MATHEMATICS PAPER 2

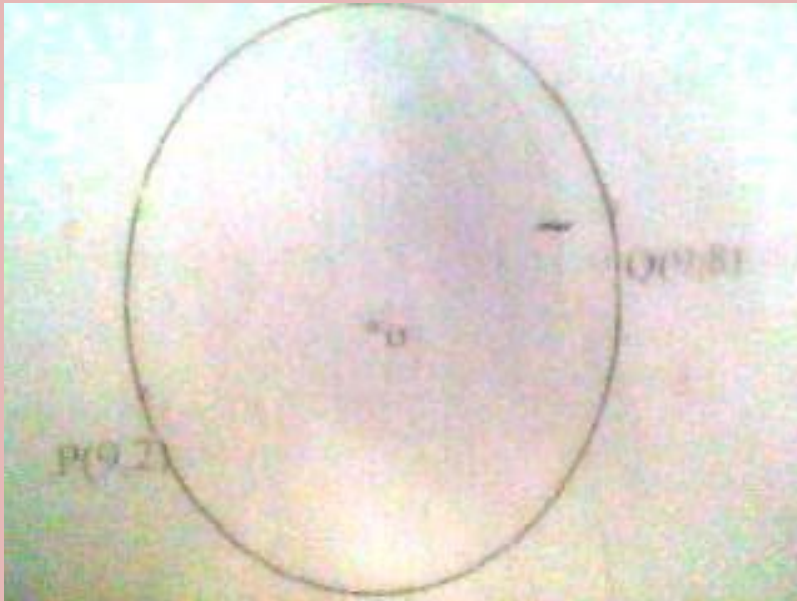KAGONDO SECONDARY SCHOOL

MID TERM 1 2013

SECTION A (50 MKS)

Attempt all questions in this section

1.Using a calculator, simplify.

$[1.32 \times 1.62 + 2.64 \times 1.19]/[0.66 \times 7.27 - 0.66 \times 2.27]$ (2mks)

2.Use matrix method to determine the co-ordinates of the point of intersection of the two lines (3mks)

3.P and Q are the points on the end of the diameter of the circle below

Write down in terms of x and y the equation of the circle in the form

$ax^2 + by^2 + x + y + c = 0$ (2mks)

4.Coffee at sh.50 per kilogram is mixed with coffee of sh.60 per kilogram in the ratio 2:3.What ratio should this mixture be mixed with coffee at sh.40 to produce a coffee costing sh.52 per kilogram (3mks)

5.A fraction 2/7 truncated to 3 decimal places. Find the percentage error in doing this (3mks)

6.A bag contains y red balls and (y-10) blue ones. The probability of drawing at random a red ball is 0.75.Find

i)The number of balls in the box (3mks)

ii)The probability of drawing at random a blue ball (1mk)

7.Make x the subject of the formula (3mks)

$W=\sqrt{[(x-p)/(x-q)]}$

9.The sum of the first four terms of an arithmetic progression is 14.If the sum of the first eight terms is 108, find the sixth term of this progression (3mks)
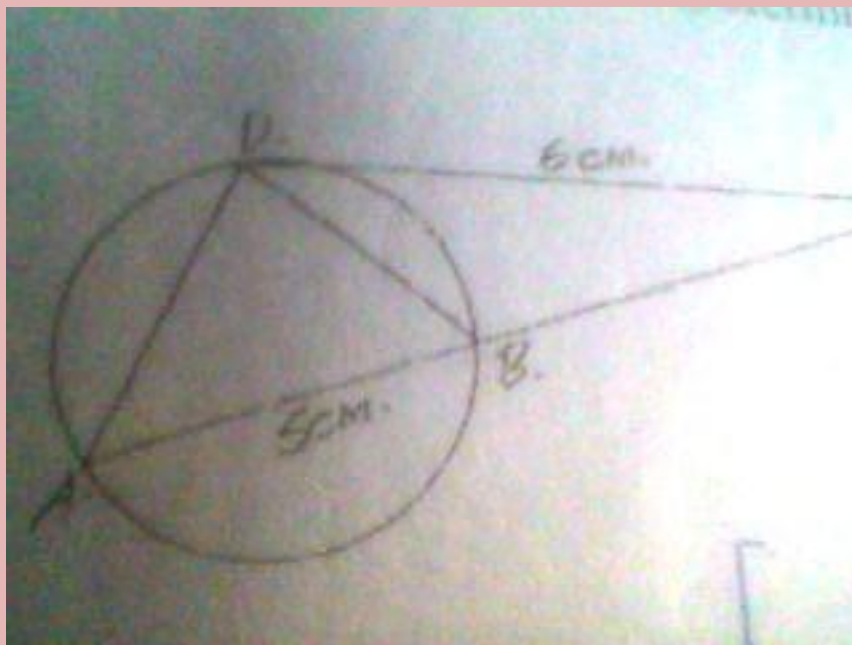
10.Solve the equation 8 $Cos^2\emptyset$+ 2 $Cos\emptyset$ – 3=0, for $0^0\leq\emptyset\leq360^0$ (3mks)

11.Without using tables, rationalize the denominator in

(2 tan 45^0- tan 60^0)/(4tan45^0 sin30^0-√3)   (3mks)

12.Factorise x^2- y^2, hence evaluate 3282^2- 3272^2 (3mks)

13.In the figure below, DC=6 cm, AB = 5cm.Determine BC if DC is a tangent (3mks)

14.Expand and simplify $(1-3x)^5$,Hence use your expansion up to the term x^3 to estimate $(0.94)^5$ correct to 4 significant figures (4mks)

15 Grade A tea costs Ksh 100 per kg while grade B costs Ksh 150 per kg.Find the ratio in which the two grades should be mixed to get a mixture worth ksh.140 per kg (3mks)

16.The average of the first and fourth terms of a GP is 140.Given that the first term is 64.Find the common ratio (3mks)

17.The masses of 50 students in a form 4 class were taken and recorded as in the table below

Mass (Kg)	40-42	43-45	16-48	49-51	52-58	59-69
Frequency	3	11	20	9	5	2

a)calculate the median mass (4mks)

b)Calculate the semi-interquartile range (4mks)

c)If the student are arranged in order from the highest to the heaviest, find mass of the 45th student (2mks)

18.Water flows through a cylindrical pipe of diameter 3.5 cm at a speed of 45m/minute.

a)Calculate the volume of water delivered by the pipe in one minute in liters (3mks)

b)A cylindrical storage tank height 4 meters is filled by water from this pipe at the same rate of flow. Water started flowing at 8.00 a.m. and was filled up at 2.50 p.m. Calculate the area of the cross section of this tank (4mks)

c)Water costs sh.3.50 per thousand liter plus a fixed standing charge of sh.18.50.Calculate the cost of a family which consumes the capacity of this tank in one month (3mks)

19.Use ruler and pair of compasses only in this question

a)Construct triangle ABC such that AB=6cm,AC=BC and triangle ACB=135⁰ (4mks)

b)On one side only construct the locus o'p such that

i)<APB=67.5⁰ (1mk)

ii)area of triangle,APB =9cm² (3mks)

c)i)locate P1 and P2 the two possible positions of P which satisfy the two conditions above (1mk)

ii)measure the distance between P1 and P2 (1mk)