

**1MA1 Practice papers Set 2: Paper 2F (Regular) mark scheme – Version 1.0**

| Question |     | Working   | Answer                              | Mark | Notes   |
|----------|-----|---|-------------------------------------|------|---|
| 1.       |     |   | $\frac{13}{1000}$                   | 1    | B1 cao  |
| 2.       |     |   | 64                                  | 1    | B1 cao  |
| 3.       |     |   | 8                                   | 1    | B1 cao  |
| 4.       |     |   | 2401                                | 1    | B1 cao  |
| 5.       | (a) |   | 8, 10                               | 1    | B1 cao  |
|          | (b) |   | 24                                  | 1    | B1 cao  |
|          | (c) |   | reason                              | 1    | B1 for a valid reason that demonstrates the understanding that the number of triangles is twice the pattern number  |
| 6.       |     | $3.80 \times (23 + 21)$<br>$= 87.4 + 79.8 = 167.20$<br><br>$5.99 \times (28 + 27) =$<br>$167.72 + 161.73 =$<br>$329.45$<br><br>$7.14 \times (19 + 32) =$<br>$135.66 + 228.48 =$<br><u>364.14</u><br><br>860.79<br>$5.99 \times (23 + 21 + 28 +$ | No,<br>Parcel Express<br>is cheaper | 5    | M1 for a correct method to find cost of Parcel Express for either month or for the two months for one of the weight ranges<br><br>M1 for method to find cost of Parcels R Go for either one month or for two months<br><br>A1 for 860.79<br><br>A1 for 898.5(0)<br><br>C1 (dep on M2) for a correct conclusion from their comparable calculations; units must be included |

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|  | $27 + 19 + 32) = 898.50$ |                                  |      |  |
| <b>7.</b>  |                          | Accurate drawing                 | 2    | M1 for one angle of triangle drawn as $50^\circ$<br><br>A1 for accurate drawing  |
| <b>8.</b>  | (i)                      | Label A at 1                     | 1    | B1   |
|  | (ii)                     | Label B at 1 cm to 2.5 cm from 0 | 1    | B1   |
|  | (iii)                    | Label C at 0.5                   | 1    | B1   |
| <b>9.</b>  |                          | 30                               | 2    | M1 for finding the middle value or indication of 0, 29, 29.5, 30.5, 31, 31.5, 32 or writing “10th value” (or equivalent)<br><br>A1 cao |
| <b>10.</b>   | (b)                      | 23                               | 3    | B1   |
|  | (b)                      | $1200 \div 8 \times 12$          |      | M1 $1200 \div 8 \times 12$ (or equivalent)   |
|  |                          | 1800                             |      | A1   |

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|   |  |                     |             |  |
| <b>11.</b>  | (a) RB, RG, RY, RP<br>BG, BY, BP<br>GY, GP<br>YP<br><br>(RR, BB, GG, YY, PP) | Correct 10 outcomes | 2           | B2 for all 10 correct outcomes with no incorrect pairs or repeats or additional reversed pairs condone replacement<br><br>(B1 for at least 6 pairs ignoring any incorrect pairs, repeats or additional reversed pairs) |
|   | (b)  | $\frac{1}{10}$      | 1           | B1 for $\frac{1}{10}$<br>or ft from their incorrect number of outcomes from part (a)   |

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| <b>12.</b>   | (a)     | $(79 + 39) \times 1.2$<br>$118 \times 1.2$<br><br><b>OR</b><br>$79 \times 1.2 + 39 \times 1.2$<br>$94.80 + 46.80$<br><br><b>OR</b><br>$\frac{20}{100} \times (79 + 39) = 23.60$<br><br>$118 + 23.60$<br><br><b>OR</b><br>$\frac{20}{100} \times 79 = 15.80$<br>$\frac{20}{100} \times 39 = 7.80$<br>$15.80 + 7.80 + 118$ | 141.60 | 3     | M1 for $79 \times 1.2$ or $39 \times 1.2$ (or equivalent)<br>M1 for $79 \times 1.2 + 39 \times 1.2$ (or equivalent)<br>A1 for 141.6(0)<br><br><b>OR</b><br>M1 for $\frac{20}{100} \times 79 (= 15.8)$ and $\frac{20}{100} \times 39 (= 7.8)$<br>M1 for $\frac{20}{100} \times 79 + 79 + \frac{20}{100} \times 39 + 39$<br>A1 for 141.6(0)<br><br><b>OR</b><br>M1 for $\frac{20}{100} \times (79 + 39) (= 23.6)$ (or equivalent)<br>M1 for $\frac{20}{100} \times (79 + 39) + 79 + 39$ (or equivalent)<br>A1 for 141.6(0) |
|  | (b)     | $20\,000 \times 0.8 = 16\,000$<br>$16\,000 \times 0.9 = 14\,400$<br><b>OR</b><br>$\frac{20}{100} \times 20\,000 = 4000$  | 14 400 | 3     | M1 for $20\,000 \times 0.8$ (or equivalent) or 16 000 seen<br>M1 for '16 000' $\times 0.9$ (or equivalent)<br>A1 for 14 400<br><br><b>OR</b>   |

**1MA1 Practice papers Set 2: Paper 2F (Regular) mark scheme – Version 1.0**

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| Question   | Working  | Answer            | Mark | Notes  |
|  | $20\,000 - 4000 = 16\,000$<br>$10\% \times 16\,000 = 1600$<br>$16\,000 - 1600 =$ |                   |      | M1 for $20\,000 - 0.2 \times 20\,000$ (or equivalent) or 16 000 seen<br>M1 for '16 000' – $0.1 \times '16\,000'$ (or equivalent)<br>A1 for 14 400  |
| <b>13.</b>   |  | Correct elevation | 2    | B2 for sketch of trapezium<br><br>(B1 for trapezium with a rectangle or a parallelogram added at top or side or lines drawn from vertices)   |
| <b>14.</b>   | (a)  | $2 \times 2 = 4$  | 1    | B1   |
|  | (b)  | explanation       | 2    | C2 Complete explanation e.g. negative $\times$ negative = positive then negative $\times$ positive = negative<br><br>(C1 Start to explanation eg. negative $\times$ negative = positive) |
| <b>15.</b>   |  | 6 : 3 : 1         | 2    | M1 Writes down any one ratio correctly, e.g. 2:1 or 3: 1<br><br>A1   |
| <b>16.</b>   |  | explanation       | 1    | C1, e.g. both fractions are bigger than $\frac{1}{2}$ so answer should be greater than 1 but answer is less than 1   |

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| <b>Question</b>   | <b>Working</b> | <b>Answer</b> | <b>Mark</b> | <b>Notes</b>  |
| <b>17.</b>  |                | $148^\circ$   | 4           | <p>M1 for (angle <math>BDC =</math>) <math>360 - 250 (=110)</math></p> <p>M1 (dep) for <math>180 - (180 - '110' - 38) (= 148)</math><br/>or for <math>'110' + 38 (= 148)</math></p> <p>C2 (dep on M2) for <math>x = 148</math> with full reasons, relevant to the complete correct method used, for example:</p> <p><u>Angles</u> at a <u>point</u> add up to <u><math>360^\circ</math></u><br/><b>and</b> <u>angles</u> in a <u>triangle</u> add up to <u><math>180^\circ</math></u><br/><b>and</b> <u>angles</u> on a <u>straight line</u> add up to <u><math>180^\circ</math></u>;</p> <p>Or</p> <p><u>Angles</u> at a <u>point</u> add up to <u><math>360^\circ</math></u><br/><b>and</b> <u>exterior angle</u> of a triangle is <u>equal</u> to the sum of the <u>interior opposite angles</u> or</p> <p>(C1 (dep on at least M1) for one reason relevant to correct method)</p> |

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|--|---|----|----|---|---|--------|------|-------|---|---|---|----|----|----|----|---|---|---|---|---|
| Question   | Working   |    |    |   |   | Answer | Mark | Notes |   |   |   |    |    |    |    |   |   |   |   |   |
| 18.  | <table border="1"> <tr> <td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td> </tr> <tr> <td>-7</td><td>-5</td><td>-3</td><td>-1</td><td>1</td><td>3</td> </tr> </table> |    |    |   |   | -2     | -1   | 0     | 1 | 2 | 3 | -7 | -5 | -3 | -1 | 1 | 3 | Straight line from $(-2, -7)$ to $(3, 3)$ | 4 | <p><b>(Table of values)</b><br/>                     C1 for axes scaled and labelled</p> <p>M1 for at least 2 correct attempts to find points by substituting values of <math>x</math></p> <p>M1 ft for plotting at least 2 of their points (any points plotted from their table must be plotted correctly)</p> <p>A1 for correct line between <math>x = -2</math> and <math>x = 3</math></p> <p><b>(No table of values)</b><br/>                     C1 for axes scaled and labelled</p> <p>M1 for at least 2 correct points with no more than 2 incorrect points</p> <p>M1 for at least 2 correct points (and no incorrect points) plotted<br/>                     OR line segment of <math>y = 2x - 3</math> drawn</p> <p>A1 for correct line between <math>x = -2</math> and <math>x = 3</math></p> <p><b>(Use of <math>y = mx + c</math>)</b><br/>                     C1 for axes scaled and labelled</p> <p>M1 for line drawn with gradient of 2 OR line drawn with a <math>y</math> intercept of <math>-3</math></p> |
| -2   | -1  | 0  | 1  | 2 | 3 |        |      |       |   |   |   |    |    |    |    |   |   |   |   |   |
| -7   | -5  | -3 | -1 | 1 | 3 |        |      |       |   |   |   |    |    |    |    |   |   |   |   |   |

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| Question   | Working   | Answer      | Mark | Notes  |
|  |   |             |      | M1 for line drawn with gradient 2 <b>and</b> with a y intercept of $-3$<br>A1 for correct line between $x = -2$ and $x = 3$  |
| <b>19.</b>   | $19.5 \times 1000 \div 210$<br>$= 19500 \div 210 =$<br>$92.8(5714\dots)$<br><br>or $92 \times 210$<br>$= 19320 = 19.32 \text{ l}$<br><br>$93 \times 210 =$<br>$19530 = 19.53 \text{ l}$<br><br>or<br>$19500 \div 92 = 211.95$<br>$19500 \div 93 = 209.67$ | explanation | 3    | M1 for converting between $m/l$ and $l$ correctly or for 0.21 or 19500 seen<br><br>M1 for “19500” $\div$ “210” or $92 \times$ “210” or $93 \times$ “210” or “19500” $\div$ 92<br><br>A1 for a worded explanation with correct calculations |
| <b>20.</b>   | $a = \text{cost}(p)$ of an apple<br><br>$p = \text{cost}(p)$ of a pear<br><br>$3a + 4p = 184$<br><br>$5a + 2p = 176$<br><br>$7a = 2 \times 176 - 184 = 168$   | 24, 28      | 4    | B1 $3a + 4p = 184$ and $5a + 2p = 176$ (or equivalent)<br><br>M1 correct process to eliminate $a$ or $p$<br><br>M1(dep on M1): substitute found value of $a$ or $p$ to find other variable<br><br>A1 cao                                   |



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| <b>21.</b> |  | $\frac{3}{4} \times 120 = 90,$ $\frac{1}{4} \times 120 = 30$<br>$\frac{2}{3} \times 90 = 60,$<br>$\frac{20}{100} \times 30 = 6$<br>$60 : 6$ | 10 : 1 | 5    | <p>M1 for <math>\frac{3}{4} \times 120</math> (or equivalent) or 90<br/>                     or <math>\frac{1}{4} \times 120</math> (or equivalent) or 30</p> <p>M2 (indep) for <math>(1 - \frac{1}{3}) \times '90'</math> (or equivalent) (or 60)</p> <p>AND <math>\frac{100 - 80}{100 \times 30}</math> (or equivalent) (or 6)</p> <p>(M1 (indep) for <math>(1 - \frac{1}{3}) \times '90'</math> (or equivalent) or 60</p> <p>OR <math>\frac{100 - 80}{100 \times 30}</math> (or equivalent) or 6</p> <p>OR both <math>\frac{1}{3} \times 90 (= 30)</math> and <math>\frac{80}{100} \times 30 (= 24)</math></p> <p>M1 (dep on at least M2) for '60' : '6'<br/>                     or 1 to 10 or 6 to 60 (or equivalent) or reversed ratio 6:60</p> |

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|------------|-------|--------------|------------|------------|-----------------|------|---|
|            |       |              |            |            |                 |      | A1 10:1 cao   |
| <b>22.</b> | (a)   |              |            |            | 17.50           | 1    | B1 for 17.5(0)  |
|            | (b)   |              |            |            | 1.25            | 1    | B1 cao  |
|            | (c)   | <b>Days</b>  | <b>SaU</b> | <b>StY</b> | Comparison made | 3    | M1 for drawing line for Saws to You (StY) through the origin or for line with gradient 3<br><br>C2 for a correct line and making a statement of which is cheaper up to 5 days and which is cheaper for 6 days or more<br><br>(C1 (depM1) for making any correct comparison from their graphs)<br><br><b>Or</b><br><br>M1 for any three correct costs for Saws to You<br><br>C2 for correct figures for 5 days and 6 days for both companies and making a statement of which is cheaper up to 5 days and which is cheaper for 6 days or more<br><br>(C1 (depM1) for making any correct comparison from their calculations for the two companies) |
|            |       | 3            | 13.75      | 9          |                 |      |   |
| 4          |       | 15.00        | 12         |            |                 |      |   |
| <b>5</b>   |       | <b>16.25</b> | <b>15</b>  |            |                 |      |   |
| <b>6</b>   |       | <b>17.50</b> | <b>18</b>  |            |                 |      |   |
| 7          | 18.75 | 21           |            |            |                 |      |   |

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| 23.  | $8.4^2 + 8.4^2$<br><br>$\sqrt{70.56 + 70.56} = \sqrt{141.12}$                             | 11.9 cm                        | 3    | M1 $8.4^2 + 8.4^2$ (or equivalent)<br><br>M1 $\sqrt{70.56 + 70.56}$ or $\sqrt{141.12}$<br><br>A1 11.85 – 11.9  |
| 24.  | $\pi(6)^2 - \pi(5)^2$<br>$= 113(.0973\dots) -$<br><br>$78.5(398\dots)$<br>$= 34.55751919$ | 34.6                           | 3    | M1 for $\pi(6)^2$ (or equivalent) or $\pi(5)^2$ (or equivalent) or 113... or 78.5...<br><br>M1 for $\pi(6)^2 - \pi(5)^2$ (or equivalent)<br><br>A1 for 34.5 – 34.6 |
| 25.  | $\tan x = 14 \div 7.5$<br>$= 1.86666\dots$<br><br>$\tan^{-1} 1.8666\dots$                 | 62                             | 3    | M1 for $\tan x = 14 \div 7.5$ (= 1.86666...)<br>M1 for $\tan^{-1} (14 \div 7.5)$<br>A1 for answer in the range 61.7 to 62  |
| 26.  |   | 4.2                            | 3    | M1 $1500 \div (100 \times 100)$ (=0.15)<br><br>M1 $28 \times "0.15"$<br><br>A1   |
| 27.  | (a)   | 0.7, 0.3<br>0.9, 0.1, 0.9, 0.1 | 2    | B1 for 0.7, 0.3 in correct position<br><br>B1 for 0.9, 0.1, 0.9, 0.1 in correct position   |
|  | (b)   |                                | 2    | M1 $0.7 \times 0.9$ ft from tree diagram   |

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| <b>Question</b>   |  | <b>Working</b> | <b>Answer</b> | <b>Mark</b> | <b>Notes</b> |
|   |  |                | 0.63          |             | A1           |

National performance data from Results Plus

| Qu No | Spec    | Paper | Session | Qu   | Topic                      | Max score | Mean % all | ALL               | C    | D    | E    | F    | G    |
|-------|---------|-------|---------|------|----------------------------|-----------|------------|-------------------|------|------|------|------|------|
| 1     |         |       |         | NEW  | Fractions and decimals     | 1         |            | No data available |      |      |      |      |      |
| 2     |         |       |         | NEW  | Conversions                | 1         |            | No data available |      |      |      |      |      |
| 3     |         |       |         | NEW  | Faces, edges, vertices     | 1         |            | No data available |      |      |      |      |      |
| 4     |         |       |         | NEW  | Index notation             | 1         |            | No data available |      |      |      |      |      |
| 5     | 1MA0    | 2F    | 1303    | Q02  | Pattern sequences          | 3         | 86         | 2.58              | 2.88 | 2.75 | 2.60 | 2.36 | 1.92 |
| 6     | 5AM2    | 2F    | 1306    | Q13  | Money calculations         | 5         | 67         | 3.36              | 4.57 | 3.93 | 2.63 | 1.65 | 0.61 |
| 7     | 5AM2    | 2F    | 1506    | Q07  | Constructions              | 2         | 58         | 1.15              | 1.71 | 1.29 | 0.88 | 0.62 | 0.25 |
| 8     | 4MA0    | 2F    | 1305    | Q03  | Probability                | 3         | 67         | 2.02              | 2.45 | 2.08 | 1.73 | 1.18 | 0.95 |
| 9     | 2540    | 2F    | 0811    | Q21  | Stem-and-leaf diagrams     | 2         | 54         | 1.08              | 1.62 | 1.26 | 0.70 | 0.27 | 0.15 |
| 10    | 4MA0(R) | 2F    | 1501    | Q15  | Percentages                | 3         | 70         | 2.09              | 2.33 | 2.00 | 1.50 | 0.50 |      |
| 11    | 5AM2    | 2F    | 1506    | Q10  | Sample space diagrams      | 3         | 62         | 1.87              | 2.33 | 2.13 | 1.75 | 1.36 | 0.77 |
| 12    | 5AM1    | 1F    | 1211    | Q21  | Percentages - VAT          | 6         | 40         | 2.42              | 4.61 | 3.10 | 1.80 | 0.23 | 0.16 |
| 13    | 1380    | 2F    | 0911    | Q23b | Plans and elevations       | 2         | 70         | 1.39              | 1.72 | 1.48 | 1.25 | 1.05 | 0.75 |
| 14    |         |       |         | NEW  | Algebraic proof            | 3         |            | No data available |      |      |      |      |      |
| 15    |         |       |         | NEW  | Probability                | 2         |            | No data available |      |      |      |      |      |
| 16    |         |       |         | NEW  | Fractions                  | 1         |            | No data available |      |      |      |      |      |
| 17    | 1MA0    | 2F    | 1411    | Q15  | Angles                     | 4         | 38         | 1.50              | 2.60 | 1.87 | 1.07 | 0.40 | 0.10 |
| 18    | 1MA0    | 2H    | 1411    | Q12  | Graphs of linear equations | 4         | 47         | 1.88              | 2.39 | 1.24 | 0.27 |      |      |
| 19    | 1380    | 2H    | 1011    | Q18  | Compound measures          | 3         | 62         | 1.85              | 1.67 | 0.96 | 0.50 |      |      |
| 20    | 5AM1    | 1H    | 1406    | Q11  | Simultaneous equations     | 4         | 71         | 2.83              | 1.94 | 0.67 | 0.13 |      |      |
| 21    | 5MM2    | 2H    | 1111    | Q06  | Ratio                      | 5         | 60         | 3.02              | 2.15 | 1.26 | 1.33 |      |      |
| 22    | 5AM1    | 1F    | 1411    | Q23  | Conversion graphs          | 5         | 22         | 1.10              | 1.95 | 1.26 | 0.67 | 0.80 | 0.29 |
| 23    | 5MM2    | 2F    | 1206    | Q27  | Pythagoras in 2D           | 3         | 11         | 0.34              | 1.21 | 0.34 | 0.08 | 0.01 | 0.03 |
| 24    | 1380    | 2H    | 1106    | Q05  | Area of a circle           | 3         | 59         | 1.78              | 0.92 | 0.24 | 0.07 |      |      |
| 25    | 5MM2    | 2H    | 1306    | Q15  | Trigonometry               | 3         | 56         | 1.68              | 1.02 | 0.42 | 0.13 |      |      |
| 26    |         |       |         | NEW  | Compound measures          | 3         |            | No data available |      |      |      |      |      |
| 27a   | 2MB01   | 1H    | 1411    | Q08  | Probability trees          | 2         | 67         | 1.33              | 2.00 | 1.75 | 1.48 | 1.22 | 1.33 |
| 27b   | 2MB01   |       |         | NEW  | Probability                | 2         |            | No data available |      |      |      |      |      |
|       |         |       |         |      |                            | <b>80</b> |            |                   |      |      |      |      |      |