EXAMINATIONS COUNCIL OF ZAMBIA
JUNIOR SECONDARY SCHOOL LEAVING EXAMINATION (GRADE 9) – 2014

MATHEMATICS 401/1
PAPER 1
(SPECIMEN)
(INTERNAL AND EXTERNAL CANDIDATES)

TIME: 2 HOURS
MARKS: 50
NO READING TIME

INSTRUCTIONS TO CANDIDATES

1. Pull out the Answer Sheet from the question paper.
2. Write your name, examination number and school/centre on the Answer Sheet.
3. There are two (2) sections in this question paper, Section A and B.
4. Answer all the questions in both sections on the Answer Sheet provided.
5. In Section A, for each question, four (4) suggested answers are given, A, B, C and D. Choose the correct answer and show it on the Answer Sheet by marking it with a cross (X).

For example, if the answer is D

A B C D

6. No paper for rough work is to be provided. Any working should be done on the question paper in the spaces provided.
7. Only the Answer Sheet should be handed in.

INFORMATION FOR CANDIDATES

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

DO NOT TURN THIS PAGE UNTIL YOUR ARE TOLD TO DO SO

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This question paper consists of 9 printed pages.
ANSWER SHEET FOR GRADE 9 MATHEMATICS PAPER 1 – 2014

NAME OF CANDIDATE: _____________________________________________
EXAMINATION NO.: _____________________________________________
SCHOOL/CENTRE: _______________________________________________

TOTAL MARKS: __________________

Section A
For each question, mark your choice with a cross (X)

<p>| | | | | | | | | | | |</p>
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<td>B</td>
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<td>D</td>
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<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>A</td>
<td>B</td>
</tr>
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</table>

TOTAL MARK for Section A

Section B
Write your answers in the spaces provided. Working must NOT be done on this paper.

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 11 (i) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 12 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 13 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 14 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 15 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 16 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 17 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 18 (a) |   | (b) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 19 (a) |   | (b) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 20 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

TOTAL MARK for Section B

Mathematics/403/1/2014
SECTION A  [10 MARKS]

1. Find the value of \(-5 - (+8)\).
   A \(-13\)
   B \(-3\)
   C \(3\)
   D \(13\)

2. Which of the following is **not** a rational number?
   A \(\frac{1}{2}\)
   B \(\sqrt{3}\)
   C \(\sqrt{9}\)
   D \(-5\)

3. Solve the inequation \(3x - 1 > 8\).
   A \(x > 3\)
   B \(x = 3\)
   C \(x < 3\)
   D \(x > -3\)

4. What is the value of \(2^5 + 2^3\)?
   A \(12\)
   B \(16\)
   C \(40\)
   D \(256\)

5. Which of the following is a net of a pyramid?
   A
   B
   C
   D
6. If $2a - 4b$ is factorised, the answer is • • •
   A. $2(a - 2b)$.
   B. $2(a - 4b)$.
   C. $2(a - 2b)$.
   D. $2(2a - b)$.

7. The diagram below shows the pass percentage of grade 9 pupils at Punzillo Primary School from 2010 to 2013.

   ![Graph showing percentage pass over years]

   What was the mean pass percentage?
   A. 30
   B. 40
   C. 50
   D. 60

8. In the diagram below, the lines AB and PQ intersect at O. Angle $AOP = 60^\circ$ and angle $BOQ = 5w^\circ$. Find the value of w.

   ![Diagram with angle labels]

   A. 60
   B. 36
   C. 20
   D. 12
The Venn diagram below illustrate sets A and B.

List the set \((A \cup B)'\).

- **A** \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9\}
- **B** \{1, 2, 3, 4, 5, 7, 9\}
- **C** \{0, 6, 8\}
- **D** \{1, 3\}

Find the value of \(4x^2y - 2xy\), if \(x = 2\) and \(y = -3\).

- **A** 36
- **B** 12
- **C** 36
- **D** -48
SECTION B  [40 MARKS]

11 Given that $A = \begin{pmatrix} 1 & 2 & 4 \\ 0 & 1 & 3 \end{pmatrix}$,

(i) state the order of matrix $A$,

(ii) find $3A$.

12 A money transfer company charges a fixed amount of K8.10 and a further 15% on the amount sent. Liswaniso wants to send K90.00 from Shangombo to Lusaka. What would be the total charge for the transfer?

13 Simplify $5a^2 - a - 4b + 3a - 4a^2$.

14 In the diagram below, $F$ is due south of $H$ and $\angle GFH = 50^\circ$.

![Diagram](image)

Calculate the bearing of $G$ from $F$.

15 The size of each interior angle of a regular polygon is $108^\circ$. How many sides does the polygon have?

16 Convert 34.5 to a number in base 2.

17 Mutali is 1.8m tall and Mufupi is 1.2m tall. On a bright and sunny afternoon, they were standing next to each other facing the direction of the sun. If Mufupi’s shadow was 6m long, how long was Mutali’s shadow?

18 (a) Calculate the value of $\sqrt[3]{64}$.

(b) Given that $f(x) = 2x - 1$, find $f(3)$.

19 (a) Write 23 914 correct to 3 significant figures.

(b) It is given that angles $x$ and $y$ are complementary. If angle $x = 31^\circ$, calculate the size of angle $y$. 
20. The diagonal of a flat rectangular television (TV) screen is 50cm. If the screen is 30cm broad, find its length.

21. Solve the equation $4x - 6 = 6 - 2x$.

22. Makwebo deposited K1 500.00 in a bank at 12% simple interest per annum. How much did she have in her bank account after 8 months?

23. In the triangle below, BE is parallel to CD, AB = 2cm and BC = 3cm.

![Triangle Diagram]

Write the ratio $BE:CD$.

24. The Venn diagram below shows the sets $A$ and $B$.

![Venn Diagram]

Using set notation, describe the shaded region.

25. The volume of a cylinder is $3\ 000\text{cm}^3$. If its density is $0.05\text{g/cm}^3$, what is the mass of the cylinder?
26  The table below shows the distribution of the favourite breakfast for 800 pupils at a boarding school.

<table>
<thead>
<tr>
<th>Type of Breakfast</th>
<th>Samp</th>
<th>Maize Porridge</th>
<th>Rice</th>
<th>Sweet Potatoes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of pupils</td>
<td>280</td>
<td>100</td>
<td>240</td>
<td>180</td>
</tr>
</tbody>
</table>

If this information is presented on a pie chart, calculate the angle of the sector representing Samp.

27  To run a motor vehicle for a year, Mr Kantwa needs to pay:

- Insurance at K300.00,
- Road tax at K75.00,
- Fitness at K40.00 and
- Petrol at K10.00 per litre.

If he covers 30 000km in one year and uses 1 litre of petrol to cover a distance of 15km, what would be his total expenses in that year to run the vehicle?

28  The flow chart below shows how a company calculates agent’s commission based on monthly sales. Mrs Chirwa, an agent at this company, made sales of K4 780.00 in one month.

- Start
- Write down sales (A)
- Are sales less than K5 000.00
  - No: Calculate commission = \( A \times \frac{2}{3} \)
  - Yes: Calculate commission = \( A \times \frac{1}{10} \)
- Stop

Calculate Mrs Chirwa’s commission in that month.
29 The diagram below shows a regular polygon with an exterior angle marked $e$.

\[ \text{Find the size of angle } e. \]

30 In the diagram below, $ABC$ is a right angled triangle. $BD$ is perpendicular to $AC$.

\[ \text{Which angle is equal to angle CBD?} \]
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