URANGA MATHEMATICS ASSOCIATION

Kenya Certificate of Secondary Education

TERM ONE JOINT EVALUATION, 2026

121/1 MATHEMATICS PP1 Alt A

MARCH, 2026 TIME: 2½ Hrs

FORM FOUR

Name: …… Admission No: ……

School: ……..... Signature: ……**Tuesday, 10th Mar, 2026.**

INSTRUCTIONS TO CANDIDATES:

1. Write your name, school, admission number and sign in the spaces provided above.
2. This paper contains **TWO** sections: Section **I** and Section **II**.
3. Answer **ALL** the questions in Section **I** and **FIVE** questions from section **II**.
4. All answers and working **MUST** be written on the question paper in the spaces provided below each question.
5. Marks may be given for correct working even if the answer is wrong.
6. Non-programmable silent electronic calculators and KNEC Mathematical tables may be used, except where stated otherwise.
7. This paper consists of 16 printed pages. Check to confirm that all pages are printed.

For Examiner's Use Only

SECTION I

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total

SECTION II

17	18	19	20	21	22	23	24	Total

TOTAL

SECTION I (50 MARKS)
Answer ALL questions in this section

1. Without using mathematical tables or calculators, evaluate:

$^{3}/_{8} \div (\frac{1}{2} - {}^{1}/_{3})$ of $\frac{3}{4} - {}^{1}/_{10}$ (3 marks)

2. Simplify completely.

$$\frac{2ax + 3bx - 2ay - 3by}{y - x}$$ (3 marks)

3. In a class of 43 students there are 5 girls more than boys. Every boy pays Ksh. 2,400 for uniform and every girl pays Sh.3,000. How much is paid for uniform by the class?. (3 marks)

4. The radius of a sphere is increased by 5%. Calculate the percentage increase in its volume. (3 marks)

5. Find all the integral values of x which satisfy the inequality; (3 marks)

$$3(1 + x) < 5x - 11 < x + 45$$

6. Use a ruler and a pair of compasses only to construct a trapezium ABCD such that AB is parallel to DC, AB = 8.5 cm, BC = 5cm, <BAD = 90^o and < ABC =120^o. Measure the shortest distance from C to line AB. (3marks)

7. Given $\tan \theta^o = 3^3/_7$, find $\cos (90 - \theta)^o$ as a decimal to four significant figures. (3 marks)

8. John, a tourist arriving in Kenya from Britain had 9600 UK sterling pounds. He converted the pounds to Kenyan shillings at a commission of 5%. While in Kenya, he spent three-quarters of this money. He exchanged the balance to US dollars after his stay. If he was not charged any commission for this last transaction, calculate, to the nearest US dollars, the amount he received. (4 marks)

	BUYING	**SELLING**
1 US Dollar	63.00	63.20
1 UK pound	125.30	125.95

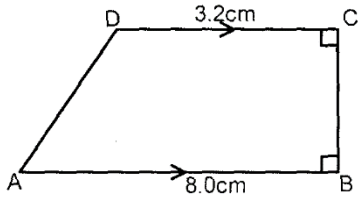
9. Use tables of squares, square roots and reciprocal to find the value of x if it is given that

$$x = \frac{2}{\sqrt{0.4278}} + \frac{1}{6.04^2}$$ (4 marks)

10. Find the value of m in the equation below. (3 marks)

$$\left(\frac{1}{27}\right)^{M} \text{ x } (81)^{-1} = 243$$

11. Given that the area of the trapezium ABCD is 30.8cm^2, find the length of AD. (3 marks)



12. Solve for x in the equation; (3 marks)

$$\frac{x+1}{3} - \frac{x-1}{4} = \frac{x}{6}$$

13. Complete the shape below using the centre O to show a rotational symmetry of order 3.
(3 marks)

14. The points P, Q and R lie on a straight line. The position vectors of $\mathbf{P} = 2\mathbf{i} + 2\mathbf{j} + 13\mathbf{k}$ and that of $\mathbf{R} = 2\mathbf{i} + 5\mathbf{j} + 4\mathbf{k}$. Q divides PR internally in the ratio 2: 1

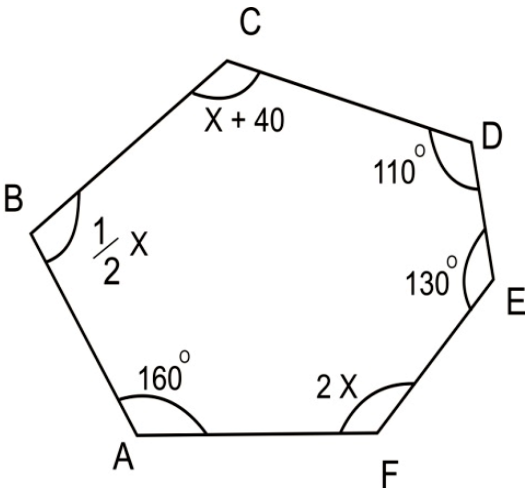
Find;

i) The position vector of Q in terms of **i**, **j** and **k**. (2 marks)

ii) The magnitude of Q above. (1 mark)

15. A chord of length 13cm subtends an angle of 67^{o} at the circumference of a circle centre O.
Find the radius of the circle. (3marks)

16. The figure below shows a regular polygon A B C D E F with the interior angles indicated.
Find the value of the smallest angle in the polygon. (3 marks)



SECTION II (50 MARKS)

Answer any five questions in this section.

17. The distance between two towns A and B is 460 km. a minibus left town A at 8.45 am and travelled towards Bat an average speed of 65km/hr. A matatu left B at 10.55 am on the same day and travelled towards A at an average speed of 80km/hr.

(a) How far from town B did they meet? (4 marks)

(b) At what time did the two vehicles meet? (2 marks)

(c) A motorist started from his home at 9.15am on the same day and travelled to B at an average speed of 120km/hr. he arrived at the same time as the minibus. Calculate the distance from B to his home. (4 marks)

18. A line L_1 passes through the points $(-2, 3)$ and $(-1, 6)$ and is perpendicular to L_2at $(-1, 6)$.

a) Find the equation of L_1. (2 marks)

b) Find the equation of L_2 in the form $ax + by - c = 0$ where a, b and c are constants. (2 marks)

c) Given that another line L_3 is parallel to L_1 and passes through point $(1,2)$, find the x and y intercepts of L_3 . (3 marks)

d) Find the point of intersection of $L_2$and L_3. (3 marks)

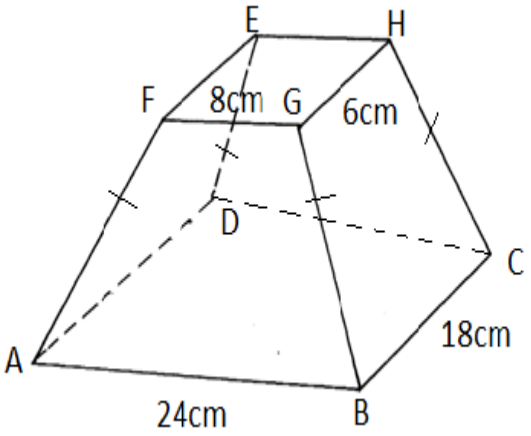
19. In the year 2022 the price of a sofa set in a shop was Ksh. 120,000
(a) Calculate the amount received from the sales of 240 sofa sets that year. (2 marks)

(b) In the year 2023 the price of each sofa set increased by 25% while the number of sets sold decreased by 10%.
(i) Calculate the percentage increase in the amount received from the sales . (3 marks)

(ii) If at the end of the year 2023, the price of each sofa set changed in the ratio 16:15. Calculate the price of each sofa set in the year 2024. (2 marks)

c) The number of sofa sets sold in the year 2024 was p% less than the number sold in the year 2023. Calculate the value of p given that the amount received from the sales in the years were equal. (3 marks)

20. The figure below show a solid frustum ABCDEFGH with a rectangular base measuring 18cm by 24cm and the top measuring 6 cm by 8cm. The slant edges AF=BG=CH=DE= 26cm long.



Determine:

a) Height of the original pyramid. (4marks)

b) Volume of the frustrum. (3marks)

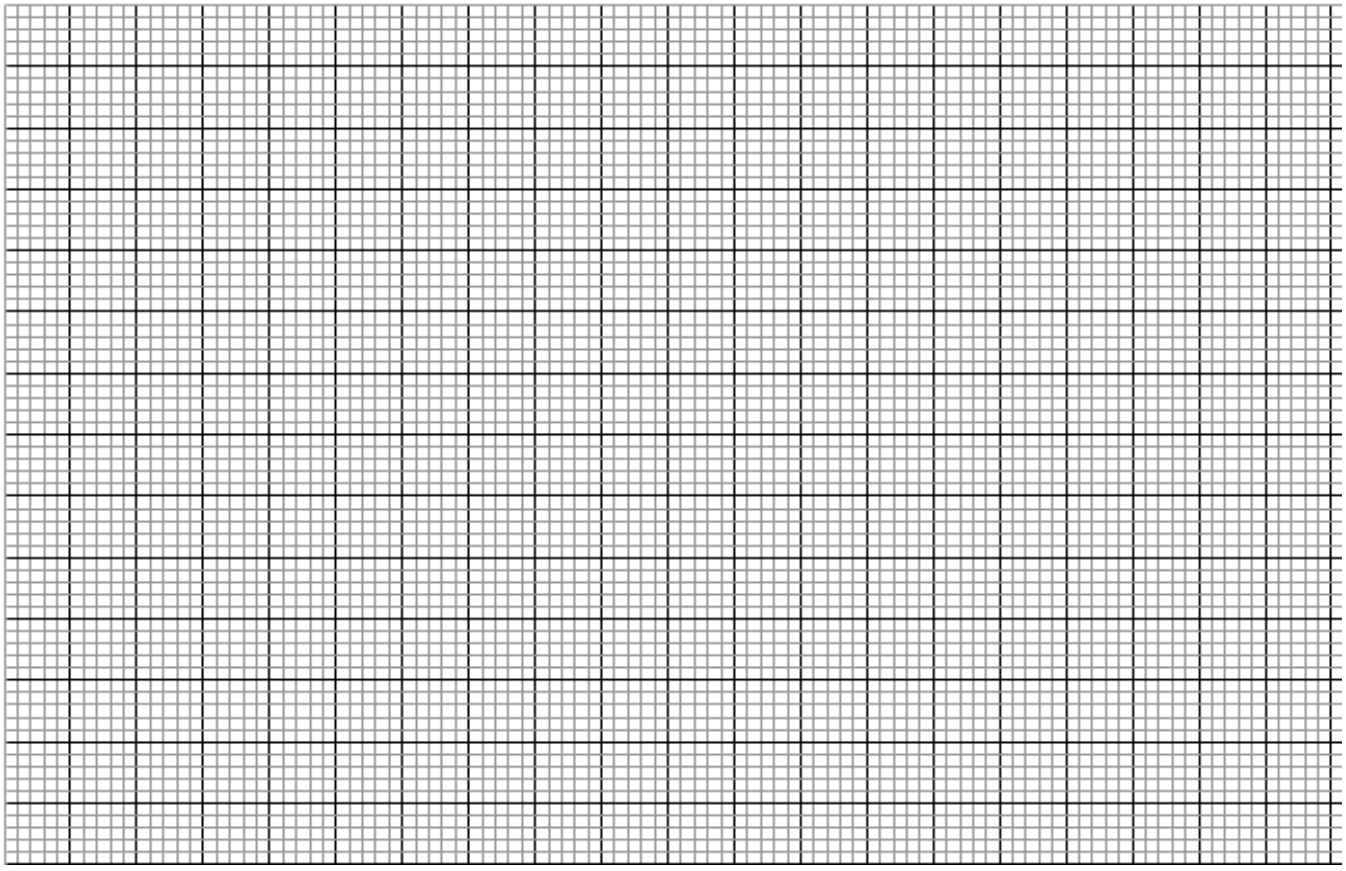
c) Density in g/cm^3 if the solid has a mass of 7.488kg. (3marks)

21. The frequency distribution table below shows marks obtained by pupils in a certain school.

Marks	$200 \leq x \leq 220$	$220 \leq x \leq 240$	$240 \leq x \leq 280$	$280 \leq x \leq 320$	$320 \leq x \leq 340$
No. of pupils	6	14	12	8	5

a) Calculate the mean. (4 marks)

b) (i) On the grid provided, draw a histogram to represent the information above. (4 marks)



ii) Use your histogram to estimate the median. (3 marks)

22.a) Given that the matrix $A = \begin{pmatrix} 2 & 3 \\ 3 & 4 \end{pmatrix}$, find A^{-1}, the inverse of A. (2 marks)

b) Kariuki bought 400 goats and 600 sheep for a total of Kshs 1,700,000. Maina bought 180 goats and 240 sheep for a total of Kshs 720,000. If the price of a goat is sh. X and that of a sheep is shs y.

i) Form two equations to represent the above information. (2 marks)

ii) Use the matrix A^{-1} to find the price of one goat and one sheep. (3 marks)

c) John bought 450 goats and 720 sheep. He was given a total discount of shs 66,600. If the discount on the price of a goat was 2%, calculate the percentage discount on the price of a goat. (3 marks)

23. A village Q is 7 km from village P on a bearing of 045^0. Village R is 5 km from village Q on a bearing of 120^0 and village S is 4 km from village R on a bearing of 270^0.

a) Taking a scale of 1 cm to represent 1 km, locate the three villages. (3 marks)

b) Use the scale drawing to find the:

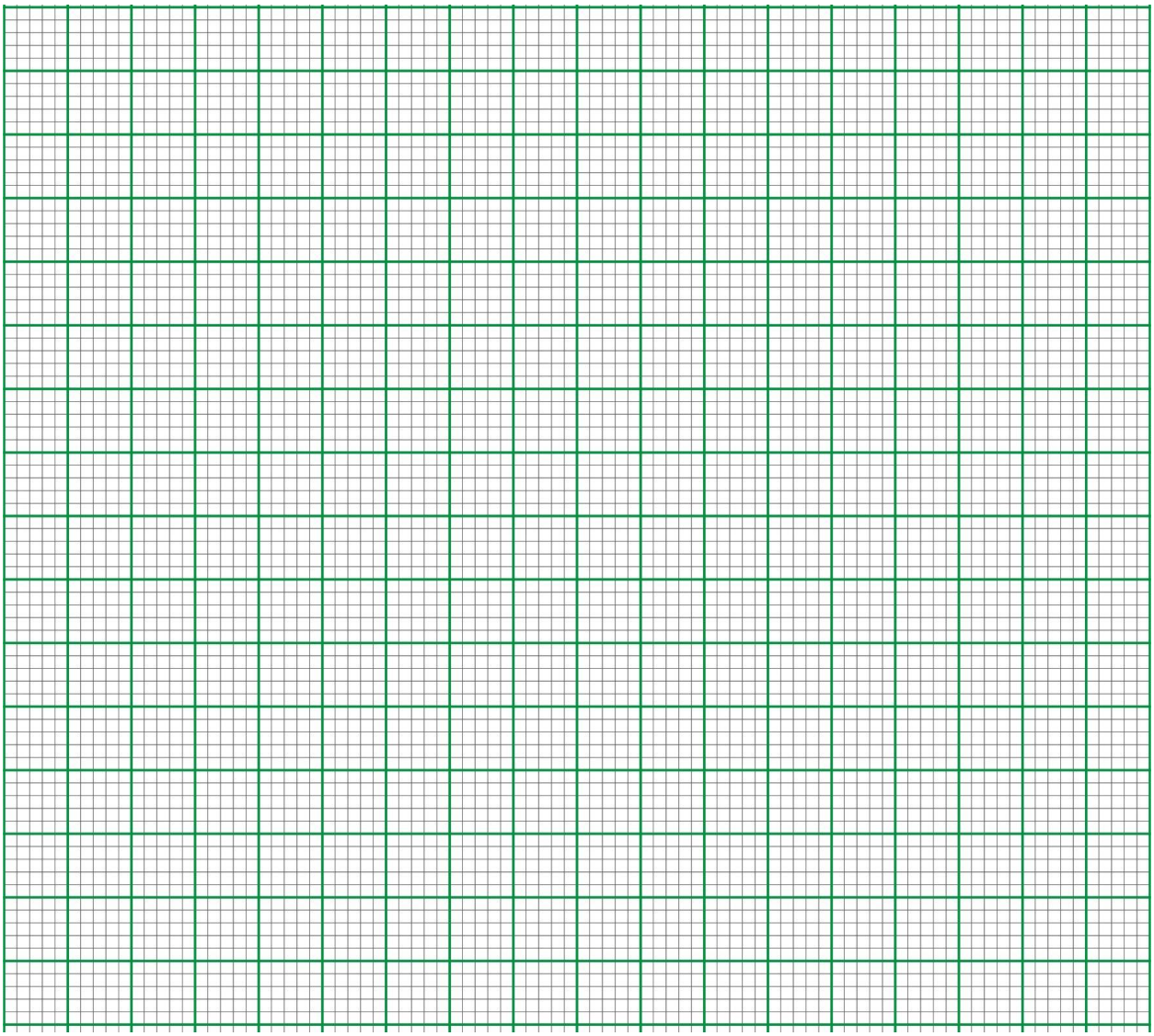
i. Distance and bearing of the village R from village P. (2 marks)

ii. Distance and bearing of village P from village S. (2 marks)

c) Calculate the area enclosed by the three villages in square km. (3 marks)

24. $A^1(-1,0)$ $B^1(-1,2)$ and $C^1(-4,0)$ is the image of A(2,1), B(4,1) and C(2,4) respectively under a rotation

(a) Plot the two triangles on the grid provided (2 marks)



(b) By construction find the center and angle of rotation (3 marks)

(c) $A''B''C''$ is the image of $A^1B^1C^1$ under enlargement, center (-2,-1) and scale factor -2. Plot $A''B''C''$ and state its coordinates (3 marks)

(d) $A^{111}B^{111}C^{111}$ is the image of $A''B''C''$ under reflection in the line $y + 2 = 0$. Plot $A^{111}B^{111}C^{111}$ on the same grid and state its coordinates (2 marks)