INSTRUCTIONS TO CANDIDATES

- Answer all questions. There are 20 questions to answer.

- Each question carries 1 mark.

- Calculators, protractors and other mathematical instruments are not allowed.

- You are not required to show your working. However space for working is provided if you need it.
<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
<th>Space for Working</th>
</tr>
</thead>
</table>
| 1   | Work out:  
   \[100 - 26 \times 3\] | \[\_\_\_\_\_\_\_\_\_\_] |
| 2   | A stamp costs 20 cent. How many stamps can I buy for €2.50? | \[\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_] stamps |
| 3   | In a mathematics test Karl got 16 out of 20 questions correct. Write Karl’s mark as a percentage. | \[\_\_\_\_\_\_\_\_\_\_\%\] |
| 4   | At a film show 25% of the audience is men and one third is women. The remainder of the audience is children. What fraction of the audience are children? | \[\_\_\_\_\_\_\_\_\_\_\_] |
| 5   | Work out the area of the shaded region, in terms of \(\pi\). | \[\text{Area} = \_\_\_\_\_\_\pi\text{\text{\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_}\] |
| 6   | A fair dice was thrown 5 times. Each time a six appeared on the top face. The dice is thrown again. The probability of another six appearing is \[\text{A. equal to one sixth} \]
   \[\text{B. more than one sixth} \]
   \[\text{C. less than one sixth} \] |
<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
<th>Space for Working</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Evaluate: ((3.247 + 6.753)^3)</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>The area of a square is equal to the area of a rectangle with sides of 9 cm and 4 cm. Work out the perimeter of the square.</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Work out (\left(\frac{3}{4} - \frac{2}{3}\right) \times 24)</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Which is the smallest number that leaves a remainder of 1 when divided by 4 and a remainder of 1 when divided by 5?</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>The mean of the numbers 14, 19 and (x) is 13. Work out the value of (x).</td>
<td>(x = )</td>
</tr>
<tr>
<td>12</td>
<td>Write down the three prime numbers between 40 and 50.</td>
<td>,  ,</td>
</tr>
<tr>
<td>13</td>
<td>The opposite angles of a cyclic quadrilateral are in the ratio of 1 : 4. Work out the size of the smallest angle.</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Mario fills his car with 30 litres of petrol at €1.40 per litre. Work out the change from €50.</td>
<td>Change = €</td>
</tr>
<tr>
<td>No.</td>
<td>Question</td>
<td>Space for Working</td>
</tr>
<tr>
<td>-----</td>
<td>----------</td>
<td>-------------------</td>
</tr>
</tbody>
</table>
| 15  | Underline the correct answer for the area of the square.  

![Square Diagram](image)

A. $\sqrt{5}$ cm$^2$  
B. $\sqrt{13}$ cm$^2$  
C. 25 cm$^2$  
D. 13 cm$^2$

| 16  | A number of cards are coloured either red or blue. There are 6 blue cards. The probability of choosing a red card is $\frac{4}{5}$. How many cards are there in all?  

__________ cards

| 17  | A bag holds 400 grams of flour. How many bags can be filled from 5 kg of flour?  

__________ bags

| 18  | Evaluate:  

$$\frac{1}{3} + \frac{1}{4} + \frac{1}{5} + \frac{4}{5} + \frac{3}{4} + \frac{2}{3}$$  

__________

| 19  | Write down the smallest number.  

20%, $\frac{9}{50}$, 0.201 $\times$ 10$^2$  

__________

| 20  | Write $4^{-2}$ as a fraction.  

__________
1. The table below shows the radii of three planets.

<table>
<thead>
<tr>
<th>Planet</th>
<th>Radius (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>$2.43 \times 10^3$</td>
</tr>
<tr>
<td>Earth</td>
<td>6380</td>
</tr>
<tr>
<td>Jupiter</td>
<td>$71.4 \times 10^3$</td>
</tr>
</tbody>
</table>

(a) Write down the name of the smallest planet. _______________

(b) Fill in:

The radius of Jupiter is about ________ times the radius of Mercury.

(c) Work out the circumference of the earth, correct to the nearest 1000 km.

Circumference = __________ km
2 (a) Claire said that the line \(2y = 3x - 4\) cuts the \(y\)-axis at \((0, -2)\). Is Claire correct? Explain.

\[\text{because}\]

(b) Paul said that the longer a line is, the bigger is its **gradient**. Is Paul correct? Explain.

\[\text{because}\]

(c) The coordinates of four points are: \(A(1, -1), B(-1, 1), C(1, 1), D(-1, -1)\)
Which point lies on the straight line \(y = 3x - 2\)? Show your working.

\[\text{___________________________}\]

\[\text{___________________________}\]

\[\text{4 marks}\]

3 A dice is thrown 60 times. The table below shows the number of times each number was thrown.

<table>
<thead>
<tr>
<th>Number Thrown</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>4</td>
<td>8</td>
<td>10</td>
<td>7</td>
<td>15</td>
<td>(x)</td>
</tr>
</tbody>
</table>

(a) Work out the value of \(x\).

\[x = \text{__________}\]

(b) Work out the **mean** number thrown.

\[\text{Mean} = \text{__________}\]

(c) This dice is thrown 300 times. How many times would you expect a 1 to come up?

\[\text{__________ times}\]

\[\text{6 marks}\]
4. After one year the price of a car was €12760. After two years the price of the car was €11228.80.

(a) Work out the rate by which the car **depreciates** each year.

Rate = _________% 

(b) Work out the **price** of the car when it was bought.

Price = €_________

6 marks

5. ABCD is a **parallelogram**. AP and CQ are drawn perpendicular to BD.

(a) **Prove** that triangle ABP is congruent to triangle CDQ.

(b) Fill in:

$\angle BAP = \angle$ __________

5 marks
Anita was asked to make $m$ the subject of the formula $mk = 11 - 3m$.
Her work is shown below.

\[
\begin{align*}
mk + 3m &= 11 \quad \text{Line 1} \\
m(k + 3) &= 11 \quad \text{Line 2} \\
m &= 11(k + 3) \quad \text{Line 3}
\end{align*}
\]

There is a mistake in Anita’s work.

(a) In which line does the mistake lie? What is Anita’s mistake?

__________________________________________________________________________
__________________________________________________________________________

(b) Write down the correct answer.

\[m = \underline{\phantom{0}}\]

(c) Work out the value of $m$ when $k = 19$.

\[m = \underline{\phantom{0}}\]

5 marks
7. Solve the simultaneous equations:
\[3x + 2y = 10\]
\[2x - 3y = 11\]

x = \_\_\_, y = \_\_\_

4 marks

8. The angles of a triangle are \(x^\circ\), \(6x^\circ\) and \((x + 60)^\circ\).

(a) Form an equation in \(x\) and solve it to find the size of the largest angle of the triangle.

Largest angle = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\^

(b) Is this triangle isosceles, scalene or equilateral? Give a reason for your answer.

__________________________________________________

5 marks
A boat, B, is 45 km due South of a Lighthouse L. It sails on a bearing of 060° until it is due East of the lighthouse.

(a) Use compasses and ruler only to make a scale drawing of the position of the boat. Take 1 cm to represent 10 km.

(b) How far is the boat from the lighthouse? __________ km

(c) A radio transmitter on the boat has a range of 50 km.

(i) On your diagram, shade the region that lies within the range of the transmitter.

(ii) Can the lighthouse be contacted with the boat’s radio? Give a reason for your answer.

__________ because _____________________________________________

____________________________________________________________
AP and BP are two tangents to a circle with centre O.

(a) Fill in: \( \angle PAO = \) __________ \( \degree \)

Reason: ______________________________

(b) Work out, correct to 1 decimal place,

(i) the size of \( \angle APB \)

\[ \angle APB = \) __________ \( \degree \]

(ii) the length of OP

\[ OP = \) __________ cm \]

8 marks
Six months before an election, voters were asked which candidate, Pace, Borg or Gatt, they preferred as mayor. The same voters were asked the same question again three months before the election. The results are shown in the bar graphs below.

(a) Fill in:
In the first survey Pace received ________% of the votes, Borg received ________% of the votes and Gatt received ________% of the votes.

(b) Did Pace do better in the first survey or in the second survey? Give a reason for your answer.

__________________ because __________________________________________

__________________________________________________________________

(c) In the second survey, Pace obtained 672 more votes than Borg. How many votes did Gatt get?

__________ votes

(d) Which candidate did better in the second survey than in the first? Explain.

__________________________________________________________________

__________________________________________________________________

8 marks
12  
(a) Which of the shapes, B, C or D, is similar to shape A?

(b) The diagram below shows two similar shapes.

Work out the value of $h$.

$$h = \text{_______ cm}$$

(c) Write similar or not similar. The first one has been done for you.

<table>
<thead>
<tr>
<th>Shapes</th>
<th>Similar or Not Similar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two circles</td>
<td>Similar</td>
</tr>
<tr>
<td>Two equilateral triangles</td>
<td></td>
</tr>
<tr>
<td>Two rectangles</td>
<td></td>
</tr>
<tr>
<td>Two isosceles triangles</td>
<td></td>
</tr>
<tr>
<td>Two squares</td>
<td></td>
</tr>
</tbody>
</table>
13 (a) Complete the table below for \( y = 4x - x^2 \).

<table>
<thead>
<tr>
<th>( x )</th>
<th>-1</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>( 4x )</td>
<td>-4</td>
<td>0</td>
<td>8</td>
<td>12</td>
<td>16</td>
<td>20</td>
<td>24</td>
</tr>
<tr>
<td>( -x^2 )</td>
<td>-1</td>
<td>0</td>
<td>-4</td>
<td>-9</td>
<td>-16</td>
<td>-25</td>
<td>-36</td>
</tr>
<tr>
<td>( y )</td>
<td>-5</td>
<td>0</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>-5</td>
<td>-16</td>
</tr>
</tbody>
</table>

(b) On the graph paper provided draw the graph of \( y = 4x - x^2 \). Take 2 cm for 1 unit on the x-axis and 1 cm for 1 unit on the y-axis.

(c) Use your graph to find the values of \( x \) when \( y = -1 \).

\[ x = \underline{\phantom{00}} \text{ and } \underline{\phantom{0}} \]

9 marks

END OF PAPER