

Q1. (2018)

6	Alternative method 1 Any one of $60\,000 \div 420\,000$ or $0.14\dots$ or $14(\dots)\%$ or $\frac{1}{7}$ or $480\,000 \div 420\,000$ or $1.14\dots$ or $114(\dots)\%$ or $\frac{8}{7}$ or $420\,000 \div 60\,000$ or 7 or $420\,000 \div 480\,000$ or 0.875 or 87.5% or $\frac{7}{8}$ or $60\,000 \div 540\,000$ or $0.11\dots$ or $11(\dots)\%$ or $\frac{1}{9}$ or $540\,000 \div 60\,000$ or 9	M1	oe eg $60\,000 : 420\,000$ or $1 : 7$ or $480\,000 : 420\,000$ or $8 : 7$
	Any one of $60\,000 \div 480\,000$ or 0.125 or 12.5% or $\frac{1}{8}$ or $540\,000 \div 480\,000$ or 1.125 or 112.5% or $\frac{9}{8}$ or $480\,000 \div 60\,000$ or 8 or $480\,000 \div 540\,000$ or $0.88\dots$ or 0.89 or $88(\dots)\%$ or 89% or $\frac{8}{9}$	M1	must be a matching pair (could be different forms) to award M2 (see A1 for list of matching pairs) oe eg $60\,000 : 480\,000$ or $1 : 8$ or $540\,000 : 480\,000$ or $9 : 8$
6 cont	$\frac{1}{7}$ and $\frac{1}{8}$ and No or $\frac{8}{7}$ and $\frac{9}{8}$ and No or $0.14\dots$ and 0.125 and No or $14(\dots)\%$ and 12.5% and No or $1.14\dots$ and 1.125 and No or $114(\dots)\%$ and 112.5% and No or 7 and 8 and No or $\frac{7}{8}$ and $\frac{8}{9}$ and No or $\frac{1}{9}$ and $\frac{1}{8}$ and No or 9 and 8 and No or $0.11\dots$ and 0.125 and No or $11(\dots)\%$ and 12.5% and No or 0.875 and $0.88\dots$ or 0.89 and No or 87.5% and $88(\dots)\%$ or 89% and No	A1	oe eg $1 : 7$ and $1 : 8$ and No

Alternative method 2		
6 cont	No and any one of $\frac{60\,000}{420\,000} \times 480\,000$ and [67200, 68640] or $\frac{60\,000}{480\,000} \times 540\,000$ and 67 500 or $\frac{60\,000}{480\,000} \times 420\,000$ and 52 500 or $\frac{60\,000}{540\,000} \times 480\,000$ and [52 800, 53 334] or $\frac{420\,000}{480\,000} \times 540\,000$ and 472 500 or $\frac{480\,000}{420\,000} \times 480\,000$ and [547 200, 548 640] or $\frac{480\,000}{540\,000} \times 480\,000$ and [422 400, 427 200] or $\frac{540\,000}{480\,000} \times 420\,000$ and 472 500	oe B2 any one of the calculations B1 any one of the fractions oe for equivalent fractions, decimals and percentages see Alternative method 1
	B3	

Additional Guidance		
6 cont	In Alt 1, for M2 the matching pair do not have to be in comparable form eg 14.3% and $\frac{1}{8}$ and No	M1M1A0
	For comparable fractions, they must be in their lowest terms or have the same numerators or the same denominators for the A1 eg Alt 1 $\frac{60\,000}{420\,000}$ and $\frac{60\,000}{480\,000}$ and No	M1M1A1
	For comparable ratios, they must be in their lowest terms or have the same LH sides or the same RH sides for the A1 eg Alt 1 60 000 : 420 000 and 60 000 : 480 000 and No	M1M1A1
	If working with percentages, condone absence of % symbol eg Alt 1 14 and 12.5 and No	M1M1A1
	Both are increases of 60 000 and it is then over different amounts so cannot be the same percentage	M0M0A0

Q2. (2020)

Q	Answer	Mark	Comments
14	Alternative method 1		
	6500 $\times$ 1.05 or 6825	M1	oe eg 6500 + 0.05 $\times$ 6500 or 6500 + 325 may be implied eg 7475
	6500 $\times$ 1.05 ³ or 7524.(...) or 7525	M1dep	oe eg their 6825 $\times$ 1.05 or 7166.25 and their 7166.25 $\times$ 1.05 6825 $\times$ 1.05 ² is M2
	7524.(...) and Yes or 7525 and Yes	A1	oe eg 7524.(...) which is more than 7500
	Alternative method 2		
	1.05 ³ or 1.157... or 1.158 or 1.16 or $\frac{7500}{6500}$ or 1.15(3...) or 1.154	M1	oe
	1.05 ³ or 1.157... or 1.158 or 1.16 and $\frac{7500}{6500}$ or 1.15(3...) or 1.154	M1dep	oe
	1.157... or 1.158 or 1.16 and 1.15(3...) or 1.154 and Yes	A1	

14 cont	Additional Guidance	
	Working is implied by a correct value	
	7524.(...) and Yes with no working	M1M1A1
	7525 and Yes with no working	M1M1A1
	7524.(...) with no working	M1M1A0
	7525 with no working	M1M1A0
	7525 > 7500	M1M1A1
	7525 < 7500	M1M1A0
	For year on year working allow truncation/rounding eg 6825 $\times$ 1.05 = 7166 7166 $\times$ 1.05 = 7524.30 Yes	M1 M1A1
	Increasing by 5% four or more times can score a maximum of M1M1A0	
	Increasing by 5% two times can score a maximum of M1M0A0	
	Do not allow misreads of 5%	

Q3. (2021)

(A)

Q	Answer	Mark	Comments
14(a)	4200 $\times$ 1.12 ²⁰	M1	oe allow 4200 $\times$ [9.64, 9.65]
	40514(...) or 40515 or 40500 or 40510 or 40489 or 40509 or 40548	A1	
	Additional Guidance		
	Year on year calculations Consistently rounding down to nearest integer leads to 40489 Consistently rounding to nearest integer leads to 40509 Consistently rounding up to nearest integer leads to 40548		

(B)

Q	Answer	Mark	Comments
14(b)	$4200 \times 1.13^{19} \times 0.92$ or [39402, 39403] or 39400 or 39372 or 39407 or 39435	M1	oe allow $4200 \times [10.19, 10.2] \times 0.92$
	No and [39402, 39403] or No and 39400 or No and 39372 or No and 39407 or No and 39435	A1	
	Additional Guidance		
	Year on year calculations Consistently rounding down to nearest integer leads to 39372 Consistently rounding to nearest integer leads to 39407 Consistently rounding up to nearest integer leads to 39435		

(C)

Q	Answer	Mark	Comments
14(c)	0.4×700 or 280 or $(1 - 0.4) \times 900$ or 0.6×900 or 540 or 30×0.4 or 12 or $30 \times (1 - 0.4)$ or 30×0.6 or 18	M1	oe implied by 820
	$30 \times 0.4 \times 700$ or 8400 or $30 \times (1 - 0.4) \times 900$ or 16200	M1dep	oe implied by 820×30
	24600	A1	
	Additional Guidance		
	Up to M2 may be awarded for correct work, with no or incorrect answer, even if this is seen amongst multiple attempts		

Q4. (2022)

Q	Answer	Mark	Comments
20	Alternative method 1		
	5.88 ÷ 1.68 or 3.5 or 1.68 ÷ 5.88 or [0.285, 0.29] or 5.88 ÷ 5.60 or 1.05	M1	oe eg $\frac{7}{2}$ or $\frac{2}{7}$ or $\frac{21}{20}$ or $5.6 \times 1.05 = 5.88$
	5.6(0) ÷ (5.88 ÷ 1.68) or 5.6(0) × (1.68 ÷ 5.88) or 1.68 ÷ (5.88 ÷ 5.60) or 1.6	M1dep	oe eg 5.6(0) ÷ 3.5 or 5.6(0) × [0.285, 0.29] or 1.68 ÷ 1.05
	their 1.6 ÷ 1.68 or [0.952, 0.9524] or 1 – their 1.6 ÷ 1.68 or 1 – [0.952, 0.9524] or [0.0476, 0.048]	M1dep	oe eg $\frac{20}{21}$ or $1 - \frac{20}{21}$ or $\frac{1}{21}$ 5.6(0) ÷ 5.88 oe scores M3 1 – 5.6(0) ÷ 5.88 oe scores M3
	4.76	A1	
	Alternative method 2		
	5.88 ÷ 5.6(0) or 1.05	M1	oe eg $\frac{21}{20}$
	1 ÷ their 1.05	M1dep	oe eg $1 \div \frac{21}{20}$
	[0.952, 0.9524] or 1 – [0.952, 0.9524] or [0.0476, 0.048]	M1dep	oe eg $\frac{20}{21}$ or $1 - \frac{20}{21}$ or $\frac{1}{21}$ 5.6(0) ÷ 5.88 oe scores M3 1 – 5.6(0) ÷ 5.88 oe scores M3
	4.76	A1	

Additional Guidance is on the next page

20 cont	Additional Guidance	
	Up to M3 may be awarded for correct work with no, or incorrect answer, even if this is seen amongst multiple attempts	
	$\frac{0.28}{5.60} = 0.05$ is M0 unless 1.05 subsequently used	
	5.60 ÷ 1.68 with no further correct working	M0
	Note that 1.6 seen may be from an incorrect method eg $1.68 \times 0.95 = 1.6$ does not score because 1.68×0.95 is an incorrect method and the actual value of 1.68×0.95 is 1.596	
	Any single calculation or set of calculations that lead to $\frac{20}{21}$ or $\frac{1}{21}$	M3
	Some common oes for $1 - 5.6(0) \div 5.88$ are $\frac{5.88 - 5.6(0)}{5.88}$ or $\frac{0.28}{5.88}$ and $\frac{1.68 - 1.6}{1.68}$ or $\frac{0.08}{1.68}$	M3
	3rd M1 oes include [0.952, 0.9524] × 100 or [95.2, 95.24]% 100% – [0.952, 0.9524] × 100 [0.0476, 0.048] × 100 or (4.76, 4.8)%	
	Values that score marks may be seen in ratios eg 5.88 : 1.68 (does not score at this stage) 3.50 : 1	M1
	Allow working in pence eg $588 \div 1.68$ or 350	M1
	Allow working in grams eg $5.88 \div 1680$ or 0.0035	M1

Q5. (2023)

Q	Answer	Mark	Comments
4	112.5% or 1.125 or $\frac{9}{8}$ or $19.53 \div 112.5 (\times 100)$ or $0.1736 (\times 100)$	M1	oe eg $1 + 0.125$ or $19.53 \div 9 \times 8$ or 2.17×8
	17.36	A1	
	Additional Guidance		
	M1 may be awarded for correct work with no answer or incorrect answer, even if this is seen amongst multiple attempts		
	M1 may be seen in a trial (the answer to the trial can be ignored) eg 15×1.125		M1
	19.53×1.125		M1
	Do not allow misreads for 12.5% eg1 $19.53 \div 1.0125$ eg2 $19.53 \div 112$		M0 M0
	112.5 not recovered		M0

Q6. (2024)

Q	Answer	Mark	Comments
2	88(%) or 0.88	M1	oe eg $1 - 0.12$
	$2200000 \div 88 (\times 100)$ or $25000 (\times 100)$	M1dep	oe eg $2.2 \times 10^6 \div (100 - 12) (\times 100)$ or $2200000 \times [1.136, 1.14]$ or 2500000
	2.5×10^6	A1	oe standard form eg 2.500000×10^6 SC1 2.2×10^6 oe standard form seen SC1 any value seen converted to standard form
	Additional Guidance		
	M1 or SC1 may be awarded for correct work with no answer or incorrect answer, even if this is seen amongst multiple attempts		
	M1 may be seen in a trial or incorrect working eg 3000000×0.88 or 88% of 2200000		M1
	$2200000 \div 88\%$ not recovered		M1M0
	$2200000 \times 1.12 = 2464000$ $2.464 \times 10^6 = 2.5 \times 10^6$		SC1

Q7. (2024)

Q	Answer	Mark	Comments
10	Alternative method 1: works year by year		
	90 000 $\times$ 1.03 or 92 700 or 90 000 $\times$ 1.08 or 97 200	M1	oe eg 90 000 + 90 000 $\times$ 0.03
	90 000 $\times$ 1.03 $\times$ 1.08 or 100 116	M1dep	oe eg 92 700 $\times$ 1.08
	100 116 and Yes	A1	oe eg 100 116 > 100 000 SC1 99 900 seen
	Alternative method 2: uses multipliers		
	1.03 $\times$ 1.08 or 1.112(4)	M1	oe
	$\frac{100\,000}{90\,000}$ or 1.111(...) or $\frac{100\,000}{1.03 \times 1.08}$ or [89 895, 89 900]	M1	oe $\frac{100\,000}{1.03 \times 1.08}$ or [89 895, 89 900] is M2
	1.112(4) and 1.111(...) and Yes or [89 895, 89 900] and Yes	A1	oe eg 1.112(4) and 1.111(...) so it is more SC1 99 900 seen
	Additional Guidance		
	M1 or SC1 may be awarded for correct work with no answer or incorrect answer, even if this is seen amongst multiple attempts		
	A correct value is sufficient for showing working eg1 Alt 1 100 116 eg2 Alt 1 100 116 and Yes		M2A0 M2A1
	Alt 1 90 000 $\times$ 103% not recovered		M0
	Alt 2 Yes cannot be implied only by an inequality		
	SC1 is from increasing 90 000 by 11%		