

STEM EXAMINATIONS BOARD

PRIMARY SEVEN ASSESSMENT SET VII, 2023

MATHEMATICS

Time Allowed: 2 hours 30 minutes

Index No.	Random No.	Personal No.
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Candidate's Name:

Candidate's Signature:

District ID No:

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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. Work out: 4×9 .

2. Simplify: $4y + y - 3y$.

3. Multiply:
$$\begin{array}{r} 101_{\text{ten}} \\ \times 10_{\text{ten}} \\ \hline \end{array}$$







4. Below are the subsets of set K:
 \emptyset , {a}, {n}, {n, a}
 How many elements are in set K?

5. Express "five hundred four" in standard form.

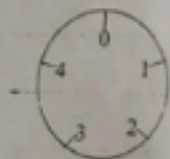
6. In the space provided below, draw a square-based pyramid.



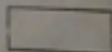
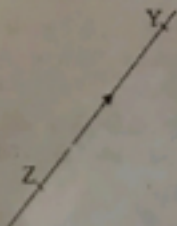
7. Convert 2.05 litres to cm^3 .

8. If  stands for 18 boys and  stands for 10 girls in a class, find the total number of pupils represented by    

9. Use the dial below to multiply;
 $2 \times 3 = \underline{\hspace{1cm}}$ (mod 5)



10. Using a ruler, a pencil and a pair of compasses only, construct a parallel line WX parallel to YZ below.



11. Find the next two numbers in the sequence.

81, 27, 9, 3, _____, _____

12. Add:	Weeks	Days
	18	3
	+ 22	4
	<hr/>	

13. Use commutative property to solve for \square ;

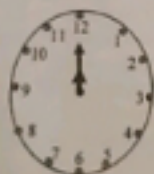
$$13 \times \square = 27 \times \square$$

14. Work out the smallest number of pens that can be shared by 13 boys and 15 girls in a class and leaves 5 pens as the remainder.

15. Tom's car broke down after covering $\frac{3}{5}$ of the journey. If he had covered 560km, how long was the journey?

16. The mean age of three teachers is 38 years. If one of the teachers' age is 34 years, find the total age of the other two teachers.

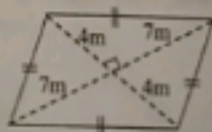
17. Tell the morning time shown on the clock face below.



18. Joan has 7 mangoes more than her sister. If their total number of mangoes is 37, how many mangoes does her sister have?

19. Abdul banked notes of Shs. 1000 numbered from XY 007001 to XY007110. How much money did he bank.

20. Calculate the area of the rhombus below.



SECTION B : 60 MARKS

Answer all questions in this section.

Marks for each question are indicated in the brackets.

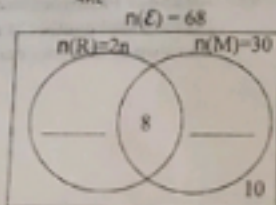
21. Find the value of a, b, c, d, e by completing the 3 x 3 magic puzzle below.

(5 marks)

a	b	c
9	7	5
d	e	6

22. A class of 68 candidates was served with matooke (M) and rice (R). 30 candidates ate matooke, 2n ate rice, 8 ate both matooke and rice while 10 candidates did not eat either of the foods.

(a) Represent the above information on the Venn diagram below. (2 marks)

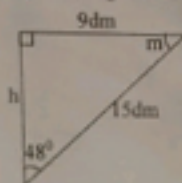


(b) Solve for the value of n. (2 marks)

(c) Work out the probability of picking a candidate at random who ate one type of food only. (2 marks)

23. At North Primary School, there are 20% more boys than girls and 300 girls only.
- (a) Find the percentages for both boys and girls in the school. (3 marks)
- (b) How many pupils are in the school altogether? (2 marks)

24. Use the right angled triangle below to answer the questions that follow.

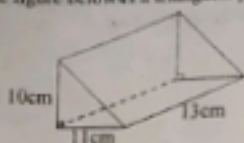


- (a) Calculate the size of angle marked m in degrees. (2 marks)
- (b) Work out the height (h) in dm of the triangle above. (2 marks)



25. To make a girl's school uniform, a tailor needs the following:
- A school badge for Shs. 1000.
 - Threads for Shs. 7000.
 - 3 buttons at Shs. 300 per button.
 - $4\frac{1}{2}$ metre of a cloth at Shs. 3000 per metre.
 - Tailor's labour of Shs. 3000.
- How much will a parent pay for his two daughters' school uniform? (5 marks)

26. The figure below is a triangular prism.



- (a) Draw the net of the prism above. (2 marks)
- (b) Find the volume of the prism above. (2 marks)

27. Andrew drove from town at 4:30pm travelling at a speed of 60km/hr and arrived home 100km away from town in the evening. At what time did he reach his home? (4 marks)

With the help of a ruler, a pencil and a pair of compasses only, construct a regular hexagon of diameter 8cm. (5 marks)

Tom's farm, the ratio of cows, goats and rabbits is 3:4:1 respectively. If there are 40 more cows than rabbits on the farm, work out the total number of each type of animal on the farm. (6 marks)

30. (a) Given that $y = 2$ and $t = 3$
Find the value of $3t + 2y$.
(2 marks)

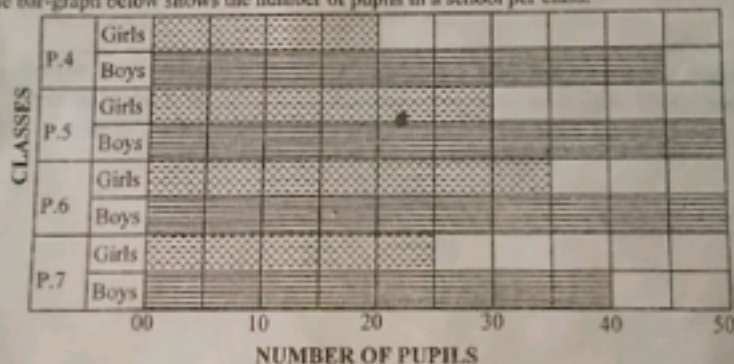
(b) Solve for m : $\frac{2m}{7} = 20$
(2 marks)

(c) Work out: $3p + 4 = p + 16$.
(2 marks)

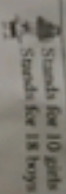

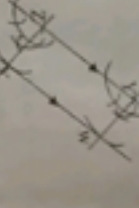
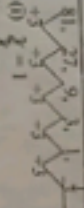

31. A cow gives 18000ml of milk per day.
(a) How many litres of milk does it give in a fortnight?
(3 marks)

- (b) If a litre of milk costs Shs. 2000, how much does the farmer earn per week?
(2 marks)

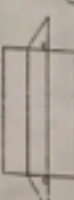
32. The bar-graph below shows the number of pupils in a school per class.



- (a) Which class has most number of pupils?
(1 mark)
- (b) Write two classes with the same number of pupils.
(1 mark)
- (c) Which class has 80 pupils only?
(1 mark)
- (d) Calculate the total number of pupils in the four classes above.
(2 marks)

S/N	SOLUTION	MARKS	COMMENTS	S/N	SOLUTION	MARKS	COMMENTS
1.	$4 \times 9 = 4$ groups of 9 $= 9 + 9 + 9 + 9$ $= 36$ OR $4 \times 9 = 36$	M ₁ A ₁	For using repeated addition For 36	8.	 Stamps for 10 girls Stamps for 18 boys Total = 10 + 10 + 18 = 38 puffs	M ₁ A ₁	For correct method For 38 puffs
2.	$\frac{4x+y}{2} - 3y$	M ₁ A ₁	For correct subtraction For 2y	9.	 $2 \times 3 = 1$ (mode 5)	B ₁ B ₁	For 3 jumps of twos For $2 \times 3 = 1$ (mode 5)
3.	$\frac{0 \text{ bus}}{8 \times 1 \text{ bus}}$ $\frac{0 \text{ bus}}{8 \times 1 \text{ bus}}$ $\frac{0 \text{ bus}}{8 \times 1 \text{ bus}}$	M ₁ A ₁	For correct multiplying For 10 bus	10.		L ₁ C ₁	For parallel line WX For accurate area
4.	$2^x = 4$ $2^x = 2 \times 2$ $2^x = 2^2$ $x = 2$ $= 2$ elements	M ₁ A ₁	For correct method For 2 elements	11.		B ₁ B ₁	For 1
5.	$\text{Five hundred four} = 504$ $= 504 \times 10$ $= 504 \times 10^1$ $= 5.04 \times 10^2$	M ₁ A ₁	For correct method For 5.04×10^2	12.	$\frac{1}{2} = \frac{1}{2}$ $\frac{1}{2} = \frac{1}{2}$ $\frac{1}{2} = \frac{1}{2}$	B ₁ B ₁	For $\frac{1}{2}$
6.		B ₁	For diagram square base-pyramid	13.	$13 \times 2 = 27 \times 2$ $13 \times 2 = 27 \times 2$ $13 \times 2 = 27 \times 2$	M ₁ A ₁	For correct addition For 41 weeks 0 days
7.	$\text{Base} = 1000\text{cm}^2$ $2105 \text{ litres} = 2105 \times 1000\text{cm}^3$ $= 2105 \times 1000$ $= 2105000$	M ₁ A ₁	For correct multiplying For 2050000		$13 \times 2 = 27 \times 2$ $13 \times 2 = 27 \times 2$ $13 \times 2 = 27 \times 2$	B ₁ B ₁	For $\square + 27$ For $\square = 13$

S/N	SOLUTION	Marks	Comments	S/N	SOLUTION	Marks	Comments		
14.	LCM = 5 pems $\begin{array}{r} 3 \ 15 \ 13 \\ 5 \ 5 \ 13 \\ 13 \ 1 \ 13 \\ \hline 1 \ 1 \ 1 \end{array}$ $= 3 \times 5 \times 13 + 5 \text{ pems}$ $= 195 + 5$ $= 200 \text{ pems}$	B ₁	For correct prime factorization	19.	Notes = 007110 $\begin{array}{r} -002001 \\ \hline 109 + 1 \text{ note} \end{array}$ Amount = Shs. 1000 x 110 notes = Shs. 110,000	B ₁	For 110 notes		
15.	$\frac{3}{5} x = 60 \text{ km}$ $\frac{3}{5} x = 60 \text{ km}$ $x = 60 \text{ km} \times \frac{5}{3}$ $x = 100 \text{ km}$	B ₁	For 200 pems	20.	Area = $\frac{1}{2} \times d_1 \times d_2$ $\begin{array}{l} = \frac{1}{2} \times 14 \text{ m} \times 8 \text{ m} \\ = 7 \text{ m} \times 8 \text{ m} \\ = 56 \text{ m}^2 \end{array}$	M ₁	For correct multiplying		
16.	Mean = $\frac{\text{Total}}{\text{Number}}$ = 38 years = Total = 38 years Total = $3 \times 38 = 114$ years Age of two teachers = $114 - 34 \text{ years}$ = 80 years	M ₁	For correct method	21.	Total = $9 + 7 + 5 = 21$ (i) $\frac{21}{21} - (5 + 6) = c$ $c = 10$ (ii) $\frac{21}{a} - (7 + 6) = a$ $a = 21 - 13$ $a = 8$ (iii) $\frac{21}{d} - (8 + 9) = d$ $d = (21 - 17)$ $d = 4$ (iv) $\frac{21}{e} - (4 + 6) = e$ $e = 21 - 10$ $e = 11$ (v) $\frac{21}{b} - (11 + 7) = b$ $b = 21 - 18$ $b = 3$	A ₁	For $x = 100 \text{ km}$	B ₁	For $c = 10$
17.	11:00 a.m Twelve O'clock in the morning	B ₁	For C.A.O	B ₁	For $a = 8$				
18.	Sister Joan Total $\begin{array}{r} x \quad y + 7 \quad 37 \\ x + y + 7 = 37 \\ x + 7 = 37 - 7 \\ x = 30 \end{array}$	M ₁	For forming equation	22.	(a) $n(R) = 20$ $n(C) = 68$ $n(R \cap C) = 30$ $n(R) = 20$ $n(C) = 68$ $n(R \cap C) = 30$ $(20 - 30) = -10$ $(68 - 30) = 38$	B ₁	For $b = 3$	B ₁	For $2a = 8$
							For 22		

S/N	SOLUTION	MARKS	COMMENTS						
(b)	$\frac{2x + 3y}{2x + 3y + 68} = \frac{22 + 10}{40 + 32}$ $\frac{2x + 3y}{2x + 3y + 68} = \frac{32}{72}$ $\frac{2x + 3y}{2x + 3y + 68} = \frac{4}{9}$ $9(2x + 3y) = 4(2x + 3y + 68)$ $18x + 27y = 8x + 12y + 272$ $10x + 15y = 272$ $2x + 3y = 54.4$ $2x + 3y = 54$ $n = 18$	M ₁	For forming equation						
(c)	Probability = $\frac{FOC}{TOS}$ Probability = $\frac{22 + 10}{68} = \frac{32}{68}$ Probability = $\frac{22}{68}$ Probability = $\frac{50}{68}$	M ₁	For correct method						
		A ₁	For 30/68						
23. (a)	<table><tr><th>Boys</th><th>Girls</th><th>Total</th></tr><tr><td>$x = 20\%$</td><td>x</td><td>100%</td></tr></table> $x + x + 20\% = 100\%$ $2x + 20\% = 100\%$ $2x = 100\% - 20\%$ $2x = 80\%$ $x = 40\%$ $\text{Boys} = 20\% + 40\% = 60\%$ $\text{Girls} = 40\%$	Boys	Girls	Total	$x = 20\%$	x	100%	B ₁	For correct method
Boys	Girls	Total							
$x = 20\%$	x	100%							
		B ₁	For 60%						
		B ₁	For 40%						
(b)	Let the total pupils be y 40% of y = 500 girls 100 x 40 x y = 500 x 100 $\frac{40y}{100} = \frac{500 \times 100}{100}$ $y = \frac{500 \times 100}{40}$ $y = 750 \text{ pupils}$	M ₁	For forming equation						
		A ₁	For 750 pupils						
24. (a)	$m + 90^\circ + 48^\circ = 180^\circ$ $m + 138^\circ = 180^\circ$ $m = 180^\circ - 138^\circ$ $m = 42^\circ$	M ₁	For forming equation						
		A ₁	For $m = 42^\circ$						
S/N	SOLUTION	MARKS	COMMENTS						
(b)	$a^2 + b^2 = c^2$ $9dm^2 + b^2 = 15dm^2$ $9 \times 9dm^2 + b^2 = 15 \times 15dm^2$ $81dm^2 + b^2 = 225dm^2$ $b^2 = 225dm^2 - 81dm^2$ $b^2 = 144dm^2$ $b = \sqrt{144dm^2}$ $b = 12dm$	M ₁	For correct addition						
25. (i)	Badge = Shs. 1000	B ₁	For Shs. 900						
(ii)	Tinned = Shs. 7000	M ₁	For correct addition						
(iii)	Buttons = 3 x Shs. 300 = Shs. 900								
(iv)	Coat = $\frac{2}{9} \times \text{Shs. } 3600 = \text{Shs. } 800$								
(v)	Labour = Shs. 13,500	B ₁	For Shs. 13,500						
(vi)	Total = Shs. 1000 + 7,000 + 900 + 800 + 13,500 = Shs. 25,400	M ₁	For correct addition						
		A ₁	For Shs. 25,400						
	Amount for 2 daughters = Shs. 25,400 x 2 = Shs. 50,800	B ₁	For Shs. 50,800						
26. (a)		B ₂	For correct drawn net						
(b)	Volume = $\frac{1}{3} \times b \times h \times L$ $= \frac{1}{3} \times 11cm \times 16cm \times 13cm$ $= 11cm \times 5cm \times 13cm$ $= 55cm \times 13cm$ $= 715cm^3$	M ₁	For correct method						
		A ₁	For 715cm ³						
S/N	SOLUTION	MARKS	COMMENTS						
27. Time taken = Distance	Speed = $\frac{1000m}{12hr}$ Distance = $\frac{1000m}{12hr}$ Time = $\frac{1000m}{12hr}$	M ₁	For correct division						
		A ₁	For $1\frac{2}{3}$ hours						

[illegible]