



ZERAKI ACHIEVERS' EXAMINATIONS (2023)

Term 1 - 2023

MATHEMATICS (121)

FORM TWO (2)

Time: 2 ½ Hours

Name: **Adm No:**

School: **Class:**

Signature: **Date:**

Instructions to candidates

1. *Write your name, admission no. and class in the spaces provided.*
2. *Sign and write the date of examination in the spaces provided above*
3. *The paper contains two sections; Section I and II.*
4. *Answer all questions in Section I and II*
5. *All answers and working must be written on the question paper in the spaces provided below each question.*
6. **Show all the steps in your calculations, giving your answers at each stage in the spaces provided below each question**
7. *KNEC Mathematical tables may be used, except where stated otherwise*
8. *Silent or non-programmable calculators **SHOULD NOT** be used*

1. Evaluate

$$\frac{1}{2} \text{ of } 18 \div (-3) + 2 \frac{1}{2} \times -\frac{3}{5}$$

$$\frac{1}{2} + 3 \frac{3}{4} \div \frac{3}{4}$$

(3 mks)

2. Solve the following without using a mathematical table or a calculator

$$\frac{\sqrt{3600}}{\sqrt[3]{27000}}$$

(3 mks)

3. The G.C.D of three numbers is 30 and their L.C.M is 900. Two of the numbers are 60 and 150. What are the other possible number?

(4 mks)

4. Use logarithm tables to solve

$$\frac{(79.36)^3}{8.2 \times (9.2)^2}$$

(4 mks)

5. The ratio of the area of two circles is $\frac{16}{9}$

I. Find the ratio of their radii

(2 mks)

II. If the larger circle has a radius of 20cm , find the radius of the smaller one

(2 mks)

6. Use the exchange rates below to answer this question

	Buying	Selling
1 US DOLLAR	63.00	63.20
1 UK £	125.30	125.95

A tourist arrived in Kenya from Britain had 9600 UK Sterling Pounds (£). He converted the pounds to Kenya shillings. While in Kenya he spent $\frac{3}{4}$ of his money. He changed the balance to US dollars after his stay. Calculate to the nearest US dollars the amount he received. (3mrks)

7. Use reciprocal table to evaluate:

$$\frac{1}{0.0125} + \frac{1}{12.5} \quad (3\text{marks})$$

8. The interior of the angle of hexagon are $(4x-5)^0, (4x+5)^0, 3x, (5x+26)^0, 2x^0$ and $(2x+4)^0$. Find the value of X (3mks)
9. A line which joint point A (3, K) and B (-2,5) is parallel to another line whose equation is $5y+2x=10$. Find the value of K. (3MKS)
10. Two years ago Jane was twice as older as John 17 the sum of their ages 5 years from now will be 44years .Calculate their present ages (3mks)

11. Convert 0.83 into fraction (3mks)

12. Solve for X:

(12) $32^{(x-3)} \times 8^{(x+4)} = 64 \div 2^x$ (3marks)

13. The length of a hand of a clock is 7cm . Find the angle of turns if it sweeps an area of 48cm^2 .
(3marks)

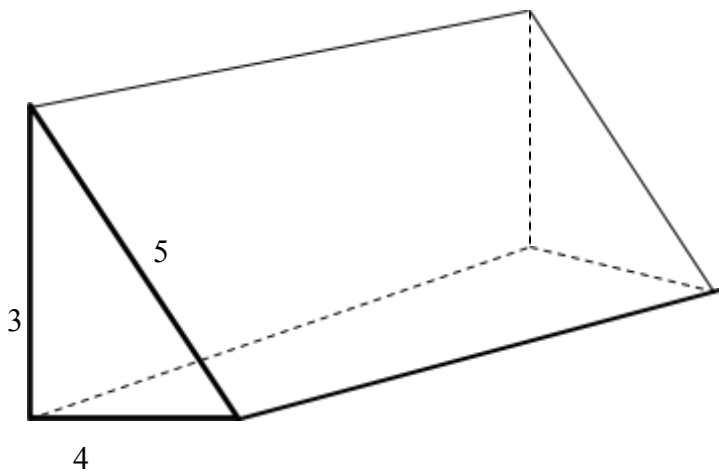
14. Simplify

$$\frac{ra+rb}{ma+mb} \quad (2\text{mrks})$$

15. Evaluate

$$\frac{a^b \cdot b^a}{b^b \cdot a^a} \quad \text{if } a=2 \text{ and } b=-2 \quad (3\text{mks})$$

16. Draw the net of the figure below (3marks)



SECTION B

Instructions: Answer all five questions from this section

17. Five members of SILK a self-supporting enterprise Jane, Jepchoge, Esther, Mama Charo and Chepkoech were given a certain amount to share amongst themselves. Jane got $\frac{3}{8}$ of the amount given while Jepchoge got $\frac{2}{5}$ of the remainder. The remaining amount was shared equally among Esther, Mama Charo and Chepkoech each of which received Kshs 6000.

(a) How much was shared among the five business women (3mks)

(b) How much did Jepchoge Get? (2mks)

(c) Jane, Jepchoge and Chepkoech invested their money and earned profit of Kshs 12,000. A third of the profit was left to maintain business and the rest was shared according to their investments. Find how much each got. (5mks)

18. Nafula broke three beakers and four test tubes and Munyao broke 2 beakers and 5 test tubes during a practical lesson in the laboratory. If Nafula was charged Ksh 560 and Munyao Kshs 490, for the breakages:

a)(i) Form the two simultaneous equations (2mks)

(ii) Use the above equations to find the cost of one beaker and one test tube (3mks)

(b) Solve the following simultaneous equations

(i) $\frac{1}{4}x + y = 2\frac{1}{4}$

$\frac{1}{2}y - \frac{1}{4}x = 3\frac{3}{4}$ (3mks)

(ii) $3t=s$

$t+2s=5$ (2mks)

19. Construct triangle ABC, where $BC=8\text{cm}$ and angle $ABC=105^\circ$ and angle $BCA=45^\circ$. (3mrks)

(ii) Drop a perpendicular from A to meet line BC at P. (1mrk)

(iii) Measure the followings:

(a) Lines AB and AC (2mks)

(b) Line AP (the perpendicular line) (1mk)

(c) Measure angle BAC (1mrk)

(d) Calculate the area of the triangle ABC (2mks)

20(a) The volume of water in a measuring cylinder is 200cm^3 . When the cube is immersed into the water, the cylinder reading is 543cm^3 . Find:

(i) The volume of the cube (3marks)

(ii) The length of the side of the cube (2marks)

(b) A metallic cuboid measuring 16cm by 8cm by 4cm was melted. The material was then used to make a cube. Calculate:

(i) The volume of the cuboid (2marks)

(ii) The length of one side of the cube formed from the cuboid (3marks)

21. A Line L passes through point $(-2, 3)$ and $(-1, 6)$ and perpendicular to a line P at $(-1, 6)$.

(a) Find the equation of L. (2marks)

(b) Find the equation of P in form of $ax+by=c$, where a, b, and c are constants. (2marks)

(c) Given that another line Q is parallel to L and passes through point $(1, 2)$. Find the x and y intercept. (3marks)

(d) Find the point of intersection of lines P and Q. (3marks)