| 1MA1 Practice papers Set 4: Paper 2F (Regular) mark scheme – Version 1.0 | | | | | |
|---|---|---|---|---|---|
| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| **1.** | | | 15*ab* | 1 | B1 cao |
| **2.** | | | 142 | 2 | M1 for 720 – (110 + 92 + 158 + 85 + 133) or 720 – 578<br><br>A1 for 142 cao |
| **3.** | | (D, A) (J, A)<br>(W, A) (D, M)<br>(J, M) (W, M) | list of 6 combinations | 2 | B2 for six correct and distinct pairs<br><br>(B1 for at least 3 pairs and no incorrect pairs or all correct pairs with repeats) |
| **4.** | (i)<br><br>(ii) | | 40<br><br>(0).4 | 1<br><br>1 | B1<br><br>B1ft (if 0 < % < 100),<br>i.e. allow ft if their % from (i) is between 0 and 100 |
| **5.** | (a)(i)<br><br>(a)(ii)<br><br>(b) | | unlikely<br><br>impossible<br><br>3 marked red<br>2 marked white | 1<br><br>1<br><br>2 | B1 cao<br><br>B1 cao<br><br>B1 for 3 red sectors written in<br><br>B1 for number of white sectors > number of blue sectors |

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|---|---|---|---|---|---|
| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| **6.** | | | 96 | 4 | M1 for a method to find 36% of 400 (= 144)<br>M1 for a method to find $\frac{2}{5}$ of 400 (= 160)<br>M1 (dep on M2) for 400 – "144" – "160"<br>A1 cao |
| **7.** | | | 25 | 2 | M1 for 10 ÷ 40 (= 0.25) or 10 × 100 ÷ 40<br>A1 cao |
| **8.** | (a)<br>(b)<br>(c) | | 9 to 9.1<br>11.8<br>1.4 | 1<br>1<br>1 | B1<br>B1<br>B1 |
| **9.** | | | e.g. 10, 12, 5, 2 | 3 | M1 for at least 2 factors of 60 clearly identified<br>M1 for 20 < sum of '4 distinct natural numbers' < 35<br>A1 cao |

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|---|---|---|---|---|---|
| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| **10.** | | | 57° | 4 | M1 for a method to find angle *BCD*, e.g. 180 – 75 (= 105)<br><br>M1 for a complete method to find *x*<br><br>A1 for *x* = 57 with supporting working<br><br>C1 (dep on M1) for "sum of the angles in a quadrilateral is 360(°)" or equivalent quadrilateral theory.<br><br>[Condone omission of other reasons] |
| **11.** | (a) | | 0 | 1 | B1 cao |
| | (b) | (8 + 4 + 5 + 5 + 3 + 2 + 1) ÷ 10 | 2.8 | 2 | M1 (8 + 4 + 5 + 5 + 3 + 2 + 1) ÷ 10<br><br>A1 cao |
| **12.** | (a) | | 7 | 2 | M1 for –15 and ÷ 5.4<br><br>A1 cao |
| | (b) | | $C = 5.4y + 15$ | 2 | C1 for $5.4y + 15$ or $C$ = linear expression in $y$<br><br>C1 for $C = 5.4y + 15$ (oe) |

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|---|---|---|---|---|---|
| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| **13.** | (a) | | | 2 | B2 conversion graph (line) drawn between 4.4 pounds and 15.4 pounds<br><br>(B1 for plotting at least 2 points from the table) |
| | (b) | | 4.4 – 4.6 | 1 | B1 for 4.4 – 4.6 or ft graph (dep on single straight line) |
| | (c) | | 14.2 – 14.4 | 1 | B1 for 14.2 – 14.4 or ft graph (dep on single straight line) |
| **14.** | | 9.39 × 10<br><br>24.30 × 3 + 9.39<br><br>93.90 − 82.29 | £11.61 | 5 | M1 for a correct method to find the most expensive way to buy the 10 cartridges (= 93.90)<br><br>M1 for a correct method to find the least expensive way to buy the 10 cartridges (= 82.29)<br><br>M1 (dep on M1 scored) for a correct method to find the difference between their least and their most expensive way, provided that both totals are for the cost of exactly 10 cartridges<br><br>A1 for 11.61<br><br>B1 (indep) for correct units |

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|---|---|---|---|---|---|
| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| **15.** | (a) | | 1.06 | 3 | M1 for $6.99 \div 3$ (= 2.33) or $3r + 6t = 13.35$<br><br>M1 for $\frac{1}{2}$ (4.45 – "2.33") or $6t =$ "13.35" – 6.99<br><br>A1 cao |
| | (b) | | Henri 7.15<br>Ray 4.29 | 3 | M1 for $11.44 \div (5 + 3)$ (=1.43)<br><br>M1 for "1.43" × 5 (= 7.15) **or** "1.43" × 3 (= 4.29)<br><br>A1 for Henri and 7.15 and Ray and 4.29 |
| **16.** | | $500 \times 1.2$ (oe) = 600<br>600 ÷ 12 = | 50 | 4 | M2 for $500 \times 1.2$ (= 600) (oe)<br><br>(M1 for $500 \times 0.2$ (= 100) (oe)<br><br>M1 for 600 ÷ 12 or 100 ÷ 12 or $1.2 \div 12$ or $500 \div 12$<br><br>A1 cao |
| **17.** | | $18.6^2 - 7.2^2$ (= 294.12)<br><br>$\sqrt{294.12}$<br>or $\sqrt{(18.6^2 - 7.2^2)}$ | 17.1 | 3 | M1 for squaring **and** subtracting<br><br>M1 (dep) for square root<br><br>A1 for answer in the range 17.1 – 17.15 |

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|---|---|---|---|---|---|
| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| **18.** | | $2(x + x + 10) = 40$<br><br>$4x + 20 = 40$<br><br>$4x = 20$<br><br>$x = 5$ | 5 | 4 | M1 for algebraic method to set up Amy and Beth's ages as $x$ and $x + 10$<br><br>M1 for setting up the equation $2( x + x + 10) = 40$ oe<br><br>M1 for $4x + 20 = 40$<br><br>A1 cao |
| **19.** | | **5A**<br>= 150 + 150 + 150 + 150 + 150<br><br>= 35p × 5 = £1.75<br><br>**2C + A**<br>= 300 + 300 + 150<br><br>= £1.60 + 35p = £1.95<br><br>**3B + A**<br>=200 + 200 + 200 + 150<br><br>= 45p × 3 + 35p = £1.70<br><br>**3A + C**<br>= 150 + 150 + 150 + 300<br><br>= 35p × 3 + 80p = £1.85 | £1.70 | 4 | M1 for attempt to find at least 2 different combinations of weights (can be implied by costs) with at least one correct that add to 750g<br><br>M1 for identifying and attempting to calculate the costs of two out of the four possibilities from 5A or 2C + A or 3B + A or 3A + C oe (can be implied by the costs)<br><br>A1 for at least 3 costs correct from £1.75, £1.95, £1.70, £1.85 ignore units)<br><br>C1 ft (dep on M1) for £1.70 (or 170p) identified as lowest cost from all four possible combinations |

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|---|---|---|---|---|---|
| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| **20.** | | e.g. $4a + 3b = 250$<br>$3a + 4b = 240$<br><br>(×3) $12a + 9b = 750$<br>(×4) $12a + 16b = 960$<br><br>Subtract<br>$7b = 210$ so $b = 30$<br><br>Substitute<br>$4a + 90 = 250$<br>$4a = 250 – 90 = 160$ | (i) 40<br><br>(ii) 30 | 5 | B1 for correct equations expressed in terms of two variables (oe)<br><br>M1 for correct process to eliminate either variable (condone one arithmetic error)<br><br>A1 for either (£)0.4 or (£)0.3 (oe)<br><br>M1 (dep on first M1) for correct substitution of their found variable<br><br>A1 cao for both (i) 40 and (ii) 30 |
| **21.** | (a) | | 3, 6, 9 | 1 | B1 condone {3, 6, 9} |
| | (b) | | {2, 3, 4, 6, 8, 9, 10} | 1 | B1 condone omission of brackets |
| | (c) | | {6} | 1 | B1 condone omission of brackets |
| | (d) | | 3, 9 | 2 | B2 cao<br><br>(B1 for one of 3, 9 with no incorrect numbers **or** 3, 6, 9) |
| **22.** | | 7200 ÷ 0.75<br><br>75% = 7200<br><br>1% = 7200 ÷ 75 = 96<br><br>100% = 96 × 100 | 9600 | 3 | M2 for 7200 ÷ (1 – 0.25)<br><br>A1 for 9600<br><br>A1 for 9600 |

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|---|---|---|---|---|---|
| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| **23.** | (a) | | Liz explanation | 1 | B1 Liz because she carried out most trials |
| | (b) | 12 + 34 + 57 = 103<br>40 + 100 +300<br>103 ÷ 40 | 0.23 or $\frac{103}{440}$ | 2 | M1 (12 + 34 + 57)/*b* where *b* > 103<br>or *a*/( 12 + 28 + 34 + 66 + 57 + 243) where *a* < 440<br>A1 0.23or 0.234(09..) or $\frac{103}{440}$ (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** | **C** | **D** | **E** | **F** | **G** |
| **1** | NEW | | | | Simplifying terms | 1 | No data available | | | | | |
| **2** | 5MM2 | 2F | 1106 | Q09 | Interior and exterior angles | 2 | 1.69 | 1.98 | 1.87 | 1.90 | 1.73 | 1.18 |
| **3** | 1MA0 | 2F | 1406 | Q06 | Sample space diagrams | 2 | 1.79 | 1.97 | 1.95 | 1.91 | 1.85 | 1.71 |
| **4** | 4MA0 | 2F | 1401 | Q02 | Percentages | 2 | 1.86 | 1.94 | 1.91 | 1.81 | 1.52 | 1.31 |
| **5** | 5AM2 | 2F | 1506 | Q02 | Probability scale | 4 | 3.53 | 3.93 | 3.78 | 3.55 | 3.09 | 2.53 |
| **6** | 5MM2 | 2F | 1506 | Q15 | Fractions | 4 | 2.39 | 3.73 | 3.35 | 2.39 | 1.04 | 0.45 |
| **7** | NEW | | | | Scale | 2 | No data available | | | | | |
| **8** | 4MA0 | 2F | 1401 | Q09 | Line graphs of real situations | 3 | 2.32 | 2.72 | 2.37 | 1.98 | 1.39 | 1.31 |
| **9** | 1MA0 | 2F | 1206 | Q16 | Factors, multiples, primes | 3 | 1.94 | 2.69 | 2.37 | 1.93 | 1.31 | 0.74 |
| **10** | 5MM2 | 2F | 1506 | Q14 | Angles | 4 | 1.69 | 3.43 | 2.66 | 1.17 | 0.27 | 0.01 |
| **11** | 1387 | 2F | 711 | Q14 | Mean; median, mode | 3 | | | | | | |
| **12** | NEW | | | | Using formulae | 4 | No data available | | | | | |
| **13** | 5AM2 | 2F | 1411 | Q05 | Conversion graphs | 4 | 2.49 | 3.15 | 2.92 | 2.10 | 1.47 | 1.25 |
| **14** | 1MA0 | 2F | 1303 | Q11 | Ratio | 5 | 2.87 | 3.78 | 3.23 | 2.69 | 1.96 | 1.18 |
| **15** | 5AM2 | 2H | 1506 | Q03 | Ratio | 6 | 5.80 | 5.77 | 5.28 | 2.69 | | |
| **16** | 5AM1 | 1H | 1106 | Q01 | Simple interest | 4 | 3.23 | 2.54 | 2.00 | 1.00 | | |
| **17** | 4MA0 | 2H | 1405 | Q08 | Pythagoras in 2D | 3 | 2.66 | 1.86 | 0.75 | 0.15 | | |
| **18** | 5AM1 | 1F | 1411 | Q24 | Derive expressions | 4 | 1.66 | 2.45 | 2.06 | 1.10 | 1.27 | 0.14 |
| **19** | 5AM2 | 2F | 1211 | Q17 | Ratio | 4 | 1.94 | 2.39 | 2.36 | 1.69 | 1.24 | 0.74 |
| **20** | 5AM1 | 1H | 1211 | Q13 | Simultaneous equations | 5 | 3.58 | 2.92 | 0.67 | 0.00 | | |
| **21** | 4MA0(R) | 2F | 1501 | Q24 | Sets | 5 | 2.09 | 2.67 | 1.31 | 1.00 | 1.00 | |
| **22** | 5AM1 | 1H | 1211 | Q10 | Reverse percentages | 3 | 1.62 | 0.76 | 0.60 | 0.00 | | |
| **23** | 5AM2 | 2F | 1106 | Q19 | Probability | 3 | 0.39 | 0.34 | 0.72 | 0.50 | 0.00 | 0.25 |
| | | | | | | **80** | | | | | | |