Dr. Bbosa Science

UGANDA NATIONAL EXAMINATION BOARD

PRIMARY LEAVING EXAMINATION

2008

MATHEMATICS

Time allowed: 2hours 15 minutes

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Index No:

Candidate's Name……..

Candidate's signature…….

District Name……

Read the following instructions carefully

1. **This paper has two sections A and B.**
2. **Section A has 30 short answer questions (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		

SECTION A: (30MARKS)

Question 1to 30 carry one mark each.

1. Work out 60 ÷ 6

   $60 \div 6 = 10$

2. Given that set K = (1, 2, 3, 4, 5) and set L = (0, 5, 7),
   Find (KUL)
   (KUL) = {1, 2, 3, 4, 5, 0, 7}

3. Simplify 4k – 3k + k

   4k + k -3k = 5k- 3k = 2k

4. A meeting started at 9:30am and lasted 50munites at what time did it end?

   9:30

   \+ 50

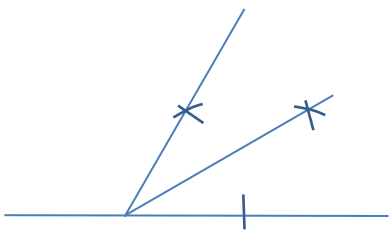
   10: 20am

5. Express 0.3 as a fraction

   0.3 = $\frac{3}{10}$

6. Arrange the following numbers beginning with the smallest.
   3, 0, ⁻1, 8, ⁻ 6
   Arranged as follows: ⁻6, ⁻1, 0, 3, 8

7. Using a pair of compasses, ruler and pencil only, construct an angle of 30°



8. Abdul bought the following number of goats during the week follow.

Day of the week	**MON**	**TUE**	**WED**	**THUR**	**FRI**
number of goats	3	2	5	7	8

Find the range

Range = highest value – lowest value

= 8 - 2

= 6

9. Write CXC in Hindu – Arabic numerals

CXC = C + XC

= 100 + 90

= 190

10. If Nandi buys 4 text books for shs 240,000, how much will 9 similar books cost?

4 books cost 240000

9 books cost (cross multiply) = $\frac{240000\ x\ 9}{4} = 540000$

∴ 9 books cost shs. 540000

11. Write in words 3,602

Three thousands six hundred two

12. The time on the 24 – hour clock is 13:42 hours. What time will it be on a12- hour clock?

13 : 42

\- 12 : 00

1 : 42 pm

13. Find the next number in the sequence: $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, $\frac{1}{16}$.....

$\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, $\frac{1}{16}$, $\mathbf{\frac{1}{32}}$

Or $\frac{1}{2^1}$, $\frac{1}{2^2}$, $\frac{1}{2^3}$, $\frac{1}{2^4}$, $\mathbf{\frac{1}{2^5}}$,

14. A trader got a simple interest of shs 18,000 after depositing shs90,000 in a bank at an interest of 10% per annum. For, how long was his money in the bank?

    I = P x R x T

    90000 x $\frac{10}{100}$ $x\ T$ = 18000

    T = 2 years

15. A taxi carries 14 passengers while bus carries 29 passengers. If the two vehicles make two journey each, how many passengers will they carry altogether?

    Total passengers carried by a taxi = 14 x 2= 28

    Total passengers carried by a bus = 29 x 2 = 58

    Total passengers carried by a taxi and bus = 28 + 58 = 86

16. Solve the equation 5t- 2 (t +1) = 1
    Remove brackets: 5t – 2t-2 = 1
    Collect like terms: 5t -2t = 1 +2
    Simplify 3t = 3
    t = 1

17. Change 9 base ten to base two

2	9	R
2	4	1
2	2	0
2	1	0

∴ $9_{ten} = 1001_{two}$

18. The base area of a cube is 25cm^2, calculate the volume of the cube.

    Note for cube all sides are equal

    Side of the cube S = $\sqrt{25}$ = 5cm

    Volume = S^3 = 5 x 5 x 5 = 125cm^3

19. Solve the inequality -2p + 4>6

Collect like terms – 2p > 6 - 4 = 2

Divide through 2 : -p > 1

Multiply though by -1 (the sign changes) p < -1

20. The exterior of a regular polygon is 45^0. Find the number of sides the polygon has.

Exterior = $\frac{360}{number\ of\ sides}$

Number of sides =$\frac{360}{45} = 8\ sides$

21. The difference between $\frac{1}{5}$ and $\frac{1}{6}$ of a number is 7. Find the number.

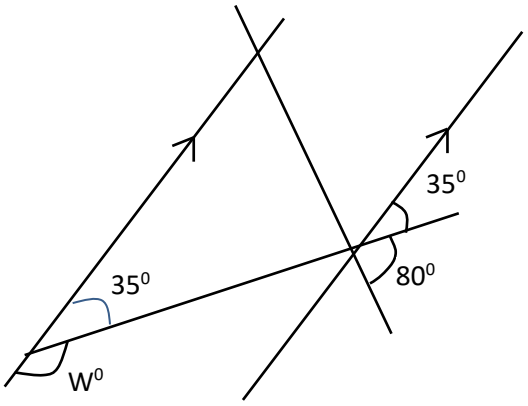
Let the let the number be X

$\frac{1}{5}$ x - $\frac{1}{6}x = 7$

$\frac{1\ x\ 6\ x - 1\ x\ 5x}{30} = 7$

X = 210

22. Find the value w in the figure below



W + 35 = 180

W = 180 – 35

= 145^0

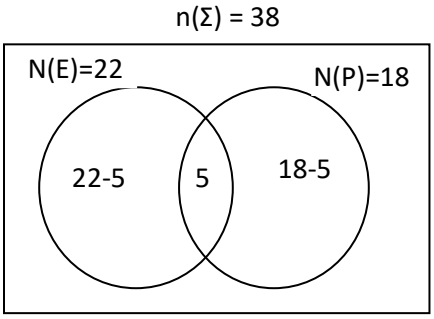
23. Motor cyclist covered a distance of 42km in $3\frac{1}{2}$ hours. Calculate the average speed of the journey.

Speed = $\frac{distance}{time}$ $= \frac{42}{3\frac{1}{2}}$

$= 42 \div \frac{7}{2}$

$= 42 \times \frac{2}{7} = 12 khr^{-1}$

24. Study the Venn diagram below carefully and answer the question that follows.



Find n(EUP)'

n (EUP) = 22 – 5 + 5 + 18 -5 = 35

n(EUP)' = 38- 35 = 3

25. Simplify $\frac{3}{9} - \frac{1}{18}$

$\frac{3 x 2-1}{18} = \frac{5}{18}$

26. Workout: $\frac{0.25 \times 54}{0.045}$

$= \left(\frac{25}{100} x\ 54\right) \div \frac{45}{1000}$

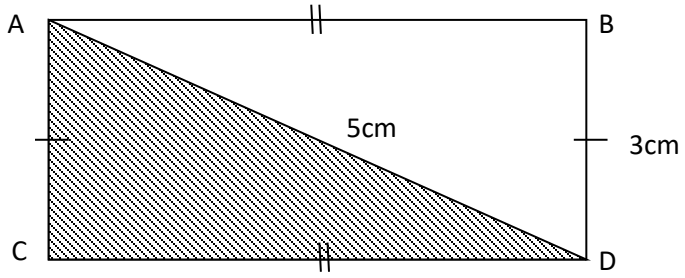
$= \frac{25\ x\ 54\ x\ 1000}{100\ x45}$

= 30

27. Find the square root of 1.96

$\sqrt{1.96} = \sqrt{\left[\frac{196}{100}\right]} = \frac{14}{10} = 1.4$

28. Find the area of the shaded part in the figure below.



$AC^2 + CD^2 = AC^2$ (Pythagoras theorem)

$3^2 + CD^2 = 5^2$

$CD^2 = 25 - 9$

$= 16$

$CD = \sqrt{16} = 4cm$

Area = $\frac{1}{2}\ x\ AC\ x\ CD = \frac{1}{2}\ x\ 4\ x\ 3 = 2\ x\ 3 = 6cm^2$

29. Solve 5+ n=3 (finite 7)

5 +n = 3 (finite 7)

5 + n = 3 +7

n = 10 – 5 = 5

30. Peter scored the following marks in attest 9, 8, 7 and 4. Find peters' mean score in the test.

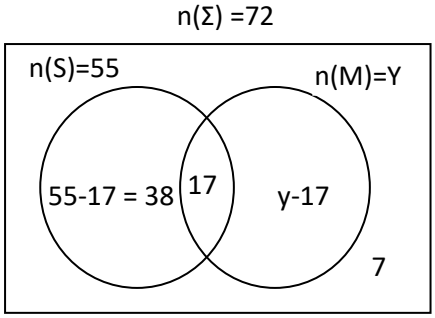
Mean = $\frac{sum\ of\ items}{number\ of\ Items} = \frac{9+8+7+4}{4} = \frac{28}{4} = 7$

SECTION B (70MARKS)

(Marks for each part of the question are indicated in the brackets)

31. At a birthday part, 72 guests were invited. 55 were served with soda (S), Y were served with mineral water (M) while 7 did not take any of the two drinks and 17 were served with both drinks.

(a) Represent the above information on the Venn diagram (3marks)



(b) Find the valve of Y

38 + 17 + Y – 17 + 7 = 72

Y + 45 = 72

Y = 72 -45 = 27

(c) How many guest were served with one drink only? (2marks)

= n(s) only + n(M) only

= 38 + (27- 17) = 38 + 10 = 48

32. Given that m=2 and y= -3 (2marks)

(a) Workout: $\frac{2(ym)+2}{(m-Y)-6}$ (3marks)

Substitute for y and m

$\frac{2(-3\,x2)+2}{(2-(-3))-6} = \frac{-10}{-1} = 10$

Turnover

(b). Barbara is 4 times as old as Mukasa. In 10 years' time, Barbara will be twice as old as Mukasa will be

How old is Barbara and Mukasa now? (4marks)

Let Barbra's age be 4x

Mukasa's age = $\frac{4x}{4} = x$

In 10 years times Barbara's will be 4x+ 10

Mukasa's ages will be x + 10

It implies that 4x + 10 = 2(x + 10)

4x + 10 = 2x + 20

Collecting like terms:

4x – 2x = 20 - 10

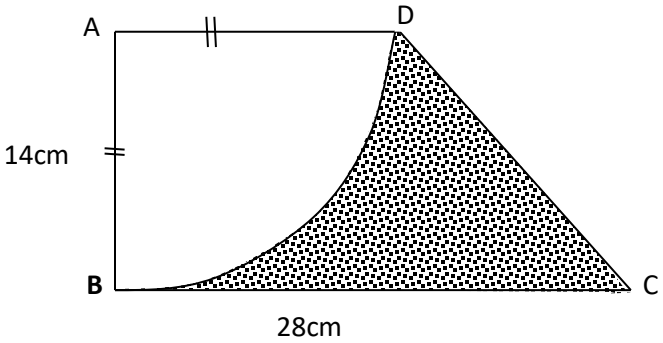
2x = 10

X = 5

∴ the age of Barbra = 4 x 5 = 20years

33. The figure below is a trapezium where AB=AD=14cm, BC = 28cm and ABD from a quarter of a circle.

Calculate the area of the shaded part (use π $=\frac{22}{7}$) (6mark)

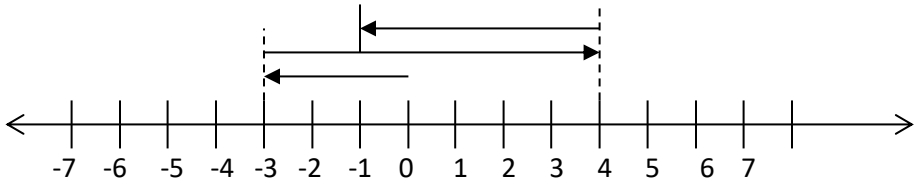


Area of shaded area = Area of ABCD – Area of ABD

$= \frac{1}{2}\, h\,(a+b) - \frac{1}{4}\,\pi r^2$

$= \frac{1}{2}\, x\, 14\,(14+28) - \frac{1}{4}\,\pi x\, 14^2 = 294 - 154 = 140\text{cm}^2$

34. Write mathematical statement shown on the number line below.



Statement = -3 + 7 = -5

35. The District inspector of school of certain district register 4000 candidates of PLE-2007. Out these, 30% were girls below 15years and 25% were boys below 15year of age, if there were 1000 girls who were above 15 of age:

(a) find the number of girls who sat for PLE. (2mark)

The number of girls below 15years = $\frac{30}{100}\ x\ 4000 = 1200$

Total number of girls = 1000 + 1200

= 2200

(b) Find the number of boys who sat for PLE (1mark)

Number of boys = total number of pupils – number od girls

= 4000 – 2200

= 1800 boys

(c) How many first grade did the district get if all the candidates below 15years of age in division one? (2marks)

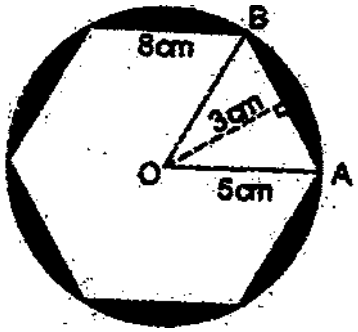
Boys before the age = $\frac{25}{100}\ x\ 4000$ = 1000

Number of first grades = number of boys below 15years + number of girls below 15years

= 1000 + 1200

= 2200

36. The figure below show a regular six- sided 8cm long enclosed in circle of radius 5cm. Triangle OAB of height 3cm is part of the polygon.



(a) Find the area of the polygon

Area of the polygon = area of AOB x 6

$$= \left(\frac{1}{2}\ x\ 8\ x\ 3\right) x\ 6 = 72cm^2$$

(b) Find the area of the shaded region. (use $\pi = 3.14$) (3mark)

Area of shaded part = Area of circle – area of polygon

$$= \pi r^2 - 72$$

$$= \pi\ x\ 5^2 - 74 = 78.5 - 17$$

$$= 6.5\ cm^2$$

37. A Certain country in Uganda has population of 300,000 people. Of these people $\frac{3}{5}$ are females and $\frac{5}{6}$ of the females are girls.

(a) If $\frac{2}{3}$ of the males among the population are boys, find the ratio of boys to girls. (4marks)

Fraction of boys = $\frac{2}{3}(1 - \frac{3}{5}) = \frac{2}{3}\ x\ \frac{2}{5} = \frac{4}{15}$

Fraction of girls = $\frac{3}{5}\ x\ \frac{5}{6} = \frac{1}{2}$

Ratio of boys to girls: $\frac{4}{15} \div \frac{1}{2} = \frac{4}{15}\ x\ \frac{2}{1} = \frac{8}{15}$ or 8:15

(b) What the total number of boys and girls in the country? (2marks)

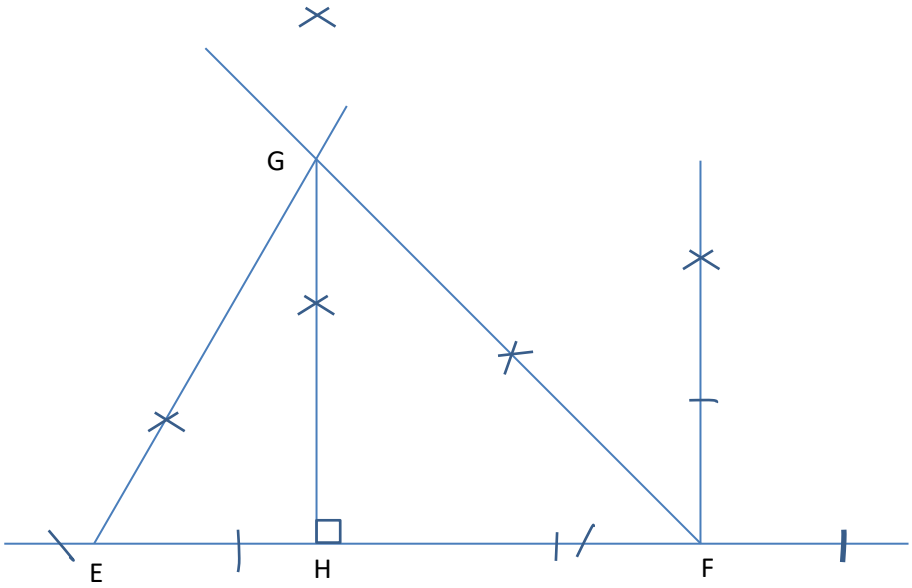
Number of girls = $\frac{1}{2}\ x\ 300000 = 150000$

Number of boys = $\frac{4}{15}\ x\ 300000 = 80000$

Total boys and girls = 80000 + 150000 = 230000

38. (a) using a pair of compasses, a pencil and ruler only.

(i) construct a triangle EFG in which EF = 8cm, angle GEF = 60^0 and angle EFG = 45^0. From G, drop a perpendicular FG to meet EF at H. (4marks)



(ii). Measure *GH*:**5cm** (1mark)

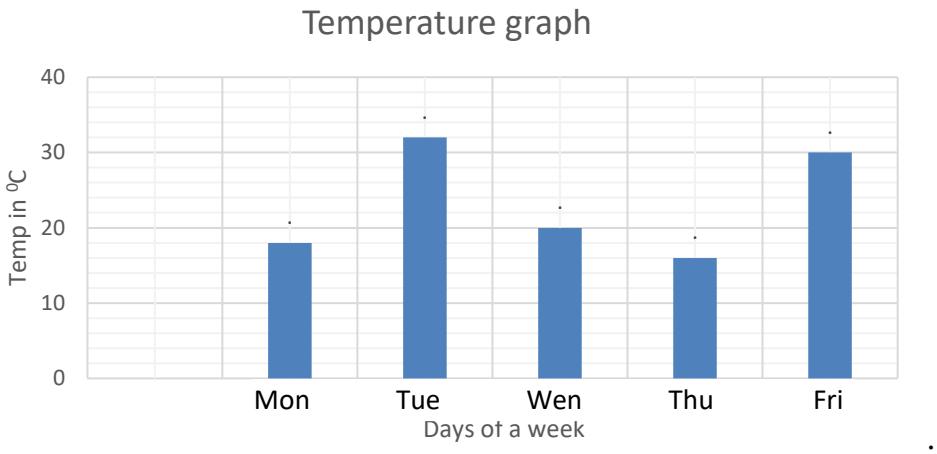
(b). Using GH as the height, find the area of triangle EFG (2marks)

Area $= \frac{1}{2}\ x\ EF\ x\ HG$

$= \frac{1}{2}\ x\ 8\ x\ 5 = 20cm^2$

39. The line graph below shows the temperature of a certain place recorded over a week.

Study the graph and answer the question that follow



(a). On which day was the highest temperature recorded? (1mark)

Tuesday

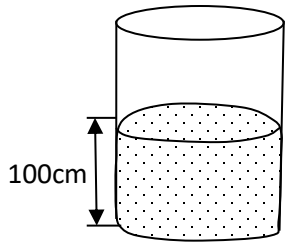
(b). What was the lowest temperature recorded?

15^0C (1mark)

(c). Find the mean temperature of the given days (2marks)

Mean temperature: $= \frac{18+32+20+15+30}{5} = 23\ ^0C$

40. The figure below is a cylindrical tank containing 1540 litres of water



(a). Find the radius of tank. (use $\pi = \frac{22}{7}$) (4marks)

Volume of a cylinder = $\pi r^2 h$

1L = 1000cm^3

1540 l = 1540 x 1000 = 1540000cm^3

$\therefore 1540000 = \pi r^2 \, x100$

$r^2 = \frac{1540000}{(\pi \, x \, 100)}$

$r = \sqrt{\left(\frac{1540000}{(\pi \, x \, 100)}\right)}$ = 70cm

(b) If the tank is $\frac{4}{5}$ full, find its capacity (2mark)

Let the total volume be V

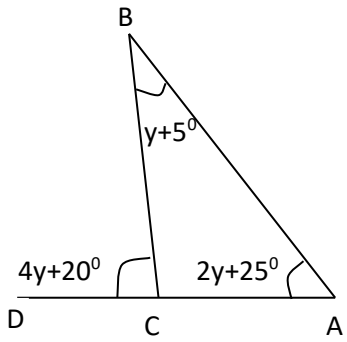
$\frac{4}{5}V = 1540$

$4V = 1540 \, x \, 5$

V = 1925litres

41. In the diagram below, *CAB* is a triangle and *DCA* a triangle line. Study it and answer the question below (3marks)

(a) What is the valve of *Y*



4y + 20 = y +5 + 2y + 25

y =10^0

(b) What the size of angle ACB? (3mark)

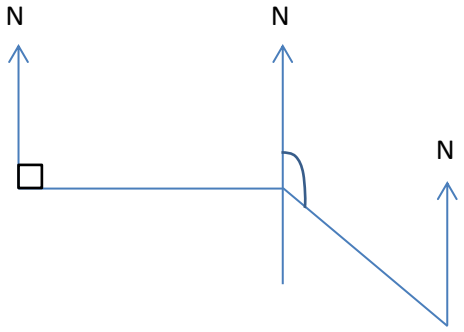
$angle\ ACB = 180^0 - (4y + 20)$

$= 180^0 - (4 \times 10 + 20)$

$= 120^0$

42. A ship left bell for Kyushu on bearing 090^0. It sailed for 120km then changed its course sailed on bearing 130^0 for 90km before reaching Kisumu.

(a). Draw a sketch diagram of the journey (4marks)

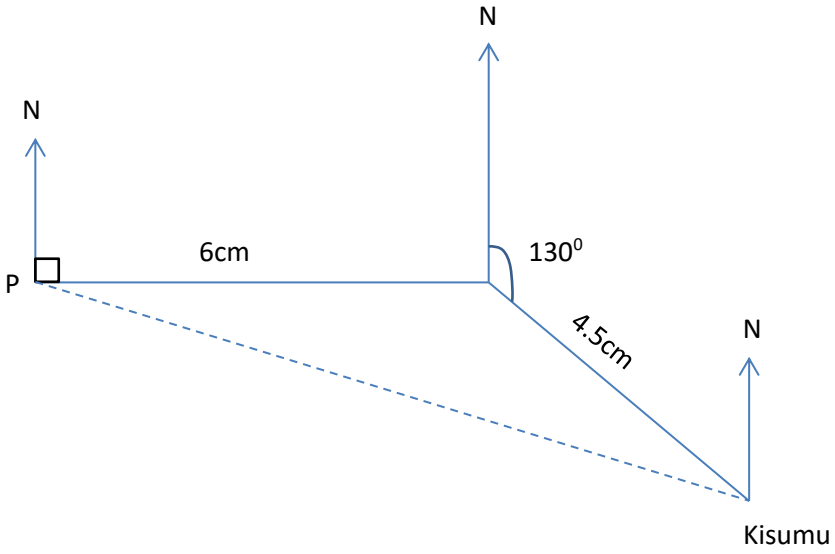


(b). Using a scale of 1cm =20km, draw an accurate diagram of the whole journey (4marks)

Drawing to scale

1cm = 20km

120km = $\frac{120}{20} = 6cm$ 90km = $\frac{90}{20} = 4.5cm$



(c) What is the bearing of Kisumu from Port bell. (1mark)

107^0

End