Dr. Bbosa Science

UGANDA NATIONAL EXAMINATION BOARD

PRIMARY LEAVING EXAMINATION

2012

MATHEMATICS

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Time allowed: 2hours 30 minutes

Index No:

Candidate's Name……

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District Name……

Read the following instructions carefully

FOR EXAMINERS USE ONLY		
Qn.No	**MARKS**	**EXR'S NO.**
1-5		
6-10		
11-15		
16-20		
21-22		
23-24		
25-26		
27-28		
29-30		
31-32		
TOTAL		

Read the following instructions carefully

1. **This paper has two sections A and B.**
2. **All the working. For both section A and B must be shown in the spaces provided**
3. **All working must be done using a blue or black ball**

Point pen or fountain pen Diagram should be drawn in pencil

4. **No calculators are allowed in the examination room.**
5. **Unnecessary change of work may lead to loss of marks**
6. **Any hand writing that cannot easily be read may lead to loss of marks**
7. **Do not fill anything in the boxes indicated:**

"For examiners use only". And those inside the question paper

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SECTION A: 40 MARKS

Answer **all** questions in this section

Question **1** to **20**carry **two** marks each

1. Work out: 87- 65

$$\begin{array}{r} 87 \\ -\ 65 \\ \hline 22 \\ \hline \end{array}$$

2. Write in words: 55,001

Five hundred thousand one

3. Simplify: $^{-}6 - {}^{-}4$

-6 + 4 = -2

4. Solve: $\frac{2}{3}$m =4

$\frac{2}{3}m = 4$

Multiply by $\frac{3}{2}$ on either side

$\frac{3}{2} \ x \ \frac{2}{3}m = \frac{3}{2} \ x \ 4$;

m = 6

5. Given that set Q= (all prime numbers less than 10), find n(Q)

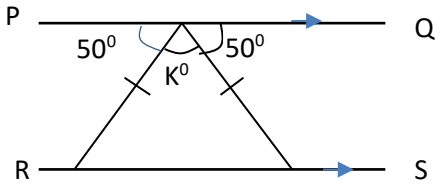
Set Q = (2, 3, 5, 7)

n(Q) = 4

6. Work out: $\frac{3}{4} \div 1\frac{1}{2}$

$\frac{3}{4} \div 1\frac{1}{2} = \frac{3}{4} \div \frac{3}{2} = \frac{3}{4} \div \frac{2}{3} = \frac{2}{4} = \frac{1}{2}$

7. In the diagram below, find the valves of K



$50^0 + k + 50^0 = 180^0$ (angle sum of a straight line)

$k = 80^0$

8. Find the valve of $2^4 + 3^0$

$= 2 \times 2 \times 2 \times 2 + 1 = 17$

9. A debate which took $1\frac{1}{4}$ hours ended at 4:10p.m. What time did it start?

4 10

- 1: 15
- 2: 55 pm

10. Find the Greatest common factor (GCF) of 18 and 24

Factors of 18 = (1, 2, 3, **6**, 9, 18)

Factors of 24 = (1, 2, 4, **6**, 8, 12, 24)

Greatest common factor **= 6**

11. Using a pair of compasses, a ruler and a pencil only, construct an angle of 120 in the space provided below.

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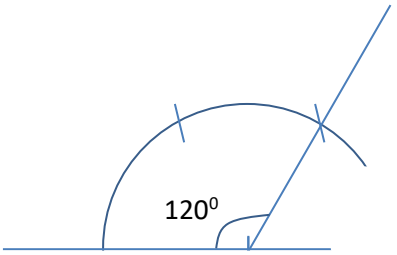
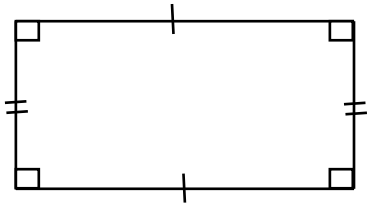


12. Write 0.08 as a fraction in its simplest form

$0.08 = \frac{8}{100} = \frac{2}{25}$

13. The perimeter of the rectangle below is 36m. Find its width if the length is 12m.



Perimeter = (2L + 2W)

36 = (2 x 12 + 2W)

2W = 36 – 24 = 12

W = 6cm

14. Work out:

$$\begin{array}{r} 268 \\ \times\ 25 \\ \hline 1340 \\ +\ 536 \\ \hline 6700 \end{array}$$

15. Given that k = 2 and p = -3, find the valve 3k +2p

Substitute for k and p

3 x 2 + 2 x -3 = 0

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16. Agate keeper's salary was increased from shs 50,000 to shs. 60,000. Find the percentage increase

the increase = 60000 – 50000 = 10000

percentage increase = $\frac{increase}{old\ salary}\ x\ 100\%$

$= \frac{10000}{50000}\ x\ 100 = 20\%$

The table below shows the goals scored by some teams in a netball competition.

Use it to answer question 17

Goals	25	20	15	12	30	10
Number of teams	2	1	3	4	3	5

17. How many teams scored less than 20 goals?

3 + 4 +5 = 12

18. Find the square root of $3\frac{1}{16}$

Change to improper fraction

$3\frac{1}{16} = \frac{49}{16}$

Then

$\sqrt{\frac{49}{16}} = \frac{\sqrt{49}}{\sqrt{16}} = \frac{7}{4} = 1\frac{3}{4}$

19. The number of subsets in set A is 16. How many elements are in set A?

Number of sub sets = 2^n (where n, is the number of elements in a set)

$16 = 2^4 = 2^n$

n = 4

20. A bus covered a distance of 280km in 3 hours and 30 minutes. What was its average speed?

Speed = $\frac{distance}{time} = \frac{280}{3\frac{1}{2}}$

$= 280 \div \frac{7}{2} = 280\ x\ \frac{2}{7} = 80 kmhr^{-1}$

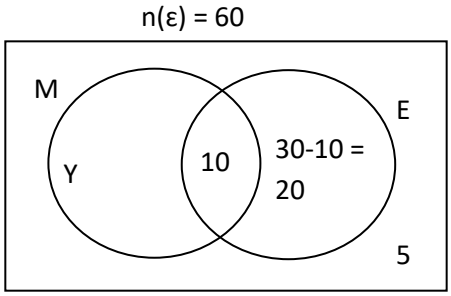
SECTION B: 60 MARKS

Answer all questions in this section

Mark for each Question are indicated in the bracket

21. In a class of 60 pupils, 30 like English (E), Y like mathematics (M) only, 10 like both subject and 5 do not like any of the two subjects.

(a) Use the information given to complete the Venn diagram below. (02 marks)



(b) Find the valve of y (02 marks)

Y + 10 + 20 + 5 = 60

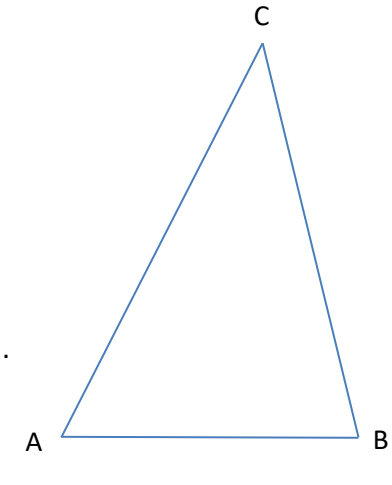
Y + 35 = 60

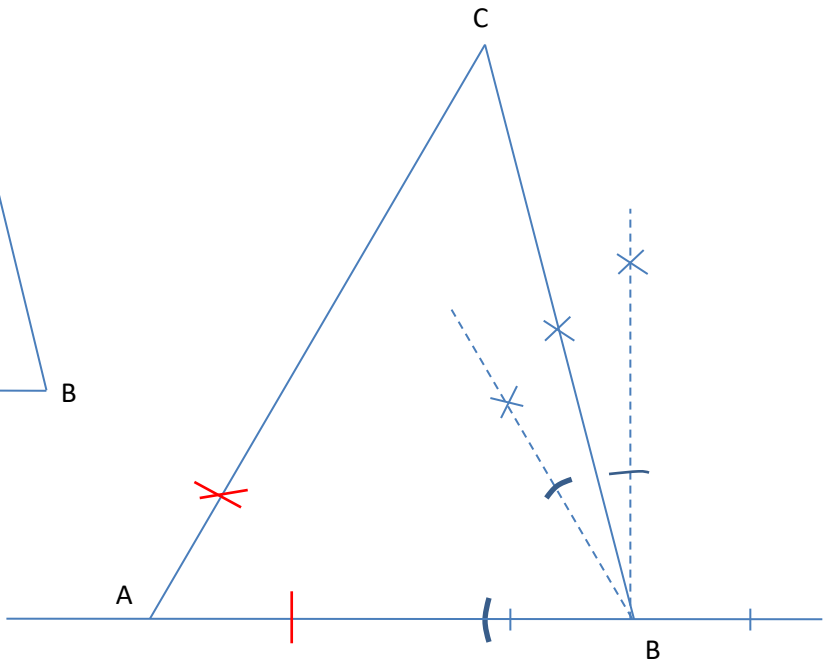
Y = 25

(c) How many pupils like Mathematics altogether? (01 marks)

Pupils that like mathematics = y + 10 = 25 + 10 = 35

22. (a). Using a ruler, a pair of compasses and a pencil only, construct a triangle ABC where line AB= 6.4 cm, angle CAB=60^0 and angle ABC=75^0 (05marks)





(c). Measure the length BC **7.8** (01mark)

23. Asiimwe bought the following items from a shop
   (i) 3bar of soap at shs 1,200 per bar
   (ii) $1\frac{1}{2}$ kg of sugar at shs 3,000 per kg
   (iii) $\frac{1}{2}$ kg of salt at shs 1,000 per kg

   (a) What was his total expenditure? (04marks)

Item	Quantity	rate	total
Soap	3	1200	3600
Sugar	1 ½	3000	4500
Salt	½	1000	500
Total			**shs. 8,600**

(b)If he had shs 10,000, how much money did he remain with? (01mark)

Balance = 10000 – 8600 = shs. 1400

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24. A cylindrical tin of radius 7cm contains $3080cm^3$ of cooking oil.

(a) Joan used $2156cm^3$ of the cooking oil. What is the height of the cooking oil remaining in the tin? (Take $\pi = \frac{22}{7}$) (03marks)

Volume of remaining oil = $3080cm^3$

$= -2156cm^3$

$924\ cm^3$

Volume = base area x height (h)

$= (\pi r^2)h$

$924 = (\frac{22}{7}\ x\ 7\ x\ 7)\ xh$

$h = 6cm^3$

(b). Joan poured the remaining cooking oil into a rectangular tin with base area $77cm^2$. What was the height of the oil in the tin?

Volume = base area x height (h)

$924 = 77\ h$

$h = 12cm$

25. (a) Solve: $14p + 4 = 11$ (2marks)

$14p + 4 = 11$

$14p = 11 - 4 = 7$

$P = \frac{7}{14}$

(b). Solve the inequality: $3x + 4 > x + 8$. (02marks)

$3x + 4 > x + 8$

Collect like terms

$3x - x > 8 - 4$

$2x > 4$

$X > 2$

26. (a) The interior angle of a regular polygon is 36 more than its exterior angle. What is the size of each exterior angle? (02marks)

Let the exterior angle be x

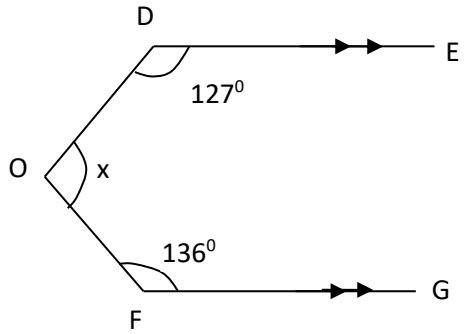
The anterior angle = x + 36

Then, x + x + 36 = 180

X = 72

(b). In the figure below DE is parallel to FG, angle ODE $=127^0$ and angle OFG$=136^0$. Calculate the size of angle x.

(02marks)



X + 127 + 136 = 360

X = 97

27. In jumbo primary school, $\frac{1}{4}$ of the pupils in p7 like science, $\frac{2}{3}$ f the remainder like mathematics. The rest of the pupil like English. If those who like English are 33, find the total number of pupil in p7. (05marks)

Students that like science $\frac{1}{4}$

Remainder = 1- $\frac{1}{4} = \frac{3}{4}$

Mathematics = $\frac{2}{3}$ of $\frac{3}{4} = \frac{1}{2}$

(mathematics and science) = $(\frac{1}{2} + \frac{1}{4}) = \frac{2+1}{4} = \frac{3}{4}$

Rest = 1 - $\frac{3}{4} = \frac{4-3}{4} = \frac{1}{4}$

Let the total number be Q

$\frac{1}{4}$ of $Q = 33$

Q = 33 x 4 = 132 pupils

28. (a) Change 13_{ten} to base two (02marks)

13 ten =

2	13
2	6 r 1
2	3 r0
	1 r1

= 1101_{two}

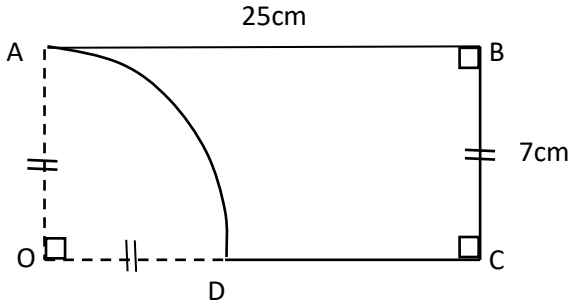
(b). Find the number which has been expanded below.

$(5 \times 10^5) + (4 \times 10^3) + (9 \times 10^0)$. (03marks)

(5 x 100000 + 4 x 1000 + 9) = 504,009

29. Carefully study the diagram below and use it to answer the questions that follow.

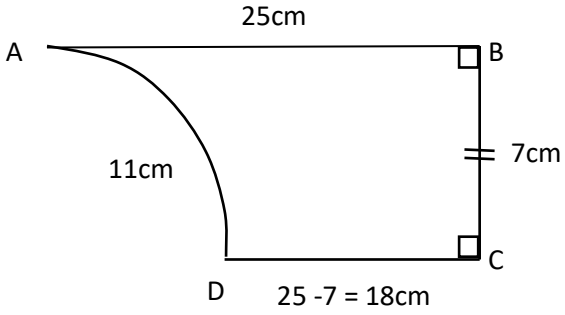
Line AB = OC and AO = OD = BC.



(a) Find the length of arc AD. (Take π = $\frac{22}{7}$) (02marks)

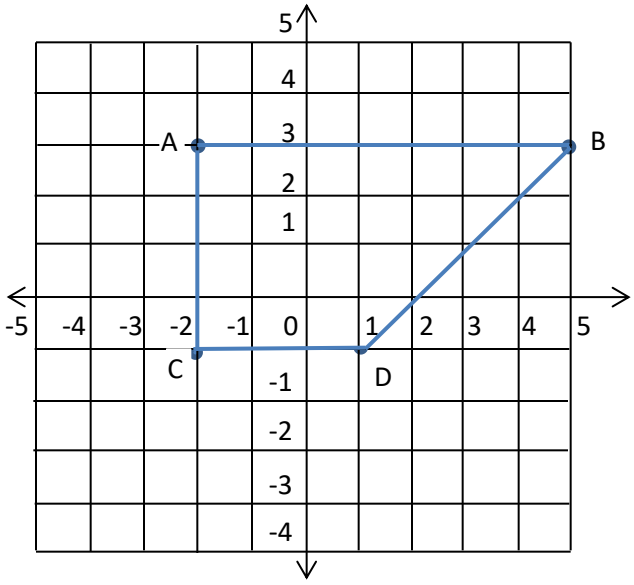
Length Ad = $\frac{1}{4}\pi d = \frac{1}{2}\pi r = \frac{1\ x\ 22\ x\ 7}{4\ x\ 7} = 11cm$

(b) Work out perimeter of ABCDA (03marks)



Perimeter = (11+ 18 + 25 + 7) = 61cm

30 (a) On the graph below, plot the points, A($^{-}2$, $^{+}3$); B($^{+}5$, $^{+}3$); C($^{-}2$, $^{-}1$) and D($^{+}1$, $^{-}1$) (04marks)



(b)Join A to B to D to C and C to A. (01mark)

(b)Name the quadrilateral formed after joining the points. **Right angled trapezium** (01mark)

31. A man's salary was increased by 30% at shs 312,000 per month.

(a) What was the man's monthly salary before the increment?

(02marks)

Let the previous salary be X

$\frac{100+30}{100}\ of\ x = 312{,}000$

$\frac{130x}{100} = 312000$

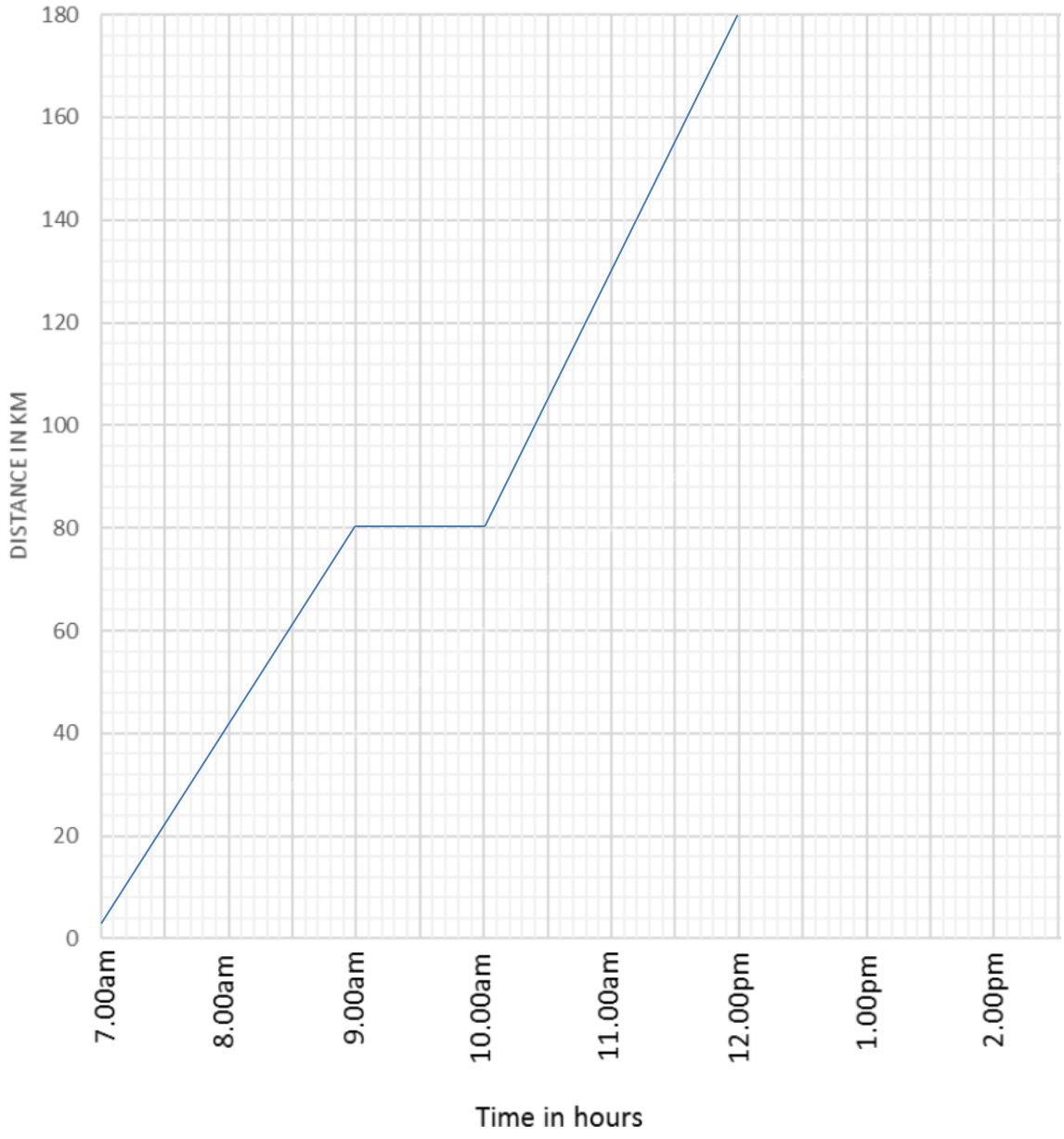
X = shs 240, 000.

(b) If 5% of his new salary is subtracted as tax, what is his final salary? (03marks)

New salary = $\frac{(100-5)}{100}\ x\ 312000 = 296400$

32. Okidi left Kampala at 7.00a.m. driving a lorry at an average speed of 40km/hr for 2hours to Jinja. He rested for one hour at Jinja, then continued to Tororo at an average speed of 50km/hr for another 2hours.

(a) Use the above information to show Okidi's Journey on the graph below. (03marks)



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(b)Calculate Okidi's average speed for the whole journey. (02marks)

Distance from Kampala – Jinja = speed x time = 40 x 2 = 80km

Distance from Jinja to Tororo = 50 x 2 = 100km

Total distance = 80 + 100 km = 180km.

Total time = Time ending – starting time

= 12:00 = 07:00 = 5hours

Speed = $\frac{Distance}{time} = \frac{180}{5} = 36kmhr^{-1}$

END