

NAME _____ CLASS _____

DATE _____ SIGNATURE _____

MATHEMATICS
2ND TERM 2015
2 ½ HRS.

Kenya Certificate of Secondary Education
MATHEMATICS
FORM ONE 2ND TERM EXAMINATION 2015

Instructions

- Write your name and your class in spaces provided
- The paper contains two sections. Section I and Section II
- Answer all the questions in section I and any five questions from section II
- All answers and working must be written on the question paper in the spaces provided below each question.
- Show all the steps in your calculations, giving your answers at each stage in the spaces below each question.
- KNEC Mathematical tables may be used. Except where stated otherwise.

For Examiner's Use Only

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

Questions	17	18	19	20	21	22	23	24
Marks								

Grand Total

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This paper consists of 14 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

1. Evaluate $\frac{1}{2}$ of $1\frac{5}{7} + 1\frac{1}{14} \div \frac{1}{2}$ [3 marks]

2. Solve for x in $\frac{2x-5}{3} - \frac{3x-1}{4} = \frac{3}{2}$ [3 marks]

3. Change the recurring decimal $0.\dot{7}3$ into a fraction and simplify completely [3 marks]

4. Three bells ring at intervals of 40 minutes, 45 minutes and 60 minutes. If they ring simultaneously at 6:30 in the morning, at what time during the day will they ring next together? [3 marks]

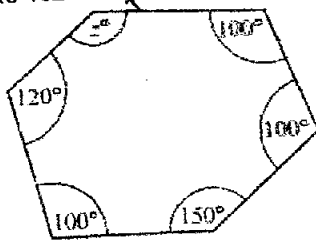
5. Evaluate $\frac{-16 \div 4 + 6 \times 14 - 2x - 5}{84 \div 14 \times 3}$

[2 marks]

6. Three men working 8 hours daily can complete a piece of work in 5 days. Find how long it will take 10 men working 6 hours a day to complete the same work [3 marks]

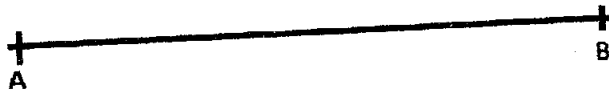
7. Find the value of z in the plane figure below.

[3 marks]



NOT TO SCALE

8. By construction divide the line segment AB into 5 equal parts using a straight edge and a pair of compass only and give the measure of part. [3 marks]



- x 9. A school exchange programme to Europe is advertised at €245 per student. The school is allowed 1 teacher for at no cost for every group of 15 students. For a group of 45 students and three teachers, how much would it cost the school if the exchange rate is $1US\$ = Kshs.91.5$ and $1.06US\$ = €1$ [3 marks]

10. Factorise by grouping completely $2x + 4y + px + 2py$ [3 marks]

- x 11. A triangular field has sides of length 550m, 300m and 400m. Using a pair of compasses and ruler, construct a scale diagram for the piece of land. Use a scale of 1cm to represent 50m. By taking a suitable measurement on your diagram calculate the area of the field in square metres. [4 marks]

12. Write the expression $\frac{1}{p} + \frac{1}{q} - \frac{p-q}{pq}$ as a single fraction in its simplest form. [3 marks]

13. A cube of copper was found to have a mass of 0.630 kg. What are the dimensions of the cube? Given that the density of copper is 8.94 g/cm³ [4 marks]

14. Given the equation $m = \frac{1}{4}(3h^2 + 8ah + 3a^2)$, Calculate the exact value of m, when $h = 20$ and $a = -5$. [3 marks]

15. Evaluate without using mathematical tables or a calculator [3marks]

$$\sqrt{\frac{384.16 \times 0.0625}{96.04}}$$

16. A staff canteen at a military camp is open shown in the schedule below.

	Monday to Friday	Saturday	Sunday
Opening time	0645h	0730h	0845h
Closing time	1730h	1730h	1200h

An employee who operates the canteen is paid a Kshs.25 per hour at the shop. How much is her weekly pay. [4 marks]

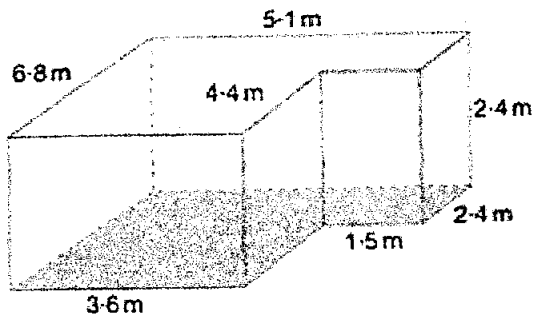
SECTION II (50 MARKS)

Answer any five questions from this section

17. In one week, Daniel sell 120kg of tomato and 80kg of grapes at his grocery shop.
- a) Write the 80kg of tomato as a ratio of the total mass sold in the simplest ratio. [2 marks]
- b) One day he sold 28kg of oranges at Kshs.140 per kg and 20kg of apples . His total collections for that day were Kshs.7500. Calculate the price of a kg of apples. [3 marks]
- c) The price of oranges was Kshs.140 which was 25% increase from the previous two weeks. Determine the price two weeks ago. [2 marks]
- d) On another James received a sum of kshs.60,030 having bought the fruits at Kshs.28230, after working for $10\frac{1}{2}$ hours. Calculate how much profit he made per hour. [3 marks]

- X 18.a) Junet spends an amount of money on pens costing Kshs.225 each. He now spends Kshs.1305 less on pencils than he spent on pens each costing Kshs.45 each. If the total number of pens and pencils is 19, calculate the amount spent on pens. [4 marks]
- b) A photograph is reduced in the ratio 3:5 for a newspaper advertisement and further reduced in the ratio 4:5 for a text book, find the ratio of the newspaper size to the text book size? [3 marks]
- c) The mass of a cat and a rabbit is 10kg, a dog and the rabbit weigh 20kg while the dog and the cat weigh 20kg. Find the mass of all three pets. [3 marks]

20. The diagram below represents a lounge room in a house. The walls and the ceiling are to be painted.



- a) Find, The area of the walls of the lounge [3 marks]
- b) The area of the ceiling [2 marks]
- c) Calculate the number of 4L cans of paint will be bought for painting of the walls and the ceilings if 1 litre of paint covers $16m^2$. Assuming the entries and the openings will take up 10% of the walls [3 marks]
- d) Floor is covered with tiles measuring 30cm by 30cm, how many tiles shall be bought. [2 marks]

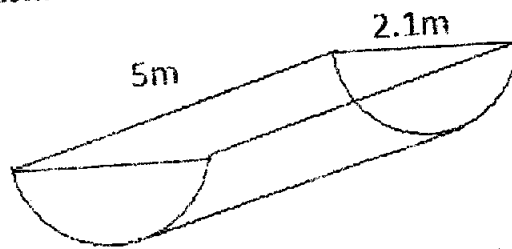
19. Table below shows the amount of money charged for hiring a PS4 for a given time.



Time in minutes	10	20	30	40	50
Charges in Kshs.	75	100	125	150	175

- a) Draw a graph of charges against time played [4 marks]
- a) Use your graph to find the standing charge. [2 marks]
- b) Using your graph determine how much money is used on hiring the PS4 for 28minutes, 33minutes and 42minutes. [2 marks]
- c) The time played if kshs.131.00, kshs.190.00 is charged. [2 marks]

21. The diagram below represents a trough which is 5m long and its cross-section is a semi-circle whose diameter is 2.1m.



- a) Calculate the capacity of the trough in litres.

[5 marks]

- b) The trough which is initially empty is filled by a water pump which pumps water at the rate of 2 litres per second. Calculate the time to the nearest minute it takes to fill the tank.

[2 marks]

- c) If the trough has a hole where water leaks at the rate of 50cm^3 per second. How long will take to fill the trough starting with an empty trough.

[3 marks]

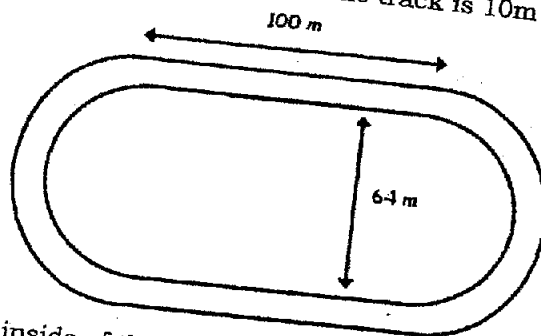
22. A metal cuboid has a volume of 1080cm^3 and a mass of 8kg.
a) Calculate the mass of one cubic centimetre of the metal in grams. [2 marks]

b) The base of the cuboid measures 12cm by 10cm , calculate the height of the cuboid. [3 marks]

c) The cuboid is melt and recast in to a sphere of radius r . calculate:
i) The radius of the sphere [3 marks]

ii) The surface area of the sphere [2 marks]

23.a) The diagram shows a running track at a high school. It consists of two parallel line segments with a semicircle at each end. The track is 10m wide.



i) Kayla runs on the inside of the track. How far does she run?

[2 marks]

ii) Emi runs on the outer edge. How far does she run in one lap?

[2 marks]

iii) Find the difference between the distances run by Kayla and Emi.

[2 marks]

b) A two digit number is such that the sum of the digits is 12. If the digits are interchanged the value of the new number formed is fifteen more than twice the value of the original number. *Find the number.*

[4 marks]

24. A large scale farmer uses his farm as follows: $\frac{2}{5}$ on tea farming, $\frac{1}{3}$ of the remainder on horticulture, $\frac{1}{6}$ of the remainder on grazing, $\frac{3}{5}$ of the remainder on homestead.
- a) If what remains is 12ha and is left as furrow, determine the size of the portion used for horticulture [4 marks]

- b) Represent the above information on a pie chart [6 marks]