



PRIME MINISTER'S OFFICE
REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT
BUMBULI DISTRICT COUNCIL
FORM THREE MIDTERM EXAMINATION



041

BASIC MATHEMATICS

TIME: 3:00HRS

MARCH 2026

INSTRUCTIONS:

MsomiBora.com

- This paper
- Answer all questions in Both sections
- Mathematical tables and graph papers may be used.
- If necessary use $R=6370\text{km}$, $\pi = \frac{22}{7}$

SECTION A (60% MARKS)

1. a) Write 67.03945 correct to;
 - i) Four significant figures
 - ii) One decimal place
 - iii) In standard form(b) Express $0.\dot{1}\dot{2}\dot{5}$ as a simplest fraction
2. (a) If $(3^{x+3})(5^{2-y}) = \left(\frac{1}{25}\right)$, find the value of x and y
(b) Solve for x given that, $\log x + \log(x+1) = 1$
3. (a) Out of 130 students of a certain school, 10 of them study biology and mathematics while 20 study neither of the two subjects. Those who study biology alone are three times as many as those who study mathematics only. How many students study biology?
(b) If $U = \{a, b, c, d, e, f, g, h, i, j\}$
 $A = \{a, c, d, e, f\}$
 $B = \{\text{vowels}\}$
 $C = \{a < U \leq h\}$
 - i. Represent that information in the Venn diagram.
 - ii. Find out the $n((A \cap B \cap C)')$

4. (a) If the line whose equation is $y = 3x - p$ passes through the point (6,10) and (q,22), find the value of p and q where by, p and q are integers.
 (b) A straight road from Itulahumba to Makambako is $\frac{2}{5}y + x - 6 = 0$, convert that straight road in form of $y = mx + c$
5. (a) The sides of a triangle are 4cm, 5cm, and 6cm. If the longest side of a similar triangle is 18cm, find the lengths of the other sides.
 (b) The length of a rectangle is twice its width if the perimeter of that rectangle is 18cm, Find the area.
6. (a) One tea spoonful of sugar is added to every 120g of juice. How many tea spoonful of sugar should be added to 1kg 800g of juice?
 (b) A piece of length 7.42m is cut off from a string that is 13.5m long. Determine the number of pieces of the remaining part of string which is to be divided into equal pieces of length 32cm.
7. (a) Salama and Salma shared 64,000 shillings in the ratio 3: 5 respectively. Find the difference between their shares.
 (b) Mr Abdul bought a book for Tsh 180,000/=-, A year later he sold a book at a profit of 40%
 i. What was the profit made?.
 ii. What was the selling price of the book?
8. (a) Let $A = \{-2, -1, 0, 1, 2\}$ and $B = \{0, 1, 2, 3, 4\}$. Draw an arrow diagram to illustrate the relation which connects each element of set A to its square in set B.
 (b) Find the inverse of a relation $R = \{(x, y) : y = 4x^2\}$
9. (a) Solve out the value of $\left(\frac{\tan 60^\circ}{\tan 45^\circ}\right) \times \sin 30^\circ$ without using mathematical table and leave your answer in surd form.
 (b) Mr. Mlowe walks 6km due to east from Wanike Secondary and then walks 8km due to south to Igima secondary. Calculate shortest distance from Wanike Secondary to Igima secondary
10. (a) Use factorization method to solve the quadratic equation $x^2 - 9x + 14 = 0$.
 (b) The sum of two consecutive integers is 31. Find the smaller number.

SECTION B (40%MARKS)

11.(a) The scores of 45 pupils in a Civics test were recorded as follows;

82 30 65 50 62 40 35 64 32 28 59 60 24 35 63 68
46 48 73 92 54 46 63 75 58 43 71 72 27 28 61 71
36 64 80 61 64 76 64 35 76 73 70 64 46

i. Construct a frequency distribution table of the given data, taking equal class intervals

21 – 40, 41 – 60, ...

ii. Draw the frequency polygon and histogram at the same graph.

12. A function is defined as $f(x) = x^2 - 3x + 2$. Find

(a). The line of symmetry of $f(x)$

(b). The domain and range of $f(x)$

(c). The maximum or minimum point of $f(x)$

13. (a) Draw the graph of the $R = \{(x, y): y \geq x^2 \text{ and } y < 4\}$ and hence find domain and range

(b) Given the function $f(x) = \frac{5x-7}{x+2}$ then find

(i) The domain and range

(ii) $f^{-1}(4)$

14. A function f is defined as $f(x) = \begin{cases} -4 & \text{for } x < -1 \\ x^2 + 1 & \text{for } -1 \leq x < 2 \\ 5 & \text{for } x \geq 2 \end{cases}$

(a) Sketch the graph of $f(x)$

(b) Find the domain and range of $f(x)$

(c) Is $f(x)$ one to one function? Give one reason.

(d) Find $f(-2)$ and $f(\pi)$