

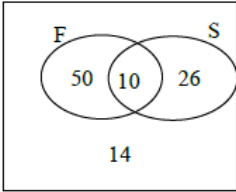
1MA1 Practice papers Set 5: Paper 1H (Regular) mark scheme – Version 1.0					
Question		Working	Answer	Mark	Notes
1.	(a)	$12 = 2 \times 2 \times 3$ $20 = 2 \times 2 \times 5$ OR 12: 1, 2, 3, 4, 6, 12 20: 1, 2, 4, 5, 10, 20	4	2	M1 for dealing with both 12 and 20 by, Writing each number as a product of prime factors (condone one error only); or by, Listing the factors of each number (condone one error only), or by, Drawing a Venn Diagram (or two factor trees) showing all prime factors of each number (condone one error only) A1 for HCF = 4 (accept 2×2 or 2^2)
	(b)	$32 = 2 \times 2 \times 2 \times 2 \times 2$ $48 = 2 \times 2 \times 2 \times 2 \times 3$ OR 32. 64, 96, 128, ... 48, 96, 144,	96	2	M1 for dealing with both 32 and 48 by, Writing each number as a product of prime factors (condone one error only); or by, Listing the multiples of each number , up to at least 96 in each list (condone one error only), or by, Drawing a Venn Diagram (or two factor trees) showing all prime factors of each number (condone one error only) A1 for LCM = 96 (accept $2^5 \times 3$ or $2 \times 2 \times 2 \times 2 \times 2 \times 3$) [SC: B1 for any multiple of both 32 and 48 (eg 192) if M0 scored]

1MA1 Practice papers Set 5: Paper 1H (Regular) mark scheme – Version 1.0				
Question	Working	Answer	Mark	Notes
2.		240	4	M1 for 16×2 (= 32 girls) M1 for $16 + '16 \times 2'$ (= 48) M1 (dep on the previous M1) for $(16 + '32') \times 5$ or $(16 + '32') \times (4 + 1)$ A1 cao OR M1 for $1 : 2 = 3$ parts M1 for 5 schools $\times$ 3 parts (= 15 parts) M1 (dep on the previous M1) for '15' parts $\times$ 16 A1 cao

1MA1 Practice papers Set 5: Paper 1H (Regular) mark scheme – Version 1.0					
Question	Working	Answer	Mark	Notes	
3.	(a) $(6 \times 10^8) \times (4 \times 10^7) = 24 \times 10^{8+7}$ 24×10^{15}	2.4×10^{16}	2	M1 $24 \times 10^{8+7}$ oe or 24 000 000 000 000 000 or 2.4×10^n A1 cao	
	(b) $(6 \times 10^8) + (4 \times 10^7)$ $= 6 \times 10^8 + 0.4 \times 10^8$	6.4×10^8	2	M1 $6 \times 10^8 + 0.4 \times 10^8$ or $60 \times 10^7 + 4 \times 10^7$ or 600 000 000 + 40 000 000 or 640 000 000 oe or 6.4×10^n A1 cao	
4.	$150 \div 6$ or $\frac{1}{6} \times 150$	25	2	M1 $150 \div 6$ or $\frac{1}{6} \times 150$ A1 cao NB $\frac{25}{150}$ scores M1 A0	
5.		21	2	M1 for $\frac{12}{8}$ oe or $\frac{8}{12}$ oe or $\frac{14}{8}$ oe or $\frac{8}{14}$ oe A1 cao	

1MA1 Practice papers Set 5: Paper 1H (Regular) mark scheme – Version 1.0					
Question		Working	Answer	Mark	Notes
6.	(a)	$\frac{5}{15} + \frac{6}{15}$	$\frac{11}{15}$	2	M1 for common denominator with at least one numerator correct A1 for $\frac{11}{15}$ oe (B2 for 0.73 recurring)
	(b)	$\frac{11}{4} \times \frac{8}{5} = \frac{88}{20}$	$\frac{22}{5}$	3	M1 for $\frac{11}{4}$ or $\frac{8}{5}$ M1 for $\frac{11}{4} \times \frac{8}{5}$ or $\frac{88}{20}$ oe A1 for $\frac{22}{5}$ or $4\frac{2}{5}$ or 4.4
7.	(a)	$3t + 1 < t + 12$ $3t - t < 12 - 1$ $2t < 11$	$t < 5.5$	2	M1 $3t - t < 12 - 1$ A1 $t < 5.5$ oe (B1 for $t = 5.5$ or $t > 5.5$ or 5.5 or $t \leq 5.5$ or $t \geq 5.5$ on the answer line)
	(b)		5	1	B1 for 5 or ft (a)

1MA1 Practice papers Set 5: Paper 1H (Regular) mark scheme – Version 1.0					
Question		Working	Answer	Mark	Notes
8.			32.5	3	M1 for $45 \div 30 (=1.5)$ or 1hr 30 min seen or for $20 \div 40 (= 0.5$ or 30min) M1 (dep) for $(45 + 20) \div ("1.5" + "0.5")$ A1 cao
9.	(a)		$(x + 7)(x - 7)$	1	B1 cao
	(b)	$2y^2 - 6y + 7y - 21$	$2y^2 + y - 21$	2	M1 for 3 out of no more than 4 terms correct with correct signs or the 4 terms $2y^2$, $6y$, $7y$ and 21 seen, ignoring signs A1 cao
10.	(a)		C	1	B1 cao
	(b)		B and C	1	B1 cao
11.			$3xy(y - 2x^2)$	2	M1 for $3x \times (y^2 - 2x^2y)$ or $3y \times (xy - 2x^3)$ or $xy \times (3y - 6x^2)$ or $3xy \times$ (a 2 term expression in x and y , with just one error) A1 cao

1MA1 Practice papers Set 5: Paper 1H (Regular) mark scheme – Version 1.0					
Question		Working	Answer	Mark	Notes
12.	(a)		-13, -1, 2	2	B2 for all values correct (B1 for any one value correct)
	(b)		Graph drawn	2	M1 ft for at least 4 points plotted correctly from their table A1 cao for correct curve drawn from (-2, -13) to (2, 11)
13.	(a)	$100 - 14 = 86$ $60 + 36 - 86 = 10$ $60 - 10 = 50$ $36 - 10 = 26$		4	M1 for two overlapping labelled circles B1 for 14 shown outside the circles M1 for 60-‘10’ or 36-‘10’ (‘10’≠0) A1 for a fully correct and labelled Venn diagram (condone omission of surrounding rectangle)
	(b)	$\frac{100-14}{100}$	$\frac{86}{100}$	2	M1 for ‘50’ + ‘10’ + ‘26’ or 100 – ‘14’
14.			126	4	M1 for method to find exterior or interior angle of octagon M1 for method to find exterior or interior angle of pentagon M1 for complete method A1 cao

1MA1 Practice papers Set 5: Paper 1H (Regular) mark scheme – Version 1.0					
Question		Working	Answer	Mark	Notes
15.			28	4	M1 for forming a correct equation , eg $2(3x + 5) = 10x - 2 \text{ oe}$ $3x + 5 = \frac{1}{2}(10x - 2) \text{ oe}$ or $10x - 2 - (3x + 5) = 3x + 5 \text{ oe}$ M1 (dep) for dealing with brackets correctly or correct method to isolate all x terms on one side. A1 $x = 3$ B1 ft (dep on M1) for 28 SC: B3 for an answer of 14 if no previous marks scored

1MA1 Practice papers Set 5: Paper 1H (Regular) mark scheme – Version 1.0					
Question	Working	Answer	Mark	Notes	
16.	(a)	$1 - \frac{2}{9}$	$\frac{7}{9}$	1	B1 $\frac{7}{9}$ oe
	(b)	Tree diagram or	$\frac{10}{81}$	5	B1 for $\frac{5}{9}$ or $\frac{1}{9}$ seen
	(i)	$\frac{5}{9} \times \frac{1}{9} + \frac{1}{9} \times \frac{5}{9}$			M1 Indication of correct 2 branches from a tree diagram leading to $\frac{5}{9} \times \frac{1}{9} + \frac{5}{9} \times \frac{1}{9}$ seen A1 $\frac{10}{81}$ Or B1 $\frac{5}{9}$ or $\frac{1}{9}$ seen M1 $\frac{5}{9} \times \frac{1}{9} \times 2$ A1 $\frac{10}{81}$

1MA1 Practice papers Set 5: Paper 1H (Regular) mark scheme – Version 1.0				
Question	Working	Answer	Mark	Notes
17.		1 hour 45 mins	6	M1 for method to find volume of pond, eg $\frac{1}{2}(1.3 + 0.5) \times 2 \times 1$ (= 1.8) M1 for method to find the volume of water emptied in 30 minutes, eg $1 \times 2 \times 0.2$ (= 0.4), $100 \times 200 \times 20$ (= 400000) A1 for correct rate, eg 0.8 m³/hr, 0.4 m³ in 30 minutes M1 for correct method to find total time taken to empty the pond, eg “1.8” ÷ “0.8” M1 for method to find extra time, eg 2 hrs 15 minutes – 30 minutes A1 for 1.75 hours, $1\frac{3}{4}$ hours, 1 hour 45 mins or 105 mins OR M1 for method to find volume of water emptied in 30 minutes, eg. $1 \times 2 \times 0.2$ (= 0.4), $100 \times 200 \times 20$ (= 400000) M1 for method to work out rate of water loss eg. “0.4” × 2 A1 for correct rate, eg 0.8 m³/hr M1 for correct method to work out remaining volume of water

1MA1 Practice papers Set 5: Paper 1H (Regular) mark scheme – Version 1.0					
Question		Working	Answer	Mark	Notes
					e.g. $\frac{1}{2}(1.1 + 0.3) \times 2 \times 1 (= 1.4)$ M1 for method to work out time, e.g. “1.4” ÷ “0.8” A1 for 1.75 hours, $1\frac{3}{4}$ hours, 1 hour 45 mins or 105 mins
18.	(a)		$2^{-2}, \frac{1}{2}, \frac{1}{\sqrt{2}}, 2^0, \sqrt{2}$	2	M1 for changing to powers of 2, e.g. sight of $2^{0.5}$ or 2^{-1} or $2^{-0.5}$ A1 for correct order (accept alternative equivalent forms, e.g. all powers of 2) (SCB1 if M0 scored, for all in correct reverse order)
	(b)		$2\sqrt{2}$	3	M1 for cubing M1 for a correct method to rationalise A1 for $2\sqrt{2}$ (accept $a = 2$)

1MA1 Practice papers Set 5: Paper 1H (Regular) mark scheme – Version 1.0					
Question		Working	Answer	Mark	Notes
19.	(a)		Circle, centre O , radius 2	2	B2 cao (B1 for a circle radius 2 any centre or for a circle or part of a circle centre $(0, 0)$ any radius)
	(b)		Cosine curve crossing at $(0, 1)$, $(90, 0)$, $(270, 0)$ and $(360, 1)$	2	B2 cao (ignore if sketch outside region) (B1 for a curve with correct intercepts but incorrect amplitude OR for a curve starting at $(0, 1)$ with correct amplitude but incorrect intercepts; curves must have a shape that approximates to a cosine curve)
20.			$\frac{3x}{x-3}$	3	M1 for factorising numerator, e.g. $(x+3)(2x-5)$ M1 for factorising denominator, e.g. $2x^2(x+3)$ and $(2x-5)(x-3)$ C1 fully correct working leading to $\frac{3x}{x-3}$

1MA1 Practice papers Set 5: Paper 1H (Regular) mark scheme – Version 1.0					
Question		Working	Answer	Mark	Notes
21.		$2y = 3x - 4$ $y = \frac{3}{2}x - 2; m = \frac{3}{2}$ $\frac{3 - -1}{1 - 4} = -\frac{4}{3}$ $\frac{3}{2} \times -\frac{4}{3} = -2$	No, with reason	4	M1 for $\frac{3}{2}$ oe or $y = \frac{3}{2}x\left(-\frac{4}{2}\right)$ oe M1 for method to find gradient of AB, e.g. $\frac{3 - -1}{1 - 4}$ or $\frac{-1 - 3}{4 - 1}$ or $-\frac{4}{3}$ oe A1 for identifying gradients as $\frac{3}{2}$ oe and $-\frac{4}{3}$ oe C1 (dep on M1) for a conclusion with a correct reason, e.g. No, as product of $\frac{3}{2}$ and $-\frac{4}{3}$ is not -1, ft (from their two gradients)

National performance data from Results Plus

	Original source of questions						Mean score of students achieving grade:						
Qn	Spec	Paper	Session YYMM	Qn	Topic	Max score	ALL	A*	A	B	C	D	E
1	5MM1	1H	1106	Q07	HCF and LCM	4	2.90	3.78	3.48	2.90	2.25	1.47	1.00
2	1MA0	1F	1303	Q23	Ratio	4	1.60				2.94	1.81	0.87
3	1380	1H	1111	Q13	Standard form	4	1.25	3.53	2.71	1.86	0.90	0.34	0.19
4	5MM1	1H	1306	Q06	Relative frequency	2	1.34	1.96	1.76	1.43	1.07	0.78	0.35
5	5MM1	1H	1506	Q14	Congruence and similarity	2	1.46	1.97	1.89	1.67	1.00	0.32	0.12
6	5MM1	1H	1406	Q15	Fractions	5	3.57	4.88	4.69	3.97	2.70	1.31	0.63
7	1380	1H	906	Q20	Solve inequalities	3	1.51	2.87	2.40	1.51	0.64	0.18	0.06
8	5MB2	2H	1306	Q11	Speed	3	0.98	2.51	1.93	1.17	0.72	0.35	0.16
9	5MB2	2H	1511	Q08de	Expanding brackets	3	1.28	3.00	3.00	2.55	1.35	1.03	0.27
10	5MM1	1H	1211	Q12	Gradients	2	1.37	2.00	1.86	1.59	1.27	0.74	1.00
11	5MM1	1H	1211	Q19	Factorise quadratic expressions	2	0.91	2.00	1.83	1.30	0.47	0.00	0.00
12	5MB3	3H	1306	Q12	Cubic graph	4	3.38	3.82	3.66	3.46	3.17	2.63	1.76
13	5MM1	1H	1311	Q17	Venn diagrams	6	4.34	5.79	5.44	4.72	3.73	2.91	2.26
14	1MA0	1H	1511	Q14	Angles	4	0.52	3.65	3.08	1.99	0.61	0.18	0.04
15	5MM1	1H	1306	Q15	Solve linear equations	4	1.83	3.80	3.22	1.94	0.75	0.29	0.00
16	5MM1	1H	1111	Q21	Probability	6	2.35	4.37	3.87	1.76	1.05	0.50	0.50
17	1MA0	1H	1306	Q17	Volume	6	0.51	3.08	1.20	0.44	0.12	0.03	0.02
18	5MM1	1H	1311	Q20	Index laws	5	0.92	3.32	1.84	0.85	0.28	0.07	0.00
19	1MA0	1H	1211	Q27	Graph of a circle	4	0.24	2.72	1.07	0.18	0.03	0.01	0.00
20	NEW				Manipulating algebraic fractions	3							
21	1MA0	1H	1411	Q24	Gradients	4	0.10	2.16	0.90	0.16	0.01	0.00	0.00
						80							