UGANDA NATIONAL EXAMINATIONS BOARD

PRIMARY LEAVING EXAMINATION

2023

MATHEMATICS

Time Allowed: 2 hours 30 minutes

Random No.						Personal No.		

Candidate's Name: FRANKLIGY PA120 0757519913

Candidate's Signature: MARKING GUIDE

District ID No.

Read the following instructions carefully:

1. Do not write your school or district name anywhere on this paper.
2. This paper has two sections: A and B. Section A has 20 questions and section B has 12 questions. The paper has 15 printed pages.
3. Answer all the questions. All the working for both sections A and B must be shown in the spaces provided.
4. All the working must be done using a blue or black ball point pen or ink. Any work done in pencil other than graphs and diagrams will not be marked.
5. No calculators are allowed in the examination room.
6. Unnecessary changes in your work and handwriting that cannot be read easily may lead to loss of marks.
7. Do not fill anything in the table indicated: "FOR EXAMINERS' USE ONLY" and boxes inside the question paper.

FOR EXAMINERS' USE ONLY		
QN. NO.	MARKS	EXR'S NO.
1 - 5		
6 - 10		
11 - 15		
16 - 20		
21 - 22		
23 - 24		
25 - 26		
27 - 28		
29 - 30		
31 - 32		
TOTAL		

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SECTION A: 40 MARKS

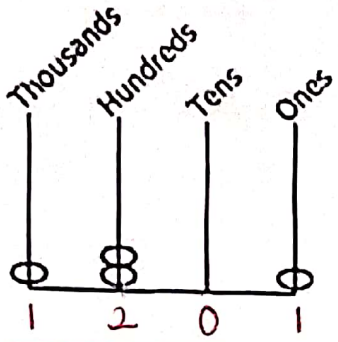
*Answer **all** the questions in this section.*

*Questions **1** to **20** carry two marks each.*

1. Work out: 63 + 54

$$\begin{array}{r} 63 \\ +54 \\ \hline 117 \\ \hline \end{array}$$

2. Write the base ten number shown on the abacus below.



3. Given that R = {a, b, c, d} and S = {a, f, p, c, s}, find n(RUS).

R = {a, b, c, d}

S = {a, f, p, c, s}

RUS = {a, b, c, d, f, p, s}

n(RUS) = 7

4. Arrange the integers ⁻3, 4, 0 and ⁻1 in ascending order.

Order is -3, -1, 0, 4

5. A training for scouts started on a Wednesday and took 30 days. Find the day of the week on which the training ended.

S	M	T	W	T	F	S
7	1	2	3	4		
0	1	2	3	4	5	6

(Wednesday) + 30 = _ (mod 7)

3 + 30 = $\frac{33}{7}$ 4 rem 5

Friday

33 − 28 = 5

6. Change 750 millilitres into litres.

1000 ml = 1 L

750 ml = $\left(\frac{750}{1000}\right)$ L

0.75 L

7. Find the value of $4^2 + 3^2 \times 9^0$.

(4×4) + {(3×3) × 1}

16 + 9

25

8. A meeting that took 2 hours and 15 minutes ended at 1:20 p.m. At what time did the meeting begin?

Method 1

1 − 2 = _ (mod 12)

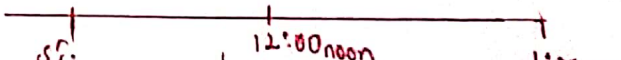
(1+12) − 2 = _ (mod 12)

13 − 2 = 11 (mod 12)

20 minutes − 15 minutes = 5

∴ 11:05am

Method 2



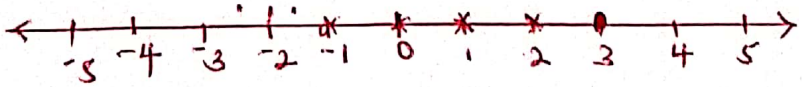
12 00 + 1:20 = 13 20

13 20 − 2 15 = 1105 HRS

11 00 + 00 00 = 1

1105 − 0000 = 11:05 am

9. Write the solution set for the inequality P ≤ 3.



P = {3, 2, 1, 0, −1, −2 ...}

Turn Over

10. Find the next number in the sequence:

1, 8, 27, 64, 125...

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

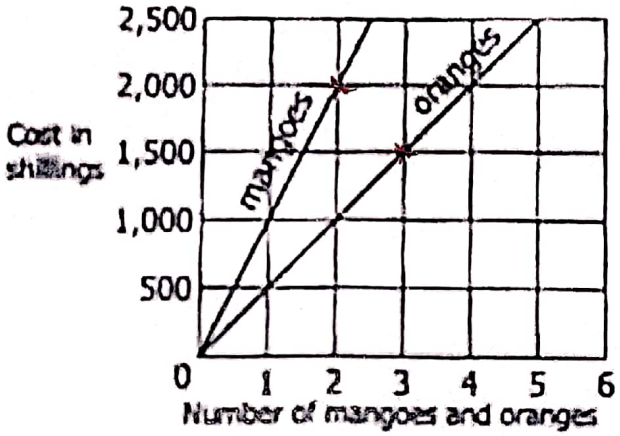
5X5X5
25
X5
125

11. Change 14_{ten} to base three.

B	N	R
3	14	
3	4	2
3	1	1
	0	1

112_{three}

12. The graph below shows the cost in shillings of mangoes and oranges. Study the graph and use it to answer the question that follows.



Find the total cost of 2 mangoes and 3 oranges.

sh. 2000
+sh. 1500
sh. 3500

13. Given that 78t is a three-digit number which is divisible by 9, find the digit represented by t.

Since 0 is divisible by every number

Method 1

$7+8+t = 0 \pmod 9$

$15+t = 0 \pmod 9$

$15-15+t = 0-15 \pmod 9$

$t = (0+9+9)-15 \pmod 9$

$t = 18-15 \pmod 9$

$t = 3$

Method 2

$M_9 = \{9, (18), 27, 36 \cdots\}$

$7+8+t = M_9$

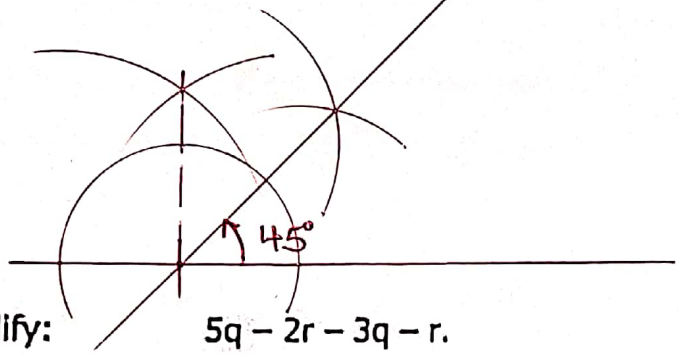
$15+t = 18$

$15-15+t = 18-15$

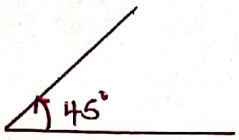
$t = 3$

14. Using a ruler and a pair of compasses only, construct an angle of 45° in the space below.

Accurate diagram



Sketch



15. Simplify: $5q - 2r - 3q - r$.

$5q - 3q - 2r - r$

$2q - 3r$

16. A farmer sold the following number of eggs in a period of three days; 62, 73 and 78. Calculate the average number of eggs the farmer sold in that period.

$\text{Average} = \frac{\text{Sum}}{\text{No of items.}}$

$\frac{62+73+78}{3}$

$\frac{213}{3} = 71$

71 eggs

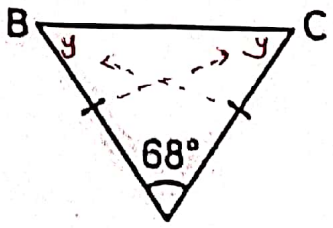
$62 + 73 = 135$

$135 + 78 = 213$

17. A businessman bought a watch at sh 45,000. He sold it and made a loss of sh 1,500. Find his selling price.

sh. 45000
- sh. 1500
sh 43500

18. In the diagram below, calculate the size of angle ABC.



Let angle ABC be y

$y + y + 68^\circ = 180^\circ$

$2y + 68^\circ = 180^\circ$

$2y + 68^\circ - 68^\circ = 180^\circ - 68^\circ$

$2y = 112^\circ$

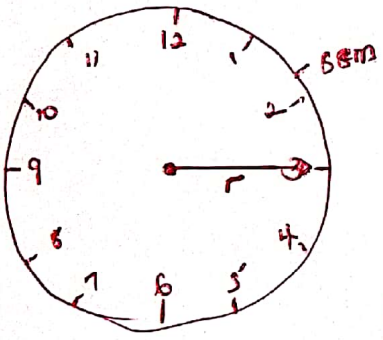
$\frac{2y}{2} = \frac{112^\circ}{2}$

$y = 56^\circ$

$\therefore ABC = 56^\circ$

$180^\circ - 68^\circ = 112^\circ$

19. In one hour, the minute hand of a clock covers 88 cm. Calculate the length of the minute hand. (Use $\pi = \frac{22}{7}$)



From

$2\pi r = C$

$2 \times \frac{22}{7} \times r = 88cm$

$\frac{44r}{7} = 88cm$

$\frac{1}{7} \times \frac{44r}{7} = \left(\frac{2}{\cancel{88} \times 7}{\cancel{44}}\right) cm$

$r = 14cm$

Length is 14cm 6

20. A pupil scored $\frac{20}{25}$ in the first term Mathematics test and $\frac{18}{20}$ in the second term Mathematics test. In which test did the pupil perform better?

2	25	20
2	25	10
5	25	5
5	5	1
	1	1

LCM $2 \times 2 \times 5 \times 5$

4×25

100

First term

$\frac{20}{25} \times \frac{4}{100}$

1

80

Second term

$\frac{18}{20} \times \frac{5}{100}$

$\frac{90}{100}$

18

$\times 5$

90

In the second term test

SECTION B: 60 MARKS

Answer all the questions in this section.

Marks for each question are indicated in brackets.

21. (a) Simplify: $\frac{1}{2} - \frac{1}{4} \div \frac{4}{5}$ *(03 marks)*

$\frac{1}{2} - \left(\frac{1}{4} \times \frac{5}{4}\right)$

$\frac{1}{2} - \frac{5}{16}$

$\frac{\left(\frac{1}{2_1} \times \frac{8}{16}\right) - \left(\frac{5}{16_1} \times \frac{1}{16}\right)}{16}$

$\frac{8 - 5}{16}$

$\frac{3}{16}$

(b) Work out: $\frac{0.27 \times 1.2}{0.9}$ *(02 marks)*

$(0.27 \times 1.2) \div 0.9$

$\left(\frac{27}{100} \times \frac{12}{10}\right) \div \frac{9}{10}$

$\frac{27}{100} \times \frac{12}{10} \times \frac{10}{9_1}$

$\frac{36}{100}$

0.36

$\begin{array}{r} 12 \\ \times 3 \\ \hline 36 \end{array}$

22. An athlete covered 400 metres in 48 seconds. Calculate the speed of the athlete in kilometres per hour. *(04 marks)*

$\text{Speed} = \left(\frac{D \times 3600}{T \times 1000}\right)$ km/h.

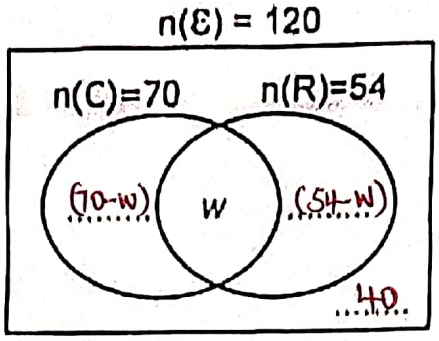
$\left(\frac{400 \times 3600}{48 \times 1000}\right)$ km/h

$\frac{30}{1}$ km/h

30 km/h

23. A total of 120 guests were invited for a marriage ceremony. 70 guests attended the church service (C), 54 guests attended the reception (R) and w guests attended both the church service and the reception. 40 guests did not turn up for the marriage ceremony.

(a) Use the given information to complete the Venn diagram below. *(03 marks)*



(b) Calculate the number of guests who attended both the church service and reception. *(02 marks)*

Method 1

$(70+54+40)-120$

164

-120

44 guests

Method 2

$70+40+54-w = 120$

$164-w = 120$

$164-164-w = 120-164$

$-w = -44$

$\frac{-w}{-1} = \frac{-44}{-1}$

$w = 44$

44 guests

70
+54
124
+40
164

24. In a certain school, there are 126, 90 and 72 pupils in Primary Five, Six and Seven respectively. In each class, groups with equal number of pupils were formed.

(a) Find the largest (GCF) number of pupils in each group. *(03 marks)*

2	126	90	72
3	63	45	36
3	21	15	12
	7	5	4

$2 \times 3 \times 3$

2×9

18 pupils

(b) How many groups were formed in Primary Five? *(02 marks)*

126

18

~~126~~ ~~63~~ 21 7

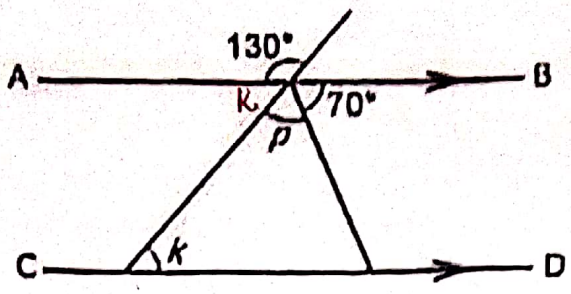
~~18~~

9

3 1

7 groups

25. In the diagram below, line AB is parallel to line CD. Study the diagram and use it to answer the questions that follow.



Find the size of;

(a) angle p. *(02 marks)*

$p + 70° = 130°$ (vertically opposite angles)

$p + 70° - 70° = 130° - 70°$

$p = 60°$

(b) angle k. *(02 marks)*

$K + 130° = 180°$ (straight angles)

$K + 130° - 130° = 180° - 130°$

$K = 50°$

26. A carton of salt contains 40 packets. Each packet has a mass of 250 grammes.

(a) Work out the mass in Kilogrammes, of all the packets of salt in the carton. *(02 marks)*

$\left(\frac{(40 \times 250)g}{1000g}\right) kg$

$\left(\frac{4 \times 25}{10}\right) kg$

$\frac{100}{10}\ kg$

10kg

(b) A family uses a packet of salt every 5 days. Find the number of days the carton will last the family. *(02 marks)*

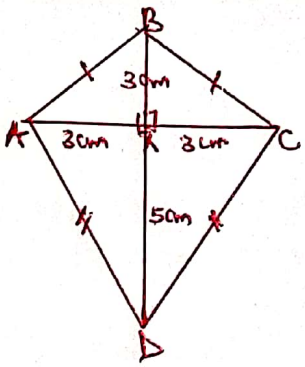
1 pac. is used in 5 days

40 pacs will be used in (5×40) days

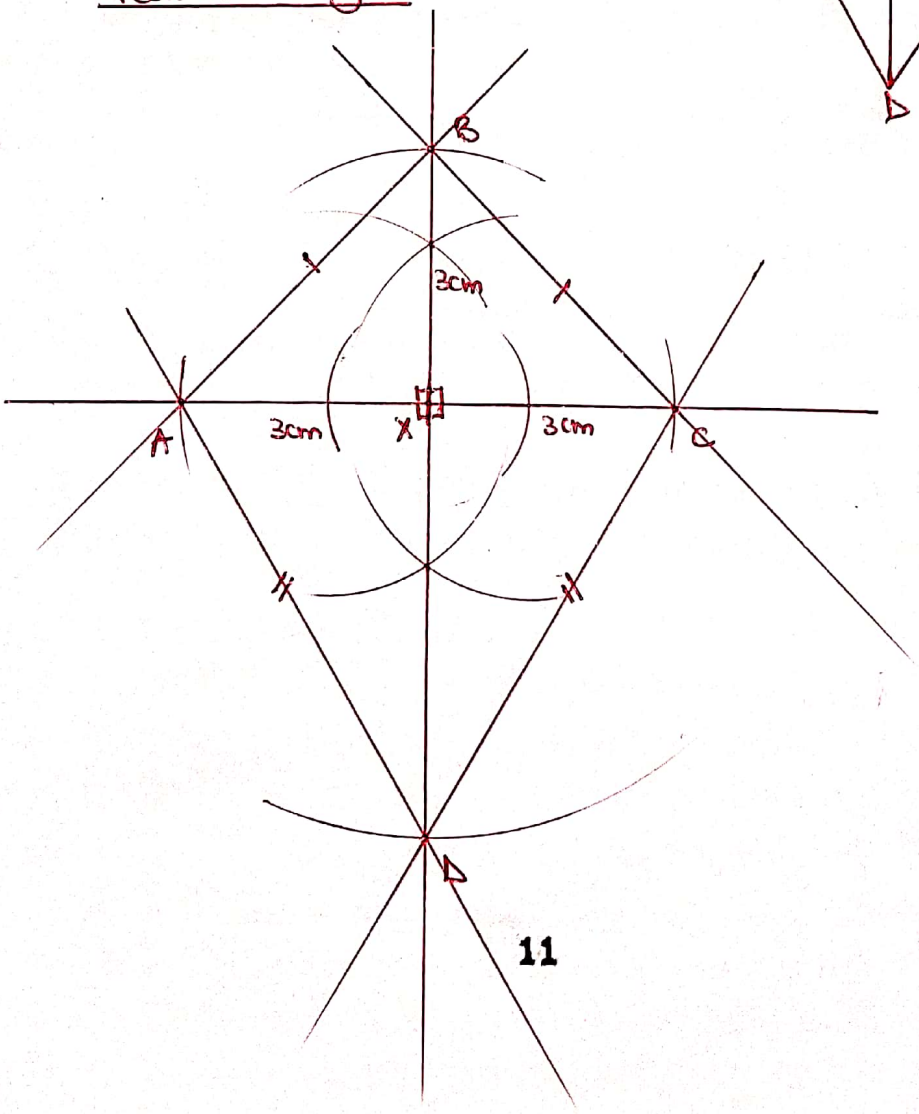
200 days

27. Using a ruler and a pair of compasses only, construct a kite ABCD in which diagonal AC = 6 cm. Diagonal BD bisects AC at X such that BX = 3 cm and DX = 5 cm. *(05 marks).*

Sketch



Accurate diagram



28. A man is four times as old as his daughter. Six years ago, the sum of their age was 48 years.

Find;

(a) the age of the daughter now. (03 marks)

Let the daughters age be p

	Man	Daughter
Now.	4p	p
Before 6yrs	4p − 6	p − 6

$4p - 6 + p - 6 = 48$

$4p + p - 6 - 6 = 48$

$5p - 12 = 48$

$5p - 12 + 12 = 48 + 12$

$5p = 60$

$\frac{5p}{5} = \frac{60}{5}$

$p = 12$

Daughter : 12 years

(b) the age of the man six years ago. (02 marks)

$4p - 6$

$(4 \times p) - 6$

$(4 \times 12) - 6$

$48 - 6$

42 years

29. A bank bought and sold foreign currencies in Uganda shillings (Ug.sh) on a certain day as shown in the table below. Study the table and use it to answer the questions that follow.

Currency	Buying in Ug.sh (×)	Selling in Ug.sh (÷)
1 Kenya shilling (Ksh)	24	26
1 US dollar ($)	3,900	3,950
1 Great Britain pound (£)	4,400	4,700

(a) A tourist had £600 (F) and exchanged them for Uganda shillings (L). Find the amount of money in Uganda shillings the tourist got. (02 marks)

F (×) L

(600×4400) Uganda shillings

2,640,000 Uganda shillings

$^{2}44 \times 6 = 264$

(b) Moses had US dollars 200 to exchange for Kenya shillings. Find the amount of money in Kenya shillings he got from the bank.

F (x) L (÷) F (04 marks)

$\left(\frac{100}{200} \times \frac{3400}{1}\right)$ Kenya shillings

30 000 Kenya shillings

30. A farmer employed two workers to dig a piece of land. The first worker could dig the land alone in 6 days. The second worker could dig the same piece of land alone in 3 days. The two workers dug the land together.

(a) Find the number of days they took to dig the piece of land. (04 marks)

Method 1

Time taken = $\frac{\text{Product}}{\text{Sum}}$

$\frac{6 \times 3}{6+3}$

$\frac{18}{9} = 2$

2 days

Method 2

fraction dug be each

First – $\frac{1}{6}$

Second – $\frac{1}{3}$

Both working together in a day –

$\frac{1}{6} + \frac{1}{3}$

$\frac{3+6}{18}$

$\frac{9}{18}$

Time taken

$1 \div \frac{9}{18}$

$1 \times \frac{18}{9} = 2$

2 days

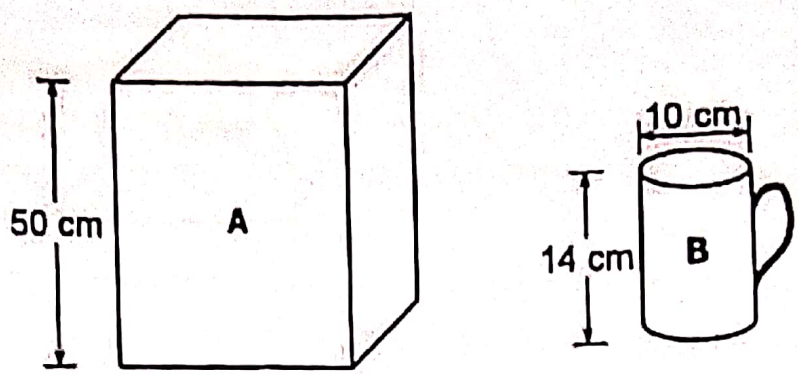
(b) The farmer paid each worker sh 15,000 per day. Calculate the amount of money the farmer spent to dig the piece of land. (02 marks)

sh. (15000 × 2 × 2)

sh. (15000 × 4)

sh. 60000

31. Forty full cups of water in cup B fill container A. Study the diagrams and answer the questions that follow.



(a) Find the volume of cup B. (Use $\pi = \frac{22}{7}$) *(02 marks)*

Volume: $\pi \times r \times r \times h$

$\frac{22}{7} \times 10\text{cm} \times 10\text{cm} \times 14\text{cm}$

$1100\ cm^3$

(b) Calculate the base area of container A. *(03 marks)*

Let the base area be y.

base area × height = Volume.

$y \times 50\text{ cm} = (1100 \times 40)\ cm^3$

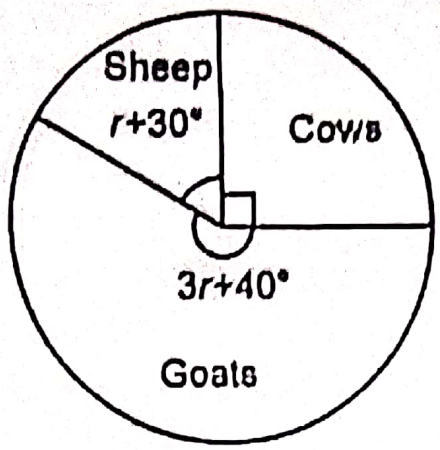
$\frac{y \times 50\text{cm}}{50\text{cm}} = \frac{(1100 \times 40)\ cm^3}{50\text{cm}}$

$y = (110 \times 8)\ cm^2$

$y = 880\ cm^2$

Base area: $880\ cm^2$

32. The pie chart below represents the number of animals reared on Amanya's farm. Study the pie chart and use it to answer the questions that follow.



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

$90° + r + 30° + 3r + 40° = 360°$

$90° + 30° + 40° + r + 3r = 360°$

$160° + 4r = 360°$

$160° - 160° + 4r = 360° - 160°$

$4r = 200°$

$\frac{4r}{4} = \frac{200°}{4}$

$r = 50°$

$120° + 40° = 160°$

(b) Given that there are 11 more goats than sheep on the farm, calculate the total number of animals on the farm. *(04 marks)*

Goats − sheep

$(3r + 40°) - (r + 30°)$

$3r + 40° - r - 30°$

$3r - r + 40° - 30°$

$2r + 10°$

$(2 \times 50°) + 10°$

$100° + 10°$

$110°$

$110° \longrightarrow 11$

$360° \longrightarrow \left(\frac{11 \times 360}{110}\right)$ animals

36 animals

END