INSTRUCTIONS TO CANDIDATES

- Answer ALL questions.

- This paper carries a total of 25 marks.

- Calculators and protractors are NOT ALLOWED.
1. Fill in:
   a) 3cm = __________ mm
   b) 6.2 kg = __________ g
   c) 1.5 hours = __________ mins

   ________________________ (3 marks)

2. a) Simplify:
   12 : 60 : 144 = 1 : _____ : _____

   b) Beth and Amy share €300 in the ratio 3 : 2. How much does each girl receive?

   Beth € ________
   Amy € ________

   ________________________ (4 marks)

3. Work out the size of the angle marked $x$.

   $x =$ __________

   ________________________ (2 marks)

4. Calculate 60% of €150.

   € ________

   ________________________ (2 marks)
5. a) Simplify:  
\[5a \times 3a = \underline{\phantom{00}}\]  
b) Expand:  
\[6(3a - 8) = \underline{\phantom{00}}\]  
c) Work out the value of \(xy\) when \(x = 2\) and \(y = 5.5\)  
\[xy = \underline{\phantom{00}}\]  
\[\underline{\phantom{00}}\] (3 marks)  

6. Work out the following:  
a) \[\frac{3}{4} \times \frac{8}{9}\]  
b) \[\frac{2}{3} - \frac{1}{2}\]  
\[\underline{\phantom{00}}\] Ans a) \[\underline{\phantom{00}}\]  
\[\underline{\phantom{00}}\] Ans b) \[\underline{\phantom{00}}\]  
\[\underline{\phantom{00}}\] (3 marks)  

7. Find the missing expression in this algebra wall. The expression is found by adding the expressions in the two bricks underneath.  
\[2a + b + a - 3b\]  
\[\underline{\phantom{00}}\] (1 mark)  

8. a) Put the correct inequality sign, < or > between:  
\[-10^\circ C \underline{\phantom{00}} -7^\circ C\]  
b) Complete:  
\[\underline{\phantom{00}} \times (-3) = 30\]  
\[\underline{\phantom{00}}\] (2 marks)
9. A bowling ball rolls in a lane. The graph shows its distance from a point P in the lane. Work out the gradient of the line.

\[ \text{gradient} = \underline{\phantom{0000}} \]

10. a) Look at these patterns. Draw pattern 3.

b) The figure shows a shape formed by joining the edges of 10 identical squares. Each side of the square is 2 cm long. Work out the perimeter and area.

Perimeter = \underline{\phantom{0000}} \text{cm} \hspace{1cm} \text{Area} = \underline{\phantom{0000}} \text{cm}^2

END OF PAPER
CALCULATORS ARE ALLOWED BUT ALL NECESSARY WORKING MUST BE SHOWN. ANSWER ALL QUESTIONS.

1. a) Calculate: \((5 \times 10^3) + 30 \times 4\)  
   Ans: ________

   b) Write 0.0456 in standard form  
   Ans: ________

   ______________________________________ (2 marks)

2. a) Increase €40 by 30%.

   € ________

   b) An MP3 player costs €150. During a sale a shop offers a discount of 20%. Work out the sale price.

   € ________

   ______________________________________ (4 marks)
3. a) i) Write down an expression for the perimeter, \( P \), of this rectangle.

\[ P = __________________________cm \]

\[ (2x + 3) \text{ cm} \]

\[ 3x \text{ cm} \]

ii) Work out the perimeter when \( x = 8 \).

\[ P = __________cm \]

b) Make \( x \) the subject of the formula: \( y - 3x = z \)

\[ x = __________ \]

________________________________________________________________________(7 marks)

4. Each exterior angle of a regular polygon is 45°.

a) Fill in: sum of the exterior angles = _____°

b) How many sides does the polygon have?

Ans: _____ sides

c) Write down the name of this type of polygon.

Ans: __________

d) Work out the size of each interior angle.

Ans: _____°

________________________________________________________________________(4 marks)
5. A duck pond is in the shape of a circle of diameter 2 m. The pond is in a rectangular garden as shown in the diagram.

a) Calculate the area of the pond correct to 1 d.p.

Area = _______ m²

b) Calculate the area of the rectangle.

Area = _______ m²

c) Calculate the shaded area correct to 2 d.p.

Area = _______ m²

(5 marks)

6. The figure shows a solid shape. Work out:

a) the volume

V = _______ cm³

b) how many faces (F) and edges (E) the solid has.

Ans b) F = _______ , E = _______

(6 marks)
7. Using ruler and compasses only:
   a) Construct triangle ABC, right-angled at B, with sides AB = 4.5 cm and BC = 7 cm.
   b) Bisect \( \angle ABC \). Let this bisector meet AC at X. Measure BX.

   \[
   \begin{array}{c|c}
   B & X \\
   \hline
   \end{array}
   \]

   BX = ______ cm

   (6 marks)

8. The table shows the marks in a maths test of a group of girls and boys.

<table>
<thead>
<tr>
<th>Boys</th>
<th>9</th>
<th>7</th>
<th>8</th>
<th>7</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Girls</td>
<td>6</td>
<td>7</td>
<td>9</td>
<td>8</td>
<td>3</td>
</tr>
</tbody>
</table>

   a) Find the mean, median and range of the boys and of the girls.

   \[
   \text{Boys: Mean} = _____ \quad \text{Girls: Mean} = _____
   \]

   \[
   \text{Boys: Median} = _____ \quad \text{Girls: Median} = _____
   \]

   \[
   \text{Boys: Range} = _____ \quad \text{Girls: Range} = _____
   \]

   b) Who did better? Explain why.

   (8 marks)
9. a) Fill in the missing LOGO commands required to draw the letter T.

```
PD
FD ___
LT 90
FD 30
RT ___
FD ___
```

b)

Carla types the formula

\[ =A1 \times B1 \times 10 \]

in cell C1. What value will be displayed in cell C1?

Ans: ________

________________________________________________________________________

(4 marks)

10. The picture shows a fair spinner. Claire spins the spinner twice and records the total score.

a) Fill in the possibility space showing all the possible outcomes.

```
<table>
<thead>
<tr>
<th>Second Spin</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

b) Find the probability that Claire scores:

i) a total of 10  
\[ P (10) = \]

ii) the score is an even number  
\[ P (\text{even}) = \]

iii) the score is less than 5  
\[ P (\text{less than 5}) = \]

________________________________________________________________________

(7 marks)
11.a) i) Rectangle \( A \) is reflected in the \( x \) axis. Draw the image and label it \( B \).

ii) Rectangle \( A \) is enlarged to form rectangle \( C \). Find: the scale factor ________

the centre of enlargement ________

b) The table shows the number of Form 1 students absent in a particular week.

<table>
<thead>
<tr>
<th></th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absent</td>
<td>12</td>
<td>8</td>
<td>10</td>
<td>18</td>
<td>7</td>
</tr>
</tbody>
</table>

i) Draw a bar chart to show this information.

ii) How many students were absent during that week? Ans: ________

(7 marks)
12. a) Complete the next two terms in the following sequence.

32, 16, 8, 4, _____, ____.

b) The \( n \)\(^{th} \) term of a sequence is \( 3n - 1 \). Work out:

1\(^{st} \) term = ________

20\(^{th} \) term = ________

c) i) Solve: \( 23 - 4n = 3 - 2n \) ii) Factorise: \( 36ab + 27c \)

Ans i) ________ , ii) ________

________________________________________________________________________(7 marks)

13. a) The equation of a line is given by \( y = 5 - 2x \).

Complete the table for \( y = 5 - 2x \).

<table>
<thead>
<tr>
<th>( x )</th>
<th>-1</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-2x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( y )</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

b) Use a scale of 2 cm = 1 unit on both axis and plot and draw the graph \( y = 5 - 2x \).

Use the graph paper on page 8.

c) From your graph, find i) the \( y \) intercept

ii) the gradient

iii) the coordinates of the point at which this line cuts the x axis.

Ans i) ________  Ans ii) ________  Ans iii) ________

________________________________________________________________________(8 marks)