STEM EXAMINATIONS BOARD

PRE-PRIMARY LEAVING EXAMINATION SET IV, 2022

MATHEMATICS

Time Allowed: 2 hours 30 minutes

Random No.						Personal No.		

Candidate's Name: .....

Candidate's Signature: .....

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 **8 printed pages** altogether.
3. Answer **all** questions. **All** the working for both sections **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 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 easily be read 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		

SECTION A : 40 MARKS

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

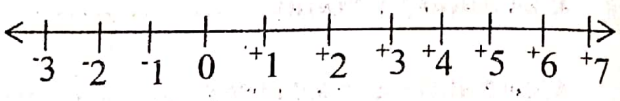
Questions **1** *to* **20** *carry* **two** *marks each.*

1. Add: 1 0 9
   + 9 0

2. Write "Four hundred thirty thousand five" in figures.

3. Solve for p: $3p - 4 = p + 6$

4. Use the number line below to work out 3 x 2



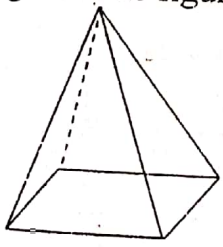
5. Convert $\frac{1}{8}$ into a decimal fraction.

6. The exchange rate in Bank of Uganda is Ug Shs. 32 to one Kenya Shilling.
   How much Uganda Shillings is Tom going to get after exchanging Kenya Shs. 3200?

7. Express 500gms as a percentage of a kilogram.

8. If set K has 16 subsets, find n(K).

9. How many vertices and edges has the geometric figure below?



(i) Vertices =

(ii) Edges =

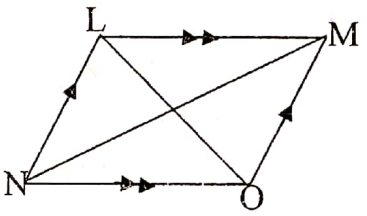
10. Calculate the square root of $1\frac{7}{9}$

11. If today is Thursday, what day of the week was it 60 days ago?

12. Increase Shs. 48,000 in the ratio 3:2.

13. If  stands for 11 bibles, draw bible pictures to represent 44 bibles.

14. In the figure below, LO = 12dm and MN = 18dm.
Work out the area of the figure.



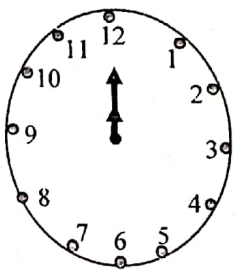
15. Solve for the value of m if $3^{2m} = 81$.

16. Round off 39.08 to the nearest whole number.

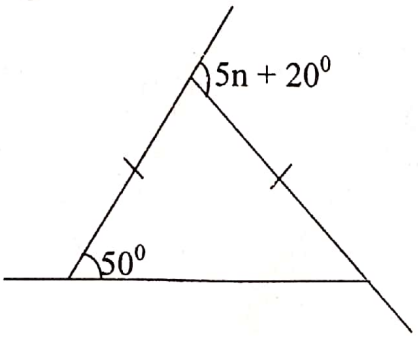
17. Find the solution set for;
$2(y - 3) \leq 14$

18. Simplify: $\frac{0.12 + 0.06}{0.9}$

19. Express the morning time on the clock face below to a 24-hour clock system.



20. In the figure below, calculate the value of n in degrees.

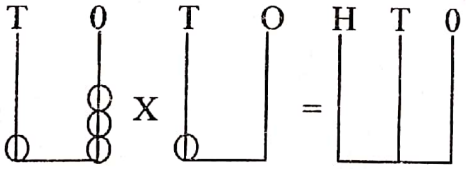


SECTION B : 60 MARKS.

*Answer **all** questions in this section.*
Marks for each question are indicated in the brackets.

21. Dan went to a local market and bought the following items.
(i) 3kg of rice at Shs. 5000 a kg.
(ii) $\frac{1}{2}$ kg of fish at Shs. 6000 per kg.
(iii) 2 packets of salt 500gms each at Shs. 1600.
(iv) $1\frac{1}{2}$ bar of soap at Shs. 8000 per bar.
If he was given a discount of 20% on his total expenditure, how much was the discount?
(6 marks)

22. (a) Work out using the abacus.

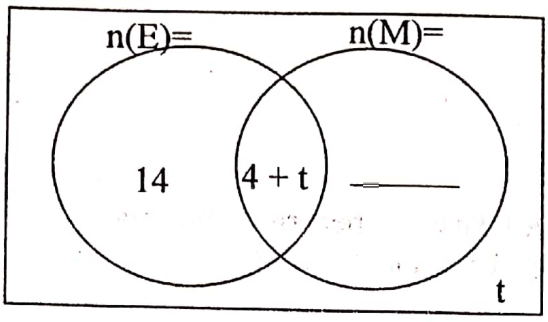


(2 marks)

(b) Solve for base n: $52_n = 112_{\text{five}}$.
(3 marks)

23. In a candidate class, 2t candidates like Mathematics (M) only, (4 + t) candidates like both English (E) and mathematics, 14 candidates like English only while t candidates like other subjects.

(a) Use the above information to complete the Venn diagram below. *(1 mark)*



(b) If those who like Mathematics are 37 candidates, find the value of t. *(2 marks)*

(c) Work out the probability of picking a candidate who likes neither of the two subjects? *(2 marks)*

24. At Excel Junior P/S. two bells ring at intervals of 30 minutes and 40 minutes for both lower and upper primary class lessons respectively. How many lessons will each class have had by the time the bells ring together again? *(5 marks)*

25. (a) There are 4 columns in a classroom. If the pupils sat 12cm apart to cover a distance of 108cm, how many pupils are in the class? *(2 marks)*

(b) A farmer collected 50 grosses of eggs last week.

(i) If the eggs were packed in trays of 30 eggs each, how many trays were packed? *(2 marks)*

(ii) A pickup carried 80 trays per trip to the market, how many trips will the pickup make to complete the work? *(2 marks)*

26. (a) The average of 4, 7, (p—2), 5, 7 and 4 is p. Find the value of p. *(3 marks)*

(b) Jonan did a series of Mathematics tests and scored marks as given below; 60, 55, 78, 80, 60, and 90.

(i) Work out his modal frequency. *(1 mark)*

(ii) Calculate his median mark. *(2 marks)*

27. A taxi driver left home at 1100Hrs and arrived in town at 1330Hrs driving at a speed of 100km/hr.

(a) Calculate the time taken to arrive in town. *(1 mark)*

(b) How far is his home from the town? *(2 marks)*

28. (a) $\frac{3}{8}$ of water in a tank lasts a family for 45 days, how long will $\frac{2}{3}$ of the water in that tank last the family?

(2 marks)

(b) Tap K can fill a tank of water in only 6 minutes while tap M can fill the same tank in only n minutes. If both taps opened at the same time and can fill the tank in 2 minutes only. Find the value of n.

(3 marks)

29. Given that $x = y + 2$, complete the table below.

(4 marks)

X	2	____	____	6	____
Y	0	1	3	____	6

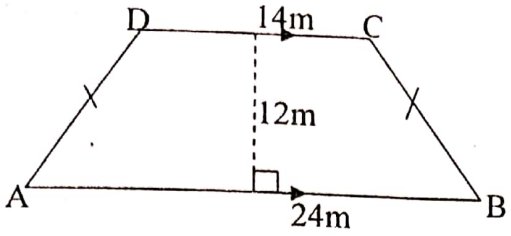
30. (a) Work out: $\frac{1}{3}$ m — 6 = 6

(2 marks)

(b) The number of boys in a school is less the number of girls by 60. If there are 300 pupils in the school, how many boys are there?

(2 marks)

31. The figure below shows a school garden ABCD.



(a) If the garden was fenced using poles planted 4m apart, how many poles were used to complete the fence? *(4 marks)*

(b) Calculate the amount of money spent on buying the poles used to fence the garden if each pole cost Shs. 5000. *(2 marks)*

32. (a) With the help of a ruler, a pencil and a pair of compasses only, construct a rhombus ABCD where AB = 7cm and angle DAB = 45^0. *(4 marks)*

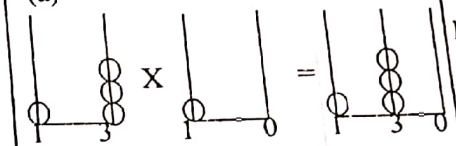
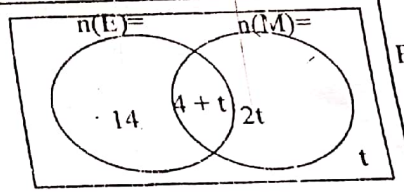
(b) Measure angle ABC in degrees. *(1 mark)*

END

P.7 MATHS MARKING GUIDE PRE-PLE SET IV, 2022

S/N	SOLUTION	MRKS	COMMENTS
1	109 90 199	M_1 A_1	For correct addition For 199
2	Four hundred thirty thousand five 430, 000 5 430,005	M_1 A_1	For correct method For 430,005
3	$3p - 4 = p + 6$ $3p - p = 6 + 4$ $2p = 10$ $p = 5$	M_1 A_1	For collection of like terms For p = 5
4	3 x 2 = 2 groups of 3 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7	B_1 B_1	For 2 groups of 3 For identifying +6
5	$= 0.125$ 8 | 10 — 8 20 — 16 40 — 40 $= 0.125$	M_1 A_1	For correct conversion For 0.125
6	1 Kenya Sh. = Ug Shs. 32 3200 Kenya Shillings = = Ug Shs. 32 x 3200 = Ug Shs. 102,400	M_1 A_1	For correct multiplication For Ug Shs. 102,400
7	1kg = 1000gms $= \frac{500}{1000} \times 100\%$ $= 50\%$	M_1 A_1	For correct division For 50%
8.	$n(K) = 2^n$ $2^n = 16$ $2^n = 2 \times 2 \times 2 \times 2$ $2^n = 2^4$ $n = 4$ n(K) = 4 elements	M^1 A^1	For correct method For n(K) = 4 elements
9.	i) Vertices = 5 ii) Edges = 8	B_1 B_1	For 5 vertices For 8 edges
10.	$1\frac{7}{9} = \frac{(1 \times 9) + 7}{9}$ $= \frac{16}{9}$ $= \frac{4 \times 4}{3 \times 3}$ $= \frac{4}{3}$ $= 1\frac{1}{3}$	M_1 A_1	For correct method For $1\frac{1}{3}$
11.	Thursday = 4 4 — 60 = ? (finite 7) 4 — (60 ÷ 7) = ? (finite 7) 4 — (8 remainder 4) 4 — 4 = 0 (finite 7) 0 stands for Sunday	M_1 A_1	For correct method For Sunday
12.	New Old 3 : 2 ? Shs. 48,000 2 parts make Shs. 48,000 1 part make Shs. $\frac{48000}{2}$ 3 parts make Shs. $\frac{24000}{48000} \times 3$ Shs. 72,000	M_1 A_1	For correct division and multiplication For 72,000
13.	Stands for 11 bibles ? Bibles = $\frac{44}{11}$ = 4 bibles Bibles	B_1 B_1	For bibles For
14.	Area = $\frac{1}{2} \times D_1 \times D_2$ $= \frac{1}{2} \times {}^{6}12\text{dm} \times 18\text{dm}$ $= 6\text{dm} \times 18\text{dm}$ $= 108\text{dm}^2$	M_1 A_1	For correct For 108dm
15.	$3^{2m} = 81$ $3^{2m} = 3 \times 3 \times 3 \times 3$ $3^{2m} = 3^4$ $2m = 4$ $m = 2$	M_1 A_1	

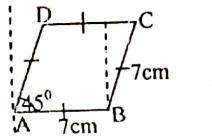
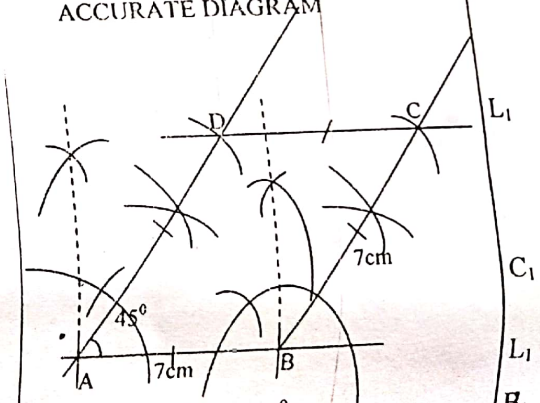
S/N	SOLUTION	MRKS	COMMENTS
16	39.08 = T O P Ts Hs: 3 9 . 0 8 → 3 9 → 39	M_1	For correct method
		A_1	For 39
17	$2(y - 3) < 14$ $2y - 6 < 14$ $2y - 6 + 6 < 14 + 6$ $\frac{2y}{2} < \frac{20}{2}$ $y < 10$	B_1	For $y < 10$
	Solution set for $y = \{10, 9, 8, 7, 6, 5...\}$	B_1	For $y = \{10, 9, 8, 7, 6, 5 ....\}$
18	$\frac{0.12 + 0.06}{0.9}$ $0.12 + 0.06 = 0.18$	B_1	For 0.18
	$\frac{18 \div 9}{100 \div 10}$ $\frac{18^2 \div 10}{100 \div 5_1}$ $= \frac{2}{10}$ $= 0.2$	B_1	For 0.2
19	Time = 12:00a.m = 12:00a.m — 12:00 0000Hrs 0000Hrs	B_1	For 12:00a.m
		B_1	For 0000Hrs
20	$5n + 20^0 = 50^0 + 50^0$ $5n + 20^0 - 20^0 = 100^0 - 20^0$ $\frac{5n}{5} = \frac{80^{16}}{5_1}$ $n = 16^0$	M_1	Forming equation
		A_1	For $n = 16^0$
21	Rice = 3kg x Shs. 5000 = Shs. 15,000	B_1	For Shs. 15000
	Fish = $\frac{1}{2}$ kg x Shs. 6000^{3000} = Shs. 3000	B_1	For Shs. 3000
	Salt = Shs. 1600	✓	For shs. 1600
	Soap = $1\frac{1}{2}$ bars x 8000 = $\frac{3}{2}$ x Shs. 8000^{4000} = Shs. 12,000	B_1	For Shs. 12,000
	Total = Shs. 15000 + 3000 + 1600 + 12000 = Shs. 31,600	B_1	For Shs. 31,600

S/N	SOLUTION	MRKS	COMMENTS
	Discount = $\frac{20}{100}$ x Shs. 31600 = 2 x Shs. 3160 = Shs. 9480	M_1	For correct method
		A_1	For Shs. 9480
		06	
22.	(a) 	B_1	For drawing bead correctly
		B_1	For 10
	(b) $52_n = 112_{five}$ $(5 \times n^1) + (2 \times n^0) = (1 \times 5^2) + (1 \times 5^1) + (2 \times 5^0)$ $5n + 2 = (1 \times 5 \times 5) + (1 \times 5) + (2 \times 1)$ $5n + 2 = 25 + 5 + 2$ $5n + 2 = 32$ $5n = 32 - 2$ $\frac{5n}{5} = \frac{30^6}{5_1}$ $n = 6$ = Base six	M_1	For correct conversion
		M_1	For forming equation
		A_1	For $n = 6$
		05	
23.	(a) 	B_1	For 2t correctly
	(b) $4 + t + 2t = 37$ $4 + 3t = 37$ $3t = 37 - 4$ $\frac{3t}{3} = \frac{33^{11}}{3_1}$ $t = 11$	M_1	For forming equation
		A_1	For $t = 11$
	(c) Probability = $\frac{EOC}{POC}$ $= \frac{T}{14 + 4 + t + 2t + t}$ $= \frac{11}{14 + 4 + 11 + 22 + 11}$ $= \frac{11}{62}$	M_1	For correct
		A_1	For $\frac{11}{62}$
		05	

SOLUTION	MRKS	COMMENTS	S/N
CM of 30 and 40 minutes 2 | 30 | 40 2 | 15 | 20 2 | 15 | 10 3 | 15 | 5 5 | 5 | 5 1 | 1 = 5 x 3 x 2 x 2 x 2 = 120 minutes	B_1 M_1 A_1	For prime factorization For multiplication For 120 minutes	
Lower primary = $\frac{120^4}{30_1}$ = 4 lessons	B_1	For 4 lessons	
) Upper primary = $\frac{120^3}{40_1}$ = 3 lessons	B_1 05	For 3 lessons	
a) otal distance) + 1 x No of columns istance apart = (108cm / 12cm) + 1 x 4 columns = (9 + 1) x 4 pupils = 10 x 4 pupils = 40 pupils	M_1 A_1	For correct method (BODMAS) For 40 pupils	2
) (i) 1 gross = 144eggs 50 grosses = 144 x 50 eggs = 7200 eggs Number of trays = 1 tray = 30eggs ? Trays = $\frac{^{240}7200 \text{ eggs}}{30 \text{ eggs}}$ = 240 trays	B_1 B_1	For 7200 eggs For 240 trays	
ii) 1 trip take 80 trays ? trips take $\frac{^{3}240 \text{ trays}}{80 \text{ trays}}$ = 3 trips	M_1 A_1 06	For correct division For 3 trips	
(a) $4 + 7 + 5 + 7 + 4 + (p - 2) = p$ $\frac{27 + p - 2}{6} = p$ $\frac{27 - 2 + p}{6} = p$ $\frac{6 \times 25 + p}{6} = p \times 6$	M_1	For forming equation	6.

SOLUTION	MRKS	COMMENTS
$25 + p = 6p$ $25 = 6p - p$ $\frac{25}{5} = \frac{5p}{5}$ $5 = p$ $p = 5$	M_1 A_1	For correct method For p
(b) (i) Modal frequency = Marks: 55 | 60 | 75 | 80 | 90 Freq: 1 | (2) | 1 | 1 | 1	B_1	For 2
(ii) 55 60 60 78 80 90 $= \frac{60 + 78}{2}$ $= \frac{^{69}138}{2_1}$ = 69 marks	M_1 A_1 05	For correct method For 69 marks
27. (a) Time = 1330hrs − 1100hrs 230minutes $= 2\frac{1}{2}$ hours	M_1 A_1	For correct method For $2\frac{1}{2}$ hrs
(b) Distance = Speed x Time $\frac{100\text{km/hr} \times 2\frac{1}{2}\text{hr}}{1\text{hr} \times 1\text{hr}}$ $^{50}100\text{km} \times \frac{5}{2_1}$ 50 x 5km = 250km	M_1 A_1 04	For correct method For 250km
28. (a) $\frac{3}{8}$ take 45 days $\frac{2}{3}$ take x days $\frac{2}{2_1} \times \frac{^{15}45}{1} \text{ days} = \frac{3}{8} \times x$ $8 \times 30 \text{ days} = \frac{3}{8_1} \times x \times \frac{8}{1}$ $8 \times \frac{^{10}30}{1_1} \text{ days} = \frac{3x}{1}$ 80 days = x ∴ $\frac{2}{3}$ of water last 80 days	M_1 A_1	For correct use of proportions For 80 days

	SOLUTION	MRKS	COMMENTS
	(b) Tap K take 6 minutes = $\frac{1}{6}$ Tap M take n minutes = $\frac{1}{n}$ Total = $\frac{1}{6} + \frac{1}{n} = \frac{n+6}{6n}$ $1 \div \frac{n+6}{6n}$ $1 \times \frac{6n}{n+6} = \frac{2}{1}$ minutes $6n \times 1 = 2(n+6)$ $6n = 2n + 12$ $6n - 2n = 12$ minutes $\frac{4n}{4} = \frac{12}{4}$ minutes $n = 3$ minutes	M_1 M_1 A_1 05	For forming equation For correct method For 3 minutes
29.	(i) $x = y + 2$ $x = 1 + 2$ $x = 3$ (ii) $x = y + 2$ $x = 3 + 2$ $x = 5$ (iii) $x = y + 2$ $6 = y + 2$ $y = 6 - 2$ $y = 4$ (iv) $x = y + 2$ $x = 6 + 2$ $x = 8$	B_1 B_1 B_1 B_1 04	For x = 3 For x = 5 For y = 4 For x = 8
30.	(a) $\frac{1}{3}m - 6 = 6$ $\frac{1}{3}m - 6 + 6 = 6 + 6$ $3 \times \frac{1}{3}m = 12 \times 3$ $m = 36$ (b) Boys x Girls $x + 60$ Total 300 $x + x + 60 = 300$ $2x = 300 - 60$ $2x = 240$ $x = 120$ boys	M_1 A_1 M_1 A_1 04	For collection of like terms For m = 36 For forming equation For 120 boys

	SOLUTION	MRKS
31.	(a) $a^2 + b^2 = c^2$ $\frac{(24 - 14)m}{2}^2 + 12m^2 = c^2$ $\frac{10m}{2}^2 + 12m^2 = c^2$ $5 \times 5m + 12 \times 12m = c^2$ $25m + 144m = c^2$ $169m = c^2$ $\sqrt{c} = \sqrt{13 \times 13m}$ $c = 13m$ Distance = S + S + S + S = 14m + 13m + 13m + 24m = 27m + 37m = 64m Number of poles = $\frac{\text{Distance}}{\text{Distance apart}}$ $= \frac{64m}{4m}$ 16 poles = 16 poles (b) Amount: 1 pole costs Shs. 3000 16 poles cost Shs. 3000 x 16 = Shs. 48,000	M_1 A_1 B_1 B_1 M_1 A_1 06
32.	SKETCH  ACCURATE DIAGRAM  (b) Angle ABC = 135°	S_1 L_1 C_1 L_1 B_1 05