| 1MA1 Practice Tests Set 1: Paper 2H (Regular) mark scheme – Version 1.0 | | | | | |
|---|---|---|---|---|---|
| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| **1** | | | 488 | 3 | M1 600 × 67.1 (= 40260) or 67.1 ÷ 82.5 (= 0.813…)<br>M1 (dep) "40260" ÷ 82.5 or "0.813.." × 600<br>A1 cao<br>SC: B2 for 712 |
| **2** | | 12, 24, 36, 48, 60, 72, ….<br>8, 16, 24, 32, 40, 48, 56, 64, 72,… | 25.80 | 5 | M1 for listing at least 3 multiples of each of 12 and 8 or 24 in two lists of multiples or from factor trees<br>M1 (dep) for attempt to find a common multiple of 12 and 8 above 60 (= 72)<br>M1 (dep M2) for method to find the number of boxes **and** the number of packs 72 ÷12 (= 6) and 72 ÷ 8 (= 9)<br>M1 for finding the total cost by multiplying numbers by cost and adding eg "6" × 2.50 + "9" × 1.20<br>A1 for 25.8(0) |
| **3** | | 62 + 92 = 117<br>√117 = | 10.8 | 3 | M1 for 62 + 92<br>M1 for √(36 + 81) or √117<br>A1 for 10.8 – 10.82 |
| **4** | (a) | | Negative | 1 | B1 cao |
| | (b) | | 117–123 | 2 | M1 for a line of best fit drawn between (9,130) and (9, 140) and between (13,100) and (13,110) inclusive<br>A1 for 117 – 123 |
| **5** | | $x + 4x > 2(x + 48)$<br>$5x > 2x + 96$<br>$3x > 96$ | 33 | 5 | B1 for $x + 48$ (or $2x + 96$ oe) **and** $4x$<br>M1 for $x + 4x > 2(x + 48)$ oe<br>M1 for subtracting $2x$ from both sides |


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<tr><th colspan="5">1MA1 Practice Tests Set 1: Paper 2H (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></td><td></td><td>$x > 32$<br><br>OR<br><br><table><tr><td>S</td><td>N</td><td>C</td><td>S+C</td><td>2N</td></tr><tr><td>10</td><td>58</td><td>40</td><td>50</td><td>116</td></tr><tr><td>20</td><td>68</td><td>80</td><td>100</td><td>136</td></tr><tr><td>30</td><td>78</td><td>120</td><td>140</td><td>156</td></tr><tr><td>32</td><td>80</td><td>128</td><td>160</td><td>160</td></tr><tr><td>33</td><td>81</td><td>132</td><td>165</td><td>162</td></tr></table></td><td></td><td></td><td>A1 for $3x > 96$ oe<br>A1 cao for 33<br><br>OR<br>Trial and Improvement<br>B1 for 1 correct trial of S, N and C<br>M1 for an improved correct trial of S, N and C<br>M1 for a correct trial of 32<br>M1 for a correct trial of 33<br>A1 (dep on M2) for 33 cao<br>NB: Accept other letters instead of $x$<br>NB: an answer of 32 without working scores 0 marks</td></tr>
<tr><td>6</td><td></td><td>$4x + 4x + 3x + 4 + 3x + 4 = 14x + 8$<br>$5x + 5x + x – 3 + 7x – 3 = 18x – 6$<br>$18x – 6 = 14x + 8$<br>$4x = 14$<br>$x = 14/4 = 3.5$ oe</td><td>$x = 3.5$<br>L = 14.5<br>W = 14</td><td>6</td><td>M1 $4x + 4x + 3x + 4 + 3x + 4$ $(= 14x + 8)$<br>M1 $5x + 5x + x – 3 + 7x – 3$ $(= 18x – 6)$<br>M1 equating e.g. $18x – 6 = 14x + 8$ $(4x = 14)$<br>A1 $x = 14/4 = 3.5$ oe<br>A1 for 14.5 or “3.5” × 3+4 ft<br>A1 for 14 or “3.5” × 4 ft</td></tr>
</table>

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|---|---|---|---|---|---|
| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| | | Area of trapezium =<br>Length is $3x + 4$ =<br>$3 \times 3.5 + 4$ =<br>Width is $4x = 4 \times 3.5$ = | | | |
| **7** | (a) | | 0.22,0.78,0.74,0.26 | 2 | B1 for 0.78,0.22 correctly placed<br>B1 for 0.26,0.74 correctly placed |
| | *(b) | | No<br>As $0.454 < 0.5$ | 4 | M1 for $0.55 \times$ "0.22" or $0.45 \times$ "0.74" oe<br>M1 for $0.55 \times$ "0.22" + $0.45 \times$ "0.74" oe<br>A1 for 0.454 oe<br>C1 (dep on M1) for conclusive statement based on their answer compared to 50% |
| **8** | | $2y - -y = 3 - 6$<br>or<br>$x + 2x = 3 + 12$ | $x = 5, y = -1$ | 3 | M1 for a complete method to eliminate one variable (condone one arithmetic error)<br>A1 $x = 5$<br>A1 $y = -1$<br>NB: Candidates showing no working score 0 marks |

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|---|---|---|---|---|---|
| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| **9** | | | 28% or $\frac{14}{50}$ | 4 | M1 for 100 – 30 (= 70) or $1-\frac{3}{10}\left(=\frac{7}{10}\right)$<br>M1 for "70" ÷ (3 + 2) (= 14) or $\frac{7}{10}\div(3+2)\left(=\frac{7}{50}\right)$<br>M1 for "14" × 2 or $\frac{7}{50}\times 2$<br>A1 for 28% or $\frac{14}{50}$ oe<br>OR<br>M1 for a correct method to find (100 – 30)% of any actual sum of money<br>M1 for "350" ÷ (3 + 2) (= 70)<br>M1 for "70" × 2<br>A1 for 28% or $\frac{14}{50}$ oe<br>OR<br>M1 for starting with two numbers in ratio 3:2, e.g. 21 and 14<br>M1 for equating sum of their numbers to 100 – 30 (= 70%),<br>e.g. '21' + '14' (= 35)<br>M1 for scaling sum of their numbers to 100%,<br>e.g. '35' ÷ 70 × 100 (= 50) |

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|---|---|---|---|---|---|
| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| | | | | | A1 for 28% or $\frac{14}{50}$ oe<br>SC: award B3 for oe answers expressed in an incorrect form e.g. $\frac{2.8}{10}$ |
| **10** | | 5, 13, 29, 53, 85, 125 | (85) | 2 | M1 for correct evaluation of at least 3 odd cases or sequence of 5, (8), 13, (20), 29… seen or the expression with $n$ = 9 or 11 or 19 or 21 or … substituted but not evaluated<br>A1 for 85 or 125 or 365 or 445 or … identified |
| **11** | (a) | | 104.5° | 3 | M1 for substitution into the cosine rule e.g.<br>$3.6^2 = 1.8^2 + 2.7^2 - 2 \times 1.8 \times 2.7 \times \cos A$<br>M1 for $\cos A = \left(\frac{1.8^2 + 2.7^2 - 3.6^2}{2 \times 1.8 \times 2.7}\right)$<br>$[= \left(\frac{3.24 + 7.29 - 12.96}{9.72}\right) = (-0.25)\ ]$<br>A1 for 104.47..... |
| | (b) | | 2.4 | 2 | M1 (ft) for $\frac{1}{2} \times 1.8 \times 2.7 \times \sin$ (a)<br>A1 for an answer in the range 2.3 to 2.4 or ft from their (a) if supported by correct working. |

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|---|---|---|---|---|---|
| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| ***12** | | *d*: UB = 190.5 (190.49..)<br>LB = 189.5<br>*f*: UB = 25.75 (25.749..)<br>LB = 25.65 | 7.4<br><br>because the LB and UB agree to that number of figures | 5 | B1 for one correct bound of *d*<br>B1 for one correct bound of *f*<br>M1 for a correct method to find the upper bound of *c*,<br>e.g. "190.5" ÷ "25.65" (= 7.4269....)<br>or for a correct method to find the lower bound of *c*,<br>e.g. "189.5" ÷ "25.75" (= 7.359....)<br>A1 for 7.42(69…) and 7.35(92…)<br>C1 (dep on M1) for a statement that both LB and UB round to "7.4" to one decimal place oe<br>**NB** an answer of 7.39(2996…) or 7.4 without working or from 190 ÷ 25.7 scores no marks |
| **13** | | Volume of A = $\frac{140}{0.7}$<br>= 200<br><br>Volume of B = $\frac{128}{1.6}$ = 80<br><br>Mass of C = 140 + 128<br>= 268<br><br>Density of C = $\frac{268}{280}$ | 0.957 | 4 | M1 for finding the volume of either liquid A or B or the mass of liquid C<br>M1 for a complete method to find the volume AND mass of liquid C<br>M1 (dep M2) for "total mass" ÷ " total volume"<br>A1 for 0.957 to 0.96 |

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|---|---|---|---|---|---|
| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| **14** | (a) | | 11 | 1 | B1 cao |
| | (b) | $y = 2x + 5$<br>$y - 5 = 2x$<br>OR<br>$x = 2y + 5$<br>$x - 5 = 2y$ | $\frac{x-5}{2}$ | 2 | M1 for a correct first stage: subtract 5 from both sides or divide all terms by 2<br>NB Accept f($x$) in place of $y$<br>A1 $\frac{x-5}{2}$ (oe) |
| | (c) | | – 16 | 1 | B1 cao |
| | (d) (i) | $(2x+5)^2 - 25$<br>$4x^2 + 10x + 10x + 25$ oe | $4x^2 + 20x$ | 5 | M1<br>B1 for correct expansion of $(2x + 5)^2$<br>A1 $4x^2 + 20x$ or a correct fully or partially factorised expression |
| | (ii) | | x = 0, x = – 5 | | M1 $4x(x + 5) (= 0)$ or $x(4x + 20) (= 0)$ or $2x(2x + 10) (= 0)$ or $x(x + 5) (=0)$ or for, e.g. $\frac{-20 \pm \sqrt{20^2 - 4 \times 4 \times 0}}{2 \times 4}$<br>A1 for both solutions |

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|---|---|---|---|---|---|
| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| **15** | | $\frac{5}{20}\times\frac{7}{19}+\frac{5}{20}\times\frac{8}{19}+$<br>$\frac{7}{20}\times\frac{5}{19}+\frac{7}{20}\times\frac{8}{19}+$<br>$\frac{8}{20}\times\frac{5}{19}+\frac{8}{20}\times\frac{7}{19}$<br>OR<br>$\left(\frac{5}{20}\times\frac{15}{19}+\frac{7}{20}\times\frac{13}{19}+\frac{8}{20}\times\frac{12}{19}\right)$<br>OR<br>1 –<br>$\left(\frac{5}{20}\times\frac{4}{19}+\frac{7}{20}\times\frac{6}{19}+\frac{8}{20}\times\frac{7}{19}\right)$ | | 4 | M1 for at least one product of the form $\frac{a}{20}\times\frac{b}{19}$<br>M1 for identifying all products<br>(condone 2 errors in 6 products, 1 error in 3 products)<br>Either<br>$\frac{5}{20}\times\frac{7}{19},\frac{5}{20}\times\frac{8}{19},\frac{7}{20}\times\frac{5}{19},\frac{7}{20}\times\frac{8}{19},\frac{8}{20}\times\frac{5}{19},\frac{8}{20}\times\frac{7}{19}$<br>OR<br>$\left(\frac{5}{20}\times\frac{15}{19},\frac{7}{20}\times\frac{13}{19},\frac{8}{20}\times\frac{12}{19}\right)$<br>OR<br>$\left(\frac{5}{20}\times\frac{4}{19},\frac{7}{20}\times\frac{6}{19},\frac{8}{20}\times\frac{7}{19}\right)$<br>M1 (dep) for<br>$'\frac{5}{20}\times\frac{7}{19}+\frac{5}{20}\times\frac{8}{19}+\frac{7}{20}\times\frac{5}{19}+\frac{7}{20}\times\frac{8}{19}+\frac{8}{20}\times\frac{5}{19}+\frac{8}{20}\times\frac{7}{19}'$ oe<br>OR<br>$\left(',\frac{5}{20}\times\frac{15}{19}+\frac{7}{20}\times\frac{13}{19}+\frac{8}{20}\times\frac{12}{19},'\right)$ oe<br>OR<br>$1-\left(',\frac{5}{20}\times\frac{4}{19}+\frac{7}{20}\times\frac{6}{19}+\frac{8}{20}\times\frac{7}{19},'\right)$ oe<br>A1 for $\frac{131}{190}$ oe or 0.68947… correct to at least 2 decimal |

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| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| | | | | | places or answer that rounds to 0.69<br>NB : If decimals used for products then must be correct to at least 2 decimal places<br>**With replacement**<br>M0<br>M1 for identifying all products<br>(condone 2 errors in 6 products, 1 error in 3 products)<br>M1 (dep)<br>A0 for $\frac{269}{400}$ oe or 0.655 (NB: $\frac{269}{400}$ oe or 0.655 implies M2)<br>**Partial replacement**<br>SC: B2 for $\frac{141}{200}$ oe or 0.705 or $\frac{121}{190}$ oe or 0.6368… correct to at least 2 decimal places |
| **16** | | $P = k/x^2$<br>$6 = k/5^2$ (k = 150)<br>$P = \frac{150}{8^2}$ | 2.34 | 3 | M1 for $P = k/x^2$ or $P \propto k/x^2$<br>M1 for $6 = k/5^2$ or ($k$ =) 150 seen or $6 \times 5^2 = P \times 8^2$<br>A1 2.34 |
| **17** | | $3^2 \times 180$ | 1620 | 2 | M1 for using a scale factor of $3^2$ (= 9)<br>A1 cao |

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| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| **18** | | e.g.<br>$1 \times 7.6 + 3 \times 9.4 +$<br>$2 \times 5.6 + 6 \times 1.4 = 55.4$<br>$55.4 \div 2 = 27.7$<br>$27.7 - 7.6 = 20.1$<br>$20.1 \div 9.4 = 2.138\ldots$<br>Median $= 55 + 2.138\ldots$<br>$\times 2.5 = 60.345\ldots$ | 60.3 | 4 | M1 for attempt to find the area of one bar<br>M1 for attempt to find total area ÷ 2 (condone one error)<br>M1 for correct attempt to locate median in second bar (condone one arithmetic error)<br>A1 for 60.3(4...) |
| **19** | | | (–15, 0) | 4 | M1 method to find gradient of tangent, e.g. $-1 \div -\frac{6}{3}$ $(=\frac{1}{2})$<br>M1 for method to find equation of tangent with $m =$ "$\frac{1}{2}$"<br>M1 for method to find $x$-axis intercept of tangent<br>A1 cao |

National performance data from Results Plus

| | Source of questions | | | | | | | Mean score of students achieving grade: | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Qu | Spec | Paper | Session | Qu | Topic | Max score | Mean % all | ALL | A* | A | B | C | D | E |
| 1 | 4MA0(R) | 2F | 1501 | Q17 | Proportions | 2.30 | 3 | 77 | | | | 2.67 | 2.08 | 1.33 |
| 2 | 1MA0 | 2H | 1406 | Q14 | HCF and LCM | 3.68 | 5 | 74 | 4.65 | 4.27 | 3.97 | 3.58 | 2.77 | 1.58 |
| 3 | 5MM2 | 2F | 1211 | Q26 | Pythagoras in 2D | 1.00 | 3 | 33 | | | | 2.90 | 1.88 | 0.52 |
| 4 | 1380 | 2F | 911 | Q27 | Scatter diagrams | 1.66 | 3 | 55 | | | | 2.47 | 1.86 | 1.21 |
| 5 | 5AM2 | 2H | 1306 | Q14 | Solve inequalities | 2.71 | 5 | 54 | 4.43 | 3.48 | 2.78 | 1.72 | 0.79 | 0.06 |
| 6 | 5AM1 | 1H | 1106 | Q14 | Solve linear equations | 3.24 | 6 | 54 | 5.84 | 5.19 | 3.02 | 1.17 | 1.00 | 1.00 |
| 7 | 5AM2 | 2H | 1411 | Q15 | Probability tree diagrams | 3.22 | 6 | 54 | 5.78 | 5.25 | 4.29 | 2.36 | 1.00 | 0.00 |
| 8 | 4MA0(R) | 2F | 1501 | Q20 | Solving simultaneous equations | 0.72 | 3 | 24 | | | | 0.94 | 0.62 | 0.00 |
| 9 | 1MA0 | 2H | 1306 | Q07 | Ratio | 1.58 | 4 | 40 | 3.75 | 3.07 | 2.08 | 1.01 | 0.33 | 0.09 |
| 10 | 2540 | 2H | 811 | Q05 | Number sequences | 0.74 | 2 | 37 | 1.81 | 1.56 | 1.05 | 0.45 | 0.12 | 0.09 |
| 11 | 5MM2 | 2H | 1506 | Q21 | Sine and cosine rule | 1.59 | 5 | 32 | 4.38 | 2.58 | 0.80 | 0.16 | 0.05 | 0.10 |
| 12 | 5AM2 | 2H | 1406 | Q18 | Bounds | 1.57 | 5 | 31 | 3.53 | 2.65 | 1.45 | 0.44 | 0.10 | 0.00 |
| 13 | 1MA0 | 2H | 1506 | Q16 | Compound measures | 0.86 | 4 | 22 | 2.54 | 1.44 | 0.82 | 0.55 | 0.40 | 0.28 |
| 14 | 4MA0 | 1H | 1401 | Q20 | Functions | 4.76 | 9 | 53 | 7.89 | 5.68 | 3.42 | 1.41 | 0.47 | 0.25 |
| 15 | 1380 | 2H | 906 | Q26 | Conditional probability | 0.84 | 4 | 21 | 3.06 | 1.75 | 0.41 | 0.04 | 0.00 | 0.00 |
| 16 | 5MM2 | 2H | 1111 | Q23 | Direct and indirect proportion | 0.60 | 3 | 20 | 2.72 | 1.37 | 0.25 | 0.07 | 0.00 | 0.00 |
| 17 | 1MA0 | 2H | 1506 | Q21 | Ratio | 0.21 | 2 | 11 | 0.93 | 0.47 | 0.21 | 0.06 | 0.01 | 0.00 |
| 18 | 5AM1 | 1H | 1311 | Q21 | Histograms and grouped data | 0.42 | 4 | 11 | 2.04 | 0.67 | 0.23 | 0.12 | 0.00 | 0.00 |
| 19 | | | | NEW | | | 4 | | | | No data available | | | |
| | | | | | | | **80** | | | | | | | |