| 1MA0 Foundation Tier - Practice Paper 1F (Set D) |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Qn |  | Working | Answer | Mark | Notes |
| 1 |  | $\begin{aligned} & 2+8+2+8=20 \\ & 20 \div 4= \end{aligned}$ | 5 | 4 | M2 for $2+8+2+8$ oe or 20 seen or $(2+8) \div 2$ oe (M1 for the sum of 3 sides of the rectangle) <br> M1 (dep) for the sum of 3 or 4 sides of the rectangle $\div 4$ or an attempt to evaluate $(2+8) \div 2$ oe to get the length of one side <br> A1 cao |
| 2 | (c)* | e.g. <br> HL to SC: 1102-1141 <br> Visit (at least 3 hours) <br> SC to HL: 15 16-1549 <br> [Note : there are 9 possible solutions] | A fully correct plan showing departure times and arrival times of the two bus journeys | 4 | B1 for a departure time of 0802 or 0904 or 1012 or 1102 from HL M1 (indep) for a correct arrival time at SC and a correct departure time from SC (or Cartbridge St) which allows for a stay of at least 3 hours in SC (the differencing does not have to be seen) OR for correctly adding 3 hours to a their arrival time at SC <br> B1 for a departure time from SC of 1320 (13 11 from CS) or 1424 (14 14 from CS) or 1516 (15 07 from CS) <br> C1 (dep on M1) for a complete correct plan which includes the departure and arrival times of the two bus journeys [Note: bus departure times may be identified by their starting times. Eg the 1507 from Cartbridge Street would be acceptable for the identification of the bus which arrives a HL at 15 49] |
| 3 |  | $\begin{aligned} & 9.5-4.75= \\ & \text { OR } \\ & 9.5 \div 2= \end{aligned}$ | 4.75 | 2 | M1 for $9.5-4.75$ or $9.5 \div 2$ or <br> A1 $4.75-9.5$     <br> cao      |
| 4 |  | $\begin{aligned} & 180 \times 1.5 \\ & 40 \times 1.5 \\ & 110 \times 1.5 \\ & 30 \times 1.5 \end{aligned}$ | $\begin{gathered} \text { Flour }=270 \\ \text { Ginger }=60 \\ \text { Butter }=165 \\ \text { Sugar }=45 \end{gathered}$ | 3 | M1 for $\times 24 \div 16$ oe or $24 / 16$ or 1.5 seen or $180+90(=270)$ or $40+20$ $(=60)$ or $110+55(=165)$ or $30+15(=45)$ or sight of any one of the correct answers <br> A2 for all 4 correct answers <br> (A1 for 2 or 3 correct answers) |
| 5 | (a) |  | 3 f | 1 | B1 for 3 f or f 3 or $3 \times \mathrm{f}$ or $\mathrm{f} \times 3$ |


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| 6 | e.g. <br> $41-21$ <br> $49-10$ <br> $16+1$ <br>  <br> OR <br> $(100-$ <br> $(=14)$ <br> $14+1$ <br> $100-$ <br>  <br>  <br> Boys <br> Girls | $9)-($ $\begin{aligned} & =24) \\ & 1+2 \end{aligned}$ <br> w <br> 16 <br> $\mathbf{1 9}$ <br> $\mathbf{3 5}$ | 9) $+21$ <br> $=35$ <br> b <br> 21 <br> 20 <br> 41 | $35$ |  | M1 for 41-21 (=20) or <br> M1 for 49-10-'20' (= 19) <br> M1 for $16+{ }^{\prime} 19$ ' <br> A1 cao <br> OR <br> M1 for 100-49 (=51) <br> M1 for ' 51 ' - $21-16(=14)$ and ' 14 ' $+10(=24)$ <br> M1 for 100 - ( $41+$ ' 24 ') <br> A1 cao <br> NB working may appear in table or diagram |
| 7 |  |  |  | Eg. How many hours do you read each day? 0 to 1 h over 1 h to 2 h over 2 h |  | B1 for an appropriate question with reference to a time frame, with a unit of time, or a question with a time frame, with a unit of time, implied by responses <br> B1 for at least 3 non-overlapping boxes (ignore if not exhaustive) or for at least 3 exhaustive boxes (ignore if any overlapping) [Note: labels on response boxes must not be inequalities] Do not accept frequency tables or data collection sheets for award of the second B mark |
| 8 |  |  |  | 44 | 1 | B1 cao |



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|  |  | Working | Answer | Mark | Notes |
| 10 | (a) <br> (b) |  | trapezium | $2$ | B1 for trapezium or isosceles trapezium <br> B2 for correct tessellation (at least 5 more shapes) <br> (B1 for at least 4 shapes (including initial shape) correctly tessellating) |
| 11 |  |  | 33 | 2 | M1 for $5 \times 5$ or 25 seen in the working <br>  or $2 \times 2 \times 2$ or 8 seen in the working <br> A1 cao |
| 12* |  | S: $35 \div 100 \times 40=14$ <br> W: $40 \div 8 \times 3=15$ <br> OR <br> D: $16 \div 40(\times 100)$ <br> $=0.4 \quad(40 \%)$ <br> $\mathrm{W}: 3 \div 8 \quad(\times 100)$ <br> $=0.375 \quad(37.5 \%)$ | Debbie and correct calculations | 4 | Compares Marks out of 40 or fractions with denominator of 40 <br> M1 for $35 \div 100 \times 40$ oe or 14 seen (or $14 / 40$ seen) <br> M1 for $40 \div 8 \times 3$ or 15 seen (or $15 / 40$ seen) <br> A1 for 14 and 15 or $\frac{14}{40}$ and $\frac{15}{40}$ <br> C1 (dep on M1) for correct conclusion for their working QWC with 3 comparable marks: <br> Decision and justification should be clear with working clearly presented and attributable. <br> OR Decimals (or Percentages) <br> M1 for $16 \div 40(\times 100)$ oe or 0.4 (or 40$)$ seen <br> M1 for $3 \div 8 \quad(\times 100)$ oe or $0.375 \quad$ (or 37.5 ) seen <br> A1 for 0.4 and 0.375 (or 40 and 37.5) <br> C1 (dep on M1) for correct conclusion for their working QWC: with 3 comparable decimals (or percentages: <br> Decision and justification should be clear with working clearly presented and attributable. |



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| :---: | :---: | :---: | :---: | :---: |
|  | Working | Answer | Mark | Notes |
| 16 | Acton after 24, 48, 72, 96, .. <br> Barton after 20, 40, 60, 80,.. <br> LCM of 20 and 24 is 120 <br> 9: $00 \mathrm{am}+120$ minutes <br> OR <br> Acton after 24, 48, 1h 12 min... <br> Barton after 20, 40, 1 h LCM is 2 hours 9:00 am +2 hours | 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 <br> (condone one addition error in total in first 3 numbers in lists) <br> A1 identify 120 (mins) or 2 (hours) as LCM <br> A1 for 11:00(am) or 11(am) or 11 o'clock <br> OR <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> A1 for correct times in each list up to and including 11: 00 <br> A1 for 11:00(am) or 11(am) or 11 o'clock |
| 17 | $\begin{aligned} & \text { e.g. } \\ & \$ 20=£ 12.50 \\ & \$ 100=5 \times £ 12.50= \\ & £ 62.50 \\ & £ 62.50-60=£ 2.50 \end{aligned}$ | £2.50 OR \$4 | 3 | M1 for a correct method to convert $\$ 100$ to $£$, e.g. $5 \times$ ' 12.50 ’ ( $=62.50$ ) (' 12.50 ' is their reading from the graph at $\$ 20$ ) <br> M1 (dep) for ' 62.50 ' - 60 <br> A1 for $£ 2.5(0)$ (units must be stated) <br> OR <br> M1 for correct method to convert $£ 60$ to $\$$, e.g. $3 \times 32$ (=96) or ft their answer to part (a) <br> M1 (dep) for 100 - ' 96 ' <br> A1 for $\$ 4$ (units must be stated) |
| 18* | $\begin{aligned} & 360-200-90(=70) \\ & \left(180-{ }^{\prime} 70 \text { ) } \div 2\right. \end{aligned}$ <br> angles at a point add to 360 o , angles in a triangle add to 180 o, base angles of an isosceles triangle are equal | $y=55$ reasons | 4 | M1 for 360-200-90 oe <br> M1 for $\left(180-{ }^{\prime} 70^{\prime}\right) \div 2$ <br> Reasons: angles at a point add up to $360^{\circ}$ <br> angles in a triangle add up to $180^{\circ}$ <br> base angles of an isosceles triangle are equal <br> C2 for $\mathrm{y}=55^{\circ}$ and all correct reasons <br> Note: An answer of 550 alone, is not enough; $\mathrm{y}=55^{\circ}$ must be explicitly stated or clearly shown on the diagram |


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| :---: | :---: | :---: | :---: | :---: | :---: |
| Qn |  | Working | Answer | Mark | Notes |
| 19 |  | $1,96 \times 2.25=4.41$ <br> OR $\begin{aligned} & 4.23 \div 9=0.47 \\ & 1.96 \div 4=0.49 \end{aligned}$ | Pack of 9 | 3 | M2 for a fully correct method to enable a conclusion <br> eg $1.96 \times 21 / 4$  <br> OR  <br> M1 for $4.23 \div 9$ or $423 \div 9$ <br> or 0.47 seen <br> M1 or 47 seen <br> for $1.96 \div 4$ or $196 \div 4$ or <br> 0.49 seen or 49 seen |
| 20 |  | $\begin{aligned} & 5 w=10+6 \\ & w=16 \div 5 \\ & \text { or } w-\frac{6}{5}=\frac{10}{5} \text { oe } \end{aligned}$ | 16/5 oe | 2 | M1 for $5 w-6+6=10+6$ oe or $w-\frac{6}{5}=\frac{10}{5}$ oe A1 for $\frac{16}{5}, 3 \frac{1}{5}, 3.2$, oe |
| 21* |  | $\begin{aligned} & 180 \div 9 \times 1: 180 \div 9 \times 3: 180 \div \\ & 9 \times 5 \\ & =20: 60: 100 \\ & \text { Not enough cement } \\ & \text { (but enough sand and } \\ & \text { enough gravel) } \\ & \text { OR } \\ & 1 \times 15: 3 \times 15: 5 \times 15 \\ & =15: 45: 75 \\ & 15+45+75=135(<180) \\ & \text { Not enough cement }(\text { to } \\ & \text { make } 180 \mathrm{~kg} \text { of concrete) } \end{aligned}$ | No + reason | 4 | M1 for $180 \div(1+3+5)(=20)$ or 3 multiples of 1:3:5 <br> M1 for $1 \times{ }^{\prime} 20^{\prime}$ or $3 \times ' 20^{\prime}$ or $5 \times{ }^{\prime} 20^{\prime}$ or 20 seen or 60 seen or 100 seen <br> A1 for (Cement=) 20, (Sand=) 60, (Gravel=) 100 <br> C1 ft (provided both Ms awarded) for not enough cement oe <br> OR <br> M1 for ( $1 \times 15$ and) $3 \times 15$ and $5 \times 15$ or $9 \times 15$ or sight of the numbers <br> 15, 45, 75 together. <br> M1 for ' 15 ' + ' 45 ' + ' 75 ' <br> A1 for 135 (<180) <br> C1 ft (provided both Ms awarded) for not enough cement oe |
| 22 |  |  | 20 | 2 | M1 $3 \times 3 \times 3$ oe seen or drawn or 27 seen or use of 3 layers <br> A1 cao |
| 23 | (a) <br> (b) | $3+10$ | 13 $7.1-7.9$ inc. | $1$ <br> 1 | B1 cao <br> B1 for answer in the range $7.1-7.9 \mathrm{inc}$ |


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| :---: | :---: | :---: | :---: | :---: | :---: |
| Qn |  | Working | Answer | Mark | Notes |
| 24 |  | Area of cross section $4 \times 7+5 \times 2$ or $9 \times 2+$ $5 \times 4$ <br> OR $9 \times 7-5 \times 5(=38)$ | 380 | 3 | M1 for $4 \times 7+5 \times 2(=38)$ or $9 \times 2+5 \times 4(=38)$ or $7 \times 9-5 \times 5(=38)$ or $4 \times 7 \times 10$ or $5 \times 2 \times 10(=100)$ or $9 \times 2 \times 10(=180)$ or $5 \times 4 \times 10(=200)$ or $9 \times 7 \times 10(=630)$ or $5 \times 5 \times 10(=250)$ <br> M1 (dep) for ' 38 ' $\times 10$ or 380 or $4 \times 7 \times 10+5 \times 2 \times 10$ or $9 \times 2 \times 10+5 \times 4 \times 10$ or $(7 \times 9-5 \times 5) \times 10$ <br> A1 cao |
| 25 | (a) <br> (b) | $3 \times 3 \times 3 \times 3$ | $\begin{gathered} 81 \\ 4 \end{gathered}$ | 1 <br> 1 | B1 cao <br> B1 cao |
| 26 |  | $\begin{aligned} & \frac{9}{2} \times(12+18)=135 \\ & 135 \div 20=6.75(=7 \\ & \text { bags }) \\ & 7 \times 4.99 \\ & \text { OR } \\ & 18 \times 9-\frac{1}{2}(6 \times 9)=135 \\ & 135 \div 20=6.75(=7 \\ & \text { bags }=7 \\ & 7 \times 4.99 \end{aligned}$ | 34.93 | 4 | M1 <br> for $\frac{9}{2} \times(12+18)$ or $18 \times 9-\frac{1}{2}(6 \times 9)$ or $9 \times 12+\frac{1}{2} \times(18-12) \times 9$ or 135 seen <br> M1 (dep) for ' 135 ' $\div 20$ or 6 or 7 seen <br> M1 (dep on previous M1) for ' 6 ' $\times 4.99$ or ' 7 ' $\times 4.99$ <br> A1 cao <br> [SC: M1 for $(12 \times 9+6 \times 9) \div 20(=162 \div 20)$ or 8 or 9 seen M1 (dep) for ' 8 ' $\times 4.99$ or ' 9 ' $\times 4.99$ <br> OR M1 for $(18 \times 9-6 \times 9) \div 20(=108 \div 20)$ or 5 or 6 seen M1 (dep) for ' 5 ' $\times 4.99$ or ' 6 ' $\times 4.99$ ] |


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| :---: | :---: | :---: | :---: | :---: |
|  | Working | Answer | Mark | Notes |
| 27* | Angle DBC $=(180-50)$ $\div 2$ <br> Base angles of isosceles triangle are equal <br> Angle ABD $=180-65$ <br> Angles on a straight line add up to 180 $x=180-20-115$ <br> Angles in a triangle add up to 180 | 45 with reasons | 4 | M1 for $(180-50) \div 2$ oe or 65 seen <br> M1 for 180-20-(180-" 65 ") or " 65 " -20 or 180-50-20-‘65' oe <br> C2 for x identified as 45 with full reasons <br> QWC: Reasons clearly laid out with correct geometrical language used <br> (C1 (dep on M1) for one reason QWC: Reasons clearly laid out with correct geometrical language used) <br> NOTE: $x=45$ with no working or without any correct angles marked on the diagram cannot score. |
| 28 |  | $4 \times 6$ rectangle | 2 | B2 for a single $4 \times 6$ rectangle drawn anywhere on the grid (B1 for a single $4 \times n$ rectangle or a single $m \times 6$ rectangle drawn anywhere on the grid) <br> Note: All nets and 3-D sketches get NO marks |
| 29 |  | Region shaded | 3 | B1 for circle arc of radius $3 \mathrm{~cm}( \pm 2 \mathrm{~mm})$ centre Burford <br> B1 for circle arc of radius $5 \mathrm{~cm}( \pm 2 \mathrm{~mm})$ centre Hightown <br> B1 for overlapping regions of circle arcs shaded |



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| :---: | :---: | :---: | :---: | :---: | :---: |
| Qn |  | Working | Answer | Mark | Notes |
|  | (c) | $\begin{aligned} & 10 t=g h \\ & h=\frac{10 t}{g} \end{aligned}$ | $\frac{10 t}{g}$ | 2 | M1 for clear intention to multiply both sides of the equation by 10 (eg. $\times 10$ seen on both sides of equation) or clear intention to divide both sides of the equation by $g$ (e.g. $\div \mathrm{g}$ seen on both sides of equation) $\begin{aligned} \text { or } \quad 10 t & =g h \\ \text { or } \quad \frac{t}{g} & =\frac{h}{10} \end{aligned}$ <br> or fully correct reverse flow diagram $\text { eg. } \leftarrow \times 10 \leftarrow \div \mathrm{g} \leftarrow$ <br> A1 for $\frac{10 t}{g}$ oe |
| 32 |  | $\begin{aligned} & 3 x-15=2 x+24 \\ & x=39 \end{aligned}$ <br> OR $\begin{aligned} & 2 \mathrm{x}+3 \mathrm{x}-15+2 \mathrm{x}+2 \mathrm{x}+24 \\ & =360 \\ & 9 \mathrm{x}+9=360 \\ & 9 \mathrm{x}=351 \\ & \mathrm{x}=39 \end{aligned}$ <br> OR $\begin{aligned} & 2 x+2 x+24=180 \\ & 4 x+24=180 \\ & 4 x=156 \\ & x=39 \end{aligned}$ | 39 | 3 |  |


| New Qn | Question Number | Paper <br> Date | Skill tested | Maximum score | Mean Score | Mean Percentage | Percentage scoring full marks |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Q14 | 1F 1206 | Find the perimeter of rectangles and triangles | 4 | 2.02 | 51 | 47.1 |
| 2 | Q14c | 1F 1211 | Work out time intervals | 4 | 1.92 | 48 | 32.9 |
| 3 | Q15b | 1F 1206 | Extract data from lists and tables | 2 | 0.89 | 45 | 32.0 |
| 4 | Q23 | 1F 1211 | Solve a ratio problem in context | 3 | 1.34 | 45 | 37.5 |
| 5 | Q13a | 1F 1211 | Manipulate algebraic expressions by collecting like terms | 1 | 0.42 | 42 | 41.8 |
| 6 | Q21 | 1F 1211 | Design and use two-way tables for discrete and grouped data | 4 | 1.67 | 42 | 30.9 |
| 7 | Q26 | 1F 1211 | Design a question for a questionnaire | 2 | 0.82 | 41 | 27.5 |
| 8 | Q20b | 1F 1206 | Calculate median | 1 | 0.40 | 40 | 39.6 |
| 9 | Q20 | 1F 1211 | Find a fraction of a quantity | 4 | 1.51 | 38 | 19.8 |
| 10a | Q16a | 1F 1206 | Recall the properties and definitions of special types of quadrilaterals | 1 | 0.36 | 36 | 35.8 |
| 10b | Q16b | 1F 1206 | Understand tessellations of regular and irregular polygons | 2 | 0.66 | 33 | 32.0 |
| 11 | Q11b | 1F 1206 | Find the value of calculations using indices | 2 | 0.70 | 35 | 28.4 |
| 12 | Q17 | 1F 1206 | Interpret fractions, decimals and percentages as operators | 4 | 1.41 | 35 | 24.2 |
| 13a | Q26a | 1F 1206 | Add, subtract, multiply and divide any number | 3 | 1.05 | 35 | 17.3 |
| 13b | Q26b | 1F 1206 | Substitute numbers into a formula | 2 | 0.32 | 16 | 3.0 |
| 14 | Q23b | 1F 1206 | Solve a ratio problem in context | 2 | 0.67 | 34 | 14.1 |
| 15a | Q22a | 1F 1206 | Calculate perimeters and areas of shapes made from triangles and rectangles | 3 | 0.39 | 13 | 16.7 |
| 15b | Q22b | 1F 1206 | Add, subtract, multiply and divide any number | 3 | 0.94 | 31 | 2.1 |
| 16 | Q24 | 1F 1206 | Find the Lowest common multiple (LCM) and Highest common factor (HCF) of two numbers | 3 | 0.93 | 31 | 23.4 |
| 17 | Q15b | 1F 1211 | Interpret straight-line graphs for real-life situations ready reckoner graphs | 3 | 0.89 | 30 | 19.8 |
| 18 | Q19 | 1F 1211 | Use the side/angle properties of isosceles and equilateral triangles | 4 | 1.14 | 28 | 1.9 |
| 19 | Q19 | 1F 1206 | Add, subtract, multiply and divide any number | 3 | 0.81 | 27 | 14.1 |
| 20 | Q17c | 1F 1211 | Solve linear equations, with integer coefficients, in which the unknown appears on either side or on both sides of the equation | 2 | 0.50 | 25 | 18.6 |
| 21 | Q29 | 1F 1211 | Solve a ratio problem in context | 4 | 0.74 | 19 | 8.7 |
| 22 | Q12a | 1F 1206 | Use 2-D representations of 3-D shapes | 2 | 0.33 | 17 | 46.0 |
| 23a | Q03b | 1F 1211 | Use brackets and the hierarchy of operations | 1 | 0.36 | 36 | 36.2 |
| 23b | Q03c | 1F 1211 | Find square roots and cube roots | 1 | 0.17 | 17 | 16.7 |
| 24 | Q27 | 1F 1211 | Find the volume of a prism, including a triangular prism, cube and cuboid | 3 | 0.51 | 17 | 12.4 |
| 25a | Q16a | 1F 1211 | Find the value of calculations using indices | 1 | 0.43 | 43 | 43.0 |
| 25b | Q16b | 1F 1211 | Find square roots and cube roots | 1 | 0.16 | 16 | 16.5 |

$\left.\begin{array}{|l|l|l|l|c|c|c|}\hline \begin{array}{l}\text { New } \\ \text { Qn }\end{array} & \begin{array}{l}\text { Question } \\ \text { Number }\end{array} & \begin{array}{l}\text { Paper } \\ \text { Date }\end{array} & \text { Skill tested } & \begin{array}{c}\text { Maximum } \\ \text { score }\end{array} & \begin{array}{c}\text { Mean } \\ \text { Score }\end{array} & \begin{array}{c}\text { Mean } \\ \text { Percentage }\end{array} \\ \hline \text { Percentage } \\ \text { scoring full } \\ \text { marks }\end{array}\right\}$

