Dr. Bbosa Science

UGANDA NATIONAL EXAMINATION BOARD

PRIMARY LEAVING EXAMINATION

2003

MATHEMATICS

Time allowed: 2hours 15 minutes

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Index No:

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Read the following instructions carefully

1. **This paper has two sections A and B.**
2. **Section A has 30 short answer question (30 mark)**
3. **All the working. For both section A and B must be shown in the spaces provided**
4. **All working must be done using a blue or black ball**
   Point pen or fountain pen Diagram should be drawn in pencil
5. **No calculators are allowed in the examination room.**
6. **Unnecessary change of work may lead to loss of marks**
7. **Any hand writing that cannot easily be read may lead to loss of marks**
8. **Do not fill anything in the boxes indicated:**

"For examiners'. And those inside the question paper

FOR EXAMINERS USE ONLY		
Qn.No	**MARKS**	**EXR'S NO.**
1-10		
11-20		
21-30		
31-32		
33-34		
35-36		
37-38		
39-40		
41-42		
Total		

Turnover

SECTION A

1. Multiply:

$$\begin{array}{r} 3 \\ \times\ 2 \\ \hline 6 \\ \hline \end{array}$$

2. Solve; m-3 = 3

m = 6

3. Write 49 in Roman numbers.

49 = 40 + 9

= XL + IX

= XLIX

4. Write the number: 58,005 in words.

58,005 = fifty-eight thousand five

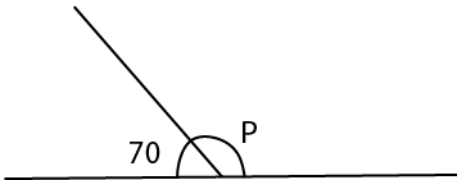
5. Subtrac

$$\begin{array}{r} 450 \\ -\ 125 \\ \hline 325 \\ \hline \end{array}$$

5. Divide: $\frac{2}{3} \div \frac{1}{3}$

$\frac{2}{3} \div \frac{1}{3} = \frac{2}{3} \, x \, \frac{3}{1} = 2$

6. Find the value of the angle marked p in the figure below.



$70 + P = 180^0$ (angle sum of a triangle)

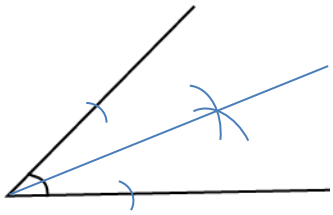
$P = 110^0$

7. If a = 2, b = 3 and c = 5, find the value of 3a + b + c.

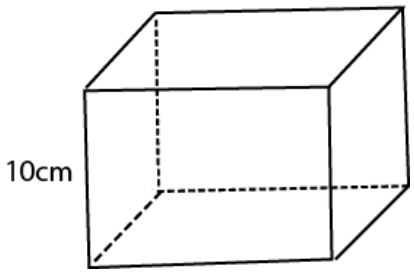
Substitute for a, b, c

(3 x 2) + 3 + 5 = 14

8. Using a pair of compasses, ruler and pencil, bisect the angle given below:



9. The figure below shows a cube whose edges are made of metal wire. If the length of one edge is 10 cm, find the length of wire needed to make the cube.



The length of the wire = 10 cm x 12 sides

= 120 cm

10. Find the next number in the following number pattern: 17, 12, 8, 5, 3, …

17, 12, 8, 5, 3, *2*

-5 -4 -3 -2 *-1*

∴ next number in the pattern is 2

11. Find the complement of an angle of 70°.

70^0 + complement = 90^0

Complement = 20^0

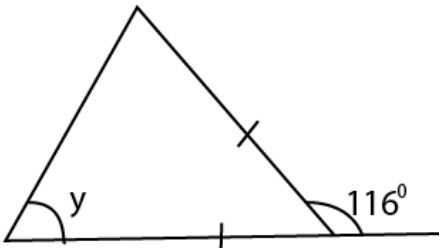
12. Saudah bought a dress at sh 6,000 and sold it at sh 7,200. What was her percentage profit?

Profit = 7200 – 6000 = 1200

Percentage profit = $\frac{profit}{cost\ price}\ x\ 100\%$

$= \frac{1200}{6000}\ x\ 100\% = 20\%$

13. Find the size of angle *y* in the figure below.



2y = 116

y = 58^0

14. Mary borrowed sh 100,000/= from her club to be returned in 3 months at a simple interest rate of 5% per month. Find out the total amount of money Mary returned to the club after 3 months.

Money returned = P + I

= P + PRT

= 100000 + 100000 x $\frac{5}{100}\ x\ \frac{3}{12}$

= 100000 + 1250

= 101250/=

15. A football team can win, draw or lose a match. What is the probability that it will win the march?

Probability = $\frac{1}{3}$

16. A bus carries 59 passengers per trip. How many passengers will the bus carry if it makes 12 trips?

Number passengers = 59 x 12 = 708

17. Find the area of circle whose radius is 7 cm. (Take $\pi = \frac{22}{7}$)

Area = πr^2

$= \frac{22}{7} \; x \; 7 \; x \; 7$

= 154 cm^2

18. The average height of Peter, James and John is 51 cm. If the height of Peter is 53 cm and that of James is 46 cm, find the height of John.

Average = $\frac{sum}{number}$

Let John's height be x

$51 = \frac{53+46+x}{3}$

(51 x 3) = 99 + x

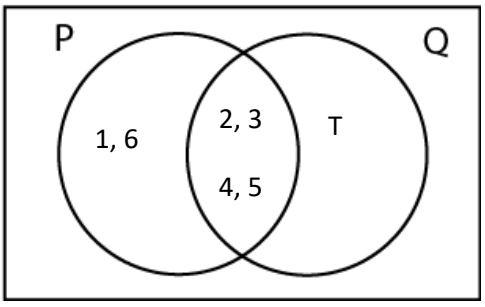
153 = 99 + x

x = 54

19. Mary kept the following record of rainfall in centimeters: 4, 3, 6, 5, 2, 3, 0. Find the mode.

The mode is the most common figure = 3

20. If P= **{1,2,3,4,5,6}** and Q= {2,3,4,5,T} , represent this information on the Venn diagram below.



21. Six plates cost sh 3,000. What is the cost of four plates?

6 plate cost 3000

1 plate cost $\frac{3000}{6} = 500$

4 plate cost 500 x 4 = shs 2000

22. Subtract: 4.06-2.9 = 1.16

23. Simplify: $\frac{1}{2} + \frac{1}{4} - \frac{1}{3}$

$\frac{(1\ x\ 6)+(1\ x\ 3)-(1\ x\ 4)}{12} = \frac{6+3-4}{12} = \frac{5}{12}$

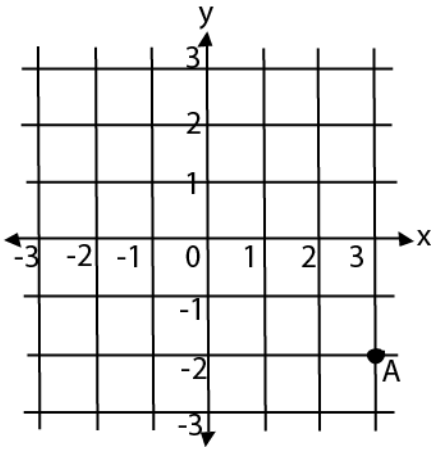
24. Subtract: 1010_{two}-111_{two}

1010_{two}

-111_{two}

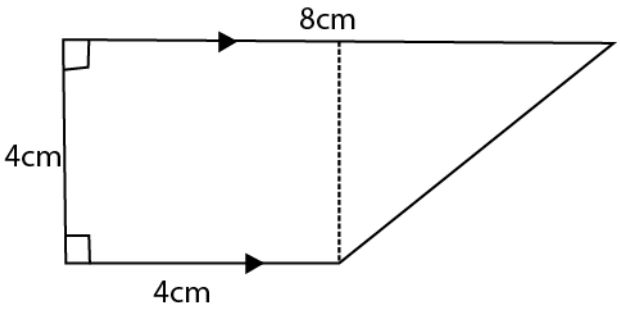
11_{two}

Use the graph to answer the question that follows:



25 Give the co-ordinates of *A =(3, -2)*

26. Find the area of the trapezium below.



Area = $\frac{1}{2}h\ (a+b)$

$= \frac{1}{2}\ x\ 4\ (8+4)$

$= 24cm^2$

28. In a class of 120 pupils, the ratio of girls to boys is 4:2. Find the number of boys.

Total ratio = 4 + 2 = 6

Number of boy = $\frac{2}{6}\ x\ 120 = 40\ boy$

29. Mukasa's bicycle got spoilt after he had covered a distance of 20 km which was $\frac{1}{4}$ of his journey. How long was the journey?

Let the whole journey be x

$\frac{1}{4}\ x = 20$

x = 20 x 4 = 80

30. Solve and give your answer in finite 7.

x-3 = 6 (finite 7).

x = (6 + 3) finite 7

= 2 (finite 7)

SECTION B

29. In Hatari Boys primary school, 60 boys who represented the school in the country sports day played the following games:

24 played hockey (H),

19 played rugby (R),

23 played football (F),

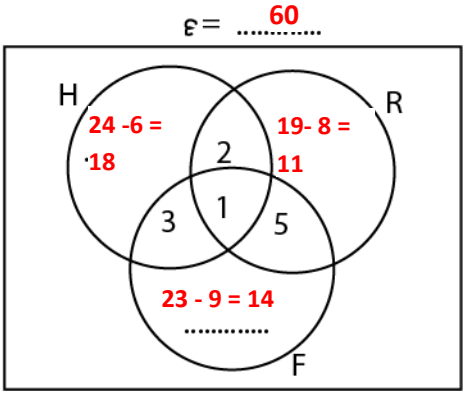
2 played both hockey and rugby only,

3 played football and hockey only.

5 played football and rugby only, and

1 played all the three games

a. Fill in the blank spaces in the Venn diagram above



b. How many boys played only one game?

Boys that played one game = 18 + 11 + 14 = 43

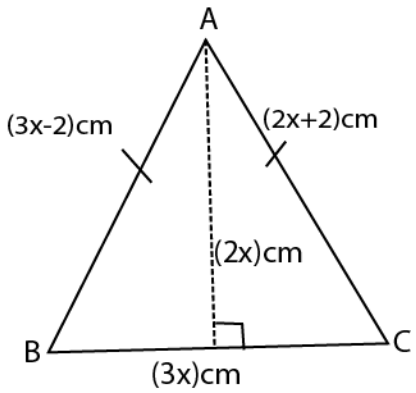
c. How many boys did not play any game?

Boys who did not play any game = 60 – (18 + 2 + 11 + 3 + 1 + 5 + 14)

= 60 – 54

= 6 boys

32. The figure ABC below is an isosceles triangle. Use it to answer the questions (a) and (b) that follow.



(i) Find the value of *x*

3x-2 = 2x +2

x = 4

(ii) Find the areas of the triangle ABC.

Area = $\frac{1}{2}bh = \frac{1}{2}(3\ x\ 4)(2\ x\ 4) = 48\ cm^2$

30. John and Mary set out for a journey of 180km. John's car consumes one litre of petrol every ten kilometres while Mary's consumes one litre every nine kilometres. If one litre of petrol costs sh 1,500, how much more money did Mary spend?

Liters of petrol consumed by Mary

9km require 1litres

180km require $\frac{1\ x\ 180}{9} = 20l$

1l cost 1500

20l cost $\frac{20\ x\ 1500}{1} = shs\ 30{,}000$

31. (a) Solve for x: $\frac{2x+2}{3} = \frac{x+3}{2}$

By cross multiplication

2(2x + 2) = 3(x + 3)

2x + 4 = 3x + 9

x = -5

(b) What is the value of $\frac{bc-d}{c^2}$; when b = 8, c = 3 and d = 6?

Substituting = $\frac{8\ x\ 3-6}{3^2} = \frac{24-6}{3\ x\ 3} = \frac{18}{9} = 2$

35. Kagodo sold two plots of land, one for sh 3,500,000, making a 10% profit and another for sh 5, 000,000, making a 20% profit. How much had Kagodo paid for the two plots?

Let the cost of the first plot be x

$\frac{110}{100} of\ x = 3500000$

x = $\frac{100}{110}\ x\ 3500000 = 3{,}181{,}818 \neq$

Let the cost of the second plot be y

$\frac{120}{100} of\ y = 5000000$

y = $\frac{100}{110}\ x\ 5000000 = 4{,}166{,}667 \neq$

the cost of two plots of land = 3,181,818 + 4,166,667 = shs. 7,348,485/=

36. a) Express 36km/h in metres per second.

1km = 1000m

36km = 36 x 1000 = 36000m

1hour = 3600second

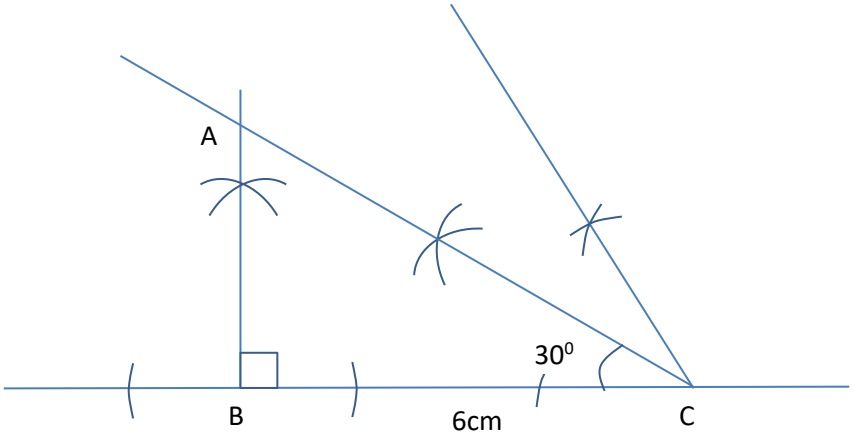
∴ 36km/h = 36000m/3600s = 10m/s

(b) A motorist covered 200km from 9.00am to 11.00am. Calculate his average speed.

Time taken = 11.00 – 9.00 = 2hours

Speed = $\frac{distance}{time} = \frac{200km}{2hours} = 100km/h$

37. Using a pencil, ruler and a pair of compasses only, construct triangle ABC in which BC = 6cm, angle ABC = 90 and angle BCA = 30°



a. Measure the length of AC = 7.0cm

b. Measure the length of AB = 3.6cm

38. Given that x = 2y+ 1. Complete the table below

X	1	**3**	5	**7**	9
Y	**0**	1	**2**	3	**4**

39. Olinde lends sh 300,000 to Mugisha at an interest rate of 5% per year for 4 months

a) Find the interest gained by Olinde.

I = PRT

= 300000 x $\frac{5}{100}$ x $\frac{4}{12}$ = 5000

b) How much money altogether did Mugisha pay back?

Money paid back = principal + interest

= 300000 + 5000

= 305,000

40. A man spends $\frac{1}{4}$ of his salary on food, $\frac{1}{3}$ on clothing, $\frac{1}{6}$ on fees, $\frac{1}{12}$ on entertainment and banks the rest which is sh 27,000.

a) What fraction of the salary does he bank?

Fraction banked = $(1 - (\frac{1}{4} + \frac{1}{3} + \frac{1}{6} + \frac{1}{12}))$

$= \frac{(1\ x\ 12) - ((1\ x\ 3) + (1\ x\ 4) + (1\ x\ 2) + (1\ x\ 1))}{12}$

$= \frac{2}{12} = \frac{1}{6}$

b) How much money does he earn as his salary?

Let the salary = X

$\frac{1}{6}$ of X = 27000

X = 27000 x 6 = 162000/=

41. Given that the exchange rate of United States dollars to Uganda shillings is US $ 1 to Ug. Sh. 1,800 and that the exchange rate of the Kenya shillings to Uganda shillings is K. sh. 1 to Ug. Sh.23. How much money in Uganda shillings do I have in total if I have US $ 85 and K.sh. 12,500?

Change $ 85 to Uganda shillings = 85 x 1800 = 153000

Change K.shs 12500 to Uganda shillings = 12500 x 23 = 287500

Total Uganda shillings = 440500

42. (a) Kamya packs cylindrical beef tins whose height is 10 cm and diameter 5 cm in a rectangular carton measuring 60 cm long 10cm wide, 30cm high, How many tins will be packed in the carton?

Number of tins = $\frac{60}{5}\ x\ \frac{10}{5}\ x\ \frac{30}{10}$

= 12 x 2 x 3 = 72 tins

(b) Find the space (in cm^3) that will remain after the tins have been packed in the carton.

(Takeπ = 3.14)

Volume of 1 tin = $\pi r^2 h$

$= \frac{22}{7}\ x\ \frac{5}{2}\ x\ \frac{5}{2}\ x\ 10 = 14140.8cm^3$

Volume of 48tins = 196.4 x 72 = 9427.2 cm^3

Volume of the box = 60 x 10 x 30 =18000

Unoccupied volume = 18000 – 14140.8 = 3859.2cm^3