

**PRESIDENT'S OFFICE
REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT
GAIRO DISTRICT COUNCIL
FORM FOUR JOINT EXAMINATION - 02
BASIC MATHEMATICS**

041

16TH MAY 2023

Time 2:30 Hrs (am)

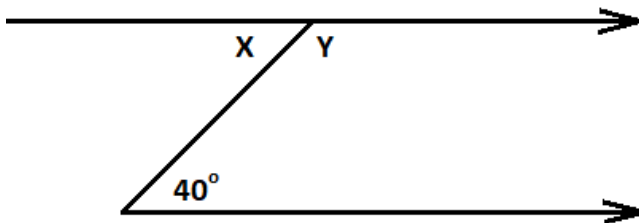
INSTRUCTIONS;

1. This paper consists of ten (10) compulsory questions. Each carry ten (10) Marks.
 2. Show clearly all the working.
 3. All writing must be in blue or black ink except drawings which must be in pencil.
 4. Write your name on every page.
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1. (a) A block is cut into equal units of 10g, 20g, and 35g. Use prime factorization method to find the smallest possible mass of block from which the pieces can be cut.
(b) Evaluate $0.864 \div 0.0246$ giving your answer correct to 2 significant figures.
 2. (a) If $t^{3n} = 6$. Find the value of $3t^{6n} - 12$.
(b) If 0.125 of all students in a mixed class are girls, what percentage of the students are boys.
 3. (a) Subtract:

m.	dm.	cm.	mm
10	9	31	2
- 8	9	38	9

(b). Find the simple interest on sh. 10,000,000 invested for 5 years at rate of 6% per annum.
 4. (a) Find the perimeter of a right-angle triangle whose base is $(4 - \sqrt{2})$ cm and height is $(4 + \sqrt{2})$ cm.

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(b) Calculate the size of angle x and y in the figure above.

5. (a) By using elimination method solve

$$2x + y = 20$$

$$X = 35 - 3y.$$

(b) The length of a book exceeds its width by 5cm. Calculate the dimensions of the book given that its area is 50cm^2 .

6. (a) If the slope of a straight line through the points $(7, 4)$ and $(-2, k)$ is 1. Find the value of k .

(b) A mason wants to design a small room 500cm by 200cm.

(i) Draw a diagram of the room at a scale of 1: 100

(ii) Calculate the area of the room using the result of 6 (b) (i).

7. (a) Use the law of exponents to simplify $(2r^3)^2 / (2r)^3$

(b) If $\log 2 = 0.3010$, $\log 3 = 0.4771$ and $\log 7 = 0.8451$, find $\log 42$

8. (a) Find two consecutive numbers such that the sum of their squares is equal 145.

(b) A piece of wire 56cm long is bent to form a rectangle of area 171cm^2 . Find the Dimensions of the rectangle.

9. (a) Find the area of a circle of radius 20cm giving the answer in the standard form

(Use $\pi = 3.142$).

(b) If $\log y + 2\log x = 3$, express y in terms of x .

10. (a) Given the formula $S = ut + \frac{3}{4}at^2$, express u in terms of other letters.

(b) If $x * y$ is the operation " x " cubed plus " y ", then find the value of $4 * (3 * 2)$.