INSTRUCTIONS TO CANDIDATES

1. Write your name, examination number and school/centre in the spaces provided on the question paper.

2. There are eight (8) questions in this paper. Answer any five (5) questions.

3. Answer all questions in the spaces provided on the question paper.

4. Write down your answers clearly.

5. All essential working must be shown. Candidates will be penalized for omitting essential working.

6. **Cell phones and calculators are not allowed in the examination room.**

7. Tick (✓) the question you have attempted in the grid provided below.

<table>
<thead>
<tr>
<th>Questions</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>Total marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tick</td>
<td></td>
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<tr>
<td>Mark</td>
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<td></td>
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</tbody>
</table>
1. (a) Convert $1110_{\text{two}}$ to a base ten number. [2]

(b) The frequency table below shows the number of questions answered by a Grade 9 class in a Mathematics test.

<table>
<thead>
<tr>
<th>Number of question answered</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of pupils</td>
<td>10</td>
<td>8</td>
<td>12</td>
<td>4</td>
<td>6</td>
</tr>
</tbody>
</table>

(i) Use the information in the table to complete the bar chart below. [3]

(ii) How many pupils are in this class? [2]
(c) A car dealer receives a commission of 3\% of the selling price of a car. Find the selling price of a car, if he was given a commission of K1 500.00.

[3]

2 (a) Solve the equation \(10x = 5(8 + x)\).

[2]

(b) Evaluate \(41_{\text{five}} \times 101_{\text{two}}\) giving your answer in base ten.

[3]
(c) Find the value of $\left(\frac{1}{6} + 2\frac{1}{2}\right) \div 4\frac{2}{3}$.

(d) The triangles below are similar. $BC = 10\text{cm}$, $AC = 8\text{cm}$ and $QR = 15\text{cm}$.

[Diagram]

Calculate the length of $PR$.

[Total: 10]

3 (a) Calculate the simple interest on K650.00 invested for 4 years at 12% per annum.

[2]
(b) Solve the simultaneous equations

\[3x - y = 5,\]
\[2x + y = 10.\]  

[c]

(c) Taonga and Tabona shared money in the ratio 3 : 4 respectively. If Taonga received K420.00, calculate the total amount of money that was shared.  

[d]

(d) Munda’s garden is in the form of a trapezium shown below. \(AB = 22\text{m}, DC = 18\text{m}\) and \(EC = 10\text{m}\).  

\[\text{Diagram of Munda's garden}\]

Calculate the area of Munda’s garden.  

[Total: 10]
4  (a) Subtract \(34_{\text{eight}}\) from \(421_{\text{eight}}\), giving your answer in base eight. \([2]\)

(b) The average number of customers per day at Nashita stores reduced from 600 to 450. Find the percentage decrease. \([2]\)

(c) Express \(\frac{2a+7}{3} - \frac{3a-1}{5}\) as a single fraction, in its simplest form. \([3]\)
(d) On the **XOY** Plane below,

(i) plot the points A \((-3, 2)\) and B\((-5, -5)\),

(ii) write the coordinates of point C.

![Graph](image)

**Total: 10**

5 (a) Factorise \(2xy - 6wxy\).

(b) Given that \(pq = 4 + 2qt\), make \(q\) the subject of the formula.
(c) Laura needs K130.00 to buy a dress. She has K45.00. If she saves K17.00 each week, how many weeks will it take her to save the remaining amount? [3]

(d) Given that \( E = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\} \), \( A = \{2, 4, 6, 8, 10\} \) and \( B = \{2, 3, 5, 7\} \),

(i) illustrate the information above in the Venn diagram below,

![Venn Diagram]

(ii) find \( n(A \cup B)' \). [1]

[Total: 10]

6 (a) Divide 10010\(_{\text{two}}\) by 11\(_{\text{two}}\), giving your answer in base two. [2]
(b) Using Geometrical Instruments,

(i) construct triangle CDE in which CD = 7cm, angle CDE = 100° and angle DCE = 45°. [2]

(ii) measure and write the length of DE. [1]

(iii) bisect angle CED and let the bisector meet CD at F. [1]

(iv) construct a perpendicular from D to meet CE at G. [1]

(c) The interior angle of a regular polygon is 135°. Find the number of sides. [3]

[Total: 10]
7  (a) If a job can be completed by 27 men in 15 days, find the number of men needed to complete the same job in 9 days, working at the same rate. [2]

(b) After the bus fare from Lusaka to Mazabuka was increased by 15%, passengers paid K46.00. What was the bus fare before the increase? [3]

(c) In the diagram below, AD is parallel to BC. Angle ABC = 90°, angle ADE = 110° and angle ACD = 80°.

Find the size of

(i) angle ACB [2]

(ii) angle DAC [1]
(d) Mrs Namafamu walked around a square garden of area 49m². Find the total distance she walked.

8  (a) Simplify \(3(4cd - 3ab) + 3ab - cd\).

(b) Mr Ribezi exchanged K625.00 for American dollars ($). If the exchange rate was K5.00 = $1, calculate the amount he got in dollars.
(c) A mapping from A to B is such that $x \to 2x$.

Find the values of $p$, $q$ and $t$. 

(d) The diagram below shows a tin for storing seeds. The diameter of the tin is 7cm and height 6cm.

Calculate the volume of the tin. (Take $\pi = \frac{22}{7}$)
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