Mark Scheme

Q1.

Paper 1MA1: 2H			
Question	Working	Answer	Notes
		$\frac{23}{90}$	M1 For a fully complete method as far as finding two correct decimals that, when subtracted, give a terminating decimal (or integer) and showing intention to subtract eg $x = 0.2\dot{5}$ so $10x = 2.5\dot{5}$ then $9x = 2.3$ leading to… A1 correct working to conclusion

(**Q15 1MA1/2H/N, Specimen papers**)

Q2.

Question	Working	Answer	Notes
		proof leading to $\frac{7}{22}$	M1 for finding two correct recurring decimals that when subtracted would result in a terminating decimal or integer with intention to subtract eg $x = 0.31818...$, $100x = 31.81818...$ A1 fully correct proof

(**Q19 1MA1/3H/S2, Specimen papers**)

Q3.

Question	Working	Answer	Mark	Notes
		Proof	M1	for a fully complete method as far as finding two correct decimals that, when subtracted, give a terminating decimal (or integer) and showing intention to subtract, e.g. $9x = 3.9$
			A1	correct working to conclusion

(**Q13 1MA1/1H/M2, Specimen papers**)

Q4.

Question	Working	Answer	Mark	Notes
		$\frac{103}{165}$	3	M1 for method to find 2 multiples of 0.624 that can be used to eliminate the decimals M1 for complete method A1 cao

(**Q14 1MA1/1H/M1, Specimen papers**)

Q5.

Question	Working	Answer	Mark	Notes
		Proof to reach $\frac{24}{55}$	M1	for $100x = 43.636\ldots$ $(43.\dot{6}\dot{3})$ **or** $10x = 4.3636\ldots$ $(4.\dot{3}\dot{6})$ and $1000x = 436.36\ldots.(436.\dot{3}\dot{6})$
			M1	(dep) for finding difference that would lead to a terminating decimal
			A1	for completing algebra to reach $\frac{24}{55}$

(Q15 1MA1/1H, Nov 2017)

Q6.

Question	Working	Answer	Mark	Notes
			M1	for the start of a method to convert 0.22.. to a fraction, eg $10y = 2.22..$ or $(y=)\frac{2}{9}$
			M1	for the start of a method to convert 0.13636... to a fraction, $10x = 1.3636..$ or $100x = 13.6363\ldots$ or $1000x = 136.3636..$ or $(x=)\frac{13.5}{99}$ or $(x=)\frac{135}{990}$
			C1	for correct arithmetic and concluding the proof
				OR
			M1	for $0.1\dot{3}\dot{6} \times 0.\dot{2} = 0.\dot{0}\dot{3}$ $(=z)$
			M1	for complete method to find two appropriate recurring decimals the difference of which is a rational number, eg. $100z = 3.0303\ldots$, $(z=)$ $0.0303\ldots$ or $\frac{3}{99}$
			C1	for correct arithmetic and concluding the proof

(Q16 1MA1/2H, June 2017)

Q7.

Question	Answer	Mark	Mark scheme	Additional guidance
	0.02, 0.152, 0.2, 0.37, 0.4	B1	for correct order	Accept reverse order

(Q01 1MA1/1F, Nov 2018)

Q8.

Question	Answer	Mark	Mark scheme	Additional guidance
	0.309, 0.32, 0.35, 0.4	B1	for 0.309, 0.32, 0.35, 0.4	Accept written in reverse order: 0.4, 0.35, 0.32, 0.309

(**Q01 1MA1/1F, Nov 2020**)

Q9.

Question	Answer	Mark	Mark scheme	Additional guidance
	0.00128	M1	for digits 128 **or** for correct placement of the decimal point following one arithmetical error, eg. 32 × 4 = 138 with an answer of 0.00138	
		A1	for 0.00128 **or** 1.28×10^{-3}	

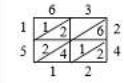
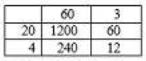
(**Q22 1MA1/1F, Nov 2022**)

Q10.

Question	Answer	Mark	Mark scheme	Additional guidance
	0.00128	M1	for digits 128 **or** for correct placement of the decimal point following one arithmetical error, eg. 32 × 4 = 138 with an answer of 0.00138	
		A1	for 0.00128 **or** 1.28×10^{-3}	

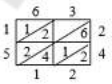
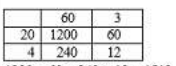
(**Q04 1MA1/1H, Nov 2022**)

Q11.

Question	Answer	Mark	Mark scheme	Additional guidance
	15.12	M1	for a complete method with relative place value correct including an intention to add all the appropriate elements of the calculation	252 1260 1512   1200 + 60 + 240 + 12 = 1512
		A1	for digits 1512	
		A1	(dep on M1) for correct placement of the decimal point into their final answer	

(**Q18 1MA1/1F, Nov 2023**)

Q12.

Question	Answer	Mark	Mark scheme	Additional guidance
	15.12	M1	for a complete method with relative place value correct including an intention to add all the appropriate elements of the calculation	252 1260 1512   1200 + 60 + 240 + 12 = 1512
		A1	for digits 1512	
		A1	(dep on M1) for correct placement of the decimal point into their final answer	

(**Q01 1MA1/1H, Nov 2023**)

Q13.

Question	Answer	Mark	Mark scheme	Additional guidance
(a)	−6,−5,0,6, 12	B1	for −6,−5,0,6,12 accept 12, 6, 0, −5,−6	
(b)	0.078,0.708, 0.78,0.87	B1	for 0.078, 0.708, 0.78, 0.87 accept 0.87, 0.78, 0.708, 0.078	Accept any additional '0's at the end of a decimal, eg 0.780 or 0.870

(**Q02 1MA1/1F, June 2018**)

Q14.

Question	Answer	Mark	Mark scheme	Additional guidance
	30	B1	cao	Accept 30.0

(**Q02 1MA1/3F, June 2018**)

Q15.

Question	Working	Answer	Mark	Notes
(a)		275.400(96709035)	M1	9.952(38664844) or 53.152(38664844)
			A1	275.400(96709035)
(b)		280	B1	ft provided part (a) is to at least 4 significant figures

(**Q17 1MA1/2F/M2, Specimen papers**)

Q16.

Question	Working	Answer	Notes
		0.8	P1 for process to find amount of soup put in bowls, eg 24 × 0.3 or amount of soup when 8 pints are shared between 24 bowls, eg 24 ÷ 8 P1 for complete process to find amount of soup left over A1

(**Q12 1MA1/2F/S2, Specimen papers**)

Q17.

Question	Answer	Mark	Mark scheme	Additional guidance
	0.408, 0.41, 0.46, 0.5	B1	for 0.408, 0.41, 0.46, 0.5	Accept written in reverse order

(**Q01 1MA1/3F, Nov 2022**)

Q18.

Question	Answer	Mark	Mark scheme	Additional guidance
(a)	87 600	B1	cao	
(b)	13.524	M1	$\frac{3381}{250}$ or 33.81 or 2.5 or digits 13524	
		A1	cao	

(**Q17 1MA1/3F, Nov 2022**)

Q19.

Question	Answer	Mark	Mark scheme	Additional guidance
	0.05, 0.5, 0.507, 0.57	B1	for 0.05, 0.5, 0.507, 0.57	Accept reverse order

(**Q03 1MA1/2F, Nov 2024**)

Q20.

Question	Answer	Mark	Mark scheme	Additional guidance
	0.35	B1	cao	

(**Q01 1MA1/3F, Nov 2023**)

Q21.

Question	Answer	Mark	Mark scheme	Additional guidance
	0.45	B1	cao	

(**Q01 1MA1/3F, Nov 2021**)

Q22.

Question	Working	Answer	Mark	Notes
(a)		−12 −8 2 5 10	B1	cao
(b)		1.073 1.307 1.37 1.703	B1	cao

(**Q01 1MA1/1F/M3, Specimen papers**)

Q23.

Question	Working	Answer	Mark	Notes
(a)		−10,−7,−5,0,4	B1	cao
(b)		0.2, 0.205, 0.25, 0.52	B1	cao

(**Q01 1MA1/1F/M2, Specimen papers**)

Q24.

Question	Working	Answer	Mark	Notes
		0.246, $0.2\dot{4}\dot{6}$ $0.2\dot{4}\dot{6}$, $0.24\dot{6}$	M1	for correct use of recurring symbol eg $0.2\dot{4}\dot{6} = 0.24646\ldots$ **or** 3 terms in the correct relative position
			A1	cao

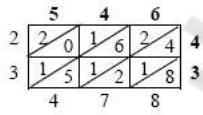
(**Q08 1MA1/1H, Nov 2017**)

Q25.

Question		Working	Answer	Mark	Notes
			3.05, 3.2, 3.205, 3.25	1	B1 cao

(**Q02 1MA1/3F/M1, Specimen papers**)

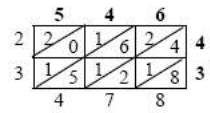
Q26.

Question	Working	Answer	Mark	Notes
	21840 1638 23478  20000 + 1600 + 240 + 1500 + 120 + 18 = 23478	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 1st method, internal numbers of grids, or complete structure shown of partitioning methods
			A1	for digits 23478
			A1	(ft dep M1) for correct placement of the decimal point into their final answer

	500	40	6
40	20000	1600	240
3	1500	120	18

(**Q23 1MA1/1F, June 2017**)

Q27.

Question	Working	Answer	Mark	Notes
	21840 1638 23478  500 40 6 40 20000 1600 240 3 1500 120 18 20000 + 1600 + 240 + 1500 + 120 + 18 = 23478	234.78	M1 A1 A1	for complete method with relative place value correct including addition of all the appropriate elements of the calculation e.g. two lines of 1st method, internal numbers of grids, or complete structure shown of partitioning methods for digits 23478 (ft dep M1) for correct placement of the decimal point into their final answer

(**Q03 1MA1/1H, June 2017**)

Q28.

Paper 1MA1: 1H			
Question	Working	Answer	Notes
		32.968	M1 for correct method (condone one error) A1 for digits 32968 A1 ft (dep M1) for correct placement of decimal pt

(**Q01 1MA1/1H/N, Specimen papers**)

Q29.

Paper 1MA1: 1F			
Question	Working	Answer	Notes
		32.968	M1 for correct method (condone one error) A1 for digits 32968 A1 ft (dep M1) for correct placement of decimal pt

(**Q21 1MA1/1F/N, Specimen papers**)

Q30.

Question	Working	Answer	Mark	Notes
		19.45	M1 A1	for a method to carry out the multiplication of 3.89×5 oe or $4 \times 5 - 0.11 \times 5$ oe or digits 1945 seen cao

(**Q07 1MA1/1F/M3, Specimen papers**)

Q31.

Question	Answer	Mark	Mark scheme	Additional guidance
	Proof	M1	for eg, $(10x =)$ 0.723723… **or** $(100x =)$ 7.237237… **or** $(1000x =)$ 72.372372… **or** $(10000x =)$ 723.723723…	Any recurring notation acceptable throughout. Proofs with terminating decimals (less than 6 figures) score M1M1A0
		M1	(dep M1) for a method using two recurring decimals that leads to a terminating decimal difference, using correct multiples of x eg $(10000x - 10x =)$ 723.723723… − 0.723723…	
		A1	for completing the algebra to $\frac{241}{3330}$ oe	

(**Q13 1MA1/2H, Nov 2023**)

Q32.

Question	Answer	Mark	Mark scheme	Additional guidance
	Shown	M1	for $(x =)$ 1.0622… or $(10x =)$ 10.622… or $(100x =)$ 106.22… or $1000x =)$ 1062.2… **OR** for $(x =)$ 0.0622… or $(10x =)$ 0.622… or $(100x =)$ 6.22… or $(1000x =)$ 62.2…	Use of recurring notation acceptable throughout.
		M1	(dep M1) for a method using two recurring decimals that leads to a terminating decimal difference, using correct multiples of x eg $(1000x - 100x =)$ 1062.2… − 106.22.. (= 956) or $\frac{956}{900}$ **OR** (dep M1) for a method using two recurring decimals that leads to a terminating decimal difference, using correct multiples of x eg $(1000x - 100x =)$ 62.2… − 6.22... (= 56) or $\frac{56}{900}$	
		A1	for completing algebra to $1\frac{14}{225}$	

(**Q14 1MA1/2H, Nov 2022**)

Q33.

Question	Answer	Mark	Mark scheme	Additional guidance
	0.31	B1	cao	Accept .31

(**Q03 1MA1/2F, June 2024**)

Q34.

Question	Answer	Mark	Mark scheme	Additional guidance
	Shown	M1	for 0.1515... + 0.22727... (= 0.37878... or $0.3\dot{7}\dot{8}$)	
		M1	for finding two correct recurring decimals that when subtracted would result in a terminating decimal or integer, eg $(1000x - 10x =)$ 378.7878... – 3.7878... (= 375) or $\frac{375}{990}$ or $(100x - x =)$ 37.8787... – 0.37878... (= 37.5) or $\frac{37.5}{99}$	Recurring decimal notation acceptable for this mark
		C1	for correct working leading to $\frac{25}{66}$ **OR**	
		M1	for start of a method to convert 0.1515... **or** 0.22727... to a fraction, eg $100x = 15.1515...$ or $\frac{15}{99}$ or $\frac{5}{33}$ oe **or** $10y = 2.2727...$ or $100y = 22.7272...$ or $1000y = 227.2727...$ or $\frac{225}{990}$ or $\frac{22.5}{99}$ or $\frac{5}{22}$ oe	Recurring decimal notation acceptable for both M marks
		M1	for a method to convert 0.1515... **and** 0.22727... to fractions, eg $(100x - x =)$ 15.1515...– 0.1515... (= 15) or $\frac{15}{99}$ or $\frac{5}{33}$ oe	
			and $(1000y - 10y =)$ 227.2727... – 2.2727... (= 225) or $(100y - y =)$ 22.7272... – 0.22727… (= 22.5) or $\frac{225}{990}$ or $\frac{22.5}{99}$ or $\frac{5}{22}$ oe	
		C1	for correct working leading to $\frac{25}{66}$	

(**Q18 1MA1/1H, June 2024**)

Q35.

Question	Answer	Mark	Mark scheme	Additional guidance
	Proof	M1	for $(10x =)$ 1.2323… or $(100x =)$ 12.323… or $(1000x =)$ 123.23…	Any recurring notation acceptable throughout. Proofs with terminating decimals (at least 5 figures) score M1M1C0
		M1	(dep M1) for a method using two recurring decimals that leads to a terminating decimal difference, using correct multiples of x eg $(1000x - 10x =)$ 123.23 … − 1.23 … (= 122) or $\frac{122}{990}$ or $(100x - x =)$ 12.323 … − 0.123 … (= 12.2) or $\frac{12.2}{99}$	
		C1	for completing algebra to $\frac{61}{495}$	

(**Q20 1MA1/3H, June 2023**)

Q36.

Question	Answer	Mark	Mark scheme	Additional guidance
	$\frac{116}{990}$	M1	for $(x =)$ 0.11717... **or** $(10x =)$ $1.\dot{1}\dot{7}$ or 1.1717... **or** $(100x =)$ $11.7\dot{1}$ or 11.7171... **or**	
		M1	$(1000x =)$ $117.\dot{1}\dot{7}$ or 117.1717...	Accept $(100x - x =)$ $11.7\dot{1} - 0.1\dot{1}\dot{7}$ or 11.7171... – 0.11717... (= 11.6)
			(dep M1) for a method using two recurring decimals that leads to a terminating decimal difference, using correct multiples of x	
			eg $(1000x - 10x =)$ $117.\dot{1}\dot{7} - 1.\dot{1}\dot{7}$ (= or 117.1717... – 1.1717... (= 116)	
		A1	for $\frac{116}{990}$ oe, eg $\frac{58}{495}$	$\frac{11.6}{99}$ must be written in the form $\frac{a}{b}$ where a and b are integers to gain the accuracy mark

(**Q12 1MA1/1H, June 2022**)

Q37.

Question	Answer	Mark	Mark scheme	Additional guidance
	Shown	M1	for start to find multiples of x with the same recurring pattern eg for $(10x =)$ 4.626262… **or** $(100x =)$ 46.262626… **or** $(1000x =)$ 462.626262…	Any recurring notation acceptable throughout. Proofs with terminating decimals (at least 5 figures) score M1M1C0
		M1	(dep on M1) for a correct subtraction that would lead to a terminating decimal, eg $(1000x - 10x) = 462.6262\ldots - 4.6262\ldots$ $(= 458)$ **or** $(100x - x) = 46.2626\ldots - 0.4626\ldots$ $(= 45.8)$	
		C1	for correct working leading to the correct answer	

(**Q14 1MA1/3H, Nov 2024**)

Q38.

Question	Answer	Mark	Mark scheme	Additional guidance
	0.8	B1	cao	

(**Q03 1MA1/3F, Nov 2022**)

Q39.

Question	Answer	Mark	Mark scheme
	Explanation	C1	explanation **Acceptable examples** he should have used 100(x) rather than 10(x) he should have used 1000x and 10x Ted's working does not eliminate the recurring decimals the recurring numbers after the decimal point have to be in the same sequence he should have multiplied by 100 to subtract easier after the decimal point he should have multiplied by 100 because two numbers are recurring **Not acceptable examples** it is not correct the method is not complete he should have used 1000x he should have multiplied by 100 he should have multiplied by 100 and then done 100x – 10x to give 43/90

(**Q13 1MA1/1H, Nov 2021**)

Q40.

Question	Answer	Mark	Mark scheme	Additional guidance
	0.09	B1	cao	Accept an answer of .09

(**Q03 1MA1/1F, Nov 2021**)

Q41.

Question	Answer	Mark	Mark scheme	Additional guidance
	56.4	M1	for a start to a method, eg 846 ÷ 15 or 8.46 ÷ 0.15 or 8.46 ÷ 3 × 20 or 282 ÷ 5 that leads to 5 as the first digit **or** for a complete method with no more than one arithmetic error	A start to a repeated subtraction method or a build-up method is acceptable if a correct first digit of 5 is found
		A1	for digits 564 identified	
		A1	(ft) dep on M1 for correct placement of the decimal point into their final answer	An answer of $56\frac{2}{5}$ gets 3 marks

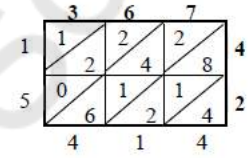
(**Q01 1MA1/1H, June 2023**)

Q42.

Question	Answer	Mark	Mark scheme	Additional guidance
	682	M1	for a start to a method, eg. 8184 ÷ 12 (or 818.4 ÷ 1.2) that leads to 6 as the first digit **or** for a complete method with no more than one arithmetic error	A start to a repeated subtraction method or build-up method is acceptable if a correct first digit of 6 is found
		A1	for digits 682	
		A1	(ft) (dep M1) for correct placement of the decimal point into their final answer	

(**Q01 1MA1/1H, Nov 2024**)

Q43.

Question	Answer	Mark	Mark scheme	Additional guidance
(a)	15.414	M1	for a complete method with relative place value correct including an intention to add all the appropriate elements of the calculation eg, 2 lines of the 1st method, internal numbers of grids, or complete structure shown of partitioning methods.	14680 734 15414  | | 300 | 60 | 7 | | 40 | 12000 | 2400 | 280 | | 2 | 600 | 120 | 14 | 12000 + 2400 + 280 + 600 + 120 + 14 = 15414
		A1	for digits 15414	
		A1	(ft) dep on M1 for correct placement of the decimal point into their final answer	
(b)	37.4	M1	for a start to a method, eg 598.4 ÷ 16 (or 59.84 ÷ 1.6) = 3 (as a first digit)	A start to a repeated subtraction method or build-up method is acceptable if a correct first digit of 3 is found
		A1	for digits 374	
		A1	(ft) dep on M1 for correct placement of the decimal point into their final answer	

(**Q01 1MA1/1H, Nov 2021**)

Q44.

Question	Answer	Mark	Mark scheme	Additional guidance
	Proof	M1	for $10x = 7.333\ldots$ ($7.\dot{3}$) and for finding difference that would lead to a terminating decimal	$100x$ and $1000x$, etc could also be used
		A1	for completing algebra to reach $\frac{11}{15}$	

(**Q15 1MA1/3H, Nov 2020**)

Q45.

Question	Answer	Mark	Mark scheme	Additional guidance
(a)	1.882(0861678…)	B2	1.882(0861678…)	Condone 1.882(0861668...) for both marks
		(B1	for 16.6 **or** 8.82 **or** $\frac{830}{441}$ **or** 1.88)	
(b)	1.88	B1	for 1.88 **or** ft their answer to part (a) correctly rounded to 2 dp, providing part (a) has at least 3 dp	Condone 1.88 Do not accept trailing 0, eg 1.880

(**Q18 1MA1/2F, Nov 2023**)

Q46.

Question	Answer	Mark	Mark scheme	Additional guidance
	30	B1	cao	

(**Q02 1MA1/1F, June 2024**)

Q47.

Question	Answer	Mark	Mark scheme	Additional guidance
	0.38	B1	cao	

(**Q01 1MA1/1F, June 2023**)

Q48.

Question	Answer	Mark	Mark scheme	Additional guidance
	0.12, 0.21, 1.02, 1.20	B1	accept 1.20, 1.02, 0.21, 0.12	

(**Q03 1MA1/2F, Nov 2021**)

Q49.

Question	Answer	Mark	Mark scheme	Additional guidance
	0.25	B1	cao	

(**Q01 1MA1/1F, Nov 2024**)

Q50.

Question	Answer	Mark	Mark scheme	Additional guidance
	14	P1	for making a start to the process eg 14×15 (= 210) **or** $14 \times 15 \times 6.50$ (= 1365) **or** $1274 \div 6.50$ (= 196) **or** $14 \times 15 \times 6.50 - 1274$ (= 91)	
		P1	for a complete process eg $(14 \times 15 \times 6.50 - 1274) \div 6.50$ **or** $14 \times 15 - (1274 \div 6.50)$	
		A1	cao	

(**Q06 1MA1/2F, Nov 2019**)