THE SIPRO PRE-PLE SET I 2023

MATHEMATICS

G1

Time Allowed: *2 Hours 30 Minutes*

Random No.						Personal No.		

Index No.

Candidate's Name: _____

Candidate's Signature: BONNIFACE

School Random No: _____

District: 0755273872

READ THE FOLLOWING INSTRUCTIONS CAREFULLY:

1. This paper has two sections: A and B.
2. Section A has 20 questions (40 Marks).
3. Section B has 12 questions (60 Marks).
4. Attempt all questions in both sections. All answers to both sections A and B must be written in the spaces provided.
5. All answers must be written in blue or black ball point pens or *ink*. Only diagrams and graph work must be done in *pencil*.
6. Unnecessary *alteration* of work will lead to loss of marks.
7. Any *handwriting* that cannot be easily read may lead to loss of marks.
8. Do not fill anything in the boxes indicated.

"FOR EXAMINER'S USE ONLY"

For Examiner's Use Only:

Q/No	MARKS	INITIALS
1-5		
6-10		
11-15		
16-20		
21-22		
23-24		
25-26		
27-28		
29-30		
31-32		
Total		

Please turn over

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SECTION A: 40 MARKS

Questions 1 to 20 carry two marks each

1. Work out;
$$\begin{array}{r} 547 \\ -103 \\ \hline 444 \end{array}$$

$7-3=4$
$4-0=4$
$5-1=4$

2. Write CIX in words.

CIX = C IX
100 + 9
109

one hundred nine

3. Subtract; $\frac{1}{4} - \frac{3}{4}$

$\left(4 \times \frac{1}{1}\right) - \left(\frac{3}{4} \times \frac{1}{4}\right)$

$\frac{4}{4} - \frac{3}{4}$

$\frac{4-3}{4}$

$\frac{1}{4}$

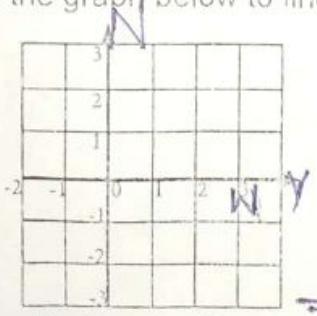
4. Solve for e; $2(e-3)=18$

$2 \times e - 2 \times 3 = 18$
$2e - 6 + 6 = 18 + 6$
$2e = 24$

$\frac{2e}{2} = \frac{24}{2}$

$e = 12$

5. Use the graph below to find the co-ordinates of point W.



W = [2, 3]

6. Given that set H ={first five composite numbers}. Set G = {first five triangular numbers}. Find n(HUG).

H = [4, 6, 8, 9, 10]

G = [1, 3, 6, 10, 15]

n(H ∪ G) = 8

7. Complete the sequence correctly.

8, 4, 2, 1, $\frac{1}{2}$ (÷1, ÷2, ÷2, $\frac{1}{2}$, ÷4)

8 ÷4 4 ÷2 2 ÷2 1 , $\frac{1}{2}$

8. A cyclist left Mbarara at **10: 05 pm** and reached Kasese at **5: 20 am**. How long was the journey?

Duration = Ending - Starting

Hrs	mins
12	00
- 10	05
2	05

Hrs	mins
5	20
- 2	05
3	15

3 hours : 15 minutes.

9. **20 poles** are fixed in a straight line along one side of the road. The poles are fixed at intervals of **5 metres**. Find the length of the road.

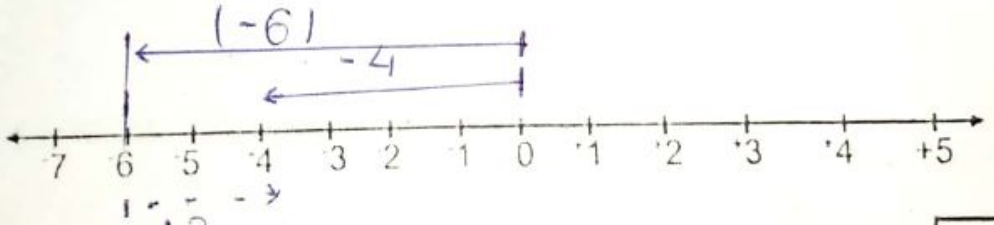
No of pole = 20 - 1

= 19 poles

length = 19 x 5

= 95 metres

10. Work out -4 - 6 using a number line.



-4 - +6 = +2

11. At a music concert, tickets worth sh 20,000 were issued out numbered consecutively from 572 to 771. How much money was collected?

771 - 571 + 1

200 tickets

sh 20,0000

x 2

sh 400000

12. The circumference of a semi-circle is 22dm. Work out its diameter. (Take π as $3\frac{1}{7}$)

$\frac{1}{2}\pi d = $ length

$\frac{1}{2} \times \frac{22}{7} \times d = 22\,dm$

$\frac{11}{1} d \times 1 = 22dm \times 7$

$\frac{11}{11} dm = \frac{22}{11} dm \times 7$

diameter = 14 dm

13. Mr Boaz borrowed sh 180,000 for 3years. He paid back a total sum of sh 216,000. Calculate his percentage rate.

sh 216000
- sh 180000
sh 36000

$I = P \times T \times R$

$sh\,36000 = sh\,180,000 \times 3 \times \frac{R}{100}$

$sh\,36000 = sh\,5400R$

$6\frac{4}{6}$

sh 36000
sh 5400
6 1

$R = 6\frac{2}{3}\%$

14. Using a ruler, a pencil and a pair of compasses only, draw a perpendicular bisect on the line segment WH.

15. Solve for b; $3^{2b} \div 81 = 1$

$3^{2b} \div 3^4 = 3^0$

$2b - 4 = 0$

$2b - 4 + 4 = 0 + 4$

$\frac{2b}{2} = \frac{4}{2}$

$b = 2$

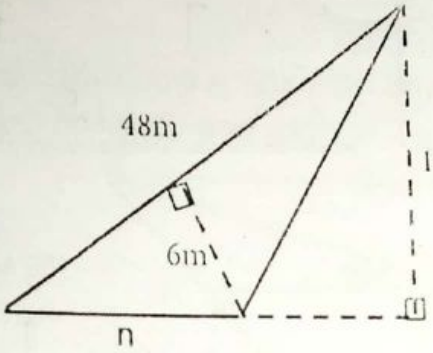
16. The average mass of 4 girls is 35kg. If the average mass of 3 girls is 90kg. Find the mass of the third girl.

Totamass : 35kg
4
140kg

Total mass
140kg
90
90kg
x 3
270kg

270kg
140kg
130kg

17. Study the figure below carefully and use it to find the value of n in metres.



b x h / 2 : b x h / 2
9
b x 18m / 2 = 48m x 6m
16 8
1 9mb = 48m x 18m
1 9m 9m
base = 16m

18. Solve the inequality; 3(2 - p)<15.

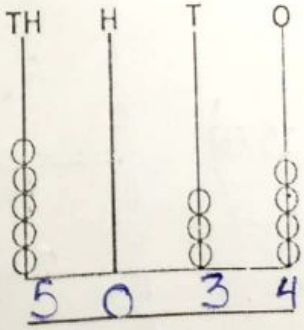
3 x 2 - 3 x p < 15
6 - 3p < 15
6 - 6 - 3p < 15 - 6
-3p < 9
-3p > +9
-3 -3
p > -3

19. Sove for M; M = 6(mod 7)

M x 5 : 6 x 5 (mod 7)
5
= 30 ÷ 7 (mod 7)
= 2 (mod 7)

4r2

20. Write the number shown on the abacus in scientific form.



5034 ÷ 10 =
503.4 ÷ 10
50.34 ÷ 10
5.034

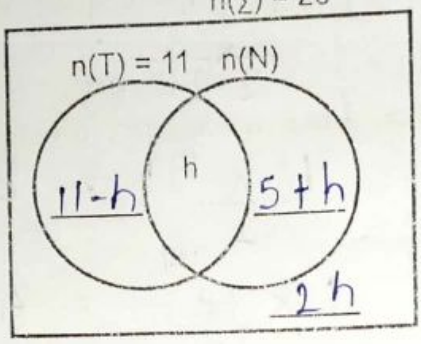
5034 = 5.034 x 10^3

SECTION B: 60 MARKS

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

21. In a club of 28 girls, 11 of them play tennis(T) and (5 + h) play netball only (N), h play both games while 2h play neither of the two games.

a) Complete the venn diagram below.



Tennis only + none
11 - 4 + 2 x 4
7 + 8
15

(03 Marks)

b) How many girls never played netball?

11-h + h + 5 + h + 2h = 28
h + 2h + 11 + 5 = 28
3h + 16 - 16 = 28 - 16
3h = 12
h = 4

(03 Marks)

22. Tap W fills a tank in 9 minutes and tap Z takes 3 minutes longer than Tap W to fill the same tank.

(a) If 700 litres of water are poured in the tank by all the taps in one minute, find the capacity of the tank.

Tap W = $\frac{1}{9}$
Tap Z = $\frac{1}{12}$
$= \frac{(\frac{1}{9} \times 36^{4}) + (\frac{1}{12} \times 36^{3})}{36}$

$\frac{4+3}{36}$
$= \frac{7}{36}$

$700 \div \frac{7}{36}$
$700 \times \frac{36}{7}$
$= 3600$ litres

(03 Marks)

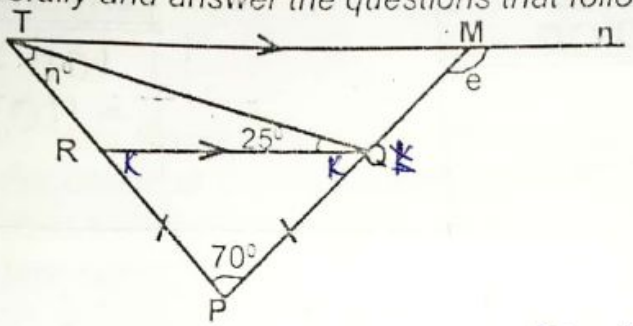
b) If a 20 litre jerrycan of milk is sold at **sh 16,000**; How much money was collected from the sale of the tank full of milk?

No of jerry cane = $\frac{3600}{20}$ = 180

= sh 160000 × 18

sh 2880000 (02 Marks)

23. In the figure below, line **PR= line PQ** and line **TM** is parallel to line **RQ**. *Study it carefully and answer the questions that follow.*



Find the size of angle;

i) n

k + k + 70 = 180

2k + 70 − 70 = 180 − 70

$\frac{2k}{2} = \frac{110}{2}$

k = 55°

n = 55° − 25°

= 30°

or

n = 180° − (125° + 25°)

= 180° − 150°

= 30°

ii) e

e = 180° − 55

= 125°

or

e = 180° − (55° + 25°)

= 180° − 80

= 100° + 25

= 125°

(03 Marks)

(02 Marks)

24. Musoke went to the supermarket and bought the following items;
3 watermelons at sh 9000
1200gm of rice at sh 5000 per kg
20 sweets at sh 300 per 5 sweets
$3\frac{1}{2}$ litres of cooking oil at sh 12000 per litre.
If he was given a discount of 10%, how much did he pay?

Watermelon	Rice	Sweets	Cooking oil	Total	
3 =sh.9000	1200 x 1000 sh.5000 sh.1200 x 5 sh.6000	20 4 5 1 sh.300 x 4 sh.1200	$\frac{7}{2}$ x sh.12000 1 =sh.42000	sh.42000 sh. 9000 sh. 6000 sh. 1200 sh.58200	90 x sh.582 100 =sh.52380

100 - 10
= 90% (05 Marks)

25. a) Solve for m; $2m - \frac{m}{3} = 5$

$3 \times 2m - \frac{m}{3_1} \times {}^{3}\cancel{3}^{1} = 5 \times 3$

$= 15$

$6m - m$

$= \frac{\cancel{15}\ 3}{5_1}$

$\frac{5m}{5_1}$

$= 3$

m

(02 Marks)

b) Solve the equation: $4(4g - 2) - 4(2g + 6) = 16$

$4 \times 4g - 2 \times 4 - 4 \times 2g + 4 \times 6 = 16$

$16g - 8 - 8g - 24 = 16$

$16g - 8g - 8 - 24 = 16$

$8g - 32 + 32 = 16 + 32$

$\frac{8g}{8_1} = \frac{{}^{6}\cancel{48}}{\cancel{8}_1}$

$g = 6$

(03 Marks)

Use a dial to work out; $3 - 4 = 5 \pmod 6$

$3+6-4 = - \pmod 6$

$9-4 = 5 \pmod 6$

$3-4 = 5 \pmod 6$

b) Akello had some apples. When she grouped them in heaps of 6, 5 apples were left and when he put them in groups of 7, 6 remained. How many apples did she have? (02 Marks)

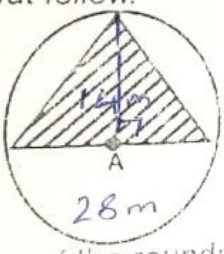
5 (finite 6) = 5, 11, 17, 23, 29, 35, (41), 46

6 (finite 7) = 6, 13, 20, 27, 34, (41), 48

= 41 apples

(03 Marks)

27. The figure below shows a roundabout with a triangular flower garden in it. A is the centre of the roundabout and the total distance around the roundabout is 88 metres. *Study the figure and answer the questions that follow.*



Find the area of the roundabout that is not covered by the flower garden. (Take π as $\frac{22}{7}$)

$\pi d = C$

$\frac{22}{7} \times d = 88m$

$\frac{22}{7_1} d \times \frac{7}{1} = 88m \times 7$

$\frac{22}{22_1} d = \frac{88^4 m \times 7}{22_1}$

$d = 28m$

$R = \frac{28^{14}}{2_1} m$

$R = 14m$

$A = \frac{b \times h}{2_{14}}$

$A = \frac{28m \times 14m}{2_1}$

$= 196m^2$

$A = \pi r \times R_2$

$= \frac{22}{7_1} \times 14m \times 14m$

$= 616m^2$

$A = 616m^2 - 196m$

$A = 420m^2$

(05 Marks)

28. Kelly, Kenneth and Cate are running a 10,000 metre race. Kelly completes her first lap after 60 seconds, Cate completes her first lap after 75 seconds and Kenneth completes his after 90 seconds.

a) When will they all be at the starting point together again if they are running at a constant speed throughout the race?

2	60	75	90
2	30	75	45
3	15	75	45
3	5	25	15
5	5	25	5
5	1	5	1

$= 2 \times 2 \times 3 \times 3 \times 5 \times 5$

$= 4 \times (9 \times 5) \times 5$

$= 4 \times 45) \times 5$

$= 180 \times 5$

$= 900$ seconds

(02 Marks)

b) At what speed is Kenneth running in kilometres per hour?

1000m = 1km

1m = $\left\{\frac{1000\text{m}}{1000\text{m}}\right\}$ km

36000s = 1hr

900s = $\frac{900}{36000}$

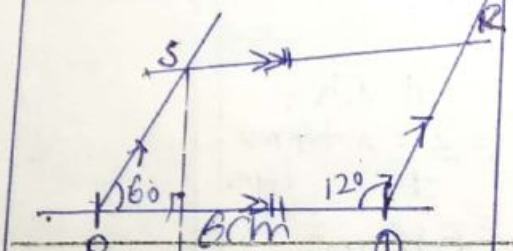
$= \left\{\frac{1000\text{m}}{1000\text{m}}\right\} \div \frac{900}{36000}$

$= \frac{1 \times 36000}{900}$ km/hr

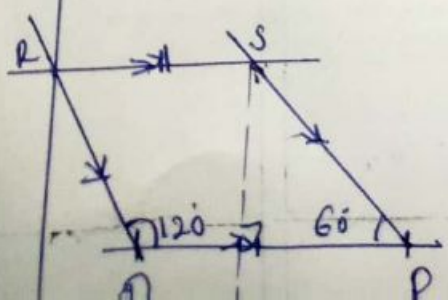
$= 40$ km/hr

(03 Marks)

29. Using a ruler and a pair of compasses only, construct a rhombus PQRS where line PQ= 6cm and angle QRS= 60°. Drop a perpendicular line from S to meet line PQ at W.



(04 Marks)



b) Measure angle PSW.

30. The table below shows a journey by a bus from town V to town Z via town W, X and Y. *Study and use it to answer the questions that follow.* (01 Mark)

Distance in km	Towns	Departure	Arrival
0	V	8: 00am	
56	W	9: 45am	9: 00am
113	X	11: 20am	11: 00am
165	Y	2: 10pm	1: 00pm
277	Z	6: 50pm	6: 10pm

a) What is the distance in kilometres from town X to town Z?

277 km
− 113 km
164 km (01 Mark)

b) ~~What is the arrival time at Z in a 24 hour clock system?~~

Hrs	Mins
6	10
+ 12	00

1810 hrs (01 Mark)

c) How long does the bus take stopping at W?

Hrs	Mins
9	45
− 9	00

45 minutes (01 Mark)

d) Calculate the average speed of the bus between town Y and town Z.

Distance = 277 km − 165 km = 112 km

Time = 6 10 pm − 2 10 = 4 00

A Speed = $\frac{D}{T}$ = $\frac{28}{1}$ km/hr = 28 km/hrs (02 Marks)

31 Mr Okobot, a poultry farmer collects 15,600 eggs a day on his farm and packs them on trays which carry 30 eggs each. His vehicle carries 40 trays per trip to the market. How many trips will the vehicle make in order to transport all the day's eggs?

No of tray

1 tray = 30 eggs

$= \frac{15\,600}{30}$

$= 520$ trays

No of trips

1 trip = 40 trays

$= \frac{520 \text{ trays}}{40 \text{ trays}}$

$= 13$ trips

(03 Marks)

32. Given that; $y = 3x - 5$, complete the table below.

X	4	____	$\frac{1}{3}$	____	3
Y	____	-2	____	-6	____

$y = 3 \times 4 - 5$

$= 12 - 5$

$= 7$

$3x - 5 = y$

$3x - 5 + 5 = -2 + 5$

$\frac{3x}{3} = \frac{3}{3}$

$x = -1$

$y = \frac{1}{3} \times 3^{1} - 5$

$= 1 - 5$

$= -4$

$3x - 5 = y$

$3x - 5 + 5 = -8 + 5$

$\frac{3x}{3} = \frac{-3}{3}$

$x = -1$

(05 Marks)

$y = 3 \times 3 - 5$

$= 9 - 5$

$= 4$