NAME …………………………………………………… ADM NO ..……………….....

MATHEMATICS ALT A   Class ……………………..

TIME: 2 ½ HRS   **Candidate's signature ……………………**

Date ……………………..

FORM 0NE END YEAR EXAMINATION

KIKUYU SUBCOUNTY

FORM 1

Instructions to candidates

(a)   Write your name and index number in the spaces provided above.

(b)   Sign and write the date of the examination in the spaces provided above.

*(c)   The paper contains **TWO** Sections: **Section I** and **Section II.***

*(d)   Answer **ALL** the questions in Section I and **only five** questions from **Section II**.*

(e)   All answers and working must be written on the question paper in the spaces provided below each question.

*(f)   **Show all the steps in your calculations, giving your answers at each stage in the spaces below each question.***

(g)   Marks may be given for correct working even if the answer is wrong.

*(h)   KNEC Mathematical tables may be used except where stated otherwise. **E**lectronic calculators must not be used.*

(i)   This paper consists of 16 printed pages.

*(j)   **Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.***

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	Total

Grand

Total

SECTION 1 (50 marks)

Answer all questions in this section

1 Evaluate: *(3 marks)*

$$\frac{\dfrac{3}{4}+1\dfrac{5}{7}\div\dfrac{4}{7}\,of\,2\dfrac{1}{3}}{\left(1\dfrac{3}{7}-\dfrac{5}{8}\right)\times\dfrac{2}{3}}$$

2 Simplify the expression:

$$\frac{4x+4y}{2y+2x}$$

(3 marks)

3 A trader sold an article at 15% discount to a customer who paid sh.510 for it. What was the marked price of the article? *(3 marks)*

4 Use square and square root tables to evaluate *(3 marks)*

$$\sqrt{83.48} - 2.674^2$$

5 Find the value of, giving your answer in the simplest form *(3marks)*

$$2.3\overset{\bullet}{7} - 1.7$$

6 Evaluate: *(3 marks)*

$$\frac{-16 + (-10) \times (-16) - (-12)}{-3 + (-8) \div 2 \times 4}$$

7 A cobbler has three strings measuring 252 cm, 567 cm and 378 cm. He wants to cut each string such that all the pieces are equal in length. What is the longest possible size of each piece of string he cuts? *(3 marks)*

8 An artisan has 63kg of metal of density 7000kg/m^3. He intends to use it to make a rectangular pipe with external dimensions 12 cm by 15 cm and internal dimensions 10 cm by 12 cm. Calculate the length of the pipe in metres.
(4 marks)

9 A lorry which consumes 1litre of diesel for every 9 km uses 128 litres of diesel for a journey. Find how many litres of diesel does a trailer which consumes 1 litre of diesel for every 5 km use for the same journey. *(3 marks)*

10 Sixteen men working at the rate of 9 hrs a day can complete a piece of work in 14 days. How many more men working at the rate of 7hrs a day would complete a similar piece of work in 12 days. *(3 marks)*

11 Evaluate without using mathematical tables: *(3 marks)*

$$\sqrt{\frac{0.63 \times 4.8 \times 2.1}{0.016 \times 0.09}}$$

12 All prime numbers between 10 and 20 are summed up to form a number:

(a) Find the number formed. *(2 marks)*

(b) Write down the number in (a) as a product of its prime factors. *(1 mark)*
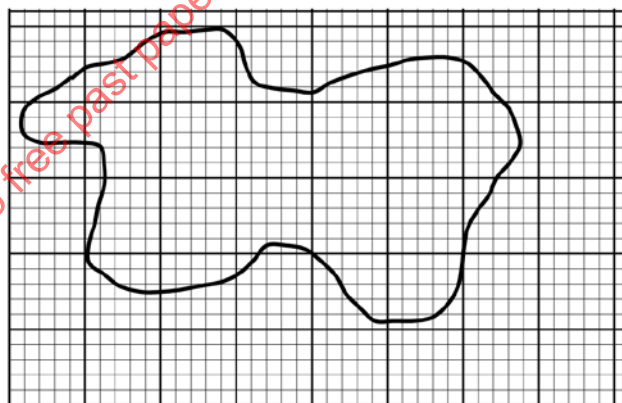
13 Solve for *x* and *y* in the simultaneous equations below:

$$3x + 2y = 5$$
$$x - 5y = 13$$

(4 marks)
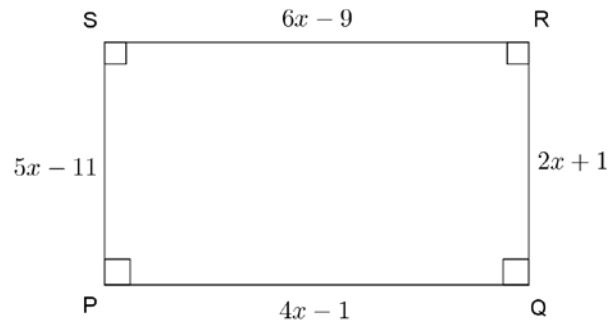
14 The figure below is a map of Kericho County drawn on a grid of 1 cm squares.

Estimate the area of the   map in square centimetres   *(2marks)*

15 Given that PQRS is a rectangle, find the value of *x* and hence calculate the area of the rectangle. *(3 marks)*

16 A forex bureau sells foreign currency using the rates below:

100 Japanese Yen = Kshs. 72.50

A Japanese tourist exchanged all his money for Ksh.281 300. If the bureau charged him a commission of 3% on the transaction, calculate the amount of Japanese Yen the tourist exchanged. *(3 marks)*

17 The Young Farmers Club hired a number of buses and matatus to transport its members for a trip to Kisumu. The number of matatus hired were twice as many as buses and no vehicle made a double trip. Each matatu can carry a maximum of 14 students and a bus can carry four times as many. The charges were Sh 5200 per bus and Sh 2800 per matatu. A total of Sh 21 600 was spent on transport for the trip.

(a) Determine the number

(i) Of buses hired.   *(4 marks)*

(ii) Of matatus hired   *(1 mark)*

(b) Calculate the number of students who took the trip if each vehicle was filled to capacity.
                                                                                      (3 marks)

(c) Each student contributed sh 60 towards the cost of trip and the club paid the remaining amount. Calculate the amount the club paid.   *(2 marks)*

18 A bus left Kampala on Wednesday and travelled to Mombasa according to travel time table below arriving there on Friday morning.

Kampala	Departure	2015 h
Malava	Arrival	0430 h
	departure	0655 h
Nakuru	arrival	1325 h
	departure	1455 h
Nairobi	arrival	1840 h
	departure	2030 h
Mombasa	arrival	0500 h

Calculate:

(a) The time taken by the bus to travel from

    (i)   Kampala to Malava   *(1 mark)*

    (ii)   Malava to Nakuru   *(1 mark)*

    (iii)   Nakuru to Nairobi   *(1 mark)*

    (iv)   Nairobi to Mombasa   *(1 mark)*

(b) The total travelling time between Kampala and Mombasa   *(2 marks)*

(c) The total stoppage time during the whole journey   *(2 marks)*

(d) The average speed for the whole journey given that the distance between Kampala and Mombasa is 1 965 km.   *(2 marks)*

19 Amina bought a second hand matatu and later sold it through a sales agent who had charged 5% commission on the price at which he sold the vehicle. She received sh 475 000 from the agent after he had deducted his commission. Amina made a profit of 25% on the price at which she had bought the vehicle.

(a) Calculate the price at which the sales agent sold the matatu. *(3 marks)*

(b) Determine the amount Amina paid for the matatu. *(2 marks)*

(c) If the amount Amina paid was 40% of the price of the new matatu, find its price when new. *(3 marks)*

(d) Express as a percentage the amount Amina received for the matatu to its price when new. *(2 marks)*

20 In 1998 the number of students in Amani Secondary School was 600.This was an increase of 25% over the number of students in 1997.The student population dropped by 10% in 1999 but increased by 20% in the year 2000.

   (a) Determine the student population
      (i) in the year 1997 *(2 marks)*

      (ii) in the year 1999 *(2 marks)*

      (iii) in the year 2000 *(2 marks)*

   (b) Express as a percentage the increase in student population in the year 2000 over the population in the year 1998. *(2 marks)*

   (c) What was the percentage increase in student population between 1997 and 1999?
   (2 marks)

21 The tables below shows the relationship between *x* and *y* for two linear equations.

x	-6	-4	-2	0	2	4	6
$y = \dfrac{x+4}{2}$	**-1**	0	**1**	**2**	**3**	4	**5**
Point	**(-6,-1)**	**(-4,0)**	**(-2,1)**	**(0,2)**	**(2,3)**	(4, 4)	**(6,5)**

x	-6	-4	-2	0	2	4	6
$y = -\dfrac{1}{2}x$	3	**2**	**1**	**0**	-1	4	**-3**
Point	**(-6,3)**	**(-4,2)**	**(-2,1)**	**(0,0)**	(2,-1)	**(4,4)**	**(6,-3)**

a) Complete each table *(2 marks)*

b) In the grid provided plot the points for each table hence draw the straight lines for the relations *(4 marks)*
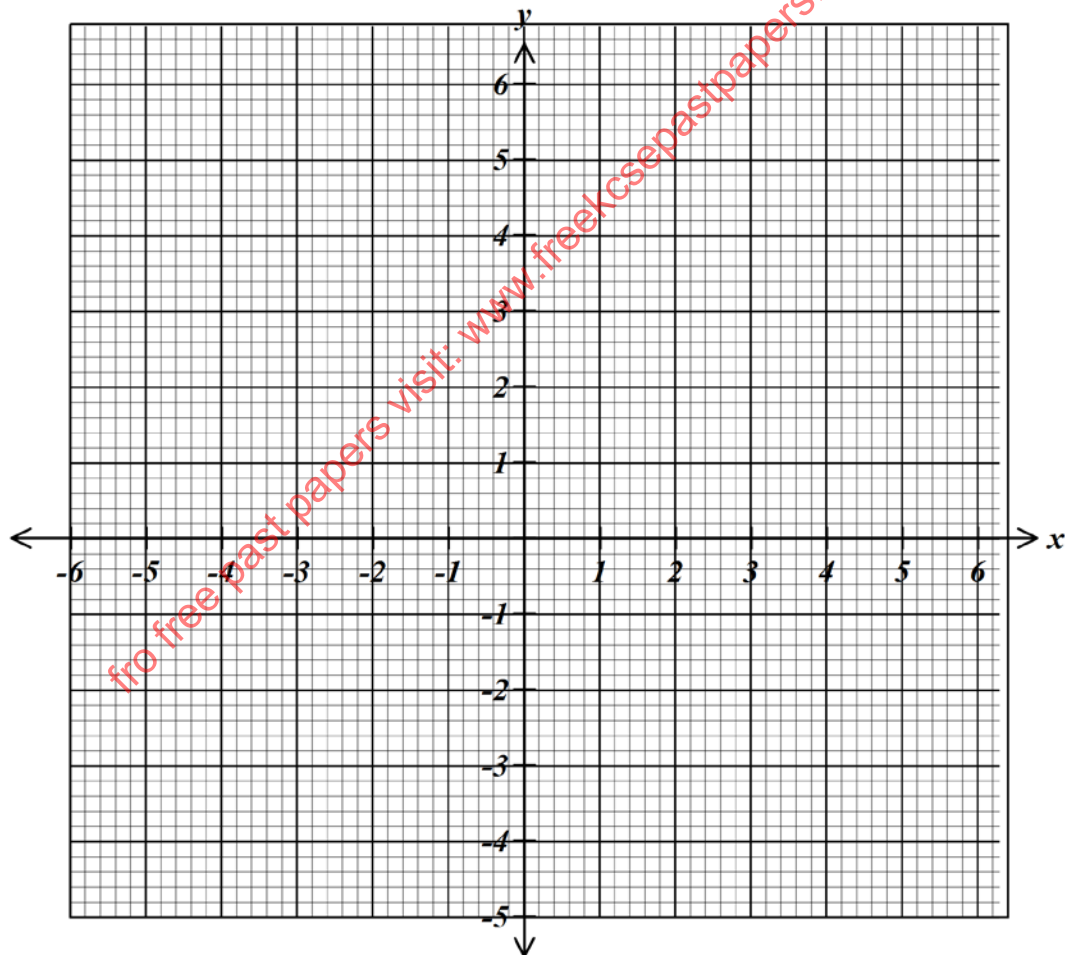
c) Use your graph to solve the simultaneous equations

$$y = \frac{x+4}{2}$$

$$y = -\frac{1}{2}x$$

(2 marks)

d) the coordinates of the point where each line cuts the y-axis *(2 marks)*