INSTRUCTIONS TO CANDIDATES

- Answer ALL questions.
- This paper carries a total of 25 marks.
- Calculators and protractors are NOT ALLOWED.
1 Work out the following:

(a) \((-5) + (-9)\)
Ans: __________

(b) \((-6) \times (+3) \times (-2)\)
Ans: __________

(2 marks)

2 Mariah runs at a speed of 8 km per hour. What distance does she travel in 3.5 hours?

Ans: __________ km

(1 mark)

3 Estimate \(\frac{23.1 \times 68.3}{4.85}\).

Ans: __________

(2 marks)

4 (a) Change \(1\frac{4}{9}\) to an improper fraction.
Ans: __________

(b) Work out: \(\frac{3}{5} - \frac{3}{8}\)
Ans: __________

(c) Work out: \(\frac{3}{7} \times \frac{11}{12}\)
Ans: __________

(5 marks)
5 Nancy inherits €2500. She divides the money between her two children Laura and Mark in the ratio 1 : 4. How much money does each child receive?

Ans: Laura gets €__________, Mark gets €__________

(2 marks)

6 Work out the value of $3x + 4y$ when $x = 6$ and $y = -3$.

Ans: __________

(2 marks)

7 Calculate 30% of 200 metres.

Ans: __________ metres

(2 marks)

8 The diagram shows a regular octagon.

Calculate the size of the exterior angle of the regular octagon, marked $y^\circ$ on the diagram.

Ans: $y^\circ = __________^\circ$

(2 marks)
9 Here are six numbers written in standard form.

\[2.6 \times 10^5 \quad 1.75 \times 10^6 \quad 5.84 \times 10^0 \quad 8.2 \times 10^{-3} \quad 3.5 \times 10^{-1} \quad 4.9 \times 10^{-2}\]

(a) Write down the largest number.

Ans: __________

(b) Write \(4.9 \times 10^{-2}\) as an ordinary number.

Ans: __________

(2 marks)

10 A storage box is in the shape of a cuboid.

\[\text{Not drawn to scale}\]

(a) Calculate the volume of this storage box.

Ans: __________ cm\(^3\)

(b) Calculate the total surface area of the box.

Ans: __________ cm\(^2\)

(5 marks)

END OF PAPER
1 Here is a list of words that represent parts of a circle:

chord    centre    radius    diameter    circumference

Fill each box below by choosing the correct word from the list.
2  (a) **Increase** €360 by 55%.

Ans: €___________

(b) During a sale, the price of a shirt is decreased from €42 to €27.30. What is the percentage decrease?

Ans: __________

(5 marks)

3  (a) Insert the **correct symbol** in the box below:  =, >, <, ≥ or ≤

   \[-6 \_ \_ \_ \_ \_ \_ \_ - 8\]

(b) **Simplify** this ratio as much as possible: 16 : 240 : 600

Ans: __________

(c) **Find** \(x\) in this ratio: \(x : 28 = 6 : 7\)

Ans: __________

(5 marks)

4  (a) Complete these **conversions**:

   (i) 6 cm  = __________ mm

   (ii) 2400 g  = __________ kg

   (iii) 0.7 litres  = __________ ml

(b) Jake’s birthday party began at 20:45 on Saturday and finished at 01:00 on Sunday. How many **minutes** did the party last?

Ans: __________ minutes

(5 marks)
5 A semi-circular protractor has a radius of 4.5 cm. Calculate its **perimeter**, giving your answer correct to 1 decimal place.

\[ \text{Perimeter} = \pi r + 2r = \pi \times 4.5 + 9 = 14.14 \text{ cm (correct to 1 dp)} \]

Ans: _______ cm

(3 marks)

6 In a class of 30, the eye colours of the students were recorded as follows.

<table>
<thead>
<tr>
<th>Eye colour</th>
<th>Amber</th>
<th>Blue</th>
<th>Brown</th>
<th>Hazel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>8</td>
<td>2</td>
<td>14</td>
<td>6</td>
</tr>
</tbody>
</table>

Draw a **pie chart** to represent this information. **Label** it clearly.

(5 marks)
7  (a) Expand: \(8(3 - 6a)\).
    Ans: __________

(b) **Factorise** completely: \(18 + 24e\).
    Ans: __________

(c) **Solve**: \(11 - 3a = 2\)
    Ans: __________

(d) Make \(x\) the **subject of the formula** \(y = 5x - 3\).
    Ans: __________

(7 marks)

8  (a) Find the **value** of \(B^\circ\).
    [Diagram of triangle with angles 124°, 35°, and \(B^\circ\)]
    Not drawn to scale
    Ans: \(B^\circ = \underline{\hspace{2cm}}^\circ\)

(b) Andre thinks of a number. He multiplies it by 4 and adds 6. His answer is 30.

(i) Write down an **equation** for Andre’s number.
    Ans: __________

(ii) Find the number.
    Ans: __________

(7 marks)
9

(a) **Describe fully** the single transformation that maps Triangle P to Triangle Q.
Ans: __________ in the line ________

(b) **Translate** Triangle P by 6 squares to the right and 4 squares up. Label the image R.

(c) **Enlarge** Triangle P by a scale factor of 2 using (0, 0) as the centre of enlargement. Label the image S.

10

(a) **Simplify:**

(i) \(x + x\)
Ans: __________

(ii) \(x \times x\)
Ans: __________

(iii) \(7y + 5 - 2y + 3 - y\)
Ans: __________

(b) Look at the **number machine** below.

(i) **Complete** the table.

<table>
<thead>
<tr>
<th>(n)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>output</td>
<td></td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(ii) **Write down the rule** in terms of \(n\).

Ans: __________

(7 marks)
11. (a) (i) Draw a circle of radius 4 cm. Use the point O below as the centre of this circle.

(ii) Hence, construct an inscribed regular hexagon of side 4 cm using ruler and compasses only.

(b) Erica is calculating the height of a tower. She stands 140 metres away from the tower. The angle of elevation of the top of the tower from Erica’s position is 40°.

(i) Make a scale drawing of the diagram shown. Use a scale of 1 cm to represent 20 m.

Not drawn to scale

(ii) Use your drawing to calculate the actual height of the tower to the nearest metre.

Ans: ___________m

(8 marks)
12 (a) Kyle throws an ordinary dice. Find the probability that Kyle gets a

(i) 6
Ans: __________

(ii) prime number
Ans: __________

(iii) 5 or more
Ans: __________

(b) Michael says that the probability that it will rain is $\frac{6}{5}$. Tick one of the boxes below to show whether you agree or disagree with Michael. Give a reason for your answer.

 Agree
Disagree

Reason: ____________________________________________

(c) The heights, to the nearest centimetre, of 10 girls are:
159, 155, 153, 154, 157, 162, 152, 160, 161 and 154. Find:

(i) their median height
Ans: ________ cm

(ii) the range of their heights
Ans: ________ cm

(7 marks)

13 (a) Complete the table for $y = 3x + 2$.

<table>
<thead>
<tr>
<th>$x$</th>
<th>$3x$</th>
<th>$-2$</th>
<th>$-1$</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+2</td>
<td>+2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-4</td>
<td></td>
<td>2</td>
<td>5</td>
<td>11</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(b) Plot the points on the graph paper found on page 8. Use 2 cm for each unit on the $x$-axis and 1 cm for each unit on the $y$-axis.

(c) Draw the graph of $y = 3x + 2$ on the same graph paper.

(d) Mark and label the points A (0, 2) and B (3, 11) on the graph.

(e) Use these two points to find the gradient of the line AB.

Ans: __________
END OF PAPER (8 marks)