| 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<br>A1 for correct angle bisector |
| **2** | | P: T: B = 1: 3: 6<br>54÷10 × 6<br><br>**OR**<br><br>e.g.<br>T = 3P<br>B = 2T<br>So, B = 2(3P) = 6P<br>P+T+B=P+3P+6P=10P<br>P = 54÷10 = £5.40<br>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<br>M1 for 54 ÷ (1 + 3 + 6) × 6<br>A1 for 32.4(0)<br>**Alternative:**<br>M1 for 1: 3: 6 oe or P + 3P + 6P (=10P) oe,<br>e.g. T/3 + T + 2T (=10T/3) or<br>e.g. B/6 + B/2 + B (=10B/6) or 5.4(0) or 16.2(0) seen<br>M1 for 54 ÷ 10 × 6 or [54 $\frac{\div' 10}{3'}$ ] × 2<br>or 54 $\frac{\div' 10}{6'}$ oe<br>A1 for 32.4(0)<br>OR<br>M1 for a partial decomposition of £54 in ratio 1:3:6, e.g. (£)5 +( £)15 + (£)30 (=(£)50)<br>M1 for a decomposition of the remaining amount in ratio 1:3:6, e.g. 40(p) + 120(p) + 240 (=400(p))<br>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)<br>M1 for at least 2 correct attempts to find points by substituting values of $x$<br>M1 ft for plotting at least 2 of their points (any points plotted from their table must be correct)<br>A1 for correct line between $x = –2$ and $x = 5$<br>or<br>(No table of values)<br>M2 for at least 2 correct points (and no incorrect points) plotted<br>or line segment of $x + y = 4$ drawn (ignore any additional incorrect segments)<br>(M1 for at least 3 correct points plotted with no more than 2 incorrect)<br>A1 for correct line between $x = –2$ and $x = 5$<br>or<br>(Use of $y = mx + c$)<br>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<br>gradient of -1 or line drawn with a $y$<br>intercept of 4 and a negative gradient)<br>A1 for correct line between $x = –2$ and $x = 5$ |
| **4** | | | Proof | 4 | M1 for setting up a correct equation in $x$,<br>eg. $3x – 2 = x + 1$<br>M1 (dep) for a fully correct method to solve their equation or for $x = 1.5$<br>M1 (dep) for ("1.5" + 1) × 4 or (3 × "1.5" – 2) × 4<br>or (3 × "1.5" – 2) × 2 + ("1.5"+ 1) × 2<br>C1 (dep on M3) for completing the proof resulting in a perimeter of 10<br>**OR**<br>M1 for setting up a correct equation in $x$,<br>eg. $2(3x – 2) + 2(x + 1) = 10$<br>M1 (dep) for a fully correct method to solve their equation or for $x = 1.5$<br>M1 (dep) for "1.5" + 1 and 3 × "1.5" – 2<br>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,<br>eg 15 × 8 (=120) or 15 × 11 (=165)<br>M1 (dep) for subtracting from/by given area,<br>eg (138 – "120") (=18) or "165" – 138 (=27)<br>M1 for final step from complete method shown,<br>eg 15 − "18"÷ 3 or "27" ÷ 3<br>A1 cao<br><br>**OR**<br><br>M1 for a correct expression for the area of one rectangle,<br>eg (8 + 3) × (15 − $x$) or 8 × $x$<br>M1 (dep) for a correct equation<br>eg (8 + 3) × (15 − $x$) + 8 × $x$ = 138<br>M1 for correct method to isolate $x$, eg 3$x$ = 27<br>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<br>M1 for $\frac{'40000'}{125}$ or $\frac{40}{'0.125'}$<br>A1 cao<br><br>**OR**<br><br>M1 for 1000 ÷ 125<br>M1 for '8' × 40<br>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<br>correct<br>A1 for $\frac{13}{20}$ oe<br>or<br>M1 for 0.4 + 0.25<br>A1 for 0.65<br>or<br>M1 for table structure, all cells correct<br>A1 for 13/20 oe |
| | (b) | $\frac{25}{8} \times \frac{2}{5}$ | $\frac{5}{4}$ | | M1 for a correct method to convert to improper fractions or $\frac{(3\times8+1)}{8}$<br>M1 (dep) for<br>A1 for or $\frac{5}{4}$ or 1.25<br><br>(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 $\frac{3}{2+3+5}$<br>A1 for $\frac{3}{10}$ oe |
| | (b) | 60 ÷ 5 = 12<br>12 × 2 =<br><br>**Alternative:**<br>Total sum = 60 × 2 = 120<br>Lillian = $\frac{2}{10}$ of 120 =<br>120 × 2 ÷ 10 | 24 | 3 | M1 for 60 ÷ 5<br>M1 for "12" × 2<br>A1 for 24 cao<br><br>**Alternative:**<br>M1 for 60 × 2 = 120 seen<br>M1 for 120 × 2 ÷ 10<br>A1 cao<br><br>SC: B2 for 24, 36 and 60<br>SC: B1 for 36 on answer line |
| **9** | (a) | 11 + 3 = 6*y* + 4*y*<br>14 = 10*y* | 1.4 | 2 | M1 for collecting the *y* terms or the numbers on one side of equation, |

| 1MA1 Practice papers Set 6: Paper 1H (Regular) mark scheme – Version 1.0 | | | | | |
|---|---|---|---|---|---|
| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| | | | | | eg $11 = 6y - 3 + 4y$ or $11 - 4y + 3 = 6y$<br>A1 for 1.4 or $\frac{14}{10}$ oe |
| | (b) | $(x - 8)(x + 5)$ | 8, –5 | 3 | M2 for $(x - 8)(x + 5)$<br>(M1 for $(x \pm 8)(x \pm 5)$<br>A1 cao 8 and –5 |
| | | **OR**<br>$\frac{-(-3) \pm \sqrt{(-3)^2 - 4 \times 1 \times -40}}{2 \times 1}$<br>$\frac{3 \pm \sqrt{169}}{2} = \frac{3 \pm 13}{2}$ | | | **OR**<br>M1 for correct substitution in formula of<br>$a = 1$, $b = \pm 3$ and $c = \pm 40$<br>M1 for reduction to $\frac{3 \pm \sqrt{169}}{2}$<br>A1 cao 8 and –5 |
| **10** | | $(\frac{6}{11} \times \frac{2}{10}) + (\frac{2}{11} \times \frac{6}{10})$ | $\frac{24}{110}$ | 4 | B1 for $\frac{2}{10}$ or $\frac{6}{10}$ oe seen as the 2nd probability<br>M1 for $(\frac{6}{11} \times \frac{2}{10})$ or $(\frac{2}{11} \times \frac{6}{10})$ oe |

| 1MA1 Practice papers Set 6: Paper 1H (Regular) mark scheme – Version 1.0 | | | | | |
|---|---|---|---|---|---|
| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| | | $= \frac{12}{110} + \frac{12}{110}$ | | | M1 for $(\frac{6}{11} \times \frac{2}{10}) + (\frac{2}{11} \times \frac{6}{10})$ o.e.<br>A1 for $\frac{24}{110}$ oe<br><br>**Tree diagram method**<br>B1 for $\frac{2}{10}$ or $\frac{6}{10}$ oe seen as the 2nd probability<br>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<br>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<br>A1 for $\frac{24}{110}$ oe<br><br>**Alternative scheme for replacement**<br>B0 for $\frac{6}{11}$ or $\frac{2}{11}$ seen as the 2nd probability<br>M1 for $(\frac{6}{11} \times \frac{2}{11})$ or $(\frac{2}{11} \times \frac{6}{11})$ oe<br>M1 for $(\frac{6}{11} \times \frac{2}{11})$ + $(\frac{2}{11} \times \frac{6}{11})$ oe |

| 1MA1 Practice papers Set 6: Paper 1H (Regular) mark scheme – Version 1.0 | | | | | |
|---|---|---|---|---|---|
| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| | | | | | A0 for $\frac{24}{121}$<br>**Special Cases**<br>SC: Award B2 for $\frac{24}{121}$or $\frac{10}{110}$oe or $\frac{20}{110}$oe<br>SC: Award B1 for $\frac{10}{121}$or $\frac{20}{121}$ |
| **11** | | $180 - x$ | $\frac{180 - x}{2}$<br>Or<br>$90 - \frac{x}{2}$ | 2 | M1 for $180 - x$ seen (eg $180 - x \div 2$)<br>A1 correct expression |
| **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 $8 = 2^3$<br>M1 for deriving a correct equation in *m*<br>A1 cao |

| 1MA1 Practice papers Set 6: Paper 1H (Regular) mark scheme – Version 1.0 | | | | | |
|---|---|---|---|---|---|
| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| **13** | | Boys Girls<br>Median: 115 112<br>Range: 41 33<br>IQR: 17 9 | Comparison of data | 4 | B1 for correct median for girls or boys<br>B1 for any correct range or IQR<br>C1 for a correct comparison of the medians<br>C1 ft for a correct comparison of the ranges or IQRs<br>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.<br>**OR**<br>B2 for an accurately drawn boxplot ( superimposed)<br>C1 for a correct comparison of the medians<br>C1 for a correct comparison of the ranges or IQRs<br>For the award of both C marks at least one of the comparisons made must be in the context of the question |
| **14** | (a) | | 820 000 | 1 | B1 cao |
| | (b) | | $3.76 \times 10^{-4}$ | 1 | B1 cao |
| | (c) | | $5 \times 10^{8}$ | 2 | M1 for $2.3 \div 4.6 \times 10^{12-3}$ oe or 500 000 000 or $0.5 \times 10^{9}$<br>A1 cao (accept $5.0 \times 10^{8}$ |
| **15** | | | $\frac{3\mathbf{b}-\mathbf{c}}{4}$ | 4 | M1 for $\overrightarrow{CD} = \overrightarrow{CO} + \overrightarrow{OB} + \overrightarrow{BD}$<br>M1 (indep) for $\overrightarrow{CO} + \overrightarrow{OB} = -\mathbf{c} + \mathbf{b}$ |

| 1MA1 Practice papers Set 6: Paper 1H (Regular) mark scheme – Version 1.0 | | | | | |
|---|---|---|---|---|---|
| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| | | | | | or $\overrightarrow{BA} = -\mathbf{b} + 3\mathbf{c}$<br>M1 for $-\mathbf{c} + \mathbf{b} + \frac{1}{4}(-\mathbf{b} + 3\mathbf{c})$<br>A1 for $\frac{3\mathbf{b}-\mathbf{c}}{4}$<br>**OR**<br>M1 for $\overrightarrow{CD} = \overrightarrow{CA} + \overrightarrow{AD}$<br>M1 (indep) for $\overrightarrow{CA} = 2\mathbf{c}$ or $\overrightarrow{AB} = -3\mathbf{c} + \mathbf{b}$<br>M1 for $2\mathbf{c} + \frac{3}{4}(-3\mathbf{c} + \mathbf{b})$<br>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) | $0.2 \times 0.4 = 0.08$<br>$0.08 \neq 0.06$ | Not independent with reason | 2 | M1 for $0.2 \times 0.4$ (= 0.08)<br>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<br>M1 for factorizing the denominator correctly<br>A1 for $\frac{x+5}{3x-1}$ |
| **18** | | $ACB = 90^o$ angle in a semi circle<br>$CBD = 180 - ACB$ co-interior angles add to 180° | 45 | 4 | B1 $ACB = 90$ (could be on the diagram)<br>or 45 seen in a correct position on the diagram<br>B1 answer of 45<br>B1 angle in a semicircle = 90 |

| 1MA1 Practice papers Set 6: Paper 1H (Regular) mark scheme – Version 1.0 | | | | | |
|---|---|---|---|---|---|
| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| | | $CBD = 90°$<br>$DCB = CDB =$<br>$(180^o - 90^o) \div 2$<br>base angles of an isosceles triangles | | | B1 base angles <u>isosceles</u> triangle are equal<br>or <u>alternate angles</u> are equal |
| **19** | | | D, C, B, A | 3 | B3 all correct<br>(B2 2 or 3 correct)<br>(B1 1 correct) |
| **20** | | $3 - \sqrt{2} + 3\sqrt{2} - \sqrt{2}\sqrt{2}$ | $1 + 2\sqrt{2}$ | 2 | M1 for 4 terms correct ignoring signs or 3 out of no more than 4 terms correct<br>A1 cao |
| **21** | (a) | $(a+1)^2 = a^2 + 2a + 1$<br>$\neq a^2 + 1$<br>**OR**<br>Pick any non-zero value of $a$ and show that LHS ≠ RHS<br>**OR**<br>$(a+1)^2 = a^2 + 2a + 1$ | 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)<br>A1 for statement that $a^2 + 2a + 1 \neq a^2 + 1$ (eg. they are different)<br>**OR**<br>M1 for correct substitution of any integer into both expressions eg. $(2 + 1)^2$ **and** $2^2 + 1$ |

| 1MA1 Practice papers Set 6: Paper 1H (Regular) mark scheme – Version 1.0 | | | | | |
|---|---|---|---|---|---|
| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| | | Solves $a^2 + 2a + 1 = a^2 + 1$ to get $a = 0$ and indicates a contradiction | | | A1 for correct evaluation of both expressions and statement that they are not equal (eg. they are different)<br>**OR**<br>M1 $(a+1)^2 = a^2 + 2a + 1$ **or** $a^2 + a + a + 1$<br>A1 Solves $a^2 + 2a + 1 = a^2 + 1$ to get $a = 0$ and indicates a contradiction |
| | (b) | $a^2 + 2a + 1 + b^2 + 2b + 1 = c^2 + 2c + 1$<br>But $a^2 + b^2 = c^2$<br>So $2a + 2b + 1 = 2c$ | AG | 3 | M1 use of Pythagoras in either triangle – **one** of<br>$a^2 + b^2 = c^2$ **or** $(a+1)^2 + (b+1)^2 = (c+1)^2$<br>A1 $a^2 + 2a + 1 + b^2 + 2b + 1 = c^2 + 2c + 1$ **and** $a^2 + b^2 = c^2$<br>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** | | | | | | | |