TIME: 2 HOURS

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.

This paper consists of Sections A and B only. There are thirty (30) questions in this paper.

Section A: Answer all questions. Write down the letter of the answer by marking a cross (X) on the Answer Sheet provided.
Question 1 – 10: 1 mark each.

Section B: Answer all questions. Write down the answers in the spaces provided on the Answer Sheet.
Question 11 – 30: 2 marks each.

Note: 1 No paper for rough work is to be provided. Any working should be done on the question paper in the spaces provided.
2 Cell phones and calculators are not allowed in the examination room.
3 Only the Answer Sheet should be handed in.
EXAMINATIONS COUNCIL OF ZAMBIA
ANSWER SHEET FOR MATHEMATICS PAPER 1 – 2009

NAME: ________________________________________________

EXAMINATION NUMBER: __________________________________

SCHOOL/CENTRE: _______________________________________

TOTAL MARKS: _____________

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

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

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<tbody>
<tr>
<td>11</td>
<td>21 x = , y =</td>
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<tr>
<td>12 (a)</td>
<td>(b)</td>
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<td>13</td>
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<td>16 (a)</td>
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<td>18 (a)</td>
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<td>19 (a)</td>
<td>(b)</td>
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<tr>
<td>20 (a)</td>
<td>(b)</td>
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Mathematics/401/1/2009
SECTION A  [10 MARKS]

1  State the number of lines of symmetry in the figure below.

\[ \text{A} \quad 0 \]
\[ \text{B} \quad 1 \]
\[ \text{C} \quad 2 \]
\[ \text{D} \quad 3 \]
\[ \text{E} \quad 4 \]

2  Evaluate \( \frac{1}{3} + \frac{1}{2} \).

\[ \text{A} \quad \frac{2}{5} \]
\[ \text{B} \quad \frac{1}{6} \]
\[ \text{C} \quad \frac{1}{5} \]
\[ \text{D} \quad \frac{3}{6} \]
\[ \text{E} \quad \frac{5}{6} \]

3  From the prime numbers which are less than 10, find the difference between the largest prime number and the smallest prime number.

\[ \text{A} \quad 5 \]
\[ \text{B} \quad 6 \]
\[ \text{C} \quad 7 \]
\[ \text{D} \quad 8 \]
\[ \text{E} \quad 9 \]
4. In the diagram below, AB = AC and angle BAC = 80°. Calculate angle ACD.

A  80°  
B  100°  
C  120°  
D  130°  
E  180°  

5. Express 16.927 in standard form correct to 3 significant figures.

A  1.69 × 10^2  
B  1.69 × 10^1  
C  1.70 × 10^2  
D  1.60 × 10^1  
E  1.70 × 10^1  

6. Write down the next term in the Sequence 58, 53, 46, 37, 26, ...

A  13  
B  14  
C  17  
D  15  
E  16
7 Given that \( p = \frac{1}{2} \) and \( q = \frac{5}{6} \), find the value of \( \frac{p}{q} \).

A \( \frac{5}{9} \)

B \( \frac{4}{5} \)

C \( 1 \frac{1}{5} \)

D \( 1 \frac{1}{4} \)

E \( 1 \frac{4}{5} \)

8 Factorise completely \( 91y^2z - 7y \).

A \( y(91yz - 7) \)

B \( yz (91y - 7) \)

C \( 7(13y^2z - y) \)

D \( 7y(13yz - 1) \)

E \( 7y (13z - 1) \)

9 Which of the following is a regular polygon?

A Rectangle

B Parallelogram

C Square

D Trapezium

E Kite
10 Three of the vertices of a quadrilateral STUV are $S(-1,0)$, $T(1, -2)$ and $U(-1, -4)$. If the quadrilateral is a square, give the coordinates of the fourth vertex $V$.

A $(-3, -4)$
B $(-1, -2)$
C $(-3, -2)$
D $(-1, -4)$
E $(-2, -3)$
SECTION B [40 MARKS]

11 Solve the equation $2(p + 5) = 1 - p$.

12 The Venn diagram below illustrates the relationship between set A and Set B.

(a) List the set $A' \cap B$.

(b) Using Set notation, describe the shaded region.

13 Given that $m = \frac{y - c}{x}$, make $y$ the subject of the formula.

14 Solve the inequation $13 - 3x > 4$.

15 Express $\frac{a + 1}{2} - \frac{2a - 4}{5}$ as a single fraction in its simplest form.

16 Mr Phiri’s water meter readings are shown on the diagrams below.

\[ \begin{array}{c}
\text{Previous reading} \\
\text{9 241}
\end{array} \quad \begin{array}{c}
\text{Current reading} \\
\text{9 316}
\end{array} \]

(a) Find the number of units used.

(b) Given that each unit costs K160 and that there is a fixed charge of K3 375, find the total amount Mr Phiri paid.

17 The length and breadth of a school Staff room are in the ratio 5:4. Find the length of the Staff room if the breadth is 3.6m.
18  The following marks were obtained by seven pupils in a Mathematics test: 5, 3, 4, 6, 7, p, 8.
   (a) Given that the mode is 3, write down the value of p.
   (b) With the mode given in part (a) above, find the LCM of the mode and median marks.

19  In the diagram below, K is due north of G and angle GKP is 50°.

Find:
   (a) the bearing of P from K,
   (b) the bearing of K from P.

20  In triangle ABC below, AB = 111₂ m, AC = 110₂ m and BC = 101₂ m.

Find the perimeter of the triangle giving your answer in
   (a) base two,
   (b) base ten.
21 Solve the simultaneous equations
\[ 3x - 2y = -1, \]
\[ x + 2y = 5. \]

22 Himoonga received K96 000 interest after investing K480 000 at 4% per annum. How long was the money invested?

23 Calculate the length of a diagonal of a rectangle whose sides are 12cm by 5cm.

24 The diagram below shows a cylindrical cup with radius 4cm and height 7cm.

![Diagram of a cylindrical cup]

Calculate the volume of the water in the cup when it is \( \frac{3}{4} \) full, given that \( \pi = \frac{22}{7} \).

25 In the diagram below, XW and YZ are parallel, VW = 3cm, WX = 2.4cm and YZ = 3.2cm. Calculate WZ.
26 The scale on a map is 1: 50 000. If the distance between two villages on the map is 12cm, find the actual distance between the two villages in kilometres.

27 A radio announcer starts work at 22 00 hours and knocks off at 06 55 hours the following day. How long did she work?

28 A woman sold her car for K45 000 000 at a loss of 10%. What was the cost price of the car?

29 A regular polygon has an exterior angle of 60°. Find:

(a) the size of each interior angle,

(b) the number of sides.

30 Nagogo School production Unit has enough pig feed to feed 18 pigs for 4 weeks. If 6 pigs are sold before starting to use the feed, how much longer will the pig feed last?