

GCSE
MATHEMATICS
8300/3F

Foundation Tier

Paper 3 Calculator

Shadow paper based on June 2023 paper

Mark scheme

June 2023

First Half

Version: 1.0

Q	Answer	Mark	Comments
1(a)	7	B1	

Q	Answer	Mark	Comments
1(b)	27	B1	

Q	Answer	Mark	Comments
1(c)	63	B1	

Q	Answer	Mark	Comments
2(a)	13	B1	

Q	Answer	Mark	Comments
2(b)	1 2 5 7 13 13 18 20 or 1 2 5 7 13 or 20 18 13 13 7 or 7 and 13 or $20 \div 2$ or $\frac{8+1}{2}$ th or 4.5th value	M1	full list of numbers in either order allow one missing, extra or transcription error in an otherwise full list of numbers list of first or last five numbers in either order allow only a transcription error in a list of the first or last five numbers oe works out the position of the median in the list
	10	A1	
	Additional Guidance		
	Ordered list in the stem of the question can be assumed to be for part (b) unless contradicted by the working seen in the working space		
	Numbers in a list may be seen crossed out in an attempt to find the median		
	Answer 10 from any or no list		M1A1
	Puts list in order then finds the mean		M1A0

Q	Answer	Mark	Comments
2(c)	19	B1	

Q	Answer	Mark	Comments
3(a)	C	B1	
	B and E	B1	either order

Q	Answer	Mark	Comments	
3(b)	Colour spinner with all sections labelled red, blue, green or yellow with at least one of each and shape spinner with all sections labelled square, circle or triangle with at least one of each	B2	B1 one spinner with all sections labelled red, blue, green or yellow with at least one of each or one spinner with all sections labelled square, circle or triangle with at least one of each	
	Additional Guidance			
	Allow any unambiguous labelling eg R for Red			
	Allow any unambiguous splitting into sections eg unruled			
	Shape spinner under Colour heading and/or Colour spinner under Shape heading can score a maximum of B1			
	Sections do not have to be equal			
	Ignore any probabilities given on the spinners			

Q	Answer	Mark	Comments
4	10.5×100 or 1050 or $80 \div 100$ or 0.8 or $3 \times 80 \div 100$ or 2.4	M1	oe 970 implies 1050 9.7 implies 0.8
	their $1050 - 3 \times 80$ or their $1050 - 240$ or 810 or $10.5 - 3 \times \text{their } 0.8$ or $10.5 - \text{their } 2.4$ or 8.1	M1dep	oe eg $1050 - 80 - 80 - 80$ oe eg $10.5 - \text{their } 0.8 - \text{their } 0.8 - \text{their } 0.8$
	810 cm or 8.1 m	A1	oe
	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		
	8 m 10 cm on answer line		M1M1A1
	Units may be seen in working but must be seen with the correct value eg 810 on answer line with 810 cm seen in working		M1M1A1
	$10.5 - 3 \times 80 = 810$ centimetres or 8.1 metres		M1M1A1
	$10.5 - 3 \times 80 = 810$ or 8.1		M1M1A0
	Do not ignore further incorrect conversion after correct answer seen eg $810 \text{ cm} = 81 \text{ m}$		M1M1A0

Q	Answer	Mark	Comments
5(a)	16	B1	implied by 76 or 316
	(3rd term =) 76	B1ft	ft (their $16 + 3$) $\times 4$
	Additional Guidance		
	16 76 on answer line		B1B1
	16 and/or 76 seen but not final term eg Answer 316		B1B0
	Answer only 316		B1B0

Q	Answer	Mark	Comments
5(b)	30×5 or 150	M1	
	195	A1	SC1 105 or 375
	Additional Guidance		
	195, 30, ... on answer line		M1A1
	195, 30, ... in working with answer line blank		M1A1
	195, 30, ... in working with 84 on answer line		M1A0
	$195 - 45 \div 5 = 30$ without answer 195 (embedded answer)		M1A0

Q	Answer	Mark	Comments
6(a)	3	B1	

Q	Answer	Mark	Comments
6(b)	12	B1	

Q	Answer	Mark	Comments
6(c)	15 + 6 or 21 or 8.48	M1	may be implied by a journey (lines or curves) ending at 8.48 on the graph
	Straight line from (8.27, 3) to (8.48, 0)	A1	$\pm \frac{1}{2}$ small square ignore any other working lines on the graph
	Additional Guidance		
	Fully correct graph		M1A1
	Accept unruled line if intention clear		

Q	Answer	Mark	Comments
7	$24 \times 10.4(0)$ or 249.60	M1	oe
	$10 - 6 + 8 - 2$ or $4 + 6$ or 10 or $(10 - 6) \times 15.6(0)$ or $4 \times 15.6(0)$ or 62.4(0) or $(8 - 2) \times 15.6(0)$ or $6 \times 15.6(0)$ or 93.6(0)	M1	oe
	their $10 \times 15.6(0)$ or their 62.4(0) + their 93.6(0) or 156	M1dep	oe dep on 2nd M their 62.4(0) and their 93.6(0) must both be from correct methods
	405.60	A1	405.6 is A0 SC2 421.2(0) or 436.8(0)

Q	Answer	Mark	Comments
8	Alternative method 1		
	40 + 40 + 35 or 115	M1	
	1000 ÷ 10 or 100 or 1000 ÷ 8 or 125	M1	oe eg $\frac{1}{10} \times 1000$
	100 and 115 and 125	A1	
	Alternative method 2		
	40 + 40 + 35 or 115 or 1 ÷ 10 or 0.1 or 1 ÷ 8 or 0.125	M1	oe do not accept $\frac{1}{10}$ or $\frac{1}{8}$
	their 115 ÷ 1000 or 0.115 or their 115 × 10 or 1150 or their 115 × 8 or 920	M1dep	oe eg $\frac{115}{1000}$ 0.92 implies 920 1.15 implies 1150
	0.115 and 0.1 and 0.125 or 920 and 1150 and 1000 or 0.92 and 1.15 and 1	A1	oe decimals, percentages or fractions with a common denominator

Mark scheme and Additional Guidance continue on the next page

8 cont	Alternative method 3		
	$40 \div 1000$ or 0.04 or $35 \div 1000$ or 0.035 or $1 \div 10$ or 0.1 or $1 \div 8$ or 0.125	M1	oe do not accept $\frac{1}{5}$ or $\frac{1}{4}$
	their 0.04 + their 0.04 + their 0.035 or 0.115	M1dep	oe their 0.04 and their 0.035 must all be from correct methods
	0.1 and 0.115 and 0.125	A1	oe decimals, percentages or fractions with a common denominator
	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		

Q	Answer	Mark	Comments
9	Always true Sometimes true Sometimes true	B3	B1 for each
	Additional Guidance		
	Allow any unambiguous indication eg if a cross is the only indication in a row, take that as the answer		
	A row with a tick and some crosses, mark the tick		
	A row with more than one tick is B0 for that row		

Q	Answer	Mark	Comments
10(a)	m^8	B1	
	Additional Guidance		
	Accept $1m^8$		

Q	Answer	Mark	Comments
10(b)	$6h + 14g$	B2	either order B1 $6h$ or $14g$
	Additional Guidance		
	Further incorrect work after a B2 response is B1 eg $6h + 14g = 20gh$		B1
	Further incorrect work after a B1 response is B1 eg $8h + 14g = 22gh$		B1
	$h6 + 14g$ or $6h + g14$		B1
	$h6$ or $g14$		B1

Q	Answer	Mark	Comments	
11	180 ÷ 15 (= 12) and 12 × 4 = 48 or 180 ÷ 15 (= 12) and 11 × 12 (= 132) and 48 + 132 = 180 or 12 × 4 (= 48) and 12 × 11 (= 132) and 48 + 132 = 180 or 48 ÷ 4 (= 12) and 12 × 15 = 180 or 4:11 = 48:132 and 48 + 132 = 180 or 180 – 48 (= 132) and 48:132 = 4:11	B2	oe B1 180 ÷ 15 or 48 ÷ 4 or 12 oe or $\frac{4}{15}$ $\frac{11}{15}$ or 180 – 48 or 132 oe	
	Additional Guidance			
	48 and 132 shown on the diagram is not oe for 48 + 132 = 180			
	180 ÷ 15 × 4 = 48		B2	
	180 ÷ 15 and 12 × 4 and 4:11 = 48:132		B2	
	180 ÷ 15 = 12 and 4:11 = 48:132 (12 × 4 or 12 × 11 missing)		B1	
	48:132 and 48 + 132 = 180 (4:11 = 48:132 missing)		B1	
	180 ÷ 15 = 12 and 48 + 132 = 180 (12 × 4 or 12 × 11 missing)		B1	
	48 ÷ 4 = 12 and 180 – 48 = 132 (12 × 4 or 12 × 11 missing)		B1	
	48 ÷ 4 and 12 × 11 and 48:132 = 4:11 (48 + 132 = 180 missing)		B1	
	48 + 132 = 180		B1	

Q	Answer	Mark	Comments
12(a)	Pair of numbers satisfying all criteria	B2	B1 pair of numbers satisfying two criteria eg $a = 20$ $b = 10$ or $a = 6$ $b = -4$
	Additional Guidance		
	a and b can be decimals eg $a = 11.2$ $b = 1.2$		B2
	Correct integer values $a = 12$ $b = 2$ $a = 11$ $b = 1$ $a = 10$ $b = 0$ $a = 9$ $b = -1$ $a = 8$ $b = -2$		B2

Q	Answer	Mark	Comments
12(b)	Pair of numbers satisfying all criteria	B2	eg $w = 4.6$ $x = 1.9$ B1 pair of numbers satisfying two criteria eg $w = 4.5$ $x = 2$ or $w = 5$ $x = 1.5$ SC1 pair of numbers with a sum of 6.5 satisfying neither inequality
	Additional Guidance		
	$w = 1.9$ $x = 4.6$ $w = 1.8$ $x = 4.7$ etc		SC1

Q	Answer	Mark	Comments
13	Yes ticked and appropriate working to show AB and CD are parallel	B2	B1 any correct angle on the diagram eg 38 opposite the 38 given eg 38 written next to the 142 given or any correct angle evaluation seen in working eg $180 - 38 = 142$
	Additional Guidance		
	Angles must be shown on diagram or clearly identified to score B2 eg Yes and 38 opposite the given 38 and corresponding angle at top shown as 38 and $38 + 142 = 180$		
	Ignore any incorrect or irrelevant terminology alongside correct working		
	“Yes” may be implied		
	Condone an incorrect angle if not subsequently used		
	Crossed out angles on diagram may be used to support working		

Q	Answer	Mark	Comments
14	All 3 correct matches	B3	B1 for each correct match
	Additional Guidance		
	Mark intention		
	Matching to more than one box on the right is choice for that match		
	$4(a + 3) \equiv 4a + 12$ $3b - 6a$ $5x + 7 = 22$ $A = 2r + 6d$ Identity Formula Equation Inequality Expression		

Q	Answer	Mark	Comments
15	$650 \div 2$ or 325	M1	oe eg 2×325
	$3 \times$ their 325 or 975	M1dep	oe $650 \times \frac{3}{2}$ is M2
	1975 – their 975 or 1000 or $(1975 - \text{their } 975) \div 4$	M1dep	oe dep on M2
	250	A1	
	Additional Guidance		
	Up to M3 may be awarded for correct work, with no answer or incorrect answer, even if this is seen amongst multiple attempts		

Q	Answer	Mark	Comments
16	$13.6 \times 10 \div 2$ or 68	M1	oe
	their $68 \div 27.2$	M1dep	
	2.5	A1	SC1 5
	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		
	$2.5 \times 27.2 = 68$, 68 on answer line		M1M1A0