Dr. Bbosa Science

UGANDA NATIONAL EXAMINATION BOARD

PRIMARY LEAVING EXAMINATION

2005

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

1. Work 2 3 0

   + 6 9

   2 9 9

2. Write 147 in roman numerals

   147 = 100 + 40 +7= C + XL + VII = CXLVII

3. Find the complement of the angle of 25^0

   Complementary angles add up to 90^0

   Let the angle be y

   $y + 250 = 90^0$

   $y = 65^0$

4. Write in figure: Two hundred twenty-two thousand twenty-two.

   200000

   22000

   \+ 22

   222,022

5. Simplify: 3p−3q + 2p+2q

   Collecting like term: = 3p + 2p 2q – 3q

   = 5p - q

6. Change 30cm to metres

   100cm = 1m

   30m = $\frac{30\ x\ 1}{100}$ = 0.3m

7. Work out: $\frac{1}{2} + \frac{3}{4}$

   $$\frac{1\ x\ 2+3}{4} = \frac{5}{4} = 1\frac{1}{4}$$

8. Find the next number in the sequence: 125, 64, 27, 8, **1**

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

9. Solve: $2t + 5=t+1$.

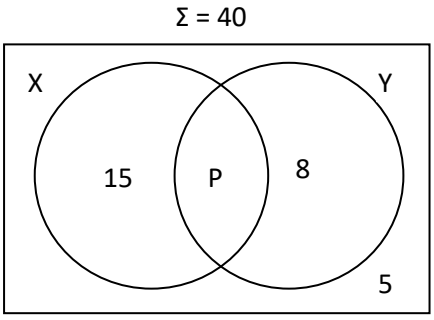
Collect like term: $2t - t = 1 - 5$

$T = -4$

10. Work out: $110_{two} \times 11_{two}$

$$\begin{array}{r} 110 \\ \times\ 11 \\ \hline 110 \\ 110 \\ \hline 10010 \end{array}$$

11. Study the Venn diagram below and find the value of P.

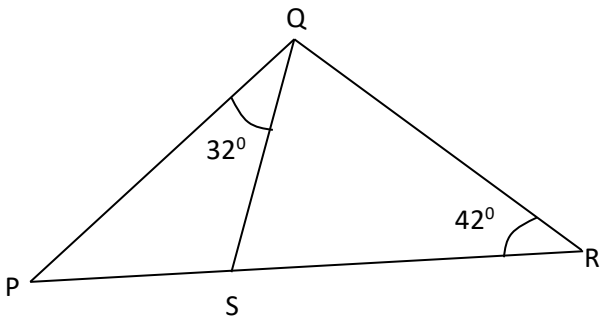


$15 + P + 8 + 5 = 40$

$P = 12$

12. Work out: $^{-}5+^{+}8. = 3$

13. In the triangle *PQR*, angle *PQR* = 78^0, angle *PRQ*=42^0 and angle *PQS* = 32^0. Find the size of angle *PSQ*.



Angle QPR + angle PQR + angle QRP = 180^0 (angle sum of a triangle)

Angle QPR + 78^0 + 42^0 = 180^0

Angle QPR = 60^0

Angle PSQ + angle QPS + angle PQS = 180^0 (angle sum of a triangle)

Angle PSQ + 60^0 + 32^0 = 180^0

Angle PSQ = 88^0

14. A school has a total of 400 pupils. If there are 240 girls in the school, what is the ratio of boys to girls?

    Number of boy: 400 – 240 = 160

    Ratio of boys: girls = 160: 240

    Divide by 80 throughout = 2: 3

15. How many cubes of ½ cm ^{3} volumes are contained in a cube of 2cm^3 volume?

    Number or cube $2 \div \frac{1}{2}$ = 2 x $\frac{2}{1} = 4cubes$

16. Find the range of the following numbers: 5,1,4,6,9,3,8,2.

    Arrange the numbers in order starting from the smallest: 1, 2, 3, 4, 5, 6, 8, 9

    Range = the biggest value – smallest value

    = 9 – 1

    = 8

17. The probability of a football team winning a game in $^3/_5$. If the team plays 15 games, how many games are the team expected to win?

    = $^3/_5\ x\ 15 = 9$

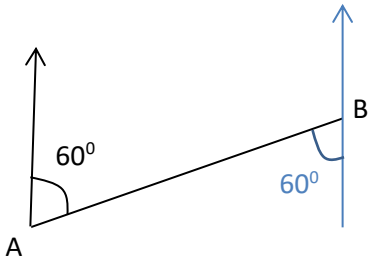
18. A businessman sold a generator at Shs. 200,000 making a loss of 10,500. What was the cost price of the generator?

Cost = sale price + loss

= 200,000 + 10,500

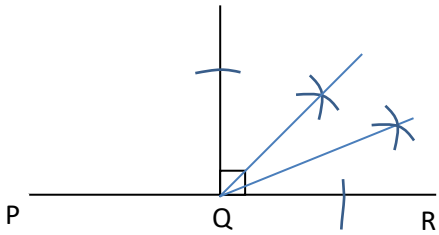
= 210, 500

19. What is the bearing of A from B in the diagram below?



The bearing of A from B = $180^0 + 60^0 = 240^0$

20. Using a pair of compasses, ruler and a pencil only, construct an angle of $22\frac{1}{2}^0$ at point Q in the

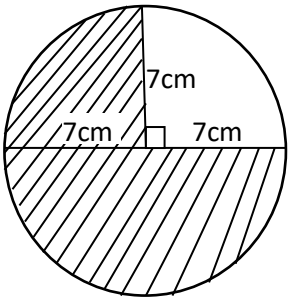


21. The time is 11:30 am. what time will it be after 10 hours on a twenty-four-hour clock?

11:30 + 10 = 21:30

22. Find the are of the shaded part in the diagram below.

(use $\pi=\frac{22}{7}$)



Area of shaded area = $\frac{3}{4}\pi r^2$

$= \frac{3}{4}\ x\ \frac{22}{7}\ x\ 7\ x7$

= 115.5cm^2

23. Find the greatest common factor (GCF) of 12 and 18.

2	12	18
3	6	9
	2	3

GCF = 2 x 3 = 6

24. A farmer banked Shs. 3 million in Nile bank. If he banked 20,000-shilling notes, how many notes did he bank?

Number of notes = $\frac{total\ amount}{amount\ per\ note} = \frac{3000000}{20000} = 150$

25. The average height of 4 girls, Mary, Jane, Mariam and Agnes is 120cm. Mary is 100 cm tall and Jane is 130 cm tall. Find the height of Mariam if Jane is as tall as Agnes.
Let the height of Agnes be x

Average = $\frac{sum\ of\ items}{number\ of\ items} = \frac{100+130+130+x}{4} = 120$

100 + 130 + 130 + x = 120 x 4

360 + x = 480

x = 480 – 360

x = 120

26. Ten men take 12 days to do a piece of work. How many men working at the same rate do the same piece of work in 8 days?

Number of men x number of days required = constant = 12 x 10 = 120days

Let the number of men required to do the work in 8days be X

8X = 120

X = $\frac{120}{8} = 15men$

27. If a=$^{-}$3, b=6 and c=$^{-}$2. Find the value of $\frac{b(a+c)}{c}$

Substitute for a, b, c in the expression = $\frac{6(-3+-2)}{-2} = \frac{6x-5}{-2} = \frac{-30}{-2} = 15$

28. Find the size of one of the exterior angles of a regular octagon.

Exterior angle = $\frac{360}{number\ of\ sides} = \frac{360}{8} = 45^0$

29. Given that X = (prime numbers less than 7) and Y = (multiple of 2 less than 7) find n(X∪Y)

x = {2, 3, 5} and Y = {2, 4, 6)

(X∪Y) = {2, 3, 4, 5, 6}

n(X∪Y) = 5

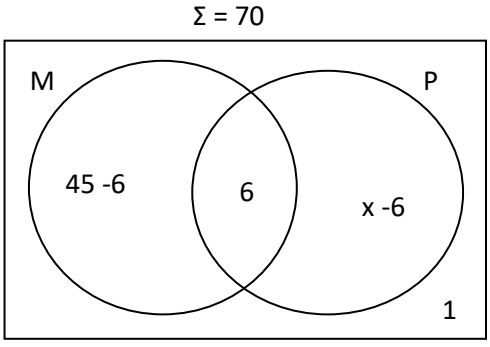
30. Find the product of place value of 1 in the number 8.91 and the place value of 3 the number 368.4.

= $\frac{1}{100}\ x\ 300 = 3$

Section B

31. Seventy children were taken to a clinic for immunization.
45 children were immunized against measles (M)
x children were immunized against polio (P)
6 children were immunized against measles and polio.
1 child was not immunized at all.

(a) Represent the above information in the Venn diagram below:



(b) Find the number of children who were immunized against polio only.

First, we find the value of x.

45 – 6 + 6 + x -6 + 1 = 70

x = 30

number of children immunized against polio only = 30 -6 = 24

32. $\frac{5}{8}$ of water in a tank lasts a family 45 days.

(a) How long will $\frac{2}{3}$ of the water in that tank last the family?

Let the capacity of the tank be y

$\frac{5y}{8}$ $last\ 45\ days$

$\therefore\ \frac{2y}{3}$ $wil\ last\ [45\ x\ \frac{2y}{3}]\ \div \frac{5y}{8}$

$= [45\ x\ \frac{2y}{3}]\ x \frac{8}{5y}$

$= 45\ x\ \frac{16}{15}$

$= 48\ days$

(b) If the family spends shs 300 per day on water, how much does it spend on a full tank?

A full tank y lasts $\frac{45\ x\ 8}{5} = 72 days$

1day costs shs 300

72 days will cost 72 x 300 = shs. 21600

33. A bus left Kampala for Masaka town with 60 passengers. At Mpigi 15 got out, at Buwama 8 boarded and at Lukaya 12 got out. It then travelled straight to Masaka town and the rest of the passengers got out.

(a) How many passengers reached Masaka town?

60 – 15 + 8 – 12 = 41

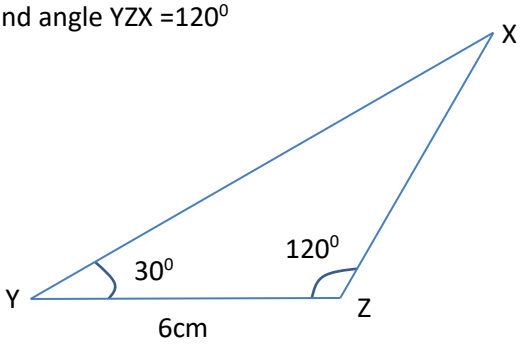
(b) How much money was collected from those who reached Lukaya if each paid shs 3,500?

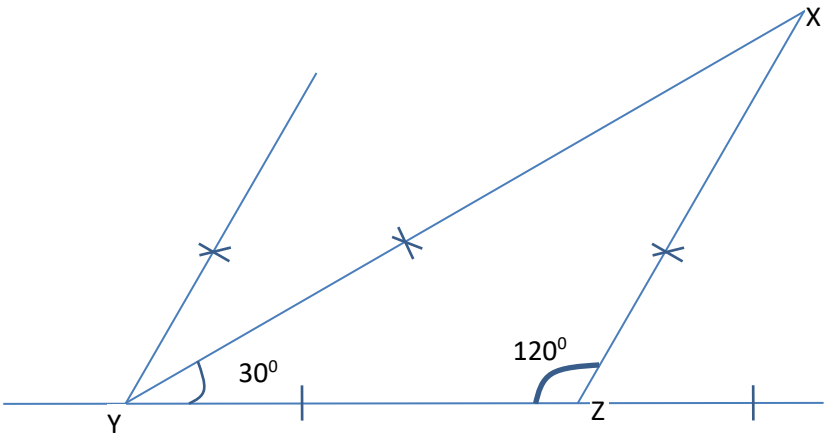
12 x 3500 = shs. 42, 000

34. (a) Using a pair of compasses, rulers and a pencil only, construct a triangle XYZ in which YZ=6cm angle XYZ=30^0 and angle YZX =120^0

Measure XY

Sketch





XY = 10.4cm

35. The sum of 4 consecutive integers is 18. Find these integers.

Let the first number be x, then then the consecutive numbers are , x, x+1, x +2, x + 3

Thus, x + x + 1 + x + 2 + x + 3 = 18

$4x + 6 = 18$

$4x = 12$

$x = 3$

hence the integers are 3, 4, 5, and 6

36. A radio uses batteries of 1.5 volts, in order for the radio to work it requires 12 volts.

(a) How many such batteries will the radio require?

It requires = $\frac{12}{1.5} = 8\ batteries$

(b) If a pair of batteries costs shs600 @, how much money will be needed to buy the required batteries?

Number of pairs of batteries = $\frac{number\ of\ batteries}{2} = \frac{8}{2} = 4\ pairs\ of\ batteries$

But 1pair of batteries cost shs. 600

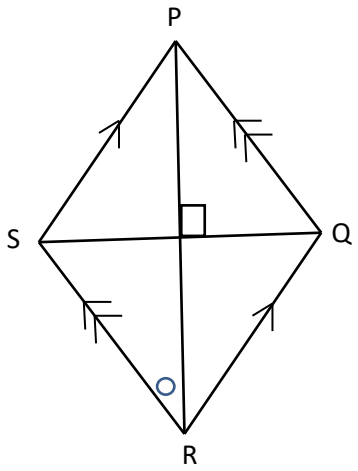
4pairs of batteries costs 600 x 4 = shs.2400

37. The sums of the values in the tables below are the same vertically; horizontally and diagonally. Fill in the missing values to complete.

14	**27**	28	17
25	20	19	**22**
21	24	23	18
26	15	**16**	29

38. The diagram below is a rhombus *PQRS*. Its perimeter is 80cm. Diagonal *SQ* is 24 cm long.

(a) Find the length of diagonal *PR*



Side of rhombus = $\frac{80}{4} = 20$

OQ = $\frac{SQ}{2} = \frac{24}{2} = 12cm$

From Pythagoras theorem

$PQ^2 = OQ^2 + OP^2$

$20^2 = 12^2 + OP^2$

OP = $\sqrt{(400 - 144)}$

OP = 16

PR = 2OP = 2 x 16 = 32

(b) Find the area of the rhombus in cm^2

Area of the rhombus = 2 x area of PSR

$= 2 \times \frac{1}{2} x24 \; x \; 16$

$= 384 \; cm^2$

39. (a) simplify $\frac{0.48 \times 0.2}{0.16}$

$= \left[\frac{48}{100} \; x \; \frac{2}{10}\right] \div \frac{16}{100}$

$= \frac{48 \; x \; 2}{1000} \div \frac{16}{100} = \frac{48 \; x \; 2}{1000} \; x \; \frac{100}{16}$

= 0.6

(b) solve $x + \frac{1}{4}x = 5$

Multiply 4 throughout

4x +x = 20

5x = 20

X = 4

40. A trader has various amounts of money in the following currencies.

200 United States dollars(US$)
100 Kenya shillings (K.shs.)
500,000 Uganda shillings (Ug.Shs)
Given that the existing exchange rate are
US$ 1= Ug Shs.1850
K. Shs 1 = Ug Shs. 25

(a) Find the total amount of amount of money in Uganda shillings, trader has.

Amount	Rate	Total
200$	1$ = Ug. Shs 1850	370,000
K. shs. 100	1K. shs = Ug shs. 25	2,500
Ug. Shs. 500,000	1	500,000
Total		**872,500**

(b) If a watch cost K shs. 1,480. Find how many US. Dollars the trader would pay for the watch.

Change K. shs into Uganda Shillings

1K. shs. = 25 Ug. Sh

1,480 K. shs. = 25 x 1480 = 37, 000

Convert Ug. Shs. To US dollars

1850Ug. Shs = 1$

37000 Ug. Shs = $\frac{37000}{1850} = 20\$$

41. The distance on map is 2.5cm. Find the actual distance on the ground in kilometers (KM). Given that the scale is 1:480, 000.

Given A scale:1: 480000

1cm on a map represents 480,000 cm on ground

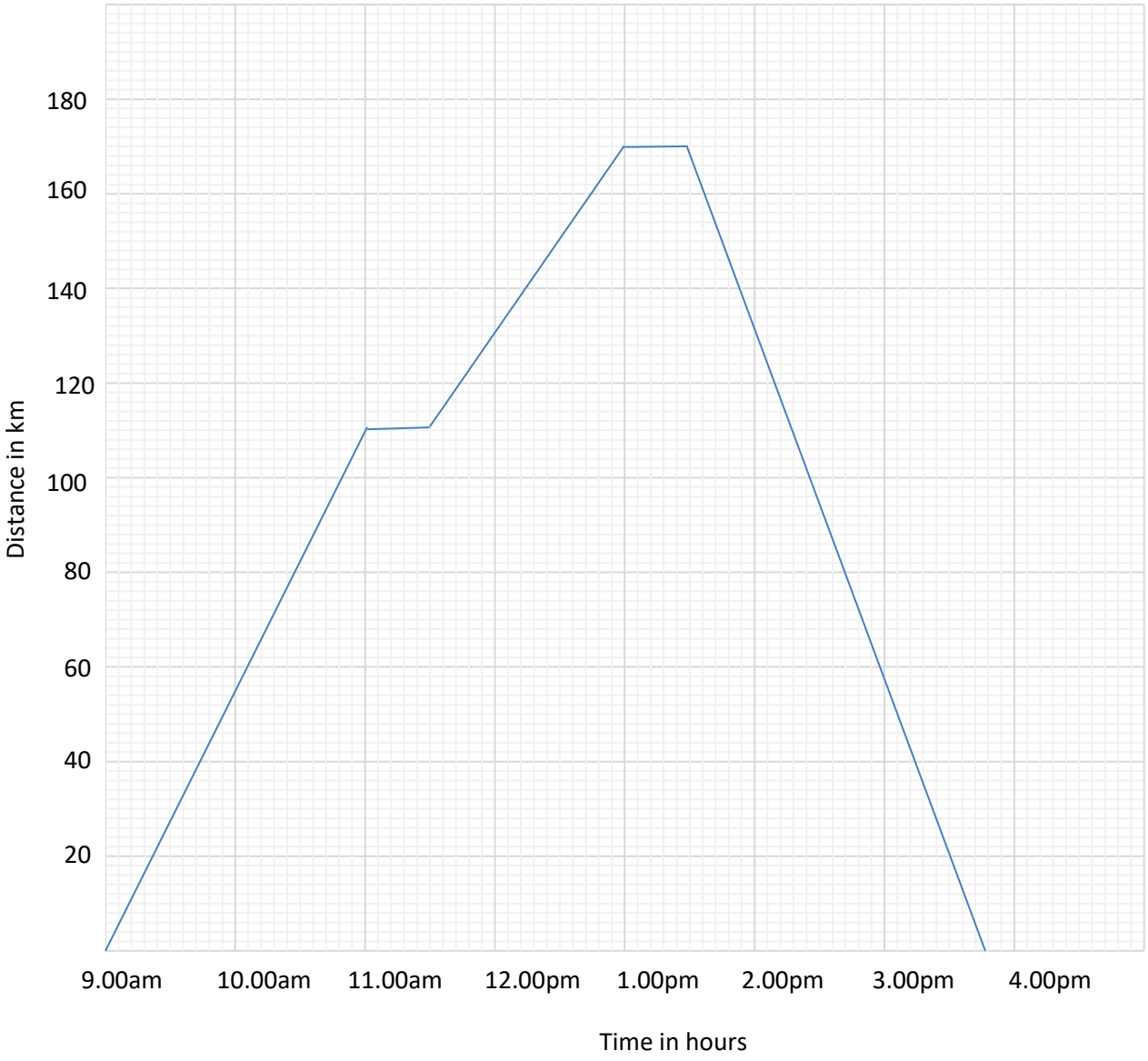
2.5cm on map represent 480,000 x 25

= 12, 000,000 cm

$= \frac{1{,}200{,}000}{100000} = 12km$

42. Bbosa left town P at 9.00am and drove at 55km per hour for 2 hours to town Q he rested for half an hour at town Q he left town Q and drove for $1\frac{1}{2}$ hours at 40km per hour to town R; he rested for half an hour at town R. He then left town R and drove back to town P 75 km per hour

(a) Draw Bbosa`s journey on the graph provided



(b) Find the average speed for the whole journey.

Total time = 6.7hours

Total distance = 170 x 2 = 340km

Speed = $\frac{distance}{time} = \frac{340}{6.7} = 51.5kmhr^{-1}$

End