

SOLUTIONS

GCSE Maths: Number

Mark schemes for the Grade 4 starter questions

Questions	20
Total marks	70
Sub-topics covered	8
Papers drawn from	20
Years	2017 to 2025

The official Edexcel mark scheme for every question in the Number question booklet, in the same order.

Question numbers match: Question 7 here answers Question 7 there.

M marks are for method, A marks for accuracy, B marks stand alone.
'oe' means or equivalent; 'cao' means correct answer only.

N2 The Four Operations

Question 1

June 2017 · Paper 1 · Q3

3 marks

3	21840 1638 23478 546 201624 151218 478 4 <table><tr><td></td><td>500</td><td>40</td><td>6</td></tr><tr><td>40</td><td>20000</td><td>1600</td><td>240</td></tr><tr><td>3</td><td>1500</td><td>120</td><td>18</td></tr></table> 20000 + 1600 + 240 + 1500 + 120 + 18 = 23478		500	40	6	40	20000	1600	240	3	1500	120	18	234.78	M1	for complete method with relative place value correct including addition of all the appropriate elements of the calculation e.g. two lines of 1 st method, internal numbers of grids, or complete structure shown of partitioning methods
	500	40	6													
40	20000	1600	240													
3	1500	120	18													
		A1	for digits 23478													
		A1	(ft dep M1) for correct placement of the decimal point into their final answer													

Question 2

November 2022 · Paper 1 · Q2

4 marks

2	(a)	$3\frac{17}{20}$	M1	for finding two fractions with a correct common denominator (multiple of 20), with at least one correct corresponding numerator, eg $\frac{12}{20}, \frac{5}{20}$ or $\frac{32}{20}, \frac{45}{20}$	May be from $\frac{3}{5}$ and $\frac{1}{4}$ or from $\frac{8}{5}$ and $\frac{9}{4}$
			A1	for $3\frac{17}{20}$ or an equivalent mixed number SC B1 for an answer of 3.85 if M0 scored	
	(b)	shown	M1	for $\frac{8}{3} \times \frac{1}{6}$ oe or $\frac{4}{9} \times \frac{6}{1}$ oe or $\frac{8}{3} \times \frac{9}{4}$ oe	
			A1	for unsimplified fraction which could lead to $\frac{4}{9}$, eg $\frac{8}{18}$ or for $\frac{4}{3} \times \frac{1}{3}$ or $\frac{24}{9} \div 6$ or for unsimplified fraction which could lead to $2\frac{2}{3}$, eg $\frac{24}{9}$ or for unsimplified fraction which could lead to 6, eg $\frac{72}{12}$	

Question 3

November 2024 · Paper 1 · Q3

5 marks

3	(a)	$2\frac{1}{3}$	M1	for a method to subtract by writing both fractions with a common denominator with at least one correct numerator, eg $3\frac{3}{6} - 1\frac{1}{6}$ or $\frac{3}{6} - \frac{1}{6} (= \frac{2}{6})$ or $\frac{21}{6} - \frac{7}{6} (= \frac{14}{6})$ or $\frac{42}{12} - \frac{14}{12} (= \frac{28}{12})$	
			A1	for $2\frac{1}{3}$ or an equivalent mixed number	Do not isw incorrect further work from correct equivalent mixed number
	(b)	Shown	M1	for conversion to improper fractions, eg $\frac{21}{4}$ or $\frac{7}{3}$ or $\frac{9}{4}$	
			M1	(dep) for method to divide by a fraction, eg $\frac{21}{4} \times \frac{3}{7}$ or $\frac{63}{12} \div \frac{28}{12}$	
			C1	for complete work showing each stage as far as $\frac{9}{4}$ or $2\frac{7}{28}$	Must see an intermediate step, eg $\frac{63}{28}$ must be seen and then cancelled or correct cancelling seen before the multiplication

N3 Inverse Operations and Order of Operations

Question 4

June 2019 · Paper 3 · Q7

2 marks

7	0.319	M1	for partial method eg 1.70(499...) or 16.74 or $\frac{837}{50}$ or 0.101(8516...) or 0.102 or 0.32	Accept 0.319 or better. Condone incorrect digits after the 0.319; isw incorrect rounding if 0.319(1419...) is shown in working.
		A1	for 0.319(1419...)	

Question 5

June 2023 · Paper 2 · Q1

3 marks

1	(a)	1.765(2...)	M1	for fully evaluating the numerator or denominator, eg 18.3... or 10.4(1) or answer of 1.76 or 1.77 or digits 1765(2...)	Answer must be given to at least 3 decimal places rounded or truncated. Check first 4 significant figures only.
			A1	for 1.765(2.....)	
	(b)	1.6	B1	for 1.6 oe	

N4 Factors, Multiples and Prime Numbers

Question 6

June 2018 · Paper 2 · Q2

3 marks

2	(a)	280	M1	for listing at least 3 multiples of both 40 and 56 OR finds the prime factors of both 40 and 56	40, 80, 120, ... 56, 112, 168, ... OR 2,2,2,5 and 2,2,2,7
			A1	cao	
	(b)	60	B1	60 or $2^2 \times 3 \times 5$ oe	2^2 , 3, 5 not enough ie must be a product

Question 7

November 2020 · Paper 2 · Q1

4 marks

1	(a)	$2 \times 2 \times 3 \times 7$	M1	for a complete method to find prime factors, could be shown on a factor tree, with no more than one arithmetic error or for 2, 2, 3, 7	Condone the use of 1
			A1	for $2 \times 2 \times 3 \times 7$ oe	Accept $2^2 \times 3 \times 7$
	(b)	420	M1	for at least 3 multiples of both 60 and 84 (can include 60 and 84) or finds the prime factors of both 84 (may be seen in (a)) and 60, may be seen in factor trees	60, 120, 180, 240, 300, 360, 420 84, 168, 252, 336, 420 $60 = 2 \times 2 \times 3 \times 5$ or $2^2 \times 3 \times 5$ If factor tree in (a) is incorrect ft this factor tree in part3 (b) for M1 only
			A1	420 or $2 \times 2 \times 3 \times 5 \times 7$ oe	

Question 8

November 2021 · Paper 2 · Q2

4 marks

2	(a)	12	M1	for a correct factor tree for either 60 or 84 with no more than one arithmetic error or for listing factors of 60 or 84, at least 4 correct for either (with no more than 1 incorrect in either list), could be in factor pairs or for the prime factors of 60 (2, 2, 3, 5) or 84 (2, 2, 3, 7)	Condone the use of 1 in any factor tree 60: 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60 84: 1, 2, 3, 4, 6, 7, 12, 14, 21, 28, 42, 84 2,2,3 is not enough, it must be a product
			A1	for 12 or $2 \times 2 \times 3$ oe SC B1 for answer of 4 or 6, if M0 scored	
	(b)	120	M1	for a correct factor tree for either 24 or 40 with no more than one arithmetic error or for at least 3 multiples of both 24 and 40 (can include 24 and 40) or for the prime factors of either 24 (2, 2, 2, 3) or 40 (2, 2, 2, 5) or for a common multiple from their lists ($\neq 120$)	Condone the use of 1 in any factor tree 24: 24, 48, 72, 96, 120, ... 40: 40, 80, 120, ... For the list not containing 120, accept the first 3 correct multiples or one error in the first 4 multiples
			A1	for 120 or $2 \times 2 \times 2 \times 3 \times 5$ oe	

N7 Indices (Integer and Fractional)

Question 9

November 2017 · Paper 2 · Q6

4 marks

6	(a)		6	B1	cao
	(b)		5	B1	cao
	(c)		Shown	M1	for writing 100^a or 1000^b as a power of 10 ($=10^{2a}$ or 10^{3b}) or 10^{2a+3b} or $100 = 10^2$ and $1000 = 10^3$
				C1	for complete chain of reasoning leading to conclusion

Question 10

November 2023 · Paper 1 · Q2

4 marks

2	(a)(i)	1	B1	cao	
	(ii)	$\frac{1}{25}$	B1	oe	
	(b)	2^6	M1	for a correct first step using a rule of indices, eg $2^{5+4} (= 2^9)$ or $2^{5-3} (= 2^2)$ or $2^{4-3} (= 2^1)$ or for $2 \times 2 \times 2 \times 2 \times 2$ or 64	
			A1	for 2^6	
					Accept $n = 6$

N9 Standard Form

Question 11

November 2021 · Paper 3 · Q3

4 marks

3	(a)	450 000	B1	cao	
	(b)	7×10^{-3}	B1	cao	
	(c)	4.73×10^3	M1	for 4730 oe or for 4.73×10^n where $n \neq 3$	
			A1	cao	

Question 12

June 2022 · Paper 1 · Q4

4 marks

4	(a)	0.00163	B1	cao	
	(b)	4.38×10^5	B1	cao	
	(c)	2.4×10^{-1}	M1	for $4 \times 6 \times 10^{3-5}$ or 0.24 oe eg 24×10^{-2} or 2.4×10^n where $n \neq -1$	
			A1	cao	

Question 13

June 2024 · Paper 3 · Q2

4 marks

2	(a)(i)	53 000	B1	cao	
	(ii)	0.000 074	B1	cao	
	(b)	3.42×10^7	M1	for $9\,700\,000 + 24\,500\,000 (= 34\,200\,000)$ or 3.42×10^n ($n \neq 7$) oe or 3.4×10^7 or correct answer in incorrect form eg 34.2×10^6 or both in a form ready for addition, eg $9.7 \times 10^6 + 24.5 \times 10^6$	
			A1	cao	

N12 Fractions and Percentages as Operators

Question 14

June 2025 · Paper 2 · Q5

3 marks

5	10 000	M1	for recognising 8000 is $\frac{4}{5}$ eg $8000 \div 4 (= 2000)$ or $\frac{4}{5} = 8000$ or $8000 = 80\%$ or $8000 \div 80 (= 100)$ or $x \times 0.8 = 8000$	
		M1	for a complete method, eg “2000” $\times 5$ or $8000 \times \frac{5}{4}$ or “100” $\times 100$ or $\frac{8000}{0.8}$	
		A1	cao	

Question 15

June 2023 · Paper 3 · Q2

5 marks

2	(a)	11533	P1	for working with 68%, eg $800 \times 0.68 (= 544 \text{ people})$ oe or " 16960 " $\times 0.68$ oe	Percentage calculation could be done at any stage
			P1	for a correct process, other than that of finding a %, eg " 544 " $\times 2 (= 1088)$ or $10.6 \times 2 (= 21.2)$ or $800 \times 2 (= 1600)$ or " 544 " $\times 10.6 (= 5766.4)$ or $800 \times 10.6 (= 8480)$	
			P1	for full process to find amount of coffee required eg " 1088 " $\times 10.6$ or " 544 " $\times 21.2$ or " 5766.4 " $\times 2 (= 11532.8)$ or for an answer of 11532	
			A1	for answer in the range 11532.5 to 11533	
	(b)	Statement	C1	for a correct statement Acceptable examples the amount will be more he will need more coffee it is an underestimate my answer in part (a) means there would not be enough for everyone he will need 12211(.2) needs 678(.4) more Not acceptable examples amount will decrease amount of coffee will change	An answer within the range shown in working but incorrectly rounded gets full marks. If figures are given as part of the answer they must be correct, but can allow ft.

N14 Estimation and Checking Calculations

Question 16

June 2018 · Paper 1 · Q4

4 marks

4	(a)	Estimated value	P1	for using a rounded value in a correct process eg $3000 \div 15$ or 15×8 or 20×8	Their rounded value must be used in a calculation Rounding may appear after a correct process eg $15.12 \times 8 = 120.96 \approx 100$ followed by eg $3069.25 \div 100$ Accept $3069.25 \div 15.12 \div 8$ oe
			P1	for a full process to find the number of days eg " 3000 " $\div$ " 15 " $\div$ " 10 " ($= 20$) or " 3000 " $\div$ " 15 " $\div 8 (= 25)$	
			A1	for a correct answer following through their rounded values	
	(b)	Explanation	C1	eg less days required or it doesn't affect the answer because I would still round 16.27 down to 15 (or up to 20)	

Question 17

June 2024 · Paper 1 · Q5

4 marks

5	(a)	Estimated value	P1	for using a value rounded to 1sf in a calculation eg $500 \div 10$ or 500×0.8 or 510×0.8 or 513×0.8 or 500×0.81	Their rounded value must be used in a calculation Rounding may occur after a correct process, eg $513 \div 10 = 51.3 \approx 50$ and 50×0.81 $513 \div 10 = 51.3 \approx 51$ and 51×0.8 scores P1P1 Accept 0.81 rounded to 0.80 for this mark Condone 0.81 rounded to 1 for this mark Where [distance] is their rounded 513 or 513 and [amount] is their rounded 0.81 or 0.81 Accept $513 \div 10 \times 0.81$ for this mark Do not award this mark if 0.81 is rounded to 1
			P1	for a full process to find the total amount eg $500 \div 10 \times 0.8$ oe ($= 40$) or $510 \div 10 \times 0.8$ oe ($= 40.8$) or $500 \div 10 \times 0.81 (= 40.5)$ or [distance] $\div 10 \times$ [amount] oe	
			A1	for a correct answer following through their correct rounded value(s)	
	(b)	underestimate with reason	C1	ft from (a) eg underestimate as numbers rounded down	

N15 Rounding and Error Intervals

Question 18

June 2017 · Paper 2 · Q7

2 marks

7		$4.755 \leq n < 4.765$	B2 [B1]	for $4.755 \leq n < 4.765$ for 4.755 or 4.765 or 4.7649]
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Question 19

June 2019 · Paper 2 · Q6

2 marks

6	8.3 and 8.4	B1	for 8.3 in the correct position	
		B1	for 8.4 in the correct position	Accept 8.39 or 8.399...

Question 20

November 2019 · Paper 2 · Q2

2 marks

2	127.5 and 128.5	B1	for 127.5 in the correct position	
		B1	for 128.5 in the correct position	Accept 128.49 or 128.499...