UGANDA NATIONAL EXAMINATION BOARD

PRIMARY LEAVING EXAMINATION

2009

mathematics

Time allowed: 2hours 15 minutes

Dr. Bbosa Science

Index No:

Candidate's Name…………………………………………………………………………………………..

Candidate's signature…………………………………………………………………………………..

District Name………………………………………………………………………………………………

Read the following instructions carefully

1. This paper has two sections **A** and **B.** Section **A** has 50 questions and section **B** has 5 questions. The paper has 15 pages following altogether.
2. Answer all questions. All answers to both sections A and B must be **written** in the spaces provided.
3. All answers must be written using a blue or black ball-point pen or ink. **Any** work written in pencil other than graphs, pictures and diagrams will **not** be marked.
4. Unnecessary change of work may lead to loss of marks.
5. Any handwriting that cannot easily be read may lead to loss to marks.
6. Do not fill anything in the boxes indicated:
7. "For examiners'. Use only and inside the question paper

| FOR EXAMINERS USE ONLY | | |
|---|---|---|
| Qn.No | MARKS | EXR'S NO. |
| 1-10 | | |
| 11-20 | | |
| 21-30 | | |
| 31-40 | | |
| 51 | | |
| 52 | | |
| 53 | | |
| 54 | | |
| 55 | | |
| Total | | |
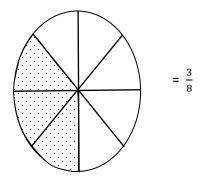
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## SECTION A :( 30 Marks)
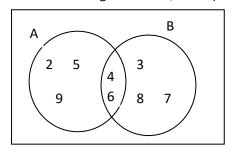
## Question 1 to 30 one mark each.

1. Work out

$$\begin{array}{r} 1\ 3 \\ +4\ 3 \\ \hline 5\ 6 \\ \hline \end{array}$$

2. What fraction of the circle is shaded

$= \frac{3}{8}$

3. In the Venn diagram below, find n(A∩B)

A     B

2   5   4   3
    9   6   8   7

n(A∩B) =2

4. Write 24 in Raman numerals

24 = XX + IV

= XXIV

5. Simplify: 6*y*+4*y*-5*y*.

=10y – 5y

= 5y
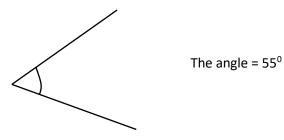
6. Write in figures: Forty two thousand eight.

$$\begin{array}{r} 42000 \\ +\quad 8 \\ \hline 42008 \\ \hline \end{array}$$

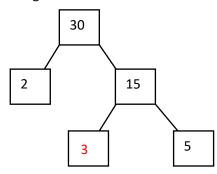7. Using a protractor, measure the angle below.

The angle = $55^0$

8. Round off 9.46 to the nearest tenth.

9.46 = 9.5 (to the nearest tenth)

9. Work out : $\frac{4}{7} \div \frac{8}{21}$

$\frac{4}{7} \div \frac{8}{21} = \frac{4}{7} x \frac{21}{8} = \frac{3}{2}$

10. Fill in the missing number in the factors tree below

```
        30
       /  \
      2    15
           / \
          3   5
```

11. Change $3\frac{1}{2}$ kg into grams.

3 ½ = $\frac{7}{2}$

1kg = 1000g

$\frac{7}{2}$ kg = $\frac{7}{2}$ x $1000 = 3500kg$

12. Work out:

```
    2 0 0
  - 1 1 2
  _____
      8 8
```

13. A primary seven pupils got the following marks in daily mental work exercises for a week: 7, 6, 6, 7, 2, 6, 8.

What was the pupils modal mark?

**Arrange the numbers from the smallest: 2, 6, 6, 6, 7, 7, 8**

**The modal mark that appear most often = 6**

14. Arrange the following fraction in order beginning with the biggest.:

$$\frac{1}{4}, \frac{2}{3}, \frac{3}{5}$$

Solution

Find LCM for denominators $= 4 \times 3 \times 5 = 60$

Then, multiply the LCM through

$$\frac{1 \, x60}{4}, \frac{2 \, x \, 60}{3}, \frac{3 \, x \, 60}{5}$$

15, 40, 36

Hence the order of the fraction starting from the biggest is

$$\frac{2}{3}, \frac{3}{5}, \frac{1}{4}$$

15. Give that set M{1,2,4}.How many subsets are in set M

The number of subsets is equal to $2^n$. where n = to the number of members.

$$= 2^3$$

$$= 8$$

16. Workout: $^+7 - ^-4$

$$= 7 + 4 = 11$$

17. Work out: $2\frac{1}{2} - \frac{1}{4}$

$$= \frac{5}{2} - \frac{1}{4} = \frac{5x2 - 1}{4} = \frac{9}{4} = 2\frac{1}{4}$$

18. David got a loan of shs. 500,000 from the bank at a simple interest rate of 20% per annum. What was the interest on the loan after a period of 9 months?
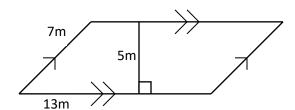
$I = P \times R \times T$

$P = 500000$

$R = 20\%$

$T = 9\text{months} = \dfrac{9}{12} year$

$I = 500000 \; x \; \dfrac{9}{12} \; x \; \dfrac{20}{100} = 75,000$

19. Find the area of the figure below.



The figure is a parallelogram
Area of parallel gram = base x perpendicular height
$$= 13 \text{ x } 5$$
$$= 65\text{m}^2$$

20. Primary seven pupils will have a party next week. Find the probability that the party will take place on a day that starts with letter 'T'.

Days of the week
Mon (M), Tue (T), Wed (W), Thu (T), Fri (F), Sat (S), Sunday (S)
Sample space $= 7$
Days starting with T $= 2$
Probability that a day starts with T $= \dfrac{2}{7}$

21. Work out:

$$
\begin{array}{r}
1\,0\,1_{two} \\
+1\,1\,1_{two} \\
\hline
1100_{two} \\
\hline
\end{array}
$$

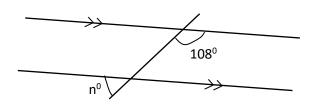22. The cost of 5 bars of soap is shs 5,400. Find the cost of 3 similar bars soap.

   5bars cost 5400

   1bars cost $\frac{5400}{5} = 1080$

   3bars cost 1080 x 3 = 3240
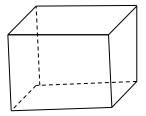
23. Write the next number in the sequence 1, 4, 9, 16, ………………………

   1,  4,  9,  16, **25**

   $1^2, 2^2, 3^2, 4^2, 5^2$

24. In the figure below, find the value of n in degrees.



   108 + n =180

      n = $72^0$

25. How many vertices does the figure below have?



   The figure has **8** vertices

26. A mathematics test was given to a class of 50 pupils and 45 of them passed the test. What percentage of the pupils failed the test?
   The number of pupils who failed = 50 -45 = 5
   **Percentage=$\frac{number\ of\ students\ that\ failed}{total\ number\ of\ pupils}$ x 100**
   **Percentage =$\frac{5}{50}\ x\ 100 = 10$%**

27. On the graph below, mark point M ($^-$1, 4).



28. Solve 3x- (x +3) =3

$$3x -x -3 = 3$$
$$2x = 6$$
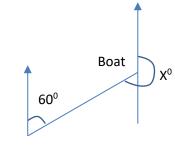$$X = \frac{6}{2} = 3$$

29. Solve for X: 3+4=X (*finite* 5)

$$3 + 4 = 7$$
$$7 \div 5 = 1r2$$
$$X = 2$$

30. A fisherman saw a boat on water on a beating of 060$^0$.  What was the bearing of the fisherman from the boat?

Let the bearing be X



Boat

X$^0$

60$^0$

Fisher man

Bearing of fisherman    = 180$^0$ + 60$^0$

= 240$^0$

## SECTION B(70MARKS)
### Marks for each part of the question are indicated in the brackets.

31. A man sells mangoes in heaps of five and eight. A heap of five mangoes costs shs 500 and a heap of eight mangoes cost shs. 1,000. He had 12 heaps of five and 14 heaps of eight mangoes.
   (a) How many mangoes did he have altogether? (03 marks)
   **Mangoes in heaps of five = 5 x 12 = 60 mangoes**
   **Mangoes in heaps of 8    = 8 x 12 = 112**
   **Total number of mangoes = 112 + 60 = 172mangoes**
   (b) How much did he get after selling all the mangoes? (03 marks)
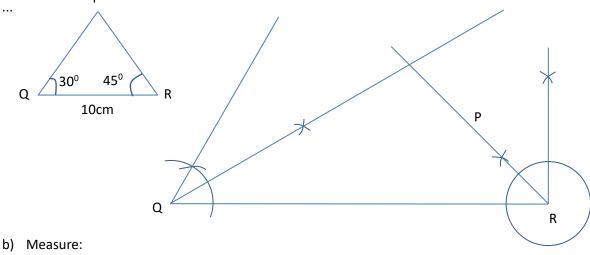   1heap of 5mangoes cost 500
   12 heaps of 5 mangoes cost 12 x 500 = 6000

   1heap of 8   mangoes cost 1000marks
   14 heaps of 8 mangoes cost 14 x 1000 = 14000

   Total money = 6000 + 14000 = shs. 20,000.

32a) Using a ruler, pencils and a pair of compasses only, construct a triangle in which angle PQR = $30^0$ and PRQ = $45^0$ and line QR = 10cm, the base of the triangle. (03 marks)



b) Measure:
   i.    PQ = 7.3cm (01 mark)

   ii.    PR= 5.2cm111(01 mark)

c) Find the perimeter of triangle PQR. (01 mark)
   Perimeter = 10 + 7.3 + 5.2 = 22.5cm

33.a) Solve for x: 2(x+1)-3(2x-1) = -3                           (03 marks)
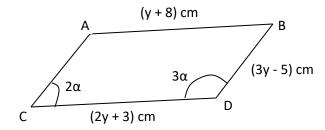
  = 2x + 2 − 6x + 3 = -3

  = -4x = -3-5 = -8

    X = 2

  b) Find the value of $a^r \div a^x$. given that a=2,r=5 and x=3        (03 marks)

$$2^5 \div 2^3 = 2^{(5-3)} = 2^2 = 2 \times 2 = 4$$

34. Use the figure below to answer question that follow.



  a)  Find the value of a.                                  (02 marks)

    $2\alpha + 3\alpha = 180^0$

      $5\alpha = 180^0$

      $\alpha = 36^0$

  b)  Find the size of angle BAC in degrees.              (01 marks)

    BAC = $3\alpha = 3 \times 36 = 108^0$

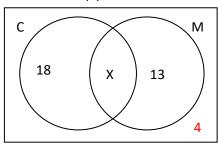  c)  Work out the value $Y$.                            (02 marks)

    2y + 3 = y + 8

    Correct like terms

    y = 5

35. At a birthday party attended by 40 guest ,18 ate chicken (c) only ,13 ate meat  (M) only, x guest ate both chicken and meat  and 4 did not eat any of the two dishes.

 a) Use the information given above to complete the Venn diagram below.

n($\varepsilon$) = 40

b) Find the value of *x*.                                                                                           (02 marks)

18 + x +13 +4 = 40

25 + x = 40

x = 5gest

c ) How many guests did not eat meat at all?                                                   (02 marks)

= 18 + 4 = 22 guests

36. A business man has 200 bags of maize flour each weight 50kg.

a)  Find the total weight of the bags in tones.                                               (02 marks)

weight of 200kg = 200 x 50 = 10000kg

but 1000kg = 1tonne

therefore, 10000kg = $\frac{10000 \times 1}{1000} = 10\ tonnes$

b) If a pick up carries 2 tones per trip, work out the number of bags the pick –up will carry in one trip.
                                                                                                                      (03 marks)

10tonnes = 200bags

2tonnes = $\frac{2 \times 200}{10} = 40 bags$

c) Find the number of trips the pickup will make to transport the whole flour from the milling machine to his shop. (03 marks)

40bags are carried in 1 trip

200bags are carried in $\frac{1 \ x \ 200}{40} = 5 \ trips$

37. On a mixed farm $\frac{1}{3}$ of the land is used for growing food crops while $\frac{1}{4}$ of the remaining lands is for cash crops, the rest of the land is for cattle grazing.

a) What fraction of the land is used for cattle grazing? (02 marks)

Land for growing of food crops = $\frac{1}{3}$

Land for growing of cash crop = $\frac{1}{4}$ of the remaining land

$$= \frac{1}{4}\left(1 - \frac{1}{3}\right)$$

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

$$= \frac{1}{6}$$

b) If 15 hectares are used for cash crops, what is the total area of the farm? (03 marks)

Let the total be X

$$\frac{1}{6}X = 15$$

X = 15 x 6

X = 90 hecteres

38. In a primary school, each pupil plays only one game. The pupils who play each game are given below.

***Use the information to answer the questions that that follow.***

| Foot ball | - | 55 |
|-----------|---|----|
| Volley ball | - | 45 |
| Netball | - | 40 |
| Basketball | - | 40 |
| Tennis | - | 20 |

a) What percentage of the pupils play netball?                                    (02 marks)

Total number of students = 55 + 45 + 40 + 20

$$= 200$$

Percentage of pupils who play netball = $\frac{40}{200} \times 100 = 20\%$

b) If a pupil is picked at random, what is the probability that the pupils plays volleyball?
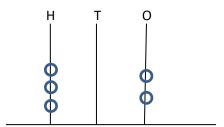
(02 mark)

Probability that a pupil plays volley ball = $\frac{number\ of\ student\ that\ play\ voleball}{total\ number\ of\ student}$

$$= \frac{45}{200}$$

$$= \frac{9}{40}$$

c) Find the mean number of pupils who plays games in the schools.  (02 marks)

Mean number = $\frac{55+45+40+40+20}{5} = 40 pupils$

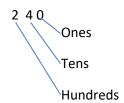39. a) Draw beads to shows the numbers 302 on the abacus below.

H     T     O

b) Write 3409 in standard form.                                    (02 marks)

3.409 x 10³

c) What is the place value of 4 in the number 240?                 (01 marks)

2 4 0
Ones
Tens
Hundreds

the place value of 4 is tens

40. Square tiles of sides 20cm cm each were laid on the floor of a room measuring 600cm by 400cm.

a) Find the number of tiles needed to cover the floor.                                   (03 marks)

Area of the floor = 600 x 400 = 240000cm$^2$

Area of a single tile = 20 x 20cm2 = 400cm$^2$

400cm2 are covered by 1tile

240000cm2 are covered by $\frac{1 \, x \, 240000}{400} = 600 tile$

b) If a box containing 25 tiles costs 30,000, find the total cost of tiles needed to covered the whole floor.

Required to find the cost per tile then find the cost of 600tile

25 tile cost 30000

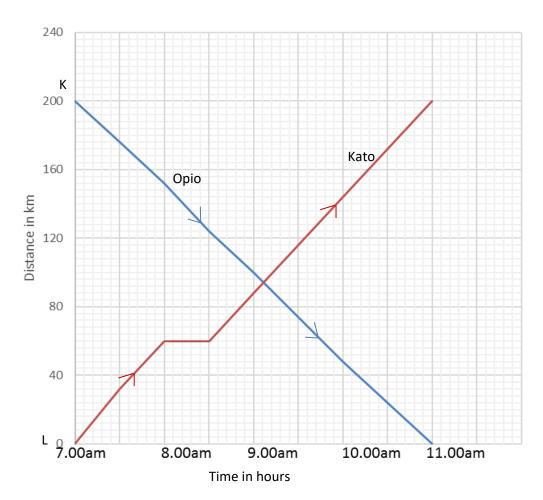1tile costs $\frac{30000}{25} = 1200$

600 tiles cost 1200 x 600 = shs. 720000

Hence, 600 tiles cost shs. 720000

41. The graph below sows the journey made by Opio and Kato between towns K and L which are 2000 km apart.

Opio left town K at 7:00am and drove at steady speed of 50km/h to town L. Kato left town L at the same time and covered a distance of 60km at a steady speed in a hour .He then rested for an hour after which he which he drove for hours to town K

**Use the graph to answer the question that follow.**



a) At what time did Opio and Kato meet?                                    (01 marks)

At 9:06am

b) What distance had Opio covered   by 9:00am?                              (01 marks)

Vertical scale each small square represent $\frac{40km}{10} = 4km$

Opio by 9.00am had covered 27 x 4 = 108 km

Alternatively opio by 9.00an had covered 200- 92 = 108km

c) How far from town L was Opio at 10:00a.m?

By 10.00am Opio  was  12 x4 = 48km from L

d) Work out Kato's average speed for the journey he covered after resting.        (01 marks)

Average speed = $\frac{total\ distance}{total\ time\ taken}$

Distance covered after resting = 200 – 60km = 140km

Time taken after resting = 11.00 – 8.30am = 2hour 30minutes = 2½ hours

∴ Average speed = $\frac{140}{2\frac{1}{2}}$ = 56kmhr$^{-1}$

e) Find Kato`s average speed for his whole journey.        (01 marks)

Average speed = $\frac{total\ distance}{total\ time\ taken}$ = $\frac{200}{(11.00am-7.00am)}$ = $\frac{200}{4}$ = $50kmhr^{-1}$

42.a) solve the inequality: 3(x+4)< 5x-2.        (03 marks)

Remove the brackets

= 3x + 12 < 5x -2

Collect like terms

12 + 2 < 5x -3x

14< 2x

7 < x

b) Solve the equation: 2x-2=$\frac{1}{4}$x+5        (03 marks)

multiply by 4 through to remove the fractions

4(2x -2) = 4($\frac{1}{4}x + 5$)

8x -8 = x + 20

Collect like terms

8x -x = 20 +8

7x = 28

x = 4

**END**