

Name.....

Index No...../.....

School.....

Candidate's Signature.....

Date

121/1
MATHEMATICS
Paper 1
July/August 2010
2 ½ Hours

BUNGOMA JOINT EVALUATION TEST - 2010
Kenya Certificate of Secondary Education (K.C.S.E)

Instructions to candidates

1. Write your name and index number in the spaces provided above.
2. Sign and write the date of examination in the space provided above.
3. The paper contains two sections: **Section I** and **Section II**.
4. Answer **All** the questions in **section I** and **strictly any five** questions from **Section II**.
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. Non-programmable silent electronic calculators and **KNEC** mathematical tables may be used, except unless stated otherwise.

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

Grand Total

This paper consists of 15 printed pages. Candidates should check the question paper to Ensure that all the pages are printed as indicated and no questions are missing

SECTION I: (50 MARKS)

Answer All questions in this section

1.
 - a) Write the odd numbers in descending order between 1 and 10 inclusive. (1mk)

 - b) Round off the number formed to 3 significant figures. (1mk)

 - c) Find the total value of digit 7 in the new number in 2(b) above. (2mks)

2. The L.C.M. of three numbers is 360 and the G.C.D of the same numbers is 2. If one of the numbers is 40. find the other 2 numbers. (3mks)

3. Mwangi and Otieno live 60km apart. Mwangi leaves his home at 7.00am cycling towards Otieno's house at 20km/h. Otieno leaves his home at 8.00am cycling towards Mwangi's house at 8mk/h
 - a) At what time did they meet? (2mks)

 - b) How far is the meeting point from Mwangi's house? (1mk)

4. Divide $10^{10}/27$ by $2^7/9$ then add the result to the product of $6^{2/3}$ and $4^{4/25}$. Find three quarters of the result and leave your answer as a fraction. (3mks)

5. Express the following recurring decimal as a fraction in its simplest form. (3mks)

$$0.\dot{1}5\dot{3}$$

6. Use the square, cube root, and reciprocal table to evaluate to 4 d.p (3mks)

$$\frac{\sqrt[3]{0.008}}{0.375} - \frac{10}{37.5^2}$$

7. A two digit number is such that the sum of its digits is 13. The product of twice the tens digit and the units digit minus the original number is 22. Find the number. (4mks)

8. Without using tables or calculators evaluate. Give your answer as a mixed number. (3mks)

$$\frac{(-8) \times 4 + 156 \div 4 \text{ of } (-36 + 30)}{(-5) - (-8) \times 2 + 6}$$

9. Solve for x in the following equation. (3mks)

$$\left(\frac{1}{4}\right)^{x-2} = 2^{x+2}$$

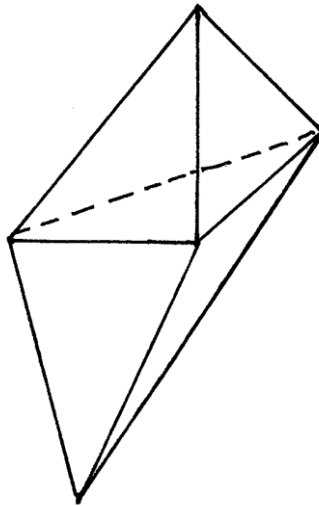
10. Three points on a map A, B, and C are such that the bearing of B and C from A are $\theta 60^0$ and 150^0 respectively. If the distance AB is 0.45m and BC is 0.75m, determine the distance AC. (3mks)
11. 0.05 litres of water is poured into an empty measuring cylinder. A piece of metal with mass 135g is put into the cylinder. If the density of the metal is 9600kg/m^3 , find the new reading of the cylinder. (3mks)
12. A newspaper vendor has 30 bank notes with a total value of Sh. 900, if the notes are either in Sh. 20 or Sh. 50 denominations, how many of each does he have? (3mks)

13. The length of a rectangle was increased by 30% while its width decreased by 15%. Determine the % change in the area of the rectangle. (3mks)

14. Find the integral values of x which satisfy the following inequalities. (3mks)

$$2(2 - x) < 4x - 9 < x + 11.$$

15. The figure below shows a solid made by placing two equal regular tetrahedra.



- a) Draw the net of the solid. (1mk)

- b) If each face is an equilateral triangle of side 5cm. Find the surface area of the solid to 4 s.f
(2mks)

16. Using a ruler and a pair of compasses only, draw a parallelogram ABCD in which $AB = 8\text{cm}$, $BC = 6\text{cm}$ and $\angle BAD = 75^\circ$. Drop a perpendicular from D to meet AB at N. Determine the length DN.
(3mks)

SECTION II. (50 MARKS)

Answer any 5 questions in this section

17. Two business men Achaki and Mkazi contributed Ksh. 128, 000 and Ksh. 112,000 respectively to start a business. They agreed to share the profits as follows;

30% shared equally

30% shared in ratio of contributors

40% retained for running business.

Their profit for the year 2008 was Ksh. 86, 400

Calculate.

- a) The amount shared equally. (3mks)

- b) The total amount received by each partner. (5mks)

- c) The amount retained for running the business. (2mks)

18. Rates of tax in operation in 2010 are as given in the table below:-

K£ pa	Rate of tax %
1 – 5208	10
5209 – 9744	25
9745 – 14292	20
14293 – 18840	15
Over 18840	30

- a) Mr. Rono pays Sh. 5400 as P.A.Y.E monthly. He was entitled to house allowance of Kshs. 9000pm and getting a monthly tax relief of Sh. 1093. Calculate his monthly basic salary. (7mks)

- b) Mr. Rono's other deduction per month were.

Co-operation society contribution	Sh. 2000.
Loan repayment	Sh. 2500

Calculate his Net salary per month (3mks)

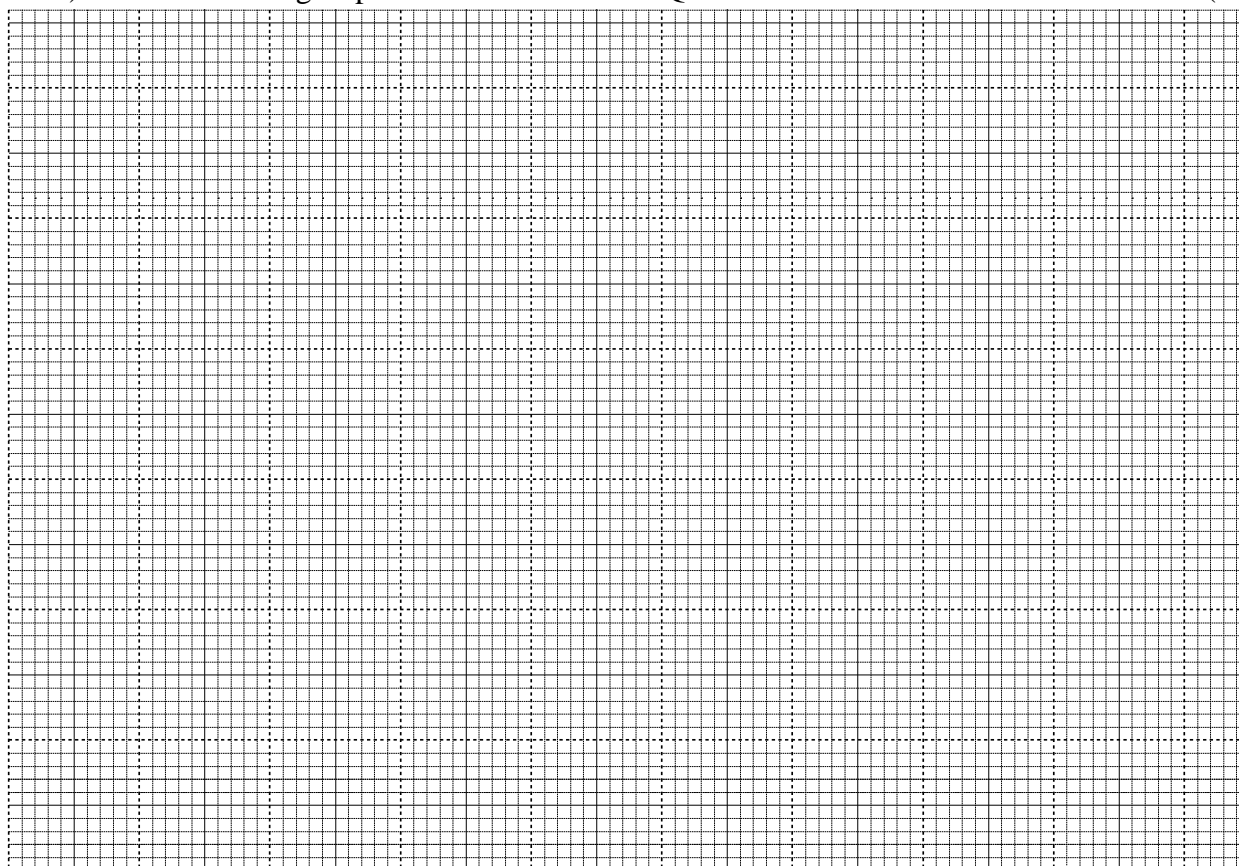
19. A Rhombus has its vertices as PQRS. The co-ordinates of the vertex P and Q of the rhombus are P(-1, 3) and Q (2, 4). The diagonal QS and PR meet at point M. Given that the equation of the line PR is $y = x + 4$.

a) Find the equation of the diagonal QS. (1mk)

b) Find the co-ordinates of the midpoint M of QS. (2mks)

c) Find the co-ordinates of the points R and S. (4mks)

d) Plot on the grid provided the rhombus PQRS. (3mks)



20. The table below shows marks scored by students in a maths test.

Marks	≤ 10	≤ 20	≤ 30	≤ 40	≤ 50	≤ 60	≤ 70	≤ 80	≤ 90	≤ 100
No. of students	2	5	10	18	27	33	38	41	43	44

a) Prepare a frequency distribution table from the above table. (2mks)

b) i) State the modal class. (1mk)

ii) Calculate the mean and the median. (5mks)

c) Find the mark if the percentage pass was $59\frac{1}{11}\%$. (2mks)

21. During a school assembly one Friday, three scouts, Morgan, Boris and Zeddy each stood 6m away from the foot of a vertical flag post 6m high. Their bearings from the flag post were 060° , 110° and 220° respectively.

a) Draw a sketch of their relative positions. (1mk)

b) Using a scale of 1cm: 1m make an accurate drawing of their positions. (3mks)

c) Find the bearing of:

i) Morgan from Zeddy (1mk)

ii) Boris from Morgan. (1mk)

d) Find the distance of Zeddy from Boris. (1mk)

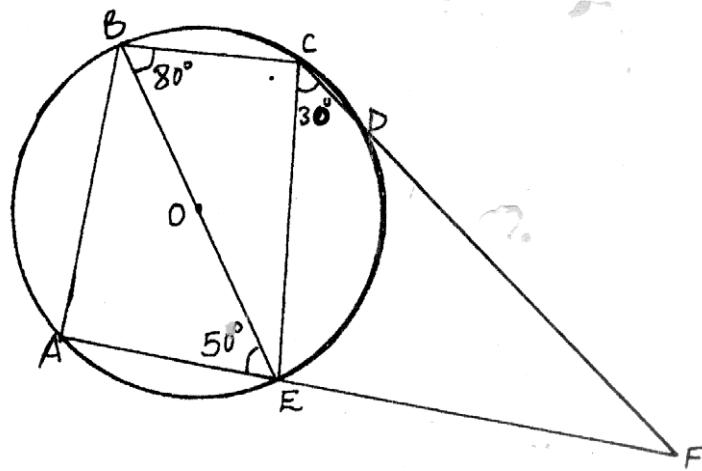
e) Find the angle of elevation of the top of the flag post from:

i) Morgan. (1mk)

ii) Boris (1mk)

iii) Zeddy (1mk)

20.



In the figure above, O is the centre of the circle. Angle AEB = 50° , angle EBC = 80° and angle ECD = 30° . Giving reasons, calculate:

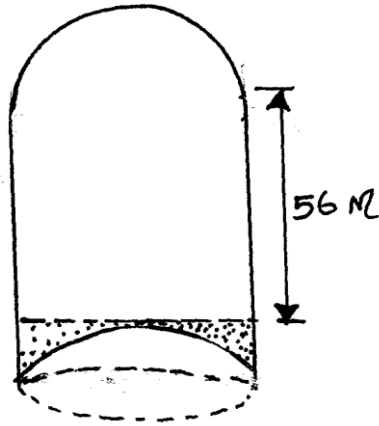
i) Angle CDE (3mks)

ii) Angle DFE (3mks)

iii) Obtuse Angle COE (2mks)

iv) Angle ADE (2mks)

23. A tank with hemispherical dome-shaped base of radius 14cm was filled with water up to the top (tangent) of the hemispherical dome shape base as shown below. ($\pi = \frac{22}{7}$)



Calculate:

- a) The surface area of the tank in contact with the water. (2mks)
- b) The volume of water in litres. (3mks)
- c) A feeder pipe of diameter 14cm supplies water to this empty tank at the rate of $40\text{cm}^3/\text{sec}$. Calculate the time taken for the tank to be filled completely in hours. (5mks)

24. In an n -sided polygon, two angles are Right angles and each of the remaining angles is 150° .
- a) Find the value of n hence the sum of interior angles of this polygon. (4mks)
- b) Name the polygon. (1mk)
- c) Find the area of a regular octagon of sides 4cm to 5 s.f.) (5mks)