NAME: …………………………………………….……….. INDEX NO:..…...……………….………

SCHOOL: …………………….………………………...……… Candidate's signature: ……….……..

Date: ……………………………..

121/1

MATHEMATICS

Paper 1

July/August

2 ½ Hours

KITUI WEST DISTRICT JOINT EVALUATION TEST- 2011
Kenya Certificate of Secondary Education

121/1

MATHEMATICS

Paper 1

July/August

2 ½ Hours

INSTRUCTIONS TO CANDIDATES

(a) Write your name and index number in the spaces provided above.
(b) Write the date of examination in the spaces provided above.
(c) This paper consists of **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) Non- programmable silent calculators and KNEC mathematical tables may be used except where stated otherwise.
(i) This paper consists 16 printed papers
(j) Candidates should check the question paper to ascertain that all the papers are printed as indicated and that no questions are   missing.

FOR EXAMINER'S USE ONLY
SECTION 1

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)

1. Evaluate without using a calculator,

$$\frac{(\quad)\quad\div}{\qquad}$$

(3mks)

2. Three consecutive odd numbers add up to 369. Determine the three numbers. (2mks)

3. A container 18cm high holds 225cm^3. Calculate the volume of a similar container which is 72cm high. (3mks)

4. Line L passes through P(8,6) and is perpendicular to the line $3y + 2x + 6 = 0$. Find the equation of line L and write it in the form $y = mx + c$. (3mks)

5. The distance between points P and Q on a section of a straight road is 12km. Mukai and Mutua left points P and Q respectively at the same time and moved towards each other at 1m/sec and 1.5m/s respectively.
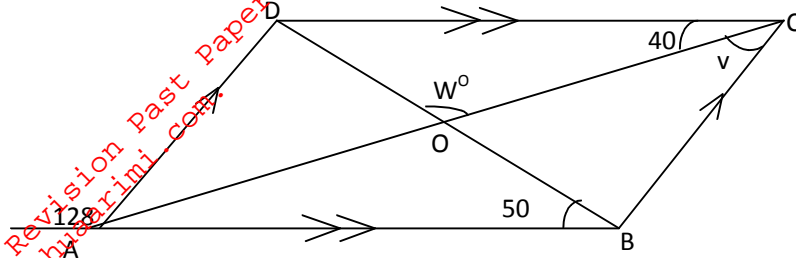
   Calculate a) their relative speed. (1mk)

   b) The time they will take before meeting. (2mks)

6. Find correct to 3s.f the value of;

   $\overline{\quad} + \overline{\quad} - \overline{\quad}$ without using a calculator. (3mks)

7. Find the values of w, and y in the figure. (3mks)

8. Juma, Ali and Hassan share the profit of their business in the ratios 3 : 7 : 9 respectively. If Juma receives sh60,000. How much profit did the business yield . (3mks)

9. Simplify as far as possible the following; (3mks)

$$\underline{\quad\quad} - \underline{\quad\quad}$$

10. Three taps A, B and C can fill a water tank in 30 minutes, 25 minutes and 15 minutes respectively. If the three taps are turned on for 5 minutes then A and C are closed. How long would it take before the tank is filled. (4mks)

11. Find the area of an equilateral triangle whose sides are 18cm. (3mks)

12. Solve for in the equation.

sin(2 − 10) = −0.5 for the range $0^o \leq$ $^o \leq 360^o$ (4mks)

13. Solve the equation.

    $\log (\quad - 9) = \log 8 + 1$ (3mks)

14. The length and width of a rectangle are stated as 18.5cm and 12.4cm respectively. Both measurements are given to the nearest 0.1cm.

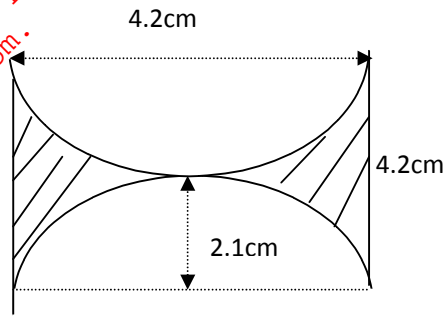   Calculate the percentage error in the area.   (4mks)

15. Find the range of values of x which satisfy the following inequalities simultaneously

    $4x - 9 < 6 + x$

    $8 - 3x \leq x + 4$ and represent them on a number line.   (3mks)

16. In the fig below. Calculate the difference between the area and perimeter of the shaded part. (3mks)

4.2cm

4.2cm

2.1cm

SECTION II (50 MARKS)

17. A trader sold an item at sh7500 after allowing his customer 15% discount on the marked price of the item. In so doing he made a profit of 35%.

a) Calculate i) The marked price of the item. (3mks)

ii) The price at which the trader had bought the item. (2mks)

b) If the trader had sold the item without giving a discount, calculate the percentage profit he would have made. (3mks)

c) To clear his stock the trader decided to sell the remaining items at a loss of 10%. Calculate the price at which he sold each item. (2mks)

18. The figure below is a model representing a rocket capsule. The model whose total height is 15cm is made up of a conical top; a hemispherical bottom and the middle part is cylindrical. The radius of the base of the cone and that of the hemisphere are each 3cm. The height of the cylindrical part is 8cm.
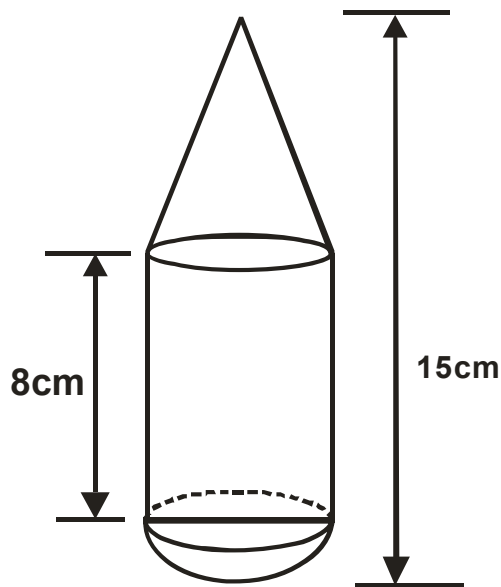
a) Calculate the external surface area of the model. (4mks)

b) The actual rocket has a total height of 6 metres. The outside of the actual rocket capsule is to be painted. Calculate the amount of paint required if an area of 20m² requires 0.75 litres of the paint.

(6mks)

19. The frequency distribution table below represents the number of kilograms of meat sold in butchery.

Mass in kg	1 – 5	6 - 10	11 - 15	16 - 20	21 - 25	26 - 30	31 - 35
Frequency	2	3	6	8	3	2	1

a) State the modal frequency. (1mk)

b) Calculate the mean mass using assumed mean of 18kg. (6mks)

c) Calculate the median mass. (3mks)

20. a) The table below shows measuring cylinder readings Vcm^{3}of water displaced by x marbles in an experiment.

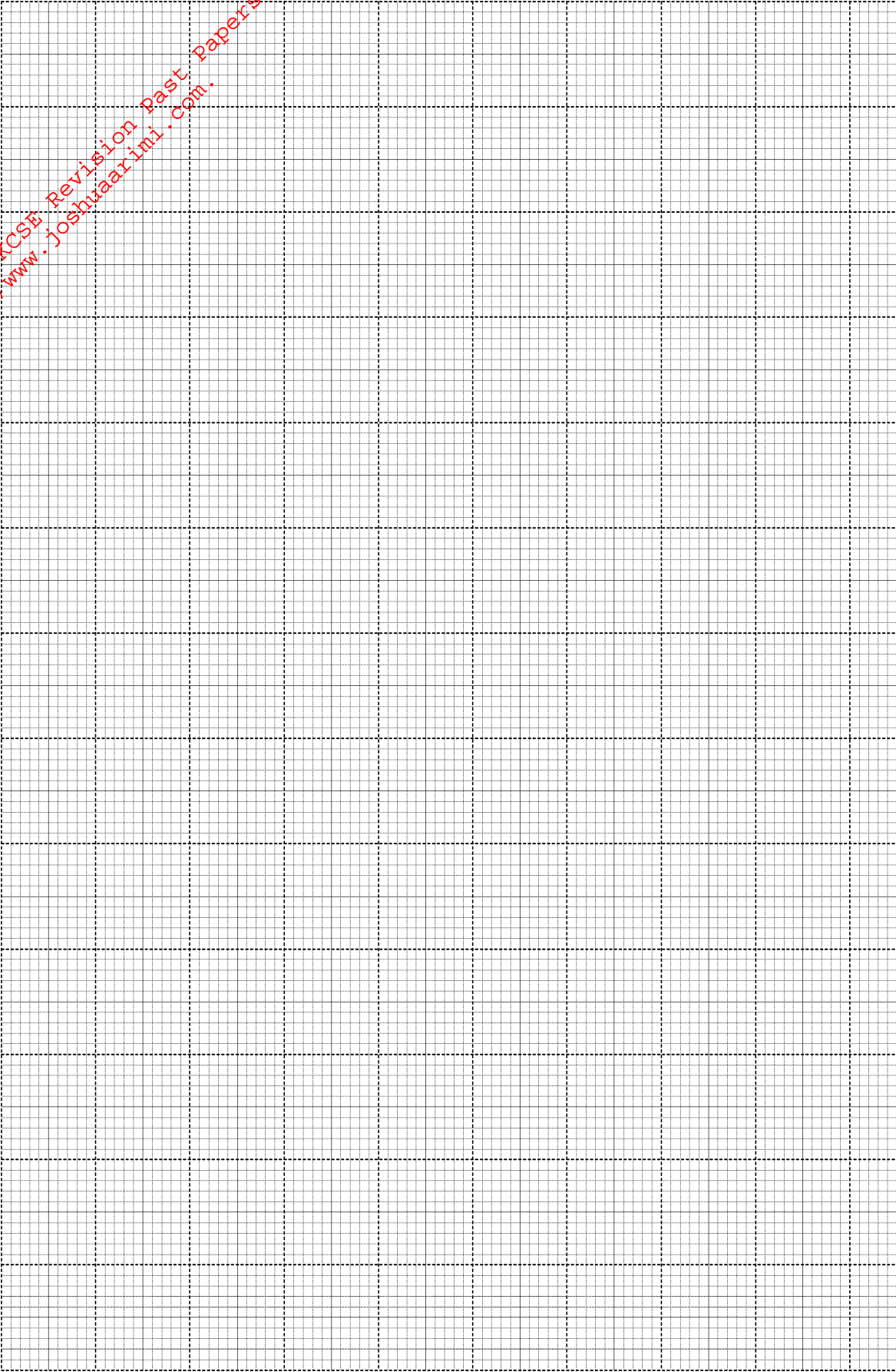| Vcm^3	39.4	68.2	83	97.4
x	4	8	12	16

i) On the graph paper provided plot (x, v). (3mks)

ii) Use the plotted points to draw the line of best fit. (1mk)

b) Using the line of best fit determine;

    i) The average volume of the ball bearing.   (2mk)

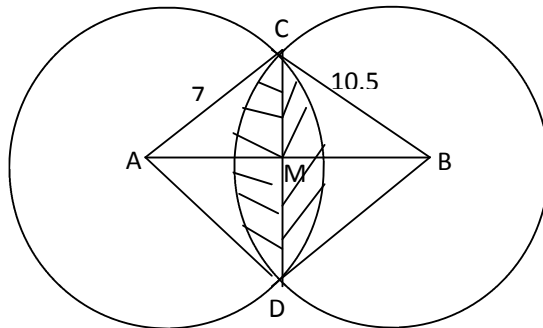   ii) The equation of the line.   (2mk)

c) Using the equation of the line in b(ii) above determine the volume of the water in the cylinder.

        (2mks)

21. The fig shows two intersecting circles with centres A and B and radii 7cm and 10.5cm respectively. The distance between AB = 14 and AM:MB = 3:4.

Calculate to four significant fig the;

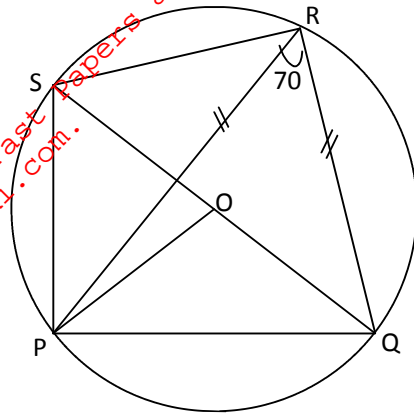a) Size of angle CAD   (2mks)

b) Size of angle CBD   (2mks)

c) Area of shaded region (use   = 3.142).   (6mks)

22. The figure below shows a circle centre O PQRS is a cyclic quadrilateral and QOS is a straight line.

Giving reasons for your answers find the size of;

a) Angle PRS   (2mks)

b) Angle POQ   (2mks)

c) Angle RPS   (2mks)

d) Angle PSR   (2mks)

e) Reflex angle POS   (2mks)

23. 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 5sf.   (5mks)

24. In the figure below, C is a point on AB such that BA = 4BC and D is the mid point of OA OC and BD intersect at x
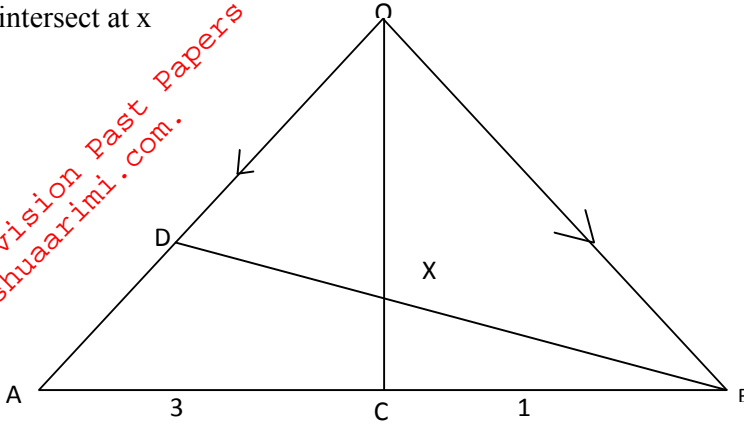
Given that OA = $\underset{\sim}{a}$ and OB = $\underset{\sim}{b}$

a) Write the vectors below in terms of $\underset{\sim}{a}$ and $\underset{\sim}{b}$

    i)   AB   (1mk)

    ii)   O$\underset{\sim}{C}$ (2mks)

    iii)   B$\underset{\sim}{D}$ (1mk)

b) If BX = h, BD express ox in terms of a, b and h   (1mk)

c) If ox = KOC, find h and k   (4mks)

d) Hence express ox in terms of a and b only   (1mk)