

**THE UNITED REPUBLIC OF TANZANIA
PRESIDENTS' OFFICE
REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT
NJOMBE REGION**

**FORM TWO MOCK EXAMINATION 2024
BASIC MATHEMATICS**

041

Time 2:30 Hours

2024

INSTRUCTIONS

1. This paper consists of a total of 10 questions.
2. Attempt all questions.
3. Each question carries 10 marks.
4. Mathematical tables may be used.
5. Write your examination number on every page of your answer sheets.
6. Do all works in spaces provided

QUESTION NUMBER	SCORE	EXAMINER'S INITIALS
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
TOTAL		

1. (a) Given the following set of whole numbers $\{0, 1, 2, 3, \dots, 12\}$

i. Find the sum of all prime numbers in the given set

ii. Find the sum of all even numbers in the given set

iii. Find the product of the LCM and GCF of the sum obtained in a(i) and a(ii) above

(b) Given that $0.222\dots$ of the school students at Ilangamoto secondary school are boys. What fraction of the students are girls at that school?

2. (a) It was reported that 70 000 fans attended a football game. If this number of football fans was rounded off to the nearest ten thousand what is:

i. The least number of fans that could have attended?

ii. The greatest number of fans that could have attended?

(b) After school hours, Sarah spent $1\frac{1}{4}$ hours at a band practice and three— quarters an hour in pool swimming. If it took 20 minutes to get at home at 6.00 p.m, at what time did she start band practice ?(Activities are in a series)

3. (a) Write the abbreviations or notation of each of the following geometrical mathematical terms

i. A ray AB

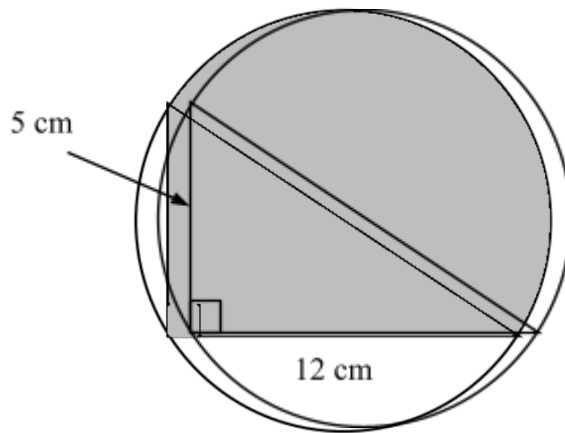
ii. A line segment AB

iii. an angle ABC

iv. A line AB

v. Point Q

(b) Find the area of the shaded region in the following circle ,if the hypotenuse of the triangle passes through the centre of the circle (Use $\pi \approx 3.14$ and leave the answer to 2 decimal places)



4. (a) (i) Solve the following simultaneous equation by substitution method

$$\begin{cases} \frac{x}{3} - \frac{y}{5} = 2 \\ 2y = x + 8 \end{cases}$$

(ii) Let x represent an odd number. Then write an expression that describes each of the following:

i. . Next odd number

ii. Preceding odd number

iii. Sum of the odd number and the next whole positive number

(b) Solve the following equation by the method of factorization

$$\frac{3x}{x-1} = \frac{2}{x-2} - \frac{2}{x^2-3x+2}$$

5. (a) Three relatives, Samson, Charity, and Herieth contributed a total of 920 000 shillings to start a project. The ratio of contribution of Samson to Charity was 2: 5 and that of Charity to Herieth was 3: 5. How much money did Charity contribute?

(b) The price of a watch is 50 000 shillings. The shopkeeper offers the discount of 20% , if a buyer pays cash. How much cash is required to buy the watch?

7. (a) A linear graph $px - qy - 4 = 0$ passes through $A(-2, -5)$ and $B(2, -3)$. Find the values of p and q .

(b) Find the coordinates of the vertices of the image of triangle ABC with $A(1, -1)$, $B(2, -4)$ and $C(7, -1)$ after a reflection in the line $x = 0$. (sketch on XY plane)

8. (a) (i) Solve : $x^{\frac{2}{3}} - 9 = 0$

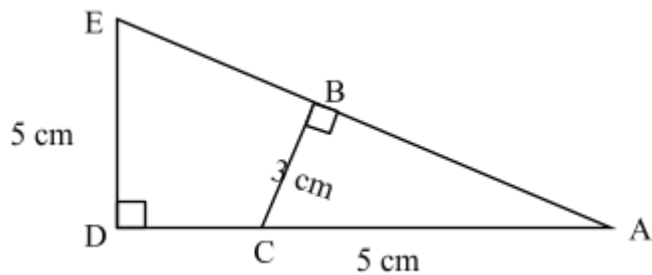
(ii) Rationalize the denominator and simplify: $\frac{x-4}{\sqrt{x}+2}$

(b) Find x so that $\frac{3}{2}4 - \frac{2}{3}8 + 2 = x$

9. (a) From the following figure, prove that triangle EQL and triangle EPN are equiangular.



(b) Prove that $\triangle ABC \sim \triangle ADE$ in the following figure and calculate line segment CD.



10. (a) A man standing 20m away from the foot of the vertical pole observes the top of the pole at an elevation of 30° . He begins to walk along the straight line on level ground towards the pole. How far

does he walk before the elevation of the top of the pole becomes 80° ? (give the answer to the nearest whole number)

(b) If $\sin A = \frac{12}{13}$ where A is an acute angle, find $\cos A$ and $\tan A$

11. (a) A city has two daily newspapers, Mwananchi and Raia mwema journal. The following information was obtained from a survey of 100 residents of the city: 35 people subscribe to the Mwananchi, 60 subscribe to the Raia mwema journal, and 20 subscribe to both newspapers
- (i) How many people in the survey subscribe to the Mwananchi but not to the Raia mwema journal?
- (ii) How many do not subscribe to either paper?

- (iii) How many people in the survey subscribe to the Raia mwema journal but not to the Mwananchi journal?

(b) The following table shows the frequency distribution of mathematics test

Class interval	Frequency
81-90	3
71-80	5
61-70	20
51-60	8
41-50	3
31-40	1

Find:

- i. The class size
- ii. The class mark for each class interval
- iii. The number of students who set for the test