1MA1 Practice papers Set 6: Paper 1H (Regular) mark scheme – Version 1.0					
Question		**Working**	**Answer**	**Mark**	**Notes**
1				2	M1 for correct intersecting arcs A1 for correct angle bisector
2		P: T: B = 1: 3: 6 54÷10 × 6 **OR** e.g. T = 3P B = 2T So, B = 2(3P) = 6P P+T+B=P+3P+6P=10P P = 54÷10 = £5.40 B = 6 × £5.40	32.40	3	M1 for 1 : 3 : 6 or any three numbers in the ratio 1:3:6 in any order M1 for 54 ÷ (1 + 3 + 6) × 6 A1 for 32.4(0) **Alternative:** M1 for 1: 3: 6 oe or P + 3P + 6P (=10P) oe, e.g. T/3 + T + 2T (=10T/3) or e.g. B/6 + B/2 + B (=10B/6) or 5.4(0) or 16.2(0) seen M1 for 54 ÷ 10 × 6 or [54 $\frac{\div' 10}{3'}$] × 2 or 54 $\frac{\div' \mathbf{10}}{\mathbf{6'}}$ oe A1 for 32.4(0) OR M1 for a partial decomposition of £54 in ratio 1:3:6, e.g. (£)5 +(£)15 + (£)30 (=(£)50) M1 for a decomposition of the remaining amount in ratio 1:3:6, e.g. 40(p) + 120(p) + 240 (=400(p)) A1 for 32.4(0)

<table>
<tr><th colspan="5">1MA1 Practice papers Set 6: Paper 1H (Regular) mark scheme – Version 1.0</th></tr>
<tr><th colspan="2">Question</th><th>Working</th><th>Answer</th><th>Mark</th><th>Notes</th></tr>
<tr><td>3</td><td></td><td><table>
<tr><td>x</td><td>–2</td><td>–1</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
<tr><td>y</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td>0</td><td>–1</td></tr>
</table></td><td>graph</td><td>3</td><td>(Table of values)
M1 for at least 2 correct attempts to find points by substituting values of x
M1 ft for plotting at least 2 of their points (any points plotted from their table must be correct)
A1 for correct line between $x = –2$ and $x = 5$
or
(No table of values)
M2 for at least 2 correct points (and no incorrect points) plotted
or line segment of $x + y = 4$ drawn (ignore any additional incorrect segments)
(M1 for at least 3 correct points plotted with no more than 2 incorrect)
A1 for correct line between $x = –2$ and $x = 5$
or
(Use of $y = mx + c$)
M2 for at least 2 correct points (and no incorrect points) plotted</td></tr>
</table>

1MA1 Practice papers Set 6: Paper 1H (Regular) mark scheme – Version 1.0					
Question		**Working**	**Answer**	**Mark**	**Notes**
					(M1 for $y = 4 – x$ or line drawn with gradient of -1 or line drawn with a y intercept of 4 and a negative gradient) A1 for correct line between $x = –2$ and $x = 5$
4			Proof	4	M1 for setting up a correct equation in x, eg. $3x – 2 = x + 1$ M1 (dep) for a fully correct method to solve their equation or for $x = 1.5$ M1 (dep) for ("1.5" + 1) × 4 or (3 × "1.5" – 2) × 4 or (3 × "1.5" – 2) × 2 + ("1.5"+ 1) × 2 C1 (dep on M3) for completing the proof resulting in a perimeter of 10 **OR** M1 for setting up a correct equation in x, eg. $2(3x – 2) + 2(x + 1) = 10$ M1 (dep) for a fully correct method to solve their equation or for $x = 1.5$ M1 (dep) for "1.5" + 1 and 3 × "1.5" – 2 C1 (dep on M3) for completing the proof resulting in a justification that the shape is a square

1MA1 Practice papers Set 6: Paper 1H (Regular) mark scheme – Version 1.0					
Question		**Working**	**Answer**	**Mark**	**Notes**
5			9	4	M1 for method to find area of one rectangle, eg 15 × 8 (=120) or 15 × 11 (=165) M1 (dep) for subtracting from/by given area, eg (138 – "120") (=18) or "165" – 138 (=27) M1 for final step from complete method shown, eg 15 − "18"÷ 3 or "27" ÷ 3 A1 cao **OR** M1 for a correct expression for the area of one rectangle, eg (8 + 3) × (15 − x) or 8 × x M1 (dep) for a correct equation eg (8 + 3) × (15 − x) + 8 × x = 138 M1 for correct method to isolate x, eg 3x = 27 A1 cao

1MA1 Practice papers Set 6: Paper 1H (Regular) mark scheme – Version 1.0					
Question		**Working**	**Answer**	**Mark**	**Notes**
6		$\frac{40000}{125}=\frac{8000}{25}$ =320 seconds	320	3	M1 for 40 × 1000 or 125 ÷ 1000 or 40000 or 0.125 M1 for $\frac{'40000'}{125}$ or $\frac{40}{'0.125'}$ A1 cao **OR** M1 for 1000 ÷ 125 M1 for '8' × 40 A1 cao

1MA1 Practice papers Set 6: Paper 1H (Regular) mark scheme – Version 1.0					
Question		**Working**	**Answer**	**Mark**	**Notes**
7	(a)	$\frac{8}{20} + \frac{5}{20}$	$\frac{13}{20}$		M1 for both fractions expressed with a suitable common denominator (multiple of 20) and at least one of the two fractions correct A1 for $\frac{13}{20}$ oe or M1 for 0.4 + 0.25 A1 for 0.65 or M1 for table structure, all cells correct A1 for 13/20 oe
	(b)	$\frac{25}{8} \times \frac{12}{5}$	$\frac{15}{2}$		M1 for a correct method to convert to improper fractions or $\frac{(3\times 8+1)}{8}$ M1 (dep) for A1 for or $\frac{15}{2}$ or 7.5 (SC: B2 for 7.5)

1MA1 Practice papers Set 6: Paper 1H (Regular) mark scheme – Version 1.0					
Question		**Working**	**Answer**	**Mark**	**Notes**
8	(a)	$\frac{3}{2+3+5}$	$\frac{3}{10}$	2	M1 for $\frac{3}{2+3+5}$ A1 for $\frac{3}{10}$ oe
	(b)	$60 \div 5 = 12$ $12 \times 2 =$ **Alternative:** Total sum $= 60 \cdot 2 = 120$ Lillian $= \frac{2}{10}$ of $120 =$ $120 \cdot 2 \div 10$	24	3	M1 for $60 \div 5$ M1 for "12" $\times 2$ A1 for 24 cao **Alternative:** M1 for $60 \cdot 2 = 120$ seen M1 for $120 \cdot 2 \div 10$ A1 cao SC: B2 for 24, 36 and 60 SC: B1 for 36 on answer line

1MA1 Practice papers Set 6: Paper 1H (Regular) mark scheme – Version 1.0					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)	$11 + 3 = 6y + 4y$ $14 = 10y$	1.4	2	M1 for collecting the y terms or the numbers on one side of equation, eg $11 = 6y – 3 + 4y$ or $11 – 4y + 3 = 6y$ A1 for 1.4 or $\frac{14}{10}$ oe
	(b)	$(x – 8)(x + 5)$	8, –5	3	M2 for $(x – 8)(x + 5)$ (M1 for $(x \pm 8)(x \pm 5)$ A1 cao 8 and –5
		OR			**OR**
		$\frac{-(-3) \pm \sqrt{(-3)^2 - 4 \times 1 \times -40}}{2 \times 1}$			M1 for correct substitution in formula of $a = 1$, $b = \pm 3$ and $c = \pm 40$
		$\frac{3 \pm \sqrt{169}}{2} = \frac{3 \pm 13}{2}$			M1 for reduction to $\frac{3 \pm \sqrt{169}}{2}$ A1 cao 8 and –5

1MA1 Practice papers Set 6: Paper 1H (Regular) mark scheme – Version 1.0					
Question		**Working**	**Answer**	**Mark**	**Notes**
10		$(\frac{6}{11} \times \frac{2}{10}) + (\frac{2}{11} \times \frac{6}{10})$ $= \frac{12}{110} + \frac{12}{110}$	$\frac{24}{110}$	4	B1 for $\frac{2}{10}$ or $\frac{6}{10}$ oe seen as the 2nd probability M1 for $(\frac{6}{11} \times \frac{2}{10})$ or $(\frac{2}{11} \times \frac{6}{10})$ oe M1 for $(\frac{6}{11} \times \frac{2}{10}) + (\frac{2}{11} \times \frac{6}{10})$ o.e. A1 for $\frac{24}{110}$ oe **Tree diagram method** B1 for $\frac{2}{10}$ or $\frac{6}{10}$ oe seen as the 2nd probability M1 for $(\text{‘}\frac{6}{11}\text{’} \times \text{‘}\frac{2}{10}\text{’})$ or $(\text{‘}\frac{2}{11}\text{’} \times \text{‘}\frac{6}{10}\text{’})$ oe M1 for $(\text{‘}\frac{6}{11}\text{’} \times \text{‘}\frac{2}{10}\text{’}) + (\text{‘}\frac{2}{11}\text{’} \times \text{‘}\frac{6}{10}\text{’})$ oe A1 for $\frac{24}{110}$ oe

1MA1 Practice papers Set 6: Paper 1H (Regular) mark scheme – Version 1.0					
Question		**Working**	**Answer**	**Mark**	**Notes**
					Alternative scheme for replacement B0 for $\frac{6}{11}$ or $\frac{2}{11}$ seen as the 2nd probability M1 for $(\frac{6}{11} \times \frac{2}{11})$ or $(\frac{2}{11} \times \frac{6}{11})$ oe M1 for $(\frac{6}{11} \times \frac{2}{11}) + (\frac{2}{11} \times \frac{6}{11})$ oe A0 for $\frac{24}{121}$ **Special Cases** SC: Award B2 for $\frac{24}{121}$ or $\frac{10}{110}$ oe or $\frac{20}{110}$ oe SC: Award B1 for $\frac{10}{121}$ or $\frac{20}{121}$
11		$180 - x$	$\frac{180 - x}{2}$ Or $90 - \frac{x}{2}$	2	M1 for $180 - x$ seen (eg $180 - x \div 2$) A1 correct expression

1MA1 Practice papers Set 6: Paper 1H (Regular) mark scheme – Version 1.0					
Question		**Working**	**Answer**	**Mark**	**Notes**
12	(a)		3	1	B1 for 3 (accept ±3, but not –3 alone)
	(b)		$\frac{1}{2}$	1	B1 for $\frac{1}{2}$ (= 0.5)
	(c)		4	1	B1 cao
	(d)		6	3	M1 for using $8 = 2^3$ M1 for deriving a correct equation in *m* A1 cao
13		Boys Girls Median: 115 112 Range: 41 33 IQR: 17 9	Comparison of data	4	B1 for correct median for girls or boys B1 for any correct range or IQR C1 for a correct comparison of the medians C1 ft for a correct comparison of the ranges or IQRs For the award of both C marks at least one of the comparisons made must be in the context of the question and all figures used for comparisons correct. **OR** B2 for an accurately drawn boxplot (superimposed) C1 for a correct comparison of the medians C1 for a correct comparison of the ranges or IQRs For the award of both C marks at least one of the comparisons made must be in the context of the question

1MA1 Practice papers Set 6: Paper 1H (Regular) mark scheme – Version 1.0					
Question		**Working**	**Answer**	**Mark**	**Notes**
14	(a)		820 000	1	B1 cao
	(b)		3.76×10^{-4}	1	B1 cao
	(c)		5×10^{8}	2	M1 for $2.3 \div 4.6 \times 10^{12-3}$ oe or 500 000 000 or 0.5×10^{9} A1 cao (accept 5.0×10^{8}
15			$\frac{3\mathbf{b} - \mathbf{c}}{4}$	4	M1 for $\overrightarrow{CD} = \overrightarrow{CO} + \overrightarrow{OB} + \overrightarrow{BD}$ M1 (indep) for $\overrightarrow{CO} + \overrightarrow{OB} = -\mathbf{c} + \mathbf{b}$ or $\overrightarrow{BA} = -\mathbf{b} + 3\mathbf{c}$ M1 for $-\mathbf{c} + \mathbf{b} + \frac{1}{4}(-\mathbf{b} + 3\mathbf{c})$ A1 for $\frac{3\mathbf{b}-\mathbf{c}}{4}$ **OR** M1 for $\overrightarrow{CD} = \overrightarrow{CA} + \overrightarrow{AD}$ M1 (indep) for $\overrightarrow{CA} = 2\mathbf{c}$ or $\overrightarrow{AB} = -3\mathbf{c} + \mathbf{b}$ M1 for $2\mathbf{c} + \frac{3}{4}(-3\mathbf{c} + \mathbf{b})$ A1 for $\frac{3\mathbf{b}-\mathbf{c}}{4}$
16	(a)	1 – 0.3	0.7	1	B1 0.7 oe
	(b)	0.3 + 0.5	0.8	1	B1 0.8 oe
	(c)	$0.2 \times 0.4 = 0.08$	Not independent	2	M1 for 0.2×0.4 (= 0.08)

1MA1 Practice papers Set 6: Paper 1H (Regular) mark scheme – Version 1.0					
Question		**Working**	**Answer**	**Mark**	**Notes**
		$0.08 \neq 0.06$	with reason		C1 for 0.08 and stating events not independent
17		$\frac{(2x-1)(x+5)}{(2x-1)(3x-1)}$	$\frac{x+5}{3x-1}$	3	M1 for factorizing the numerator correctly M1 for factorizing the denominator correctly A1 for $\frac{x+5}{3x-1}$
18		$ACB = 90^o$ angle in a semi circle $CBD = 180 - ACB$ co-interior angles add to 180° $CBD = 90°$ $DCB = CDB =$ $(180^o - 90^o) \div 2$ base angles of an isosceles triangles	45	4	B1 $ACB = 90$ (could be on the diagram) or 45 seen in a correct position on the diagram B1 answer of 45 B1 angle in a semicircle = 90 B1 base angles isosceles triangle are equal or alternate angles are equal
19			E, B, F, C, D, A	3	B3 all correct (B2 4,5 correct) (B1 2 or 3 correct)
20		$\mathbf{3 - \sqrt{2} + 3\sqrt{2} - \sqrt{2}\sqrt{2}}$	$1 + 2\sqrt{2}$	2	M1 for 4 terms correct ignoring signs or 3 out of no more than 4 terms correct A1 cao

1MA1 Practice papers Set 6: Paper 1H (Regular) mark scheme – Version 1.0					
Question		**Working**	**Answer**	**Mark**	**Notes**
21	(a)	$(a+1)^2 = a^2 + 2a + 1$ $\neq a^2 + 1$ **OR** Pick any non-zero value of a and show that LHS ≠ RHS **OR** $(a+1)^2 = a^2 + 2a + 1$ Solves $a^2 + 2a + 1 = a^2 + 1$ to get $a = 0$ and indicates a contradiction	Correctly shown	2	M1 for $(a+1)^2 = a^2 + 2a + 1$ **or** $a^2 + a + a + 1$ (Expansion must be correct but may not be simplified) A1 for statement that $a^2 + 2a + 1 \neq a^2 + 1$ (eg. they are different) **OR** M1 for correct substitution of any integer into both expressions eg. $(2 + 1)^2$ **and** $2^2 + 1$ A1 for correct evaluation of both expressions and statement that they are not equal (eg. they are different) **OR** M1 $(a+1)^2 = a^2 + 2a + 1$ **or** $a^2 + a + a + 1$ A1 Solves $a^2 + 2a + 1 = a^2 + 1$ to get $a = 0$ and indicates a contradiction
	(b)	$a^2 + 2a + 1 + b^2 + 2b + 1 = c^2 +$ But $a^2 + b^2 = c^2$ So $2a + 2b + 1 = 2c$	AG	3	M1 use of Pythagoras in either triangle – **one** of $a^2 + b^2 = c^2$ **or** $(a + 1)^2 + (b + 1)^2 = (c + 1)^2$ A1 $a^2 + 2a + 1 + b^2 + 2b + 1 = c^2 + 2c + 1$ **and** $a^2 + b^2 = c^2$ A1 $2a + 2b + 1 = 2c$
	(c)	LHS is odd, RHS is even	Explanation	1	B1 eg. LHS is odd, RHS is even **or** one side is odd and the other side is even oe

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	2540	1F	0811	Q25	Constructions	2	0.15				0.36	0.12	0.05
2	1380	1F	1106	Q27	Ratio	3	0.27				0.75	0.29	0.10
3	1380	1F	1011	Q21	Graphs of linear equations	3	0.59				1.45	0.48	0.12
4	5MM1	1H	1411	Q09	Solve linear equations	4	2.07	3.57	2.93	2.47	1.52	0.77	0.20
5	1MA0	1H	1411	Q07	Perimeter and area	4	1.38	3.85	3.56	2.93	1.51	0.68	0.29
6	1380	1H	906	Q10	Compound measures	3	2.20	2.86	2.57	2.20	1.88	1.49	0.99
7	5MM1	1H	1311	Q13	Fractions	5	2.87	4.72	4.20	3.32	2.20	0.93	0.12
8	1387	3I	0711	Q13	Ratio	5	2.48			4.30	3.07	1.65	0.78
9	5MM1	1H	1211	Q15	Solve quadratic equations	5	2.32	4.94	4.63	3.62	1.47	0.47	0.00
10	5MM1	1H	1206	Q20	Selection with or without replacement	4	1.68	3.65	2.88	1.74	0.51	0.17	0.00
11	5MM1	1H	1111	Q11	Angles	2	0.80	1.50	1.73	0.98	0.18	0.00	0.00
12	5MM1	1H	1411	Q17	Index laws	6	2.32	5.70	3.87	2.33	1.30	0.52	0.10
13	1MA0	1H	1611	Q18	Box plots	4	Data to be added January 2017						
14	1MA0	1H	1303	Q16	Standard form	4	1.18	3.27	2.48	1.68	0.91	0.35	0.09
15	5MM1	1H	1411	Q23	Vectors	4	1.10	3.85	2.12	1.03	0.17	0.03	0.00
16	5MM1	1H	1211	Q23	Venn diagrams	4	1.03	1.82	1.33	0.87	0.57	0.40	0.00
17	5MM1	1H	1411	Q22	Simplify algebraic fractions	3	0.70	2.96	1.68	0.37	0.02	0.00	0.00
18	1380	1H	1111	Q19	Circle theorems	4	0.93	3.21	2.33	1.39	0.55	0.18	0.11
19	1380	1H	1203	Q20	Graphs of trigonometric functions	3	0.67	2.14	1.26	0.70	0.38	0.23	0.19
20	1MA0	1H	1411	Q21	Surds	2	0.28	1.85	1.58	0.83	0.16	0.03	0.01
21	1380	1H	1203	Q24	Algebraic proof	6	0.54	2.55	1.27	0.56	0.16	0.03	0.02
					TOTAL	**80**							