

Functional Skills Level 2
MATHEMATICS

8362/2

Paper 2 Calculator

Mark scheme

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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.

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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 $a \leq \text{value} < b$
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	7	B1	

Q	Answer	Mark	Comments
2	Nine million, five hundred (and) seven thousand, two hundred (and) eleven	B1	
	Additional Guidance		
	Ignore spelling if intention is clear		
	Ignore punctuation and grammar		

Q	Answer	Mark	Comments
3	4 : 1 or $1 : \frac{1}{4}$ or 1 : 0.25	B2	B1 any correct ratio not in its simplest form eg 36 : 9 or 12 : 3 or $3 : \frac{3}{4}$ or any correct simplification of any unsimplified ratio
	Additional Guidance		
	Accept working in days, eg using 365 or 366 for the days in a year and using 28 to 31 for the days in a month eg1 1095 : 270 or 1095 : 279 eg2 1095 : 270 and 73 : 18		B1 B2

Q	Answer	Mark	Comments	
4	All points plotted correctly with no incorrect labels and no extra points plotted	B1 B2	B1 one or two points plotted and labelled correctly or all three points plotted correctly but labelled incorrectly, with no extra points plotted or two out of three points plotted correctly but not labelled, with no extra points plotted	
			Additional Guidance	
			Award if intention is clear eg points are plotted on the correct coordinate on the grid with just the labels X, Y and Z, without a cross or dot	

Q	Answer	Mark	Comments
5	(triangular) prism	B1	condone triangle prism
	Additional Guidance		
	Ignore spelling if intention is clear		

Q	Answer	Mark	Comments
6	$3\frac{19}{20}$ or $\frac{79}{20}$ or 3.95	B1	oe eg $3\frac{38}{40}$

Q	Answer	Mark	Comments
7	$20 \div 4$ or $8 \div 2$ or 4 or 20×2 or 40 or $20 \div 8$ or 2.5	M1	oe eg $20 \div \frac{1}{2}$ implied by $40 \div 8$
	5	A1	

Q	Answer	Mark	Comments
8	Alternative method 1		
	3×-1.8 or -5.4 or $7 + 3 \times -1.8$ or 1.6	M1	
	3.2	A1	oe eg $\frac{16}{5}$ SC1 24.8 oe or 8.6 oe
	Alternative method 2		
	$14 + 6k$ or 6×-1.8 or -10.8	M1	
	3.2	A1	oe eg $\frac{16}{5}$ SC1 24.8 oe or 8.6 oe
	Additional Guidance		
SC1 for calculating with $k = 1.8$ or $2 \times 7 + 3 \times -1.8$			

Section B

Q	Answer	Mark	Comments
9(a)	Alternative method 1 – converting km to miles		
	Any correct km to mile conversion using the graph or 1.6 or 0.625 or $\frac{8}{5}$ or $\frac{5}{8}$ oe seen	M1	eg 38 km = 23.75 miles or 48 km = 30 miles or 5 km = 3 miles or 1.6 km = 1 mile
	Uses their conversion to work out 380 km in miles or [228, 248]	M1	eg 30 km = 19 miles 300 km = 190 miles 40 km = 25 miles 380 km = 190 + 25 + 25 = 240 miles or 380 ÷ 5 × 3 or 380 ÷ 1.6 or 237.5
	their conversion for 380 km in miles ÷ 5.5 or 40 × 5.5 or 220	M1dep	dep on previous M1
[41, 45.1] and Yes or 220 and [228, 248] and Yes	A1	with at least M1 seen	

Mark scheme continues on the next page

Alternative method 2 – converting miles to km			
9(a) cont.	Any correct mile to km conversion using the graph or 1.6 or 0.625 or $\frac{8}{5}$ or $\frac{5}{8}$ oe seen	M1	eg 10 miles = 16 km or 30 miles = 48 km or 1 mile = 1.6 km
	Uses their conversion to work out 40 miles in km or [62, 68]	M1	eg 10 miles = 16 km $16 \times 4 = 64$ km or 30 miles = 48 km 10 miles = 16 km 40 miles = $48 + 16 = 64$ km
	their conversion for 40 miles in km \times 5.5 or [341, 374] or $380 \div$ their conversion for 40 miles in km or [5.58, 6.13]	M1dep	dep on previous M1
	[341, 374] and Yes or [5.58, 6.13] and 5.5 and Yes or [5 hours 34 minutes, 6 hours 8 minutes] and Yes	A1	with at least M1 seen

Mark scheme and Additional guidance continue on the next page

9(a) cont.	Alternative method 3 – work out km/h and convert to mph		
	$380 \div 5.5$ or $69(\dots)$	M1	
	Any correct km to mile conversion using the graph or 1.6 or 0.625 or $\frac{8}{5}$ or $\frac{5}{8}$ seen	M1	eg $38 \text{ km} = 23.75 \text{ miles}$ or $5 \text{ km} = 3 \text{ miles}$ or $1.6 \text{ km} = 1 \text{ mile}$
	Uses their conversion to convert their $69(\dots)$ to miles or Uses their conversion to convert 40 miles to km	M1	eg $69(\dots) \div 5 \times 3$ condone their $69(\dots)$ being [71, 72] coming from $380 \div 5.3$ eg $40 \div 3 \times 5$
	[41, 45.1] and Yes or [62, 68] and $69(\dots)$ and Yes	A1	with at least M1 seen
	Additional Guidance		
	Use the alt that favours the student		
	For reading conversions off the graph allow $\pm \frac{1}{2}$ a square		
	Allow working in minutes per mile or km or miles or km per minute eg $[228, 248] \div 330 = [0.69, 0.8]$ and $40 \div 60 = 0.66\dots$ and Yes		M1M1M1A1

Q	Answer	Mark	Comments	
9(b)	65×5 or 325 or 0.73×0.14 or 0.1022 or 0.73×65 or 47.45	M1	implied by 237.25	
	$605.17 \div 0.73$ or 829 or $0.73 \times 65 \times 5$ or 237.25	M1		
	their 829 – 65×5 or 504 or 605.17 – their 237.25 or 367.92	M1dep	dep on previous M1	
	3600	A1		
	Additional Guidance			
	Up to M2 may be awarded for correct work with no answer, or incorrect answer, even if this is seen amongst multiple attempts			
	T&I with 3600 T&I without 3600			M1M1M1A1 M0M0M0A0

Q	Answer	Mark	Comments
10(a)	Alternative method 1		
	$\frac{1}{3}$ or 0.33... or 33.3...%	M1	oe eg 1 out of 3
	$\frac{2}{5}$ or 0.4 or 40%	M1	oe eg 2 out of 5
	their $\frac{1}{3} \times$ their $\frac{2}{5}$ or $\frac{2}{15}$	M1	oe their $\frac{1}{3} < 1$ and their $\frac{2}{5} < 1$
	0.13(...) or 13(...) % and Yes or $\frac{20}{150}$ and $\frac{15}{150}$ and Yes	A1	oe comparable fractions for 10% and $\frac{2}{15}$
	Alternative method 2		
	3×5 or lists 15 different outcomes	M1	implied by a fraction with denominator 15
	$3 \times 5 \div 10$ or 1.5	M1dep	oe
	Identifies there are 2 possible winning outcomes	M1	eg R2 and R4 implied by $\frac{2}{15}$
	2 and 1.5 and Yes	A1	

Q	Answer	Mark	Comments	
10(b)	$3 \times [3.14, 3.142]$ or $[9.4, 9.43]$	M1	oe implied by $[30.55, 30.65]$	
	$16 \times [3.14, 3.142] (\div 2)$ or $[50.2, 50.3] (\div 2)$ or $[25.1, 25.14]$	M1	oe implied by $[81.57, 81.71]$ or $[163.14, 163.48]$ condone $8 \times [3.14, 3.142] (\times 2)$	
	Addition of all five straight lines eg $36.5 + 36.5 + 27.5 + 27.5 + 27.5$ or 155.5 or Multiplication of all five straight lines by 3.25 eg $36.5 \times 2 \times 3.25$ or 237.25 and $27.5 \times 3 \times 3.25$ and 268.12 or 268.13	M2	M1 addition of at least two straight lines eg $36.5 + 36.5$ or 73 or length of at least one straight line $\times 3.25$ eg 36.5×3.25 or 118.62 or 118.63	
	$(\text{Sum of all their lengths}) \times 3.25$ or $\text{Sum of (all their lengths} \times 3.25)$	M1	must have at least four lengths summed	
	[699, 699.50]	A1	accept 700 with working correct money notation	
	Additional Guidance			
	Addition of all five straight lines could be embedded with the addition of circular lines			
[215.1, 215.23] implies the first M4				

Q	Answer	Mark	Comments
10(c)	Alternative method 1		
	8225 ÷ 7 × 2 or 2350	M1	oe
	1.03 seen or used	M1	implied by 2420.5(0)
	their 2350 × 1.03 ⁴ or [2644, 2645]	M1dep	oe dep on second M1
	[2644, 2645] and No	A1	
	Alternative method 2		
	8225 ÷ 7 × 2 or 2350	M1	oe
	0.03 × their 2350 or 70.5(0)	M1	oe implied by 2420.5(0)
	fully correct method for finding the final value of the investment	M1dep	dep on 2nd M mark eg (2350 + 70.5) × 0.03 = [72.6, 73] (2350 + 70.5 + [72.6, 73]) × 0.03 = [74.7, 75] (2350 + 70.5 + [72.6, 73] + [74.7, 75]) × 0.03 = [77, 77.1] 2350 + 70.5 + [72.6, 73] + [74.7, 75] + [77, 77.1] or [2644, 2645]
	[2644, 2645] and No	A1	with no incorrect working seen
	Alternative method 3		
	1.03 seen or used	M1	implied by 8471.75
	8225 × 1.03 ⁴ or 9257.3...	M1	
	8225 × 1.03 ⁴ × $\frac{2}{7}$ or [2644, 2645]	M1	
	[2644, 2645] and No	A1	
	Additional Guidance		
	Alt 2 Total after 2nd year [2493.11, 2493.12] Total after 3rd year [2567.90, 2567.92]		implies M1M1
	Alt 3 Total after 2nd year [8725.90, 8725.91] Total after 3rd year [8987.67, 8987.69]		implies M1M1

Q	Answer	Mark	Comments
11(a)	$\frac{4}{3} \times \pi \times 2.8^3$ or [90, 92]	M1	
	their [90, 92] $\times 200 \div (5 \times 1000)$ or $200 \div (5 \times 1000 \div \text{their [90, 92]})$ or [3.6, 3.7] or their [90, 92] $\times 200 \div 1000$ and 5×4 or [18, 18.4] and $5 \times 4 = 20$ or their [90, 92] $\times 200$ and $5 \times 1000 \times 4$ or [18 000, 18 400] and $5 \times 1000 \times 4 = 20\,000$	M3	oe their [90, 92] must be from a calculation involving π M2 their [90, 92] $\times 200 \div 1000$ or [18, 18.4] or $5 \times 1000 \div \text{their [90, 92]}$ or [54, 56] or their [90, 92] $\times 200$ and 5×1000 M1 1000×5 or 5000 or $1000 \div \text{their [90, 92]}$ or [10.8, 11.2] or their [90, 92] $\div 1000$ or [0.09, 0.092] or their [90, 92] $\times 200$ or [18 000, 18 400]
	[3.6, 3.7] and 4 or [54, 56] and 4 or [18, 18.4] and $5 \times 4 = 20$ and 4 or [18 000, 18 400] and $5 \times 1000 \times 4 = 20\,000$ and 4	A1	$200 \div [54, 56]$ is implied

Q	Answer	Mark	Comments
11(b)	Alternative method 1		
	76.5(0) ÷ 0.85 or 90	M1	
	their 90 – 76.5(0) or their 90 – 14	M1dep	
	13.5(0) (less than 14) or 76 (less than 76.50)	A1	
	Alternative method 2		
	76.5(0) ÷ 0.85 or 90	M1	
	76.5(0) + 14 or 90.5(0)	M1	
	90 and 90.5(0)	A1	
	Alternative method 3		
	76.5(0) ÷ 85 or 0.9 or 76.5(0) ÷ 17 or 4.5	M1	correctly calculating 1% or 5%
	their 0.9 × 15 or their 4.5 × 3	M1dep	correctly multiplying up to 15%
	13.5(0) (less than 14)	A1	
	Alternative method 4		
	76.5(0) + 14 or 90.5(0)	M1	
	0.15 × their 90.5(0) or [13.57, 13.58]	M1dep	
	90.5(0) and [13.57, 13.58]	A1	

Q	Answer	Mark	Comments
11(c)	Alternative method 1		
	79 + 161 + 104 + 196 or 540 or 79 + 161 + 104 or 344	M1	oe
	$\frac{79 + 161 + 104}{79 + 161 + 104 + 196}$ or 0.6(3...)	M1	oe eg (540 – 196) ÷ 540
	0.6(3...) or 0.64 (and 0.7) and No	A1	oe percentage or fraction that can be directly compared to 70% or $\frac{7}{10}$ oe
	Alternative method 2		
	79 + 161 + 104 + 196 or 540	M1	
	196 ÷ their 540 or 0.36(...) or 0.4	M1dep	
	0.36(...) and 0.3 and No or 0.4 and 0.3 and No	A1	oe percentages or fractions that can be directly compared to each other
	Alternative method 3		
	79 + 161 + 104 + 196 or 540	M1	
	$\frac{3}{10} \times$ their 540 or 162	M1dep	oe eg 0.3 × their 540
	162 (and 196) and No	A1	
	Alternative method 4		
	79 + 161 + 104 + 196 or 540 or 79 + 161 + 104 or 344	M1	
	$\frac{7}{10} \times (79 + 161 + 104 + 196)$ or 378	M1dep	oe
	378 and (79 + 161 + 104 =) 344 and No	A1	
Additional Guidance			
Use the alt that favours the student			

Q	Answer	Mark	Comments
12(a)	Alternative method 1		
	20 × 2.5 or 50 or 9 × 2.5 or 22.5	M1	
	20 × 2.5 ÷ 11 or 4.5(45) or 4 and 9 × 2.5 ÷ 7.5 or 3	M1	
	12	A1	
	their 12 × 8	M1	their 12 cannot be a given length of the honeycomb or frame in any unit
	96	A1	
	Alternative method 2		
	20 × 2.5 or 50 or 9 × 2.5 or 22.5	M1	
	20 × 2.5 ÷ 7.5 or 6.66... or 6 and 9 × 2.5 ÷ 11 or 2.045... or 2	M1	
	12	A1	
	their 12 × 8	M1	their 12 cannot be a given length of the honeycomb or frame in any unit
	96	A1	

Mark scheme and Additional guidance continue on the next page

12(a) cont.	Alternative method 3		
	11 ÷ 2.5 or 4.4 or 7.5 ÷ 2.5	M1	
	20 ÷ (11 ÷ 2.5) or 4.5(45) and 9 ÷ (7.5 ÷ 2.5)	M1	
	12	A1	
	their 12 × 8	M1	their 12 cannot be a given length of the honeycomb or frame in any unit
	96	A1	
	Alternative method 4		
	11 ÷ 2.5 or 4.4 or 7.5 ÷ 2.5 or 3	M1	
	20 ÷ (7.5 ÷ 2.5) or 6.66... or 6 and 9 ÷ (11 ÷ 2.5) or 2.045... or 2	M1	
	12	A1	
	their 12 × 8	M1	their 12 cannot be a given length of the honeycomb or frame in any unit
	96	A1	
	Additional Guidance		
	Using overall areas 20 × 9 × 2.5 × 2.5 = 1125 cm ² or 20 × 9 = 180 in ² and dividing by total area of the honeycomb piece 11 × 7.5 = 82.5 cm ² or (11 ÷ 2.5) × (7.5 ÷ 2.5) = 13.2in ² giving answers of 13.63... or rounded to 13 could continue to score the final method mark eg 13.63 × 8 = 109.04		M1M0A0 M1A0
	The M1 for conversion may be awarded even if not used		

Q	Answer	Mark	Comments
12(b)	Alternative method 1		
	Any two angles measured correctly [43, 47] or [58, 62] or [118, 122] or [33, 37] or [63, 67]	M1	could be on the diagram
	their [43, 47] + their [58, 62] + their [118, 122] or 360 – their [33, 37] – their [33, 37] – their [63, 67] or [219, 231] or 360 – (their [43, 47] + their [58, 62] + their [118, 122]) or [129, 141]	M1dep	
	$\frac{1}{3} \times 360 (\times 2)$ or 120 or 240	M1	oe
	240 and [219, 231] and Packet 2 or 120 and [129, 141] and Packet 2	A1	

Mark scheme continues on the next page

12(b) cont.	Alternative method 2		
	Any two angles measured correctly [43, 47] or [58, 62] or [118, 122] or [33, 37] or [63, 67]	M1	could be on the diagram
	(their [43, 47] + their [58, 62] + their [118, 122]) ÷ 360 or [0.60(...), 0.64(...)] or (360 – their [43, 47] – their [58, 62] – their [118, 122]) ÷ 360 or (their [33, 37] + their [33, 37] + their [63, 67]) ÷ 360 or [0.35(...), 0.39(...)]	M1dep	oe percentages or fractions
	$1 \div 3 (\times 2)$ or 0.33... or 0.66...	M1	oe eg percentages or fractions reference to 'at least' or 'greater than' can be ignored
	0.66 and [0.60(...), 0.64(...)] and Packet 2 or 0.33 and [0.35(...), 0.39(...)] and Packet 2	A1	oe eg percentages or fractions

Mark scheme and Additional guidance continue on the next page

12(b) cont.	Alternative method 3		
	Any two angles measured correctly [43, 47] or [58, 62] or [118, 122] or [33, 37] or [63, 67]	M1	could be on the diagram
	(their [43, 47] + their [58, 62] + their [118, 122]) ÷ 360 or 5 ÷ 8 or (their [33, 37] + their [33, 37] + their [63, 67]) ÷ 360 or 3 ÷ 8	M1dep	
	$\frac{5}{8} = \frac{15}{24}$ and $\frac{2}{3} = \frac{16}{24}$ or $\frac{3}{8} = \frac{9}{24}$ and $\frac{1}{3} = \frac{8}{24}$	M1	oe correct comparison of fractions with common denominator
	$\frac{15}{24}$ and $\frac{16}{24}$ and Packet 2 or $\frac{9}{24}$ and $\frac{8}{24}$ and Packet 2	A1	oe fractions with common denominator
	Additional Guidance		
	their [219, 231] and their [129, 141] must not come from using an incorrectly measured angle		

Q	Answer	Mark	Comments
12(c)	Alternative method 1		
	5, 15, 25, 35	M1	condone one error
	their $5 \times 2 +$ their $15 \times 8 +$ their $25 \times 12 +$ their 35×3 or $10 + 120 + 300 + 105$ or 535	M1	condone their midpoints on or between the class boundaries
	their $535 \div (2 + 8 + 12 + 3)$ or 21.4	M1dep	dep on previous M1
	$4 \times$ their 21.4 or 85.6	M1	$0 < \text{their } 21.4 < 40$
	their $85.6 \div 2 \times 5$ or 214 or their $85.6 \div 2 \times 7$	M1	
	299.6 or 300	A1	
	Alternative method 2		
	5, 15, 25, 35	M1	condone one error
	their $5 \times 2 +$ their $15 \times 8 +$ their $25 \times 12 +$ their 35×3 or $10 + 120 + 300 + 105$ or 535	M1	condone their midpoints on or between the class boundaries
	their $535 \div (2 + 8 + 12 + 3)$ or 21.4	M1dep	dep on previous M1
	$5 \div 2 \times 4$ or 10 or $2 : 5 = 4 : 10$	M1	
	$(4 + \text{their } 10) \times \text{their } 21.4$	M1	$0 < \text{their } 21.4 < 40$
	299.6 or 300	A1	

Additional guidance continues on the next page

	Additional Guidance	
12(c) cont.	Up to M2 may be awarded for correct work with no answer, or incorrect answer, even if this is seen amongst multiple attempts, as long as it is not contradicted by an incorrect attempt at calculating the mean	