

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

SCHOOL..... CANDIDATES SIGN.....

DATE

121/1
MATHEMATICS
FORM 3
END OF TERM THREE
TIME: 2 ½ HOURS

END OF TERM (III) EXAMINATION -2019

Kenya Certificate of Secondary Education (K.C.S.E)

121/1

MATHEMATICS

FORM 3

END OF TERM THREE

TIME: 2 ½ HOURS

INSTRUCTIONS TO CANDIDATES

- Write your name, Admission number and Admission number in the spaces provided at the top of this page.
- This paper consists two sections: Section I and section II
- Answer ALL questions from **section I** and **ANY FIVE** from section II
- All answers and workings must be written on the question paper in the spaces provided below each question
- Show all the steps in your calculation, giving your answer at each stage in the spaces below each question
- Marks may be awarded for correct working even if the answer is wrong
- Candidates should check the question paper to ascertain that all the pages are printed as indicated and no questions are missing.
- Non- grammable silent electronic calculators and KNEC mathematical tables may be used except where stated otherwise
- Candidates should answer the questions in English.

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

GRAND TOTAL

SECTION 1 (50 MARKS)

ANSWER ALL THE QUESTION IN THIS SECTION

1. Evaluate $\frac{\frac{3}{4} + 1\frac{5}{7} \div \frac{4}{7} \text{ of } 2\frac{1}{3}}{(1\frac{3}{7} - \frac{5}{8}) \times \frac{2}{3}}$ (3mks)

2. A straight line passing through the points A(5,k) and B(k,6) is perpendicular to the line whose equation is $4y - 3x = 12$. Find the value of k. (3mks)

3. Solve the equation:

$$\frac{3}{5}x - \frac{x-1}{8} = \frac{x-3}{4} + 4 \quad (3mks)$$

4. The LCM and GCD of three numbers is 5400 and 12 respectively. Two of the numbers are 540 and 900. Find the least possible third number (3mks)

5. A Kenyan bank buys and sells foreign currencies at the exchange rates shown below:

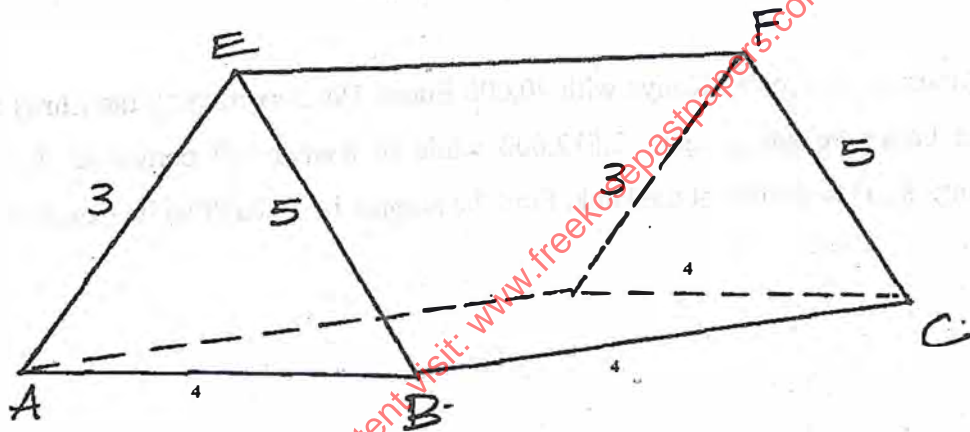
	Buying (Kshs)	Selling (Kshs)
1 Euro	147.86	148.00
1 US dollar	74.22	74.50

An American arrived in Kenya with 20,000 Euros. He converted all the Euros to Kenya shillings at the bank. He spent Kshs. 2,512,000 while in Kenya and converted the remaining Kenya shillings into US dollars at the bank. Find the amount in dollars that he received. (4mks)

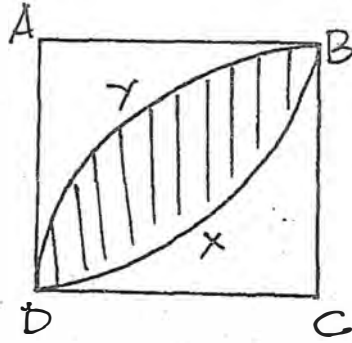
6. Given that $x:y = 2:3$ and $y:z = 4:5$, find the ratio $x:y:z$ (3mks)

7. The interior angles of an irregular polygon are 70° and 110° and the rest are 144° each. Determine the number of side of the polygon. (3mks)

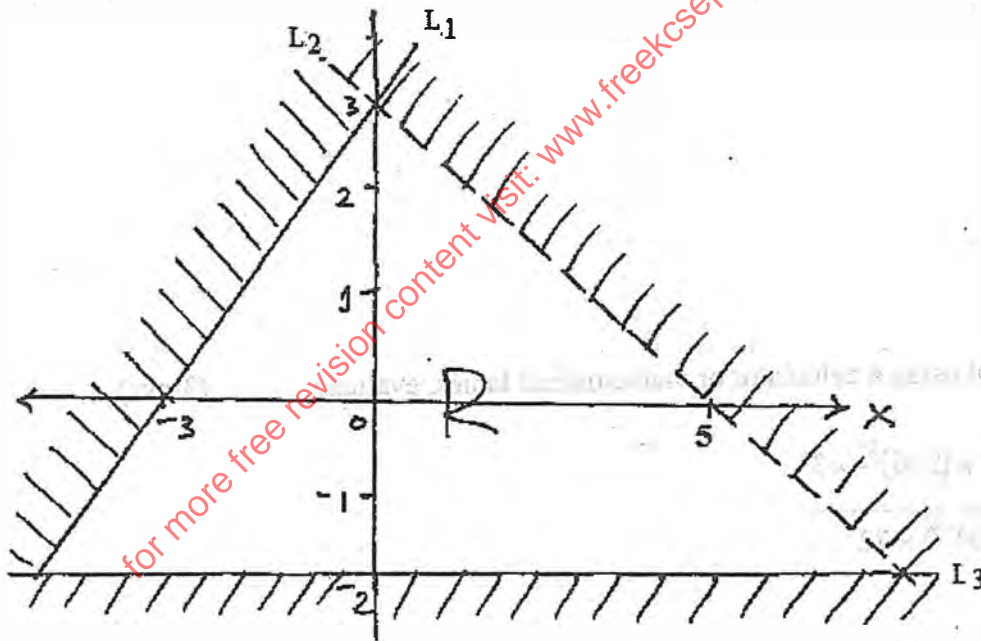
8. Draw the net of the solid shown below. Measurements are in centimetres. (3mks)



9. In the figure below ABCD is a square of side 4cm. BXD and BYD are arcs of a circle centre A and C respectively. Calculate the area of the shaded region (Take $\pi = 3.142$) (3mks)



10. Form the inequalities represented by region R (3mks)



11. Given that $\sin(x+40)^\circ = \cos(3x)^\circ$, (where x is an acute angle). Find $\tan(x+40)^\circ$ to 4s.f. (3mks)



12. Express as a single fraction. (3mks)

$$\frac{3x - 4}{3} - \frac{2x + 4}{8}$$

13. Without using a calculator or mathematical tables, evaluate, (3mks)

$$\frac{\left[\frac{1}{81}\right]^{\frac{1}{4}} \times (256)^{\frac{1}{2}} \times 3^5}{(729)^{-\frac{1}{3}} \times 72^2}$$

14. Given that $P=2i-3j+k$ and $Q=3i-4j-3k$ and $R=3P+2Q$. Find the magnitude of R to 3s.f.

(3mks)

15. Use tables of squares and square roots to evaluate

(4mks)

$$\sqrt{438.46} + 21.35^2$$

16. Draw a line AB 5cm long. Locate point C which divides AB externally in the ratio 5:2.

(3mks)

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SECTION II

Answer ANY FIVE question from this section.

17. Two business partners Mwangi and Kilonzo contributed Shs. 112000 and Shs. 128,000 respectively to start a business. They agreed to share their profits as follows:

30% to be shared equally

30% to be shared in the ratio of their contributions

40% to be retained for running the business

If their total profit for year 2014 was Shs. 86,400

Calculate:

- (i) The amount received by each partner (6mks)

- (ii) The amount retained for the running of the business (2mks)

- (iii) In the year 2015, the total profit reduced by 15%. Calculate the amount retained for running the business in year 2015. (2mks)

18. A bus left town A at 11.45a.m. and traveled towards town B at an average speed of 60km/hr. A matatu left town B at 1.15pm. on the same day and traveled towards town A along the same route at an average speed of 90/km. The distance between the two towns is 540km.

Determine:

- (a) The time of the days when the two vehicles meet.

(4mks)

- (b) Total distance traveled by bus when the two met

(2mks)

- (c) How far town B was from the bus when the matatu reached town A

(4mks)

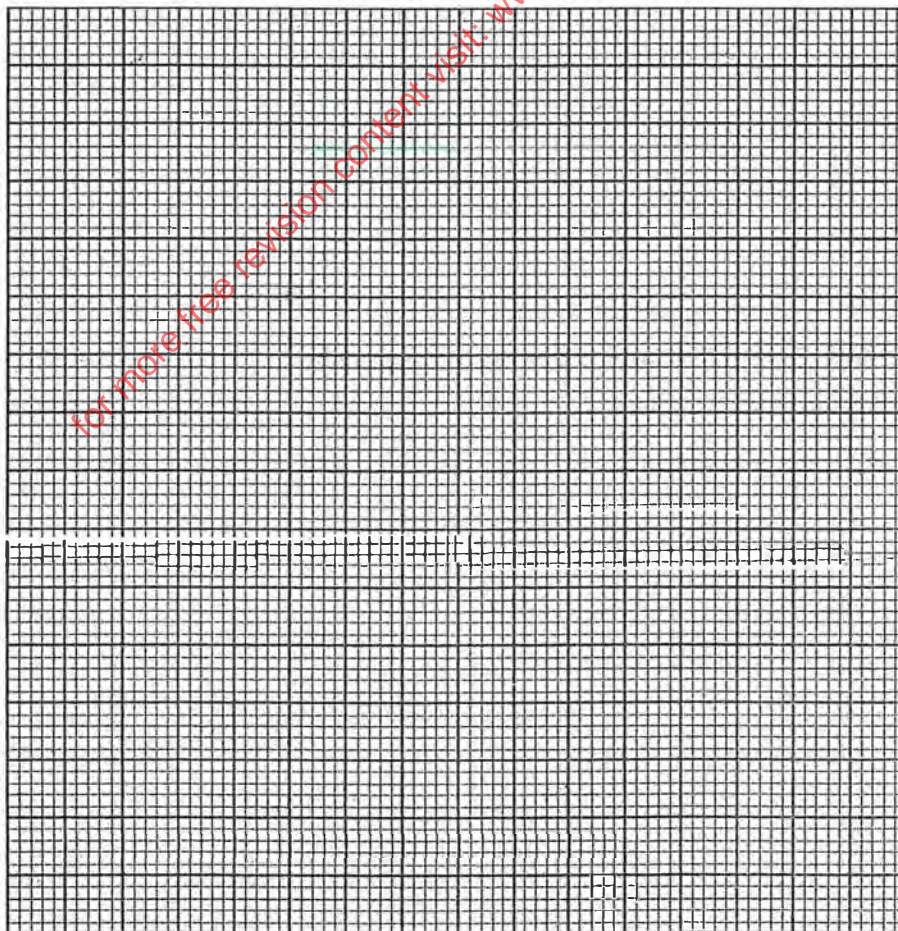
19. The table below shows marks scored by candidates in a maths test .

Marks	0-9	10-39	40-49	50-69
Frequencies	5	30	35	20

- (a) State the modal class (1mk)
(b) Calculate the mean mark (3mks)

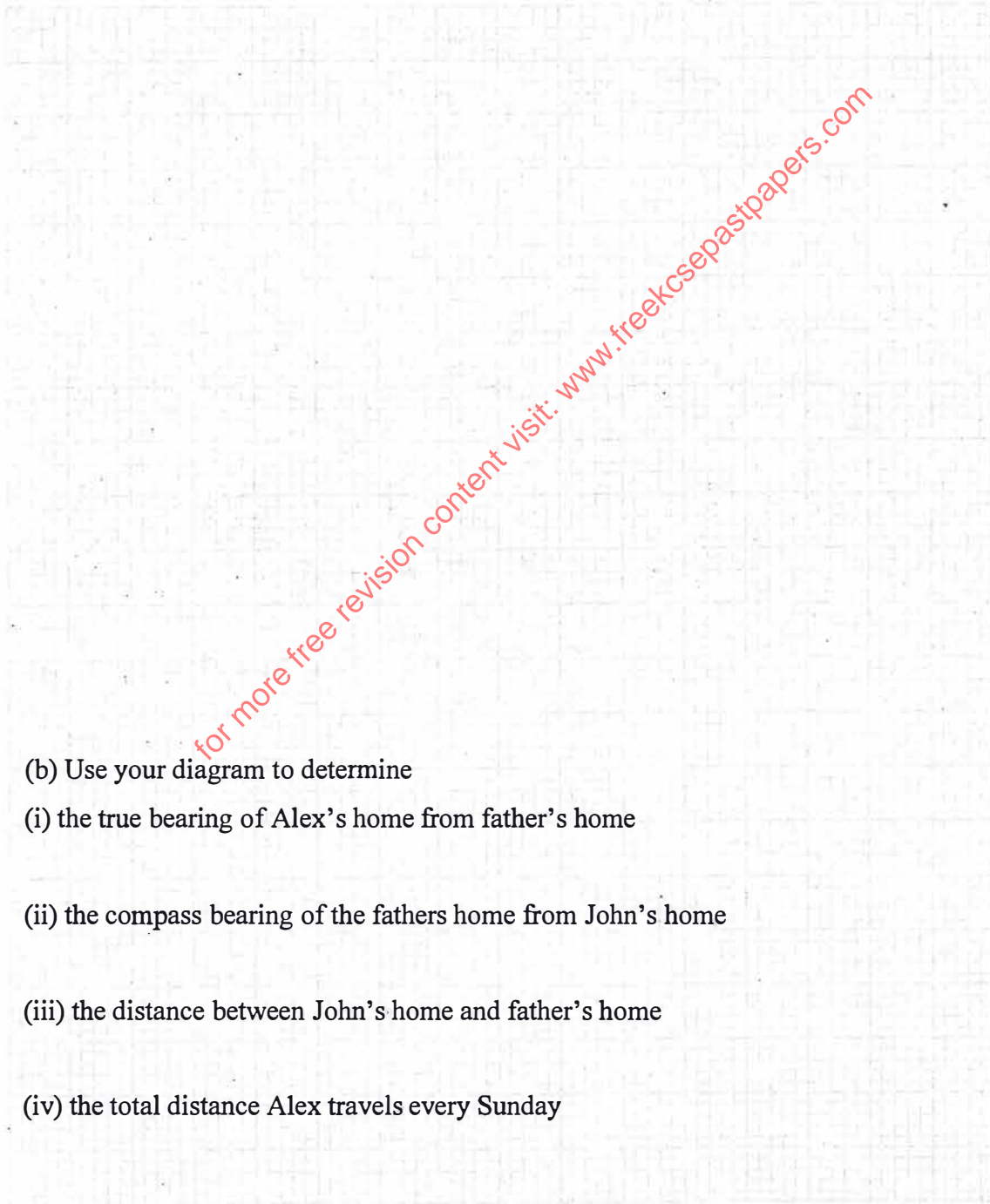
- (c) Calculate the median (3mks)

- (d) Represent the information on a histogram (3mks)



20. Every Sunday, Alex drives a distance of 80km on a bearing of 074° to pick up his brother John to go to church. The church is 75km from John's house on a bearing of $S50^{\circ}E$. After church, they drive a distance of 100km on a bearing of 260° to check on their father before Alex drives to John's home to drop him off, then proceeds to his house.

(a) Using a scale of 1cm to represent 10km, show the relative positions of these positions. (4mk)



(b) Use your diagram to determine

(i) the true bearing of Alex's home from father's home (1mk)

(ii) the compass bearing of the fathers home from John's home (1mk)

(iii) the distance between John's home and father's home (2mks)

(iv) the total distance Alex travels every Sunday (2mks)

21. On the grid provided draw quadrilateral PQRS P(-5,4), Q(-3,4), R(-5,3) and S(-4,3). (1mk)

(i) $P^1Q^1R^1S^1$ the image of PQRS under a reflection in the line $Y=0$ (2mks)

(ii) $P^{11}Q^{11}R^{11}S^{11}$ in the image of $P^1Q^1R^1S^1$ under a rotation $+180^\circ$ about (0,0) (2mks)

(iii) $P^{111}Q^{111}R^{111}S^{111}$ is the image of $P^{11}Q^{11}R^{11}S^{11}$ under an enlargement centre (4,0) enlargement scale factor -2 (2mks)

(iv) Name the quadrilateral that are:

(a) Directly congruent (1mk)

(b) Oppositely congruent (2mks)

