Dr. Bbosa Science

UGANDA NATIONAL EXAMINATION BOARD

PRIMARY LEAVING EXAMINATION

2017

MATHEMATICS

Time allowed: 2hours 30 minutes

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Index No:

WITH ANSWERS

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 20 questions and section **B** has 12 questions. The paper has 15 pages following altogether.

2. All answers to both sections **A** and **B** must be written in the spaces provided.

3. **All** working must be done 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. **No calculators** are allowed in examination room.

5. Unnecessary change of work may lead to **loss** of marks.
6. Any handwriting that cannot easily be read may lead to loss to marks.
7. Do **not** fill anything in the boxes indicated: "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		

Turn over

SECTION A: 40MARKS

Answer all the questions in this section

Question 1 to 40 carry two marks each

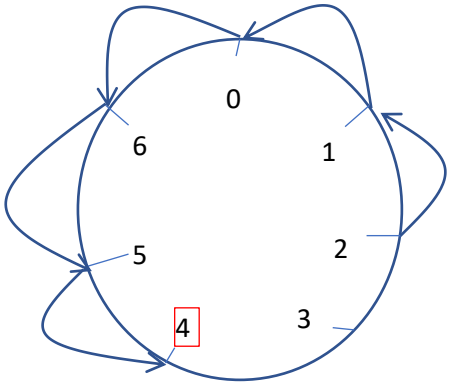
1. Work out: 32 x 3

32 X 3 = 96

2. Write 650, 019 in words

Six hundred fifty thousand nineteen

3. Work out 2-5 (Infinite 7)



Or 7+2 -5 = 4

2- 5 = 4 (infinite 7)

4. Find the next number in the sequence: -11, -8, -5, -2, ……..

-11, -8, -5, -2, **1** **(a 3 is added to the number)**

3 3 3 3

5. Solve the equation: 7n + 2 = 23

   7n + 2 = 23

   Subtract 2 from either side

   7n = 23-2 =21

   Divide by 7 on both sides

   $\frac{7n}{7} = \frac{21}{7}$

   n = 3

6. Give that set N = { c, t, p}, list all the subset in N

   {c}, {t}, {p}, {c, t}, {c, p}, {t, p}, {c, t p)

7. Find the number which has been expanded below:
   $(3 \times 10^{2}) + 5 \times 10^{-1})$

   = (3 x100) + (5 x 0.1)
   = (300 + 0.5)
   = 300.5

8. The profit on a shirt sold at 7, 900 was shs. 2,100. Calculate the cost price of the shirt.

   Cost price = selling price – profit

   = 7900

   -2100

   5800

9. Chane 10 square meters into square centimeters.

$1m^2$ = 1m x 1m

= 100cm x 100cm

10000 cm^2

∴ $10m^2$ = 10 x 10000 cm^2

= 1000000cm^2

10. Write 9:30a.m in the 24-hour clock.

09:30 hrs

11. Work out: 1½ - $\frac{2}{3}$

Change improper fraction

1½ - $\frac{2}{3}$ = $\frac{3}{2} - \frac{2}{3}$

Find LCM for denominators

= $\frac{(3 \times 3)-(2 \times 2)}{6}$

= $\frac{5}{6}$

12. Find the value of the digit in the ten thousands place in the number 850634.

5 x 10000 = 50000

13. A box contains in 20 pens. 10 are blue, 7 are red and the rest black. A pen is picked at random from the box, find the probability that it is a black pen.

Black pens = 20 – (10 + 7)

= 3

The probability of black pen = $\frac{3}{20}$

14. The diagram below shows the position of two towns L and M. Use it to answer the questions that follows.

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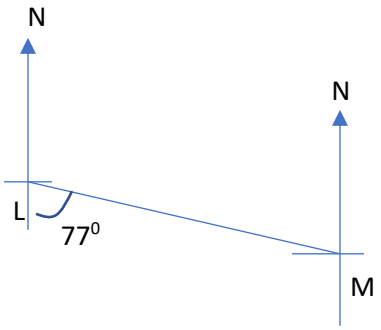
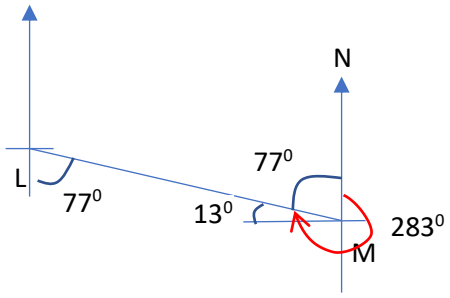


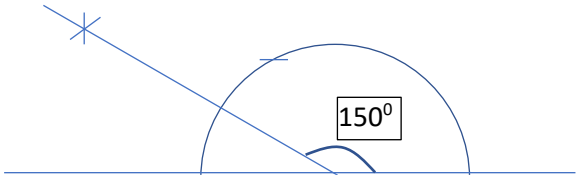
Work out the bearing of town L from town M



the bearing of town L from town M = 270 + 13 = 283^0

15. Using a pair of compasses, a ruler and a pencil only, construct an angle of 150^0 in the space below.

150 = 90 + 60 = 180 - 30



16. Given that a = 3 and b = -2, find the value of $a^2 - b^3$.

Substitute for a and b

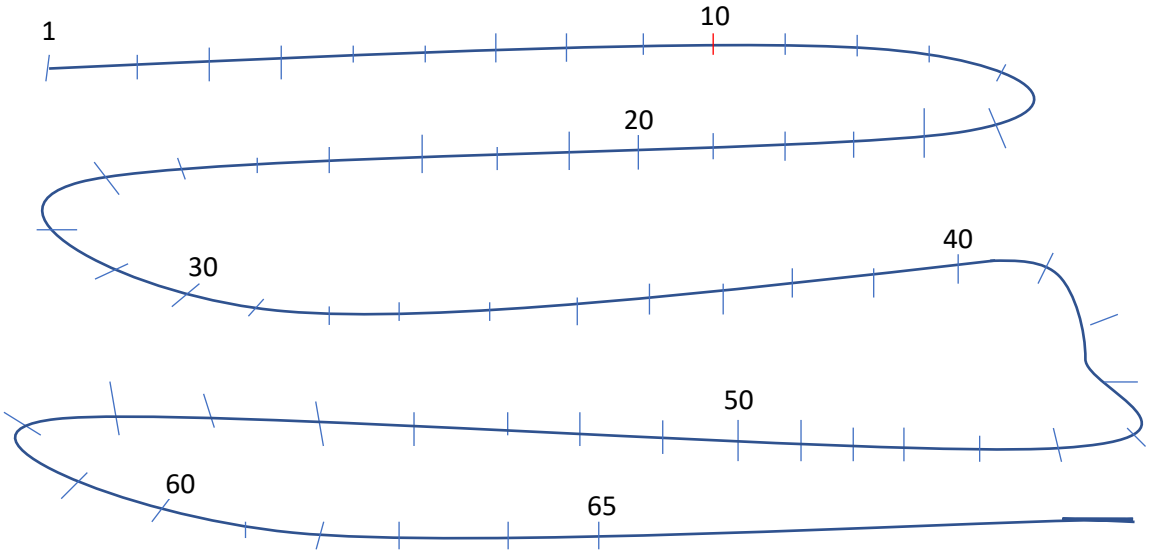
$3^2 - (-2)^3 = 9 - (-8)$

$= 9 + 8$

$= 17$

17. Sixty six poles are fixed in a straight line along one side of the road. The poles are fixed at intervals of 10 meters. Calculate the length of the road.

There are (65-1) interval of 10m between 65 pole = 64 x10 = 640m

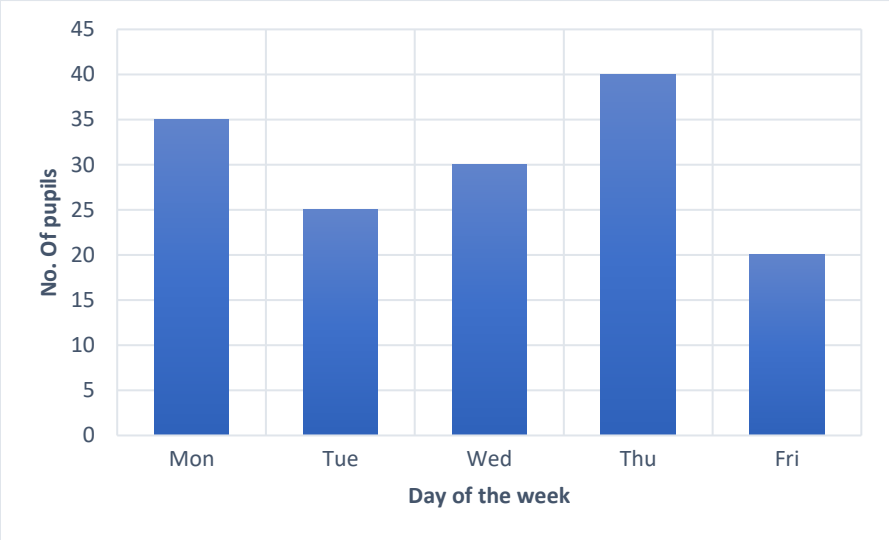


18. A house can be built by 3 men in 20 days. How many men working at the same rate can build the same house in 12 days?

Days taken by 1 man = 3 x 20 = 60 days

It implies that number of men required to work in 12 days = $\frac{60}{12}$ = 5men

19. The graph below shows the number of pupils present in a class of 40 pupils in a certain week. Study it and answer the questions that follows



Find the number of pupils who were absent on Tuesday.

Total number of pupils in class	40
Number of pupils that attended on Tuesday	- 25
Number of pupils that were absent on Tuesday	15

20. Find the least number of sweets when divided among 8 boys or 6 girls equally, laves 2 sweets as a remainder.

Find the lowest common multiple (LCM) and add 2

2	8	6
3	4	3
2	4	1
2	2	1
	1	1

The LCM = 2 x 3 x 2 x 2 = 24

The required number = 24 +2

= 26

SECTION B: 60MARKS

Answer all the questions in this section

Marks for each question are indicated in brackets

21. (a) work out 333_{five} (02 marks)

$+ 123_{five}$

1011_{five}

(b) Given that $34_t = 112_{four}$, find the value of t (03marks)

$34t\ m = 112_{four}$

It implies that $3t^1 + 4t^0 = 1 x4^2 + 1x4^1 + 2x4^0$

$3t + 4 = 16+4+2$

$3t = 18$

$t = 6$

22. Bbosa went to the market and bought the following items:

3 liters of milk at shs. 2,400 per liter.

250g of salt at shs. 2, 000 per kg.

18 oranges at shs. 1,500 for every 6 oranges.

(a) Calculate the total cost of the items (04marks)

Item	quantity	rate	total
Milk	3l	2400	7200
Salt	$\frac{250kg}{1000}$	2000	500
Orange	$\frac{18}{6}$	1500	4500
Total			12200

(b) Bbosa paid shs. 12, 000 for the items. What discount was he given? (01mark)

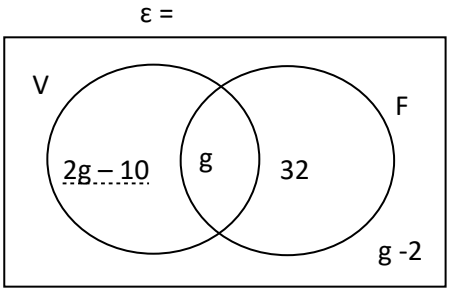
Discount = actual cost – amount paid

= 12200- 12000

= 200

23. In a class, 32 pupils play football (F) only. g play both volley ball (V) and football, (2g – 10) play volley ball but not foot ball while (g-2) play neither of the two games.

(a) Complete the Venn diagram below using the above information.



(b) Given that 62 pupils play one game only, find the value of g. (02marks)

Pupils that play one game only is (2g – 10 + 32) = 62

2g = 40

g = 20

(c) Calculate the number of pupils in the class. (02marks)

Total number of student in class = (2g - 10) + g + 32 + (g-2)

= (2g + g +g) + (-10 +32 -2)

= 4g+20

= 4 x 20 + 20

= 100

24. A school bus taking pupils to a Game park covered 75% of its journey in 1 ½ hours. The bus travelled at a steady speed of 80km per hour. Find how the school is from the game Park. (04marks).

Distance covered in 1 ½ hour = speed x time

= 80 x 1 ½

= 120km

Let the total distance be X

Thus, $\frac{75X}{100} = 120$

X = 160

25. (a) Solve the equation: $\frac{3}{5}n + 6 = 2 + n$ (03marks)

Multiply by 5 throughout to remove a fraction

$5\{\frac{3}{5}n + 6 = 2 + n\}$

= 3n + 30 = 10 + 5n

Collect like terms = (30 – 10) = (5n – 3n)

= 20 = 2n

n = 10

(b) Solve the inequality: 9 -2k > k + 3 (02 marks)

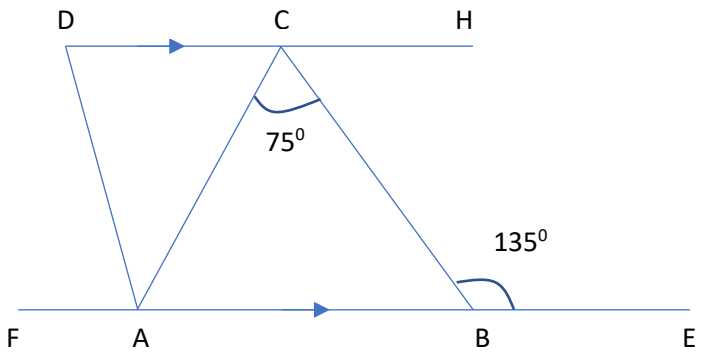
9 – 2k > k +3

Collect like terms: 9 – 3 > k + 2k

6 > 3k

Divide by 3 throughout: **2 > K**

26. In the diagram below, line DH is parallel to FE. Angle ACB = 75^0 and angle CBE = 135^0. Angle FAD is twice angle DAC. Study the diagram and use it to answer the questions that follow.



(a) Calculate the size of angle DAC (03marks)

Angle CBA + angle CBE = 180^0 (angle sum of a straight line)

Angle CBA = $(180 - 135)^0$

= 45^0

Then angle ACB + angle CAB + angle ABC = 180^0 (angle sum of a triangle)

It implies that: angle CAB = $(180 - (45 + 75))^0$

= 60^0

Let angle DAC be X, then angle FAD = 2X

But, angle FAD + angle DAC + angle CAB = 180^0 (angle sum on a straight line)

$2X + X + 60 = 180^0$

$X = 40^0$

Therefore angle DAC = 40^0

(b) Find the size of angle ADC

Angle DAC = angle FAD = 2X = 2 x 40 = 80^0 (corresponding angles)

27. David deposited money in a bank which offer a simple interest rate of 2 ½ % per year. After 9 months, his account had an amount of 163000. Calculate the money David deposited in the bank. (5marks)

Let the principle be P

Principal (P) + interest (P X R X T) = 163000

$$P + P \times \frac{5}{200} \; x \; \frac{9}{12} = 16300$$

P = 16000

Money deposited in the bank = 16000

28. (a) Using a ruler, a pencil and a pair of compasses only, construct a quadrilateral ABCD where the line AB = 7cm. angle ABC = BAD = 60^0 and AD = BC = 3.5cm. (4marks)

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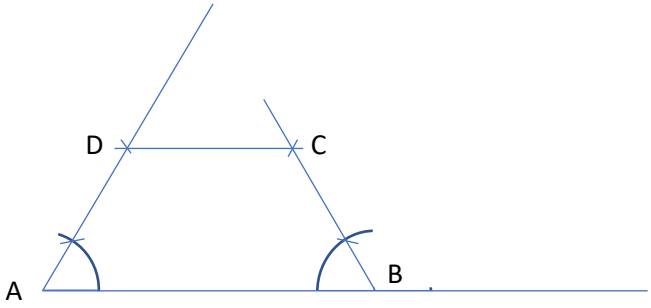


(c) Measure the length DC 3.5 cm (01mark)

29. The total mass of tins of honey in a box is 3.25kg. the mass of each tin is 250g. Find the number if tins in the box (04marks)

Total mass of tins of honey in grams = 3.25 x 1000

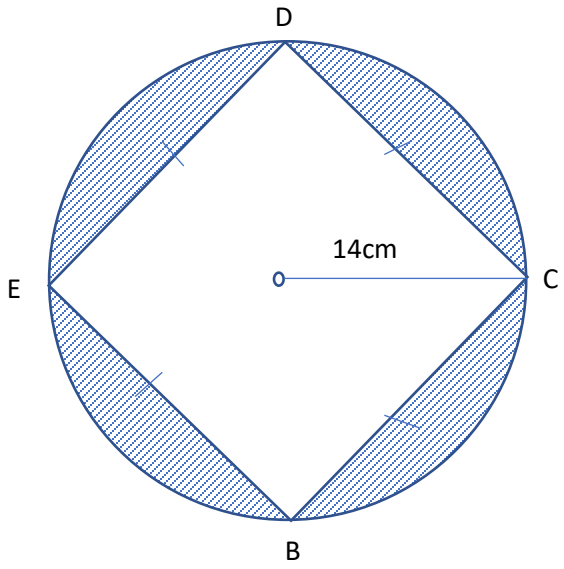
= 3250g

Number of tins = $\frac{total\ mass}{mass\ of\ each\ tin}$

= $\frac{3250}{250}$

= 13 tins

30. The diagram bellow shows a square BCDE enclosed in a circle with center O and radius 14cm. parts of the circle are shaded as shown. Study the diagram and use it to answer the questions that follow.



(a) Calculate the area of the circle. (Use $\pi = \frac{22}{7}$) (02marks)

Area $= \pi r^2$

$= \frac{22\ x\ 14\ x14}{7} = 616\ cm^2$

(b) Find the area of the shaded part. (04 marks)

$DC^2 = 14^2 \times 14^2$

$DC = \sqrt{(14^2\ x\ 14^2)} = 19.8cm$

Area of unshaded part $= (DC)^2$

$= 19.8^2$

$= 392\ cm^2$

Area of shaded part $= (616 - 392)$

$= 224\ cm^2$

31. In a class, $\frac{1}{5}$ of the girls are boarders while $\frac{1}{3}$ of the boys are day scholars. The percentage of the girls in the class is 60%. The class has 10 boys who are day scholars.

(a) How many pupils are in the class? (03marks)

Let the number of boys in the class be X

$\frac{1}{3}\ X\ = 10\ boys\ in\ day$

X = 30 boys

The percentage of boys = 100 – percentage of girls

= 100 – 60

= 40%

Let the total number of children be Y

$\frac{40}{100}Y = 30boys$

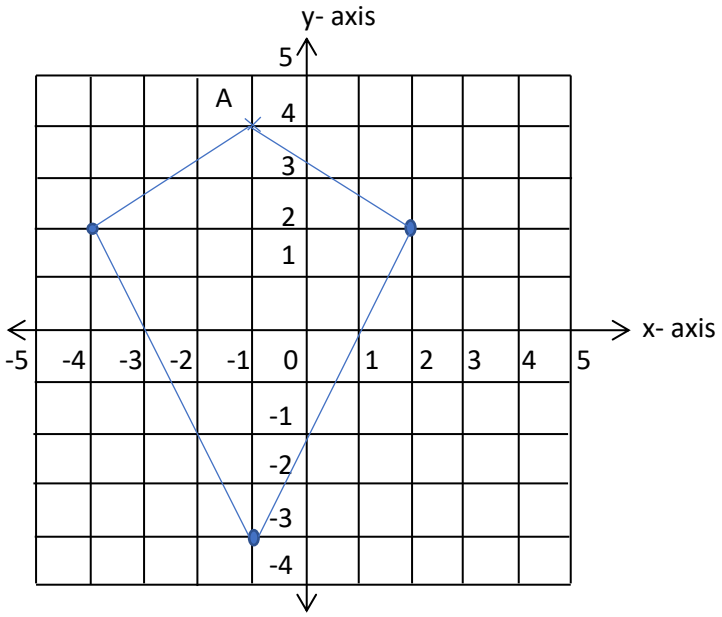
Y = 75 pupils

(b) Find the number of girls who are boarders (2marks)

Total Number of girls = 75 – 30 = 55

The number of girls that are boarder = $\frac{1}{5}\ x\ 55 = 11$

32. Study the coordinate graph and use it to answer the questions that follow.



(a) Write the coordinates of point A (01mark)

Coordinates of A are (-1, 4)

(b) Plot the points B($^{+}2$, $^{+}2$) and C($^{-}1$, $^{-}4$) on the graph. (02marks)

(c) Join points A to B to C, (01mark)

(d) Locate a point D on the graph, join it to A and C such that ABCD is a kite (01mark)

The coordinates of D are (-4, 2)

END