 4 or 5.5	M1dep	amount of coating from one bottle
	35.75 ÷ their 5.5 or 6.5	M1dep	sq metres per bottle
	their 6.5 × 2	M1dep	number of bottles needed
	13	A1	
	Additional Guidance		
	In alternative 1 the steps may be carried out in any order but must start with 35.75		
	Eg 35.75 ÷ 11 = 3.25 M1 divide driveway into ratio 3:8 3.25 × 3 = 9.75 M1 9.75 × 2 = 19.5 M1 double for the number of litres 19.5 ÷ 1.5 = 13 M1 A1 divides by 1.5 for the number of bottles		

Q	Answer	Mark	Comments
9(a)	Plots remaining points correctly (2, 250), (3.2, 180)	B1	± ½ a small square ignore any additional points plotted
	Draws an appropriate line of best fit	B1	for the 10 or 12 points intended single straight line of any length
	Draws a horizontal line from 280 to their line of best fit	M1	implied by mark at the correct place on their line of best fit or on horizontal axis or the correct reading from their line of best fit
	Correct reading from their line of best fit	A1ft	± ½ a small square ft their line of best fit must be decreasing throughout condone missing units
	Additional Guidance		
	If no line is drawn then the only mark available is the B1 for plotting the 2 extra points		
	No points are plotted, but a line of best fit drawn can score all but the first mark		
	For the second B mark an appropriate line of best fit is a line of any length which is intended to be straight, that follows the trend of the data and has at least 3 points on either side		
	For the accuracy mark ± ½ a small square is taken to be from the correct reading on the horizontal axis for their line of best fit using 280 on the vertical axis		
	Ignore any horizontal and vertical lines that come from the values in the table		
	Ignore any reference to £280 on the answer line		

Q	Answer	Mark	Comments
9(b)	**Alternative method 1**		
	15.9 × 0.6 or 9.54 or 15.9 ÷ 0.53 or 30	M1	oe
	their 9.54 ÷ 0.53 or their 30 × 0.6 or 18	M1dep	oe
	10.05 ÷ 2.65 or 3.79(…) or 3.8 or 3	M1	oe
	their 18 ÷ their 3 or 6	M1dep	oe dep on all previous marks
	their 6 × 13.85 or 83.1	M1dep	oe dep on 4th mark
	83.10	A1	SC4 249.30 SC3 249.3
	Alternative method 2		
	15.9 × 0.6 or 9.54	M1	oe
	10.05 ÷ 2.65 or 3.79(…) or 3.8 or 3	M1	oe
	their 3 × 0.53 or 1.59 (× 100)	M1dep	oe dep on previous mark
	their 9.54 ÷ their 1.59 or 6	M1dep	oe dep on all previous marks
	their 6 × 13.85	M1dep	oe dep on 4th mark
	83.10	A1	SC4 249.30 SC3 249.3
	Additional Guidance		
	Allow working in cm throughout		

Q	Answer	Mark	Comments
9(c)	**Alternative method 1**		
	$1\frac{1}{2} + 2\frac{1}{4} + \frac{9}{10}$ or $4\frac{13}{20}$ or 1.5 + 2.25 + 0.9(0) or 4.65	M1	oe eg working in cm 150 + 225 + 90 or 465
	15 × 12 or 180	M1	oe
	their 180 × 2.5 ÷ 100 or 4.5 or $4\frac{10}{20}$	M1dep	oe dep on previous M mark
	$4\frac{13}{20}$ and $4\frac{10}{20}$ and No or 4.65 and 4.5 and No	A1	oe
	Alternative method 2		
	15 × 12 or 180	M1	oe
	$1\frac{1}{2} + 2\frac{1}{4} + \frac{9}{10}$ or $4\frac{13}{20}$ or 1.5 + 2.25 + 0.9(0) or 4.65	M1	oe eg working in cm 150 + 225 + 90 or 465
	their 4.65 × 100 ÷ 2.5 or 186	M1dep	oe dep on previous M mark
	180 and 186 and No	A1	
	Alternative method 3		
	15 × 12 or 180	M1	oe
	their 180 × 2.5 ÷ 100 or 4.5 or $4\frac{10}{20}$	M1dep	oe eg 15 × 12 × 2.5
	their 4.5 – (1.5 + 2.25 + 0.9(0))	M1dep	oe
	–0.15(m) and No	A1	oe eg 15 cm short (and No)

Mark scheme and guidance continues on next page

9(c) cont'd	**Alternative method 4**		
	1.5 + 2.25 + 0.9(0) or 4.65 or 150 + 225 + 90 or 465	M1	oe
	their 4.65 × 100 ÷ 2.5 or their 465 ÷ 2.5 or 186	M1dep	oe
	their 186 ÷ 12 or 15.5	M1dep	oe eg their 4.65 ÷ (2.5 × 12)
	15.5 and No	A1	oe eg 15 feet 6 inches and No
	Alternative method 5		
	1.50 × 100 ÷ 2.5 or 60 and 2.25 × 100 ÷ 2.5 or 90 and 0.9(0) × 100 ÷ 2.5 or 36	M1	oe
	their 60 ÷ 12 or 5 and their 90 ÷ 12 or 7.5 and their 36 ÷ 12 or 3 or their 60 + their 90 + their 36 or 186	M1dep	oe
	their 5 + their 7.5 + their 3 or 186 ÷ 12 or 15.5	M1dep	oe
	15.5 and No	A1	oe eg 15 feet 6 inches and No

Mark scheme continues on next pageqa

	Additional Guidance	
	Allow working in cm consistently throughout for full marks in alts 1, 2, 3 eg Alt 1: 465 (cm) and 450 (cm) and No	M3A1

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