| 1MA1 Practice papers Set 6: Paper 1F (Regular) mark scheme – Version 1.0 | | | | |
|---|---|---|---|---|
| **Question** | **Working** | **Answer** | **Mark** | **Notes** |
| **1** (a) | | 25000 | 1 | B1 cao |
| (b) | | 24600 | 1 | B1 cao |
| **2** (a) | | 08 30 | 1 | B1 for 08 30 oe |
| (b) | | 17 | 1 | B1 cao |
| (c) | | 10 15 | 1 | B1 for 10 15 oe |
| **3** (i) | | Cone | 2 | B1 (accept incorrect spelling if intention is clear) |
| (ii) | | Cylinder | | B1 (accept incorrect spelling if intention is clear) |
| **4** (a) | | 98  145  358  709  835 | 1 | B1 cao |
| (b) | | –8  –5  –1  4  7 | 1 | B1 cao |
| (c) | (0.2, 0.25, 0.4, 0.5, 0.75) $(\frac{4}{20}, \frac{5}{20}, \frac{8}{20}, \frac{10}{20}, \frac{15}{20})$ (20%, 25%, 40%, 50%, 75%) | 0.2  $\frac{1}{4}$  40%  0.5  $\frac{3}{4}$ | 2 | M1  for two correct conversions into the same form <br> A1  cao |
| **5** (a) | | $4x$ | 1 | B1 cao |
| (b) | | $3y$ | 1 | B1 cao |
| (c) | | $8p$ | 1 | B1 cao |
| **6** (a) | | mark at 1 | 1 | B1  for × within the overlay ( within 1 cm of 1 ) |
| (b) | | mark at $\frac{1}{4}$ | 1 | B1  for × within the overlay ( between 2 and 4 cm from 0 ) |

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| 7 | 6, 11, 16, ... | 51 | 3 | M1 for a correct pattern number ( > 3) drawn |
| | | | | M1 for pattern number 10 drawn |
| | | | | A1 cao |
| | | | | **OR** |
| | | | | M1 for 6, 11, 16, ( ... )   or  + 5  seen |
| | | | | M1 for continuing the sequence to at least the 10th term (condone one arithmetic error) |
| | | | | A1 cao |
| | | | | **OR** |
| | | | | M1 for $5n$ |
| | | | | M1 for $5 \times 10 + 1$ oe   or   $5n + 1$ |
| | | | | A1 cao |
| 8 | F + C + S<br><br>30 + 7 + 8 = 45<br><br>3×20 − 45 = 15 | 15 | 4 | M2 for $30 + 7 + 8$ (= 45) |
| | | | | (M1 for $12 \times 2 + 7 \times 3 + 8$ (= 53) or $12 \times 2 + 7 \times 2$ (= 38)) |
| | | | | M1 (dep on at least M1) for "20 × 3" − "45" |
| | | | | or "20 × 3" − "53" |
| | | | | A1 cao |

| Question | | Working | Answer | Mark | Notes |
|---|---|---|---|---|---|
| 9 | | | 1.2 m or 120 cm | 4 | B1 for evidence of using 1 m = 100 cm <br><br> M1 for subtracting the four post widths from the total length <br><br> eg  4 – 4 × 10  (= 360) or "400" – 4 × 10  or  3$x$ + 40 = 400 (oe) <br><br> M1 for dividing their total space found by 3 or subtracting 40 from both sides of 3$x$ + 40 = 400 <br><br> C1 for correct conclusion for 1.2 m or 120 cm with supported working |
| 10 | (a) | | Correct explanation | 2 | M1 for working out area of triangle (=6) and area of rectangle (=24) **or** for dividing rectangle into eighths or other comparable areas <br><br> A1 for explaining that that 24 ÷ 6 is 4 **or** $\frac{2}{8} = \frac{1}{4}$ <br><br> **or** that ½ × ½ = ¼ from symmetry of shape |
| | (b) | | 75 | 1 | B1  cao |
| 11 | (a)(i) | | ( –2, –3) | 2 | B1 cao |
| | (a)(ii) | | Cross at (5, 2 ) | | B1 |
| | (b) | | $y$ = 3 | 1 | B1 for correct line (at least 2 cm spanning the $y$ axis) |

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| **Question** | **Working** | **Answer** | **Mark** | **Notes** |
| **12** | | $\dfrac{29}{40}$ | 3 | M1  for writing $\dfrac{7}{10}$ as $\dfrac{28}{40}$  **or**  $\dfrac{3}{5}$ as $\dfrac{24}{40}$ |
| | | | | M1  for writing $\dfrac{7}{10}$ as $\dfrac{28}{40}$  **and**  $\dfrac{3}{5}$ as $\dfrac{24}{40}$ |
| | | | | C1  for correct conclusion with supportive evidence |
| **13** (a) | | 30 | 2 | M1 for $25 \div 10$ or 2.5 seen or $10 \div 25$ or 0.4 seen or |
| | | | | $12 + 12 + 6$ oe or a complete method, e.g. $25 \times 12 \div 10$ oe |
| | | | | A1 cao |
| (b) | $1000 \div 200 \times 12$ | 60 | 2 | M1 for $500 \div 50$ or $1000 \div 200$ or $500 \div 10$ |
| | | | | OR correct scale factor clearly linked with one ingredient, e.g. 10 with sugar or 5 with butter or flour or 50 with milk |
| | | | | OR answer of 120 or 600 |
| | | | | A1 cao |
| **14** | | 900 | 4 | M1 for $0.2 \times 7000$ (= 1400) or $1.2 \times 7000$ (= 8400) oe |
| | | | | M1 for $7000 + "1400" - 3000$ (= 5400) oe |
| | | | | M1 for $"5400" \div 6$ |
| | | | | A1 cao |

| Question | Working | Answer | Mark | Notes |
|---|---|---|---|---|
| **15** | Acton after 24, 48, 72, 96... <br><br> Barton after 20, 40, 60, 80. <br><br> LCM of 20 and 24 is 120 <br><br> 9:00 am + 120 minutes <br><br> **OR** <br><br> Acton after 24, 48, 1h 12m <br><br> Barton after 20, 40, 1 h <br><br> LCM is 2 hours <br><br> 9:00 am + 2 hours <br><br> **OR** <br><br> Times from 9:00 am when each service leaves the bus station <br><br> Acton at 9:24, 9:48, 10:12 <br><br> Barton at 9:20, 9:40, 10:00 <br><br> **OR** <br><br> 20 = 2 × 2 × 5 <br><br> 24 = 2 × 2 × 2 × 3 <br><br> 2 × 2 × 2 × 3 × 5 = 120 | 11:00 am | 3 | M1 for listing multiples of 20 and 24 with at least 3 numbers in each list ; multiples could be given in minutes or in hours and minutes (condone one addition error in total in first 3 numbers in lists) <br><br> A1    identify    120 (mins)   **or**   2 (hours)    as LCM <br><br> A1    for    11:00 (am)   **or**   11(am)   **or**   11 o'clock <br><br> **OR** <br><br> M1 for listing times after 9am when each bus leaves the bus station, with at least 3 times in each list (condone one addition error in total in first 3 times after 9 am in lists) <br><br> A1    for correct times in each list up to and including 11:00 <br><br> A1    for    11:00 (am)   **or**   11(am)   **or**   11 o'clock <br><br> **OR** <br><br> M1 for correct method to write 20 and 24 in terms of their prime factors 2, 2, 5 and 2, 2, 2, 3 (condone one error) <br><br> A1    identify 120 as LCM <br><br> A1    for    11:00 (am)   **or**   11(am)   **or**   11 o'clock |

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|---|---|---|---|---|
| **Question** | **Working** | **Answer** | **Mark** | **Notes** |
| **16** (a) | | 9.4 | 1 | B1 cao |
| (b) | | Diagram or chart | 4 | B1 for a key, or suitable labels, to identify regular yoghurt and low fat yoghurt. |
| | | | | B1 for diagram(s) or chart(s) set up for comparison, showing data for protein, carbohydrate and fat, e.g. dual bar chart, line graph, etc |
| | | | | B1 for correct heights for regular yoghurt **or** low fat yoghurt, dependent on a linear scale |
| | | | | C1 for a fully correct diagram or chart to include labels for protein, carbohydrate and fat and vertical axis correctly scaled and labelled |
| **17** (a) | | Shape with vertices at (–1, 3), (0, 6), (2, 6), (1, 3) | 1 | B1 for correct shape in correct position |
| (b) | | Rotation centre (0,0) 90° anticlockwise | 3 | B1 rotation B1 (centre) (0,0) B1 90° anticlockwise or 270° clockwise Note: award no marks if more than one transformation is given |

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|---|---|---|---|---|
| Question | Working | Answer | Mark | Notes |
| **18** (a) | | 1 | 1 | B1 cao |
| (b) | | $\dfrac{1}{100}$ | 1 | B1 for $\dfrac{1}{100}$ or 0.01 |
| (c) | | 0.00273 <br> $27.3 \times 10^{-3}$ <br> $2.73 \times 10^{3}$ <br> $273 \times 10^{2}$ | 2 | M1 for converting all numbers to same form with at least one conversion correct <br><br> A1 for fully correct order with correct numbers in any correct form <br><br> (SC B1 if one number incorrectly placed or all 4 numbers listed in reverse order) |
| **19** (a) | | $\dfrac{5}{8}$ <br><br> $\dfrac{5}{8}, \dfrac{3}{8}, \dfrac{5}{8}$ | 2 | B1 for $\dfrac{5}{8}$ correct for 1$^{st}$ counter <br><br> B1 for $\dfrac{5}{8}, \dfrac{3}{8}, \dfrac{5}{8}$ correct for 2$^{nd}$ counter |
| (b) | $\dfrac{3}{8} \times \dfrac{3}{8}$ | $\dfrac{9}{64}$ oe | 2 | M1 for $\dfrac{3}{8} \times \dfrac{3}{8}$ <br><br> A1 for $\dfrac{9}{64}$ oe |

| Question | Working | Answer | Mark | Notes |
|---|---|---|---|---|
| 20 | <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> | graph | 3 | **(Table of values)** <br><br> M1 for at least 2 correct attempts to find points by substituting values of *x* <br><br> M1 ft for plotting at least 2 of their points <br><br> (any points plotted from their table must be correct) <br><br> A1 for correct line between *x* = –2 and *x* = 5 <br><br> **or** <br><br> **(No table of values)** <br><br> M2 for at least 2 correct points (and no incorrect points) plotted <br><br> **or** line segment of *x* + *y* = 4 drawn <br><br> (M1 for at least 3 correct points plotted with no more than 2 incorrect) <br><br> A1 for correct line between *x* = –2 and *x* = 5 <br><br> **or** <br><br> **(Use of *y* = m*x* + c)** <br><br> M2 for at least 2 correct points (and no incorrect points) plotted <br><br> (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) |

| Question | Working | Answer | Mark | Notes |
|---|---|---|---|---|
| | | | | A1 for correct line between $x = -2$ and $x = 5$ |
| **21** | | 9 | 4 | M1 for method to find area of one rectangle, <br><br> eg $15 \times 8$ (= 120) or $15 \times 11$ (= 165) <br><br> M1 (dep) for subtracting from/by given area, <br><br> eg $(138 - "120")$ (= 18) or $"165" - 138$ (= 27) <br><br> M1 for final step from complete method shown, <br><br> eg $15 - "18" \div 3$ or $"27" \div 3$ <br><br> A1 cao <br><br> **OR** <br><br> M1 for a correct expression for the area of one rectangle, <br><br> eg $(8 + 3) \times (15 - x)$ or $8 \times x$ <br><br> M1 (dep) for a correct equation <br><br> eg $(8 + 3) \times (15 - x) + 8 \times x = 138$ <br><br> M1 for correct method to isolate $x$, eg $3x = 27$ <br><br> A1 cao |

| Question | Working | Answer | Mark | Notes |
|---|---|---|---|---|
| | | | | |
| **22** | | Proof | 4 | M1 for setting up a correct equation in $x$, <br><br> eg. $3x - 2 = x + 1$ <br><br> M1 (dep) for a fully correct method to solve their equation or for $x = 1.5$ <br><br> M1 (dep) for $("1.5" + 1) \times 4$ or $(3 \times "1.5" - 2) \times 4$ <br><br> or $(3 \times "1.5" - 2) \times 2 + ("1.5" + 1) \times 2$ <br><br> C1 (dep on M3) for completing the proof resulting in a perimeter of 10 <br><br> **OR** <br><br> M1 for setting up a correct equation in $x$, <br><br> eg. $2(3x - 2) + 2(x + 1) = 10$ <br><br> M1 (dep) for a fully correct method to solve their equation or for $x = 1.5$ <br><br> M1 (dep) for $"1.5" + 1$ and $3 \times "1.5" - 2$ <br><br> C1 (dep on M3) for completing the proof resulting in a justification that the shape is a square |

| Question | Working | Answer | Mark | Notes |
|---|---|---|---|---|
| | | | | |
| 23 | P: T: B = 1: 3: 6<br><br>54 ÷ 10 × 6<br><br><br>**OR**<br><br><br>e.g.<br><br>T = 3P<br><br>B = 2T<br><br>So, B = 2(3P) = 6P<br><br>P+T+B=P+3P+6P=10P<br><br>P = 54÷10 = £5.40<br><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><br>M1 for 54 ÷ (1 + 3 + 6) × 6<br><br>A1 for 32.4(0)<br><br>**Alternative**<br><br>M1 for 1: 3: 6 oe or P + 3P + 6P (=10P) oe,<br><br>e.g. T/3 + T + 2T (=10T/3) or<br><br>e.g. B/6 + B/2 + B (=10B/6)<br><br>or 5.4(0) or 16.2(0) seen<br><br>M1 for 54 ÷ 10 × 6 or [54 $\frac{+10}{3}$ ] × 2 or 54 $\frac{+10}{6}$ oe<br><br>A1 for 32.4(0)<br><br>OR<br><br>M1 for a partial decomposition of £54 in ratio 1:3:6, e.g. (£)5 +( £)15 + (£)30 (=(£)50)<br><br>M1 for a decomposition of the remaining amount in ratio 1:3:6, e.g. 40(p) + 120(p) + 240 (=400(p))<br><br>A1 for 32.4(0) |
| 24 | | | 2 | M1 for correct intersecting arcs<br><br>A1 for correct angle bisector |

**National performance data from Results Plus**

| | Original source of questions | | | | | Max score | Mean score of students achieving grade: | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Qn | Spec | Paper | Session YYMM | Question | Topic | | ALL | C | D | E | F | G |
| 1 | 5MM1 | 1F | 1111 | Q01b | Place value | 2 | 1.83 | 1.77 | 1.64 | 1.63 | 1.36 | 1.83 |
| 2 | 1380 | 1F | 0906 | Q07 | Extract data from lists and tables | 3 | 2.51 | 2.80 | 2.69 | 2.49 | 2.17 | 1.78 |
| 3 | 1380 | 1F | 1011 | Q18 | Properties of 3D shapes | 2 | 1.62 | 1.86 | 1.72 | 1.56 | 1.36 | 1.11 |
| 4 | 1MA0 | 1F | 1303 | Q03 | Fractions, percentages and decimals | 4 | 2.97 | 3.70 | 3.26 | 2.68 | 2.21 | 1.93 |
| 5 | 1380 | 1F | 1203 | Q09 | Simplify expressions | 3 | 2.42 | 2.70 | 2.52 | 2.36 | 2.22 | 2.00 |
| 6 | 5MM1 | 1F | 1206 | Q11 | Probability | 2 | 1.46 | 1.80 | 1.78 | 1.56 | 1.39 | 0.99 |
| 7 | 5MM1 | 1F | 1406 | Q14 | Pattern sequences | 3 | 1.83 | 2.63 | 2.14 | 1.77 | 1.38 | 1.14 |
| 8 | 1MA0 | 1F | 1211 | Q10 | Money calculations | 4 | 2.87 | 3.50 | 3.22 | 2.89 | 2.46 | 1.86 |
| 9 | 1MA0 | 1F | 1611 | Q10 | Integers | 4 | Data to be added in January 2017 | | | | | |
| 10 | 1MA0 | 1F | 1611 | Q12 | Fractions | 3 | Data to be added in January 2017 | | | | | |
| 11 | 1MA0 | 1F | 1306 | Q09 | Coordinates in 2D | 3 | 1.92 | 2.42 | 2.15 | 1.96 | 1.76 | 1.50 |
| 12 | 5MM1 | 1F | 1406 | Q22 | Fractions | 3 | 0.85 | 2.23 | 1.16 | 0.51 | 0.09 | 0.04 |
| 13 | 1MA0 | 1H | 1206 | Q06 | Ratio | 4 | 3.05 | 2.91 | 2.07 | 1.30 | | |
| 14 | 1MA0 | 1H | 1411 | Q11 | Percentages - VAT | 4 | 2.20 | 2.74 | 1.56 | 0.45 | | |
| 15 | 1MA0 | 1F | 1206 | Q24 | HCF and LCM | 3 | 0.93 | 1.82 | 1.18 | 0.68 | 0.30 | 0.12 |
| 16 | 1MA0 | 1F | 1611 | Q13 | | 5 | Data to be added in January 2017 | | | | | |
| 17 | 1MA0 | 1H | 1311 | Q06 | Translations and rotations | 4 | 2.37 | 2.27 | 1.34 | 0.62 | | |
| 18 | 1MA0 | 1H | 1406 | Q17 | Standard form | 4 | 2.51 | 2.18 | 1.46 | 0.94 | | |
| 19 | 2540 | 1H | 0811 | Q21 | Probability tree diagrams | 4 | 2.37 | 2.02 | 1.61 | 1.32 | | |
| 20 | 1380 | 1F | 1011 | Q21 | Graphs of linear equations | 3 | 0.59 | 1.45 | 0.48 | 0.12 | 0.05 | 0.03 |
| 21 | 1MA0 | 1H | 1411 | Q07 | Perimeter and area | 4 | 1.38 | 1.51 | 0.68 | 0.29 | | |
| 22 | 5MM1 | 1H | 1411 | Q09 | Solve linear equations | 4 | 2.07 | 1.52 | 0.77 | 0.20 | | |
| 23 | 1380 | 1F | 1106 | Q27 | Ratio | 3 | 0.27 | 0.75 | 0.29 | 0.10 | 0.03 | 0.02 |
| 24 | 2540 | 1F | 0811 | Q25 | Constructions | 2 | 0.15 | 0.36 | 0.12 | 0.05 | 0.02 | 0.01 |
| | | | | | | **80** | | | | | | |