

MATHEMATICS FORM TWO

TIME: 2 ½ HOURS

Name..... Class Class Number.....

Instructions to candidates

1. Write your name ,and class number in the spaces provided above.
2. The paper consists of two sections: **section I** and **section II**.
3. Answer **all** the questions in the spaces provided
4. Section I has **16** questions and section two has **5** questions
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 below each question
7. KNEC Mathematical table and silent non-programmable calculators may be used

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

1	1	1	2	2	2	2	2	Tot
7	8	9	0	1	2	3	4	al

SECTION ONE

1. Use logarithms, correct to 4 decimal places to evaluate

4 mks

$$\frac{\sqrt[3]{1.794 \times 0.038}}{1.243}$$

2. A straight line passes through points (-2,1) and (6,3). Find;

a) The equation of the line in the form of $y=mx +c$

2mks

b) The gradient of a line perpendicular to the line in (a)

1mk

3. Evaluate

2mks

$$\frac{22 - -14}{6 \times -2} - \frac{4^2 \times -6 - 12}{72 \div -8 \times 3}$$

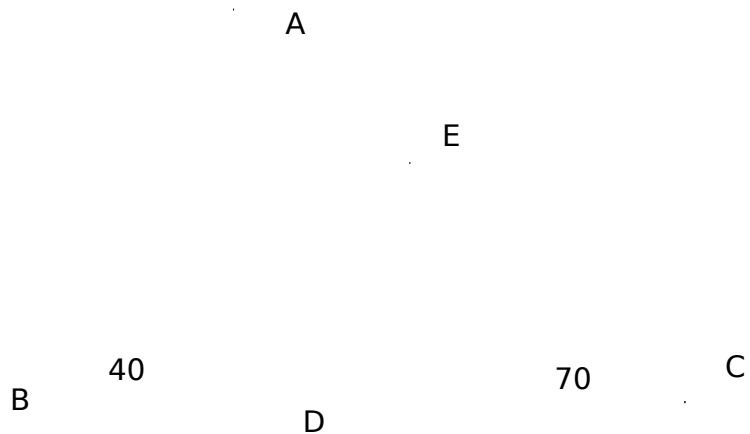
4. The interior angles of an octagon are $2x^\circ$, $\frac{1}{2}x^\circ$, $(x+40)^\circ$, 110° , 135° , 160° , $(2x+10)^\circ$ and 185° . Find the value of x 2mks

5. Find the value of m in the following equation 3mks

$$\binom{1}{27}_m \times (81)^{-1} = 243$$

6. Six cows and five sheep cost sh. 157000. Five cows and four sheep cost 265000. Find the cost of each. 3mks

7. In triangle ABC shown below, the bisector of angle A meets BC at D. DE is parallel to BA.



If angle B = 40° and angle C = 70° , find angle ADE 3mks

8.If $a=5$, $b=-4$ and $c=-3$, find the value of : 3mks

$$\frac{b^2 - ac - bc - c}{3a^2 + b^2 + c^2}$$

9.a) On the map of a certain district a forest reserve is represented by an area of 18 cm^2 . Given that the actual area of the forest reserve is 28 800 hectares, calculate the scale of the map expressing it in the form of 1: n (3mks)

b) Two towns on this map are separated by a line 10.5 cm long .Find the distance between the two towns (1mk)

9) A shop keeper marked a suit at a price which. would give him 10%profit, but later sold the suit to a customer at 5%discounton the marked price .If the customer paid sh.1045, what was the cost price of the suit? 3mks

10)Evaluate

3mks

$$\frac{\frac{2}{3} \div \frac{3}{8} - \frac{1}{5} \div \frac{1}{2} \text{ of } \frac{1}{4}}{\frac{2}{5} \left(\frac{1}{4} \div \frac{3}{4} + \frac{1}{2} \right)}$$

11) Use reciprocal tables to determine

3mks

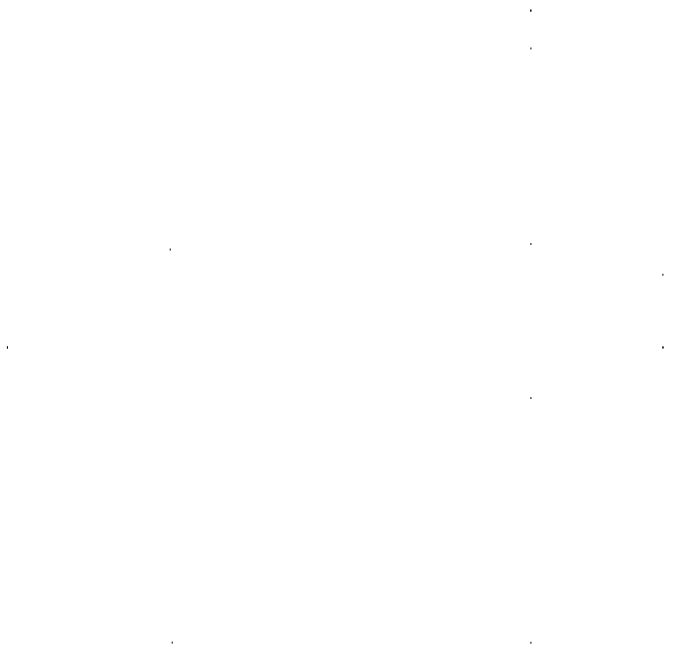
$$\frac{60}{11.35} - \frac{5}{3.94}$$

11) The wheel of a bicycle has a diameter of 70 cm and per makes 2 revolutions per second. Calculate to one decimal place the speed of the bicycle in km/h. (3mks)

13) Given that $(a-b):(a+b)=4:5$, find the value of a and b

2 mks

14) The figure below shows a net of a solid



Below is a part of the sketch of the solid whose net is shown above. Complete the sketch of the solid showing the hidden edges with broken lines 3mks

15) A Kenyan bank buys and sells foreign currencies at the exchange rates shown below;

	Buying(ksh.)	Selling(ksh)
1 Euro	147.56	148.00
1 Us Dollar	74.22	74.50

An American arrived in Kenya with 20000 Euros. He converted all the Euros into Kenya shillings at the bank. He spent ksh. 2 510 200 while in Kenya and converted the remaining Kenya shillings to us dollars at the bank. Find the amount in dollars he received. 4 mks

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16) Express 0.2315 as a simplified fraction

3mks

SECTION TWO

17)The table below shows measurements in meters made by a surveyor in his field book. Use the triangulation and offset technique to calculate the area in hectares of the field whose measurements are shown (10 mks)

	G	
	280	
F 50	250	
	200	E 40
	150	D 100
C 120	100	
	40	B 50
	A	

18. The boundaries of PQ, QR, RS and SP of a ranch are straight lines such that Q is 16 km on a bearing of 040° from P, R is directly south of Q and east of P and S is 12 km on a bearing of 120° from R.

a) Using a scale of 1cm represents 2 km, show the above information in a scale drawing (3mks)

b) From the scale drawing determine;

i) The distance, in km of P and S (2MKS)

ii) The bearing of P and S (2MKS)

c) Calculate the area of the ranch PQRS in square kilometers (3mks)

19 .a) The points A(2,6), B(1,1), C(3,4) and D(5,3) are vertices of a quadrilateral ABCD .
Plot the points ABCD on the graph paper and join them to form quadrilateral ABCD
(2 mks)

b) locate and write down the coordinates of points A', B', C' and D', the images of A, B, C and D respectively under a rotation of $+90^\circ$ about the origin. On the same grid, draw the image of the quadrilateral A' B 'C' D' .
(3 mks)

c) locate and write down the coordinates of the points A'', B'', C'' and D'' which are the images A', B', C' and D' respectively under a reflection on the x- axis. On the same grid, draw the second image quadrilateral A'' B'' C'' D''
(3 mks)

d) Quadrilateral A''B''C''D'' is the image of ABCD under a reflection. On your graph, mark the mirror line MN of the reflection and state its equation.
(2 mks)

20. a) Use a ruler and compass to construct triangle XYZ with XY = 8cm, angle YXZ = $67\frac{1}{2}^\circ$ and XYZ = 45°
(4 mks)

ii) Measure XZ and YZ

(2 mks)

b) By dropping a perpendicular from Z to XY, determine the area of the triangle (4 mks)

21. The external measurements of a closed wooden box are 1.5 m long, 0.8 m wide and 0.3 m high. The wood used in making the box is 1.0 cm thick and has a density of 0.75 g/cm^3 . The box contains 30 packets of 12 similar tools each and each tool has a mass of 125 g. Calculate

a) the volume of wood used in making the box (4 mks)

b) the mass of the empty box in kilograms (3mks)

c) the gross mass of the box in kilograms (3mks)