GREENHILL PRIMARY SCHOOLS

PRE-PLE JOINT MOCK EXAMINATION 2024

(SET II)

MATHEMATICS

Time allowed: 2 hours 30 minutes

Index No.

Random No.						Personal No.		

Candidate's Name: MARKING GUIDE

Stream: GREEN **Campus:** .....

Signature: .....

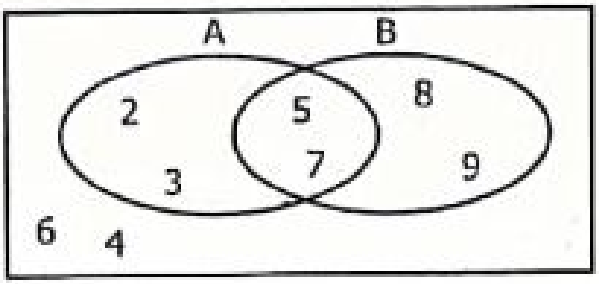
Do not open this booklet until you are told to do so.
Read the following instructions carefully

1. This paper consists of 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. Answers to both sections must be written in spaces provided.
5. All answers must be written in blue or black ballpoint pen or ink but not in pencil.
   Diagrams should be drawn in pencil.
6. Crossing out of answers 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 box indicated for examiner's use only.

FOR EXAMINERS USE ONLY		
QN.NO.	MARK	SIGN
A		
B		
TOTAL		

SECTION A:

1. Use the Venn diagram below to find the number of elements in complement of set B.



$B' = \{2, 3, 6, 4\}$ B1

$n(B)' = 4$ B1

2. Divide:

$$3\overline{)2121} = 707$$

M1 A1

-0

21

-21

002

-0

21

-21

00

3. Write in figures forty million forty thousand, forty-nine.

$40,000,000$

$40,000$

$+ \quad 49$

$40,040,049$ ✓ B2

4. Write 499 in Roman numerals.

$400 + 90 + 9$

CD XC IX

$499 = CDXCIX$ ✓ B2

5. Subtract 124_{five} from 442_{five}.

$4\overset{3}{\#}\overset{7}{2}_{five}$

$-\ 1\ 2\ 4_{five}$ M1

$3\ 1\ 3_{five}$ A1

$5 + 2 = 7$

10

6. Given that set M has all vowel letters and set T has the first six letters of alphabet. Find n(M∪T).

$M = \{a, e, i, o, u\}$ ✓

$T = \{a, b, c, d, e, f\}$ ✓

$M \cup T = \{a, e, i, o, u, b, c, d, f\}$ ✓ B1

$n(M \cup T) = 9$ ✓ B1

7. Calculate the square root of 256.

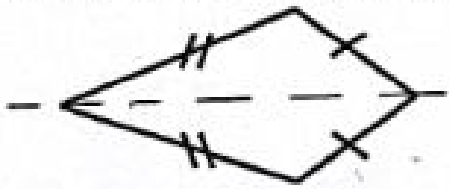
2	256
2	128
2	64
2	32
2	16
2	8
2	4
	2

$\sqrt{256} = 2 \times 2 \times 2 \times 2$ M1

$= 16$ A1

13

8. How many lines of symmetry does the figure below have?



One line of symmetry B1

Reject without the line of symmetry.

9. The supplementary angle of $(4y - 30^\circ)$ is $(y + 20^\circ)$. Find the value of y.

$(4y - 30^\circ) + (y + 20^\circ) = 180^\circ$ M1

$4y - 30^\circ + y + 20^\circ = 180^\circ$

$4y + y + 20^\circ - 30^\circ = 180^\circ$

$5y - 10^\circ = 180^\circ$

$5y - 10^\circ + 10^\circ = 180^\circ + 10^\circ$

$\frac{5y}{5} = \frac{190^\circ}{5}$ 38°

$y = 38^\circ$ A1

10. The ratio of goats to cows on the farm is 2:3 respectively. If there are 60 cows on the farm, how many goats are on the farm?

Goats	Cows	
2p	3p	
	60	

$3p = 60$ 20

$\frac{3p}{3} = \frac{60}{3}$

$p = 20$ B1

Goats

$2p = 2 \times 20$

$= 40$ goats B1

method 2.

$2 + 3 = 5$

$\frac{3}{5} \rightarrow 60$

3 parts $\rightarrow 60$

1 part $\rightarrow \frac{60}{3}$ ✓

2 parts $\rightarrow \frac{20}{60} \times 2$

40 goats ✓

10

11. A trader sold a radio at sh. 160,000 making a loss of 20%. Work out the price a trader bought a radio.

100% − 20% = 80% / B

%age	Money
80 ⟶	sh. 160,000
1 ⟶	sh. 160,000 / 80 = sh. 2000
100 ⟶	100 × sh. 2000 = sh. 200,000 B

*12. Write $\frac{2}{3} : \frac{4}{5}$ as a fraction.

$5|15 \times \frac{2}{3_1} : \frac{4}{5_1} \times {}^{3}15$ m

10 : 12

$\frac{10^{5}}{12_{6}} = \frac{5}{6}$ A

option.

$\frac{2}{3} \div \frac{4}{5}$

$\frac{2^{1}}{3} \times \frac{5}{4_{2}}$ ✓

$\frac{5}{6}$ ✓

*13. Simplify: $\frac{5}{12} - 1\frac{1}{2} + 1\frac{1}{4}$

$\frac{5}{12} + 1\frac{1}{4} - 1\frac{1}{2}$

$\frac{5}{12} + \frac{5}{4} - \frac{3}{2}$

$= \frac{5 + 15 - 18}{12}$ M

$= \frac{20 - 18}{12}$

$= \frac{2^{1}}{12_{6}}$

$= \frac{1}{6}$ A

$\frac{5}{12} + 1\frac{1}{4}$

$\frac{5}{12} + \frac{5}{4} = \frac{5 + 15}{12}$

$= \frac{20}{12}$ ✓

$\frac{20}{12} - \frac{3}{2} = \frac{20 - 18}{12}$

$= \frac{2^{1}}{12_{6}}$

$= \frac{1}{6}$ ✓

*14. Solve: 3m = 4 (finite 7)

3m = 4 + 7 (finite 7)

3m = 11 + 7 (finite 7)

$\frac{3m}{3_1} = \frac{18^{6}}{3_1}$ (finite 7) m

m = 6 (finite 7) A

08

15. The temperature of a place is $^{-}32^{\circ}C$. Find the new temperature if it drops by $18^{\circ}C$.

$-32^{\circ}C + (-18^{\circ}C)$ M
$-32^{\circ}C - 18^{\circ}C = -50^{\circ}C$ A

16. Given that **a** = 10, **b** = 3 and **c** = $^{-}8$. Find the value of 2ab – c.

$(2 \times 10 \times 3) - (-8)$ M
$60 + 8 = 68$ A

15

17. Work out the average of 3x – 4, 2x + 6, and x + 7

$\frac{3x-4+2x+6+x+7}{3}$ M

$= \frac{3x+2x+x+6+7-4}{3}$

$= \frac{6x+13-4}{3}$

$= \frac{6x+9}{3}$

$\frac{\overset{2}{\cancel{6}}x}{\cancel{3}_1} + \frac{9^{3}}{\cancel{3}_1}$

$= 2x + 3$ A

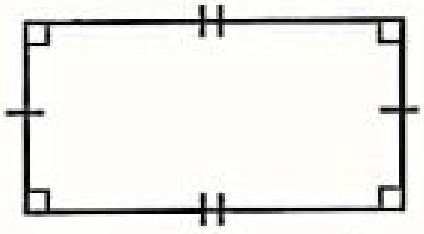
18. Convert **1248** hours to a twelve-hour clock system.

12 : 48 p.m. ✓B2

1200 hours → 1200 noon
+ 48
12:48 p.m.

08

19. The ratio of the length to the width of the figure below is 3:2 respectively. If the perimeter of the figure below is 40m, workout the actual width of the figure below.



Length	Width
3e	2e

$2(L+W) = P$

$2(3e+2e) = 40m$

$2 \times 5e = 40m$

$\frac{10e}{10} = \frac{40m}{10}$

$e = 4m$ B2

Width

$2e = 2 \times 4m$

$= 8m$ B1

20. John sold a text book at sh. 32,000 making a profit of sh.17,500. What was the cost price of the text book?

SP = sh. 32,000

Profit = sh. 17,500

CP = SP − P

sh. 32,000 M

− sh. 17,500 M

sh. 14,500 A1

04

16

SECTION B:

Answer all questions in this section

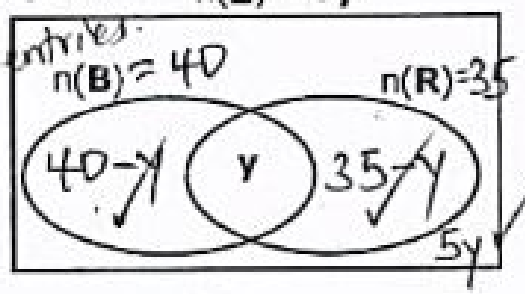
Marks for each question are indicated in brackets

21. In a class of 9y pupils, 35 pupils prefer eating rice (R), 40 pupils prefer eating bananas (B), 5y pupils do not eat any of the two kinds of food while y pupils prefer eating both rice and bananas.

(a) Use the above information to complete the Venn diagram below. ***(2 marks)***

B2 for 3 entries

B1 for 2 entries



B2

$y = (40+35+5y) - 4y$

$y = 75 + 5y - 9y$

$y = 75 - 4y$

$y + 4y = 75$

$\frac{5y}{5} = \frac{75}{5}^{15}$

$y = 15$.

(2 marks)

(b) Calculate the value of **y**.

$5y + 35 - y + 40 = 9y$ M

$5y - y + 35 + 40 = 9y$

$4y + 75 = 9y$

$4y - 4y + 75 = 9y - 4y$

$\frac{75}{5} = \frac{5y}{5}$

$y = 15$ A1

04

(c) If each of the pupils that do not eat bananas received a sweet. How many sweets did they receive altogether? **(1 mark)**

$5y + 35 - y$

$5y - y + 35$

$4y + 35$

$(4 \times 15) + 35$

$60 + 35$

$= 95$ sweets ✓B1

option 2.

$9y - 40$

$(9 \times 15) - 40$

$135 - 40$

95 sweets.

$135 - 40 = 95$

22. (a) Write the following numbers in scientific form: ***(1 mark each)***

(i) 8567 $n = 3$

8.567×10^3 ✓B1

(ii) 789000 $n = 5$

7.89×10^5 ✓B1

(iii) 0.00564 $n = -3$

5.64×10^{-3} ✓B1

(b) What number has been written in scientific notation. ***(1 mark each)***

(i) 2.49×10^3

$\frac{249}{100} \times 10 \times 10 \times 10$

$= 2490$ ✓B1

05

(ii) 5.87×10^{-4}

$\frac{587}{100} \times \frac{1}{10^4}$

$\frac{587}{100} \times \frac{1}{10000}$

$\frac{0.00587}{100000}$

$= 0.000587$ ✓B1

23 (a) Workout the product of the value of 8 and the place value of 9 in 84695. *(3 marks)*

Th	H	T	O
8	4	6	9 5

10 B1

$8 \times 10,000$

$= 80,000$ ✓B1

$80,000 \times 10$ ✓B1

$= 800,000$ B1

(b) Calculate the difference between the value of 3 and the value of 5 in 943.45 *(2 marks)*

H	T	O	T	H
9	4	3	. 4	5
		1		1

$3 \times 1 = 3$ ✓

$\frac{5}{100} = 0.05$ ✓B1

$2\ 9$

$3.10\ 10$

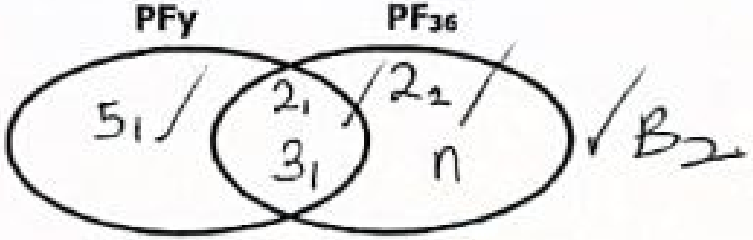
$-\ 0.05$

2.95 B1

18

24. Given that the **PFy**=$\{2_1, 3_1, 5_1\}$ and **PF$_{36}$**= $2 \times 2 \times 3 \times n$ ✓ ✓ ✓

(a) Show the prime factors of the above numbers on the Venn diagram below. *(2 marks)*



✓B2

(b) Use the above Venn diagram to find the; **(1 mark each)**

(i) Value of **y**.

$Y = 2 \times 3 \times 5$

$Y = 30$ ✓B1

(ii) Value of **n**.

$2 \times 2 \times 3 \times n = 36$

$\frac{12n}{12} = \frac{36}{12}$ 3

$n = 3$ ✓B1 Accept n=3

(iii) **LCM.**

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

$= 180$ ✓B1

19

25. (a) Joseph borrowed sh.150,000 from the bank that offers an interest rate of 5% per month for 4 months. How much money did he pay back after that period? **(3 marks)**

$P = sh.150,000$, $R = 5\%$ per month, $T = 4$ months

$SI = P \times R \times T$

$SI = sh.150,000 \times \frac{5}{100} \times 4$ m1

$SI = sh.1500 \times 20$

$SI = sh.30,000$ A1

$A = P + SI$

sh. 150,000
+ sh. 30,000
sh. 180,000 B1

(b) Use the above Venn diagram to find the; ***(1 mark each)***

(i) Value of **y**.

$y = 2 \times 3 \times 5$

$y = 30$ √ B1

(ii) Value of **n**.

$2 \times 2 \times 3 \times n = 36$

$\frac{12n}{12} = \frac{36}{12}$ 3

$n = 3$ √ B1 (Accept n=3)

(iii) **LCM.**

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

$= 180$ √ B1

25. (a) Joseph borrowed sh.150,000 from the bank that offers an interest rate of 5% per month for 4 months. How much money did he pay back after that period? ***(3 marks)***

P = sh. 150,000, R = 5% per month, T = 4 months

$SI = P \times R \times T$

$SI = sh.150,000 \times \frac{5}{100} \times 4$ m1

$SI = sh.1500 \times 20$

$SI = sh.30,000$ A1

$A = P + SI$

sh. 150,000
+ sh. 30,000
sh. 180,000 B1

(b) Timothy deposited sh. 200,000 in the bank that offers an interest rate of 10% p.a. After sometime, he found a total of sh.260,000 on his account. For how long did he keep the money in the bank? **(2 marks)**

$P = sh.\ 200,000,\ R = 10\%\ p.a.,\ A = sh.\ 260,000,\ T = ?$

~~$P + SI = A$~~

$P + SI = A - P$

sh. 260,000
− sh. 200,000
sh. 60,000 B

$P \times R \times T = SI$

$sh.\ 200,000 \times \frac{10}{100} \times T = sh.\ 60,000$

$\frac{sh.\ 20000T}{sh.\ 20000} = \frac{sh.\ 60,000}{sh.\ 20000}$

$T = 3$ years B

$(P \times R \times T) + P = A$

$(200000 \times \frac{10}{100} \times T) + 200000 = 260000$ ✓

$20000T + 200000 = 260000$

$20000T + 200000 - 200000 = 260000 - 200000$

$\frac{20000T}{20000} = \frac{60000}{20000}$

$T = 3$

*26. (a) The interior angle sum of a regular polygon is 1080°. Name the polygon. **(3 marks)**

$(n-2)180^\circ = 1080^\circ$ m

$\frac{(n-2)180^\circ}{180^\circ} = \frac{1080^\circ}{180^\circ}$

$n - 2 = 6$

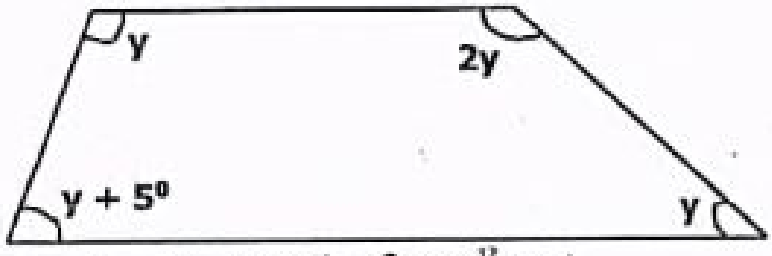
$n - 2 + 2 = 6 + 2$

$n = 8$ sides A

Regular Octagon B (Accept octagon)

20

(b) Use the figure below to find the value of **y**. **(2 marks)**



$2y + y + y + y + 5^\circ = 360^\circ$ m

$5y + 5^\circ = 360^\circ$

$5y + 5^\circ - 5^\circ = 360^\circ - 5^\circ$ A

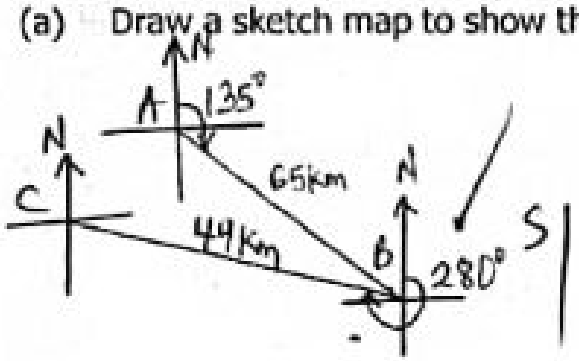
$\frac{5y}{5} = \frac{355^\circ}{5}$ A

$y = 71^\circ$ A

07

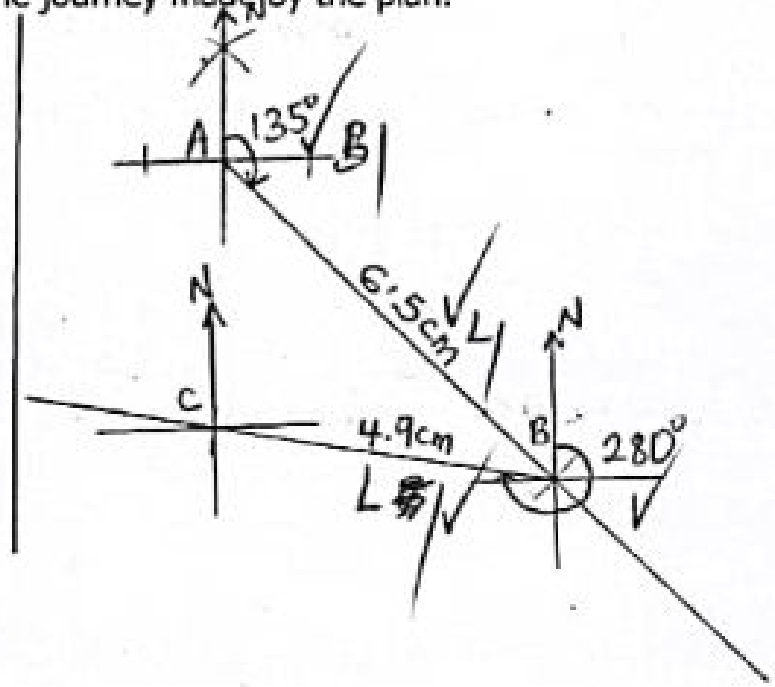
27. An aeroplane flew from town **A** to town **B** on a bearing of **135°** **65km** from town A. It then left for town **C**, **49km** away on a bearing of **280°**.

(a) Draw a sketch map to show the journey for the plane. ***(1 mark)***



(b) Using a scale of **1cm** to represent **10km**. Draw an accurate diagram to show the journey made by the plan. ***(3 marks)***

Scale
A to B
$\frac{65}{10} = 6.5\text{cm}$
B to C
$\frac{49}{10} = 4.9\text{cm}$



21

(c) What was the shortest distance between town **A** and town **C**? ***(1 mark)***

3.9 cm
$\frac{39}{10} \times 10\text{km}$
$= 39\text{km}$
37km, 38 km, 39km, ~~40km~~ B

05

28. Kiiza was travelling at an average speed of **50km/hr** for **2hours**. He later increased his speed by **10km/hr** in order to cover the remaining distance of **180km**. Find his average speed for the whole journey. *(5 marks)*

1st journey
S = 50km/hr
T = 2hr
D = S x T
D = 50km/hr x 2hr
D = 100km ✓A

2nd journey
S = 50+10
S = 60 km/hr ✓B
D = 180km
T = ?

T = D/S
T = 180km / 60km/hr
T = 3 hr ✓B

A.S = T.D / T.T
A.S = 100km + 180km / 2hr + 3hr M
A.S = 280km / 5hr = 56
A.S = 56km/h ✓A

29. The table below shows the mass of some children. Use it to answer the questions that follow.

Mass in kg	48	65	78	y
Number of pupils	2	4	1	3

(a) Workout the number of pupils. *(2 mark)*

2 + 4 + 1 + 3 M
= 10 pupils A

Award B2 for 10 pupils on sight

(b) If the average weight of all the above pupils was **59kg**. find the value of y. *(3 marks)*

(48x2) + (65x4) + 78 + 3y = 59 M
10
96 + 260 + 78 + 3y = 59
10
10 x (434 + 3y) = 59x10
10
3y + 434 = 590
3y + 434 - 434 = 590 - 434 M
3y = 156
3
y = 52kg A

Option 2
3y + (48x2) + (65x4) + 78 = 590
10

30. A rectangular tank measuring 20cm long, 10cm wide and 5cm high is $\frac{5}{6}$ full of oil.

(a) How much oil in litres is in the tank? ***(3 marks)***

$V = L \times W \times H$

$V = 20cm \times 10cm \times 5cm$ M1

$V = 1000\ cm^3$ A1

$1000\ cm^3 = 1$ litre

$\frac{5}{6} \times 1$ litre $= \frac{5}{6}$ of a litre B1

or $0.8\overline{3}$ litre

(b) Find the volume of the tank when completely full of oil ***(2 marks)***

$Vol = L \times W \times H$

$Vol. = 20cm \times 10cm \times 5cm$ M1

$= 1000\ cm^3$ A1 B1 or

$1000\ cm^3 = 1$ Litre.

Award B_2 for $1000\ cm^3$

31. Musa is **16** years older than David. **10** years ago, their total age was **72**. How old is each now? ***(5 marks)***

Time	Musa	David	Total
Now	$d+16$	d	
10 yrs ago	$d+6$	$d-10$	72

$d+6+d-10 = 72$ M1

$d+d+6-10 = 72$

$2d-4 = 72$

$2d-4+4 = 72+4$ M1

$\frac{2d}{2} = \frac{76}{2}$ 38

$d = 38$ years A1

David = 38 years old

Musa

$d+16$

$38+16$ M1

$= 54$ years old A1

10

32. Complete the table below. (5 marks)

Items	quantity	Unit cost	Amount
Rice	3kg	Sh.4000	Sh. 12,000 B
Sugar	2kg	sh. 4, 500 B	Sh. 9000
Salt	4 1/6 kg B	Sh.1200	Sh. 5000
Beans	2kg	sh. 4,000 B	Sh. 8,000 B
Total			Sh. 34,000

Rice
sh. 4000 X 3
= sh. 12,000

Sugar
4500
sh. 9000
2 1
= sh. 4,500

Salt
sh. 5000 25
sh. +200 6
25/6 = 4 1/6 kg

sh. 12,000
sh. 9,000
+ sh. 5,000
sh 26,000

sh. 34,000
- sh. 26,000
sh. 8,000

Beans
4000
sh. 8000
2 1
= sh. 4000

Institute one - 1 for correct entries without working at the last correct entry

05