

THE SIPRO P.7 PRE-MOCK - 2024

MATHEMATICS

Time Allowed: 2 Hours 30 Minutes

Index No.	Random No.	Personal No.

Candidate's Name: _____

Candidate's signature: _____

School Random No: _____

District ID: _____

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;

Qn 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

Attempt all questions in this section

Questions 1 to 20 carry two marks each

1. Work out: $30 \div 10 =$

$$\begin{array}{r} 30 \\ \times 10 \\ \hline 30 \\ -30 \\ \hline 0 \end{array}$$

Alternative

$$\begin{array}{r} 03 \\ 10 \overline{)30} \\ 0 \quad \quad \quad 30 \\ \hline 0 \quad \quad \quad 30 \\ 3 \times 10 = 30 \\ \hline 0 \end{array}$$

$$= 30 \div 10$$

$$= 3$$

2. Given that set $R = \{\text{composite numbers between } 0 \text{ and } 10\}$. Find $n(R)$

Composite numbers = 4, 6, 8, 9, 10, 12, 14, 15, 16, ...

$$\text{Set } R = \{4, 6, 8, 9\}$$

$$\underline{n(R) = 4}$$

3. Express "Sixty thousand, seven" in numerals.

$$\begin{array}{r} \text{Sixty thousand} \\ \text{seven} \\ \hline = + 7 \end{array}$$

$$\text{Sixty thousand, seven} = \underline{\underline{60,007}}$$

4. Simplify: $2a^2 + 3b^2 + -4b^2 + a^2$

$$\begin{aligned} &= 2a^2 + 3b^2 - 4b^2 + a^2 \\ &= 2a^2 + a^2 + 3b^2 - 4b^2 \\ &= \underline{\underline{3a^2 - b^2}} \end{aligned}$$

5. In the figure below, find the value of n in degrees.

$$\begin{aligned} 2n^\circ + 4n^\circ &= 180^\circ \text{ (supplementary)} \\ 2n^\circ + 4n^\circ &= 180^\circ \\ 1 \times 6n^\circ &= 180^\circ \times \frac{1}{6} \\ 6 \\ n^\circ &= 30^\circ \\ n &= 30 \end{aligned}$$

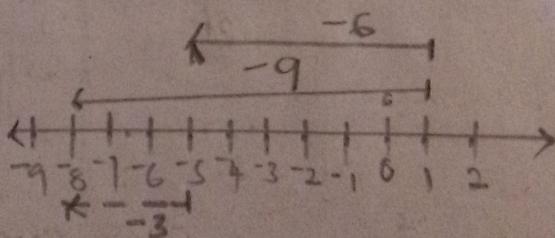
6. Simplify: $-9 - 6$

$$= -9 - 6$$

$$= \underline{\underline{-9 - 6}}$$

$$\begin{array}{c} -10 \\ -9 \cancel{-} \cancel{9} \cancel{9} \cancel{9} \cancel{9} \cancel{9} \\ +ve \quad + + + + + + \end{array} - = -3$$

$$\underline{\underline{-9 - 6 = -3}}$$



$$\underline{\underline{-9 - 6 = -3}}$$



7. The probability of picking a blue pencil from a bag containing blue and black pencils is $\frac{4}{7}$. The bag contains 28 pencils. Find the number of blue pencils in the bag.

$$\text{Blue pencil} = \frac{4}{7}$$

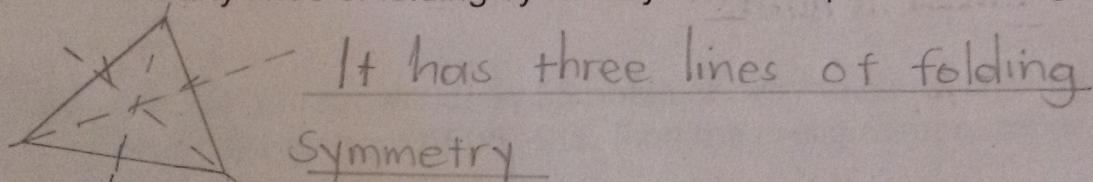
$$\text{Number of blue} = \frac{4}{7} \times 28 \\ = 4 \times 4$$

= 16 blue pencils

8. Express 25cm as a fraction of 2 metres.

$$\begin{array}{l|l} \text{2m to centimetres} & = \frac{25\text{cm}}{200\text{cm}} \\ 1\text{m} = 100\text{cm} & = \frac{5}{40} \\ 2\text{m} = 2 \times 100\text{cm} & = \frac{1}{8} \\ \underline{= 200\text{cm}} & \end{array}$$

9. How many lines of folding symmetry has an equilateral triangle?



10. Given that set P = {P.7 candidates with five heads each};

Find the number of subsets that can be obtained from set P.

P = {P.7 candidates with five heads each}

$$\begin{array}{l} P = \{ \} \\ \text{Number of elements} = 0 \\ \text{No. of subsets} = 2^0 \\ = 2 \\ = 1 \text{ subset} \end{array}$$

11. Work out: weeks days

6	10
-2	$\cancel{10}$
<u>4</u>	<u>5</u>

$$\begin{array}{l} 10 - 5 = 5 \\ 6 - 2 = 4 \end{array}$$

12. Find the Lowest Common Factor (LCF) of 12 and 16.

LCF of 12 and 16

F₁₂ = {1, 2, 3, 4, 6, 12}

F₁₆ = {1, 2, 4, 8, 16}

LCF = 1



13. Add: $2 + 3 =$ (finite 5)

$$2+3 = \underline{\quad}$$
 (finites)

$$5 = \underline{\quad}$$
 (finites)

$$5 \div 5 = \text{remo}$$

$$2+3 = \underline{0}$$
 (finites).

14. Solve for r: $3 - 2(r - 4) = 3$

$$3 - 2(r - 4) = 3$$

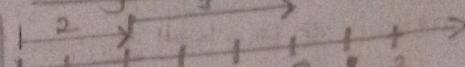
$$3 - 2r + 8 = 3$$

$$-2r + 8 + 3 = 3$$

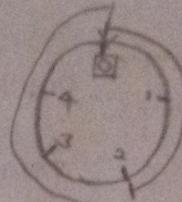
$$-2r + 11 - 11 = 3 - 11$$

$$-2r = -8$$

Using a number line

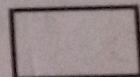
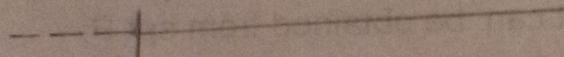


$$2+3 = \underline{0}$$
 (finites)



$$2+3 = \underline{0}$$
 (finites)

15. With the help of a ruler, a pencil and a pair of compasses only, construct an angle of 45° in the space provided below.



16. The digits 4, 0 and 5 are used to form 3-digit numerals. Work out the difference between the largest and smallest numerals formed.

Numbers that can be formed 3-digit

$$= 450 \quad | \quad 540$$

$$405 \quad | \quad 504$$

$$\begin{array}{r} \text{Difference} = 540 \\ - 405 \\ \hline = 135 \end{array}$$

17. Work out: $\frac{3}{8} + \frac{2}{3}$

Lcm of 8 and 3

$$\begin{array}{r} 2 \\ 2 \\ 2 \\ 1 \\ \hline 18 \\ 16 \\ 12 \\ 6 \\ 3 \\ 1 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ 2 \\ 2 \\ \times 2 \times 2 \times 3 \\ = 24 \end{array}$$

$$\begin{array}{r} 8 \quad 3 \\ (24 \div 8) \times 3 + (24 \div 3) \times 2 \\ = \quad 24 \\ \hline \end{array}$$

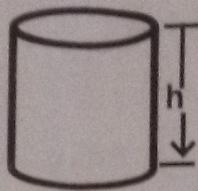
$$= \frac{7}{8}$$

$$\begin{array}{r} 19 + 16 \\ \hline 24 \end{array}$$

$$\begin{array}{r} 21 \\ \hline 24 \end{array}$$



18. The base area of a cylinder is 154cm^2 . Work out its radius. Take $\pi = \frac{22}{7}$



$$\text{Base area} = \pi r^2$$

$$154\text{cm}^2 = \frac{22}{7} \times r \times r$$

$$154\text{cm}^2 = \frac{22}{7} \times r^2$$

$$\frac{22}{7} \times r^2 = \frac{22}{7} \times r^2 \times \frac{1}{22}$$

$$r^2 = r^2$$

$$\sqrt{154\text{cm}^2} = \sqrt{r^2}$$

$$\sqrt{r^2} = r$$

$$r = 7\text{cm}$$

$$\text{Radius} = 7\text{cm}$$

19. Express 2,307 in scientific notation.

$$= \frac{2307}{10}$$

$$= \frac{230.7}{10}$$

$$= 23.07$$

$$= 2.307 \times 10^3$$

20. A school bursar withdrew 55 notes of five thousand shillings numbered consecutively from AF057485. Find the registration number of the last note.

$$\text{No. of notes} = \text{Last} - \text{First}$$

$$\text{Last} = \text{No. of notes} + \text{First}$$

$$= \text{AF057485}$$

$$+ \frac{55}{\text{AF057540}}$$

SECTION B: 60 MARKS

Attempt all questions in this section.

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

21. Amina went shopping and bought the following items;

2kg of salt at sh. 1,500 each kilogramme.

3 litres of cooking oil at sh. 6,000 per litre.

1 kg of sugar at sh. 4,000 per 1kg.

2

2 bars of soap at sh. 10,000.

(a) How much did she pay for all the items?

<u>salt</u>	<u>Cooking oil</u>	<u>Sugar</u>	<u>Soap</u>	<u>Total expenditure</u> (04 marks)
$A = 2 \times 1500$	$A = 3 \times 6000$	$\frac{1}{2} \text{kg} = \text{sh. } 4000$	$= \text{sh. } 10,000$	$= \text{sh. } 18,000$
$= \text{sh. } 3000$	$= \text{sh. } 18,000$	$1 \text{kg} = \text{sh. } 4000 \div \frac{1}{2}$	$= \text{sh. } 4000 \times 2$	$+ 10,000$
		$= \text{sh. } 8000$		$8,000$
				$3,000$
				$= \text{sh. } 39,000$



- (b) Calculate Amina's **change** if she went with a fifty thousand shilling note.

(02 marks)

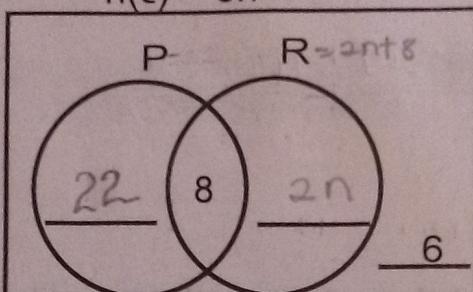
$$\text{Change} = \text{Initial amount} - \text{Expense}$$

$$\begin{aligned} &= \text{Sh. } 50,000 \\ &- \text{Sh. } 39,000 \\ &\underline{-} \\ &= \text{Sh. } 11,000 \end{aligned}$$

She remained with 11000 shillings

22. In a class of $6n$ pupils, 22 enjoy posho (P) only, 8 enjoy both posho and rice, $2n + 8$ enjoy rice (R) while 6 pupils do not enjoy any of the foodstuffs.

$$n(\epsilon) = 6n$$



$$\begin{aligned} R \text{ only} &= 2n + 8 - 8 \\ &= 2n \end{aligned}$$

- (a) Find the value of n .

(03 marks)

$$\begin{aligned} 22 + 8 + 2n + 6 &= 6n \\ 22 + 8 + 6 + 2n - 2n &= 6n - 2n \\ 36 &= 4n \\ \frac{36}{4} &= n \\ 9 &= n \end{aligned}$$

- (b) How many pupils do not enjoy posho?

(02 marks)

$$\begin{aligned} &= R \text{ only} + (P \cup R)' \\ &= 2n + 6 \\ &= (2 \times 9) + 6 \\ &= 18 + 6 \end{aligned}$$

= 24 pupils do not enjoy posho.

23. (a) Work out: $1011_{\text{two}} - 111_{\text{two}}$

(02 marks)

$$\begin{array}{r} \overset{0}{1} \overset{2}{0} 1 1 \\ - 1 1 1 \\ \hline 1 0 0 \end{array}$$

Side work

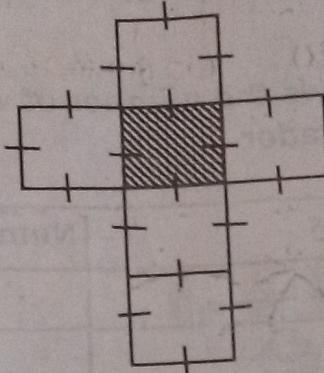
$$\begin{aligned} 0-1 &= 1 \\ 1-1 &= 0 \\ 1-1 &= 0 \\ 2-1 &= 1 \end{aligned}$$



(b) Given that; $f \times 9 = 42$. Find the value of f . (03 marks)

$$\begin{aligned} (f \times 9) + (4 \times 9) &= (4 \times 5) + (2 \times 5) \\ f \times 9 + 4 \times 1 &= 4 \times 5 + 2 \times 1 \\ 9f + 4 &= 20 + 2 \\ 9f + 4 - 4 &= 22 - 4 \\ 9f &= 18 \end{aligned}$$
$$9f = 18$$
$$f = 2$$

24. The figure below shows a net of a solid figure.



(a) If the area of the shaded face is 81 dm^2 . Calculate the length of each side. Area = 81 dm^2 $\sqrt{s^2} = \sqrt{81 \text{ dm}^2}$ (02 marks)

$$s \times s = 81 \text{ dm}^2$$
$$s = \sqrt{81 \text{ dm}^2}$$

$$s^2 = 81 \text{ dm}^2$$
$$s = 9 \text{ cm}$$

(b) Find the total surface area of the solid formed. (02 marks)

Total surface area

$$= 6(s \times s)$$

$$= 6 \times 81 \text{ dm}^2$$

$$= 486 \text{ dm}^2$$

(c) Calculate the volume of the solid. (02 marks)

Volume = Base area \times Height

$$= 81 \text{ dm}^2 \times 9 \text{ cm}$$

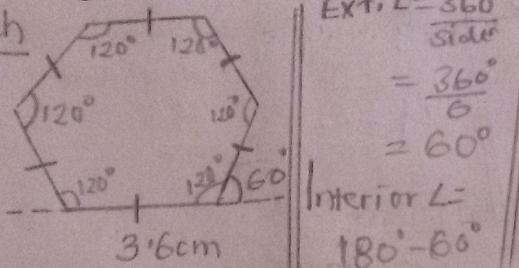
$$= 729 \text{ dm}^3$$

$$\frac{81}{9} = 729$$



25. Using a ruler, a pencil and a pair of compasses only, construct a regular hexagon of sides 3.6cm. (04 marks)

Sketch



$$\text{Ext. } L = 360^\circ$$

Sides

$$= \frac{360^\circ}{6}$$

$$= 60^\circ$$

Interior L

$$180^\circ - 60^\circ$$

$$= 120^\circ$$

Accurate drawing

26. The graph below shows the number of watches sold in four days in a week by a trader.

a) Complete the table.

Complete

(03marks)

Wednesday

Day	Pictures	Number of watches
Monday		45
Tuesday		32
Wednesday		54
Thursday		43

$$5\text{pic} = 54 \\ 1\text{pic} = \frac{54}{5} \\ 1\text{pic} = 10\frac{4}{5}$$

b) Work out the total number of watches sold in the four days.

(02 marks)

$$= 4'3 \\ 32 \\ + 54 \\ \hline 43$$

$$= 172 \text{ watches}$$

27. Three people; Kato, Odeke and Tumushabe were told to report to police at intervals of 25 minutes, 30 minutes and 40 minutes respectively. If they reported together for the second time at 5: 42 pm, at what time did they first report together at the same time? (05 marks)

Lcm of 25, 30 and 40			
2	25	30	40
2	25	10	20
2	25	5	10
5	25	5	5
5	5	1	1
1			
$= 2 \times 2 \times 2 \times 5 \times 5$			
$= 4 \times 50$			
$= 200 \text{ minutes}$			

200 min to hours

1 hour = 60 min

? = 200 min

$= \frac{10}{60} \text{ min}$

$= \frac{1}{6} \text{ min}$

$$= 3\frac{1}{3} \text{ hours}$$

$$= 5:42 \text{ pm} - 3:20 \text{ pm}$$

$$= 5:42 \text{ pm}$$

$$= 3:20$$

$$= 2:22 \text{ pm}$$

They reported together at 2:22pm for the first time.



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P.7 MATHEMATICS PRE - MOCK EXAMINATIONS - 2024

IGNITE CRITICAL THINKING AND EXPERIENCE ACTUAL LEARNING WITH THE ACTIVITY BOOKS, SEMAS, TR'S GUIDES AND PUPIL'S COMPANIONS.

28. Acham deposited sh. 800,000 in a commercial bank which offers an interest rate of 5% per annum.

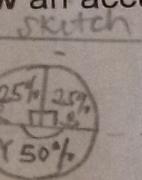
a) Calculate the interest gained after a period of 18 months. (03 marks)

$$\begin{aligned} I &= P \times R \times T \\ &= \text{sh. } 800,000 \times \frac{5}{100} \times \frac{18}{12} \\ &= \text{sh. } 400 \times 5 \times 3 \\ &= \text{sh. } 2000 \times 3 \\ &= \underline{\text{sh. } 6000} \end{aligned}$$

b) How much amount would she have after the above period? (02 marks)

$$\begin{aligned} \text{Amount} &= P + S \cdot I \\ &= \text{sh. } 800,000 \\ &\quad + \text{sh. } 6000 \\ &= \underline{\text{sh. } 806,000} \end{aligned}$$

29. In a school, 25% of the pupils wear Blue sports wear, 50% of them wear Red sports wear while the rest wear Yellow sports wear. Using a radius of 3.0cm, draw an accurate circle graph to show the above information.



Accurate drawing (05 marks)

Blue

$$\begin{aligned} &= \frac{25}{100} \times 360^\circ \\ &= 5 \times 36^\circ \\ &= 5 \times 18^\circ \\ &= 90^\circ \end{aligned}$$

Red

$$\begin{aligned} &= \frac{50}{100} \times 360^\circ \\ &= 5 \times 36^\circ \\ &= 180^\circ \end{aligned}$$

Yellow

$$\begin{aligned} &= 360^\circ - (90^\circ + 180^\circ) \\ &= 360^\circ - 270^\circ \\ &= 90^\circ \end{aligned}$$

30. Anne, Belinda and Christine shared 65 mangoes. Anne got 3 times as much as Belinda and Christine got 5 mangoes more than Belinda. Find the number of mangoes each person got. (05 marks)

Let Belinda's mangoes be w

$$\text{Belinda} = w$$

$$\text{Anne} = 3w$$

$$\text{Christine} = w+5$$

$$\text{All got} = 65 \text{ mangoes}$$

$$w + w + 5 + 3w = 65 \text{ mangoes}$$

$$2w + 3w + 5 - 5 = 65 - 5$$

$$5w = 60 \text{ mangoes}$$

$$\frac{1}{5} \times 60 = \frac{1}{5} \times 60$$

$$w = 12 \text{ mangoes}$$

$$\text{Belinda} = 12 \text{ mangoes}$$

$$\text{Anne} = (12 \times 3)$$

$$= 36 \text{ mangoes}$$

$$\text{Christine} = 17 \text{ mangoes}$$



$b = ET - ST$

31. a) Peter slept for $8\frac{3}{4}$ hours and woke up at 5:35 a.m. At what time did he start sleeping? (02 marks)

$$ST = ET - D$$

$$= 5:35 \text{ am} - 8 \frac{3}{4} \text{ hrs}$$

$$= 17:35 + 60$$

$$= 8:50 \text{ pm}$$

$$\begin{array}{r} 5:35 \text{ am} \\ - 8:45 \text{ hrs} \\ \hline 17:35 \text{ hrs} \end{array}$$

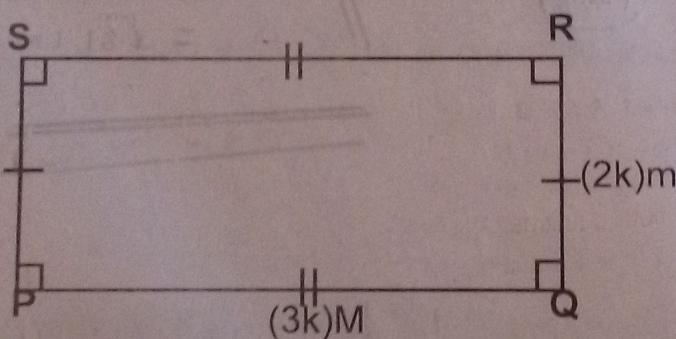
(b) A motorist covered a distance of 25 metres in only one second.

Work out the distance he would cover in one hour.

$$\begin{array}{l} 1 \text{ second} = 25 \text{ metres} \\ 1 \text{ hour} = ?? \\ \text{hours to seconds} \\ 1 \text{ hr} = 3600 \text{ seconds} \end{array}$$

$$\begin{array}{l} \text{Time} = \text{Distance} \\ 1 \text{ sec} = 25 \text{ metres} \\ 3600 \text{ sec} = 3600 \times 25 \\ = 90000 \text{ metres} \end{array}$$

32. The perimeter of the rectangular garden below is 60m.



(a) Find the value of k.

$$\begin{array}{l} \text{Perimeter} = 60 \text{ m} \\ 2(L + W) = 60 \text{ m} \\ 2(3km + 2km) = 60 \text{ m} \\ 2(5km) = 60 \text{ m} \end{array}$$

$$10k = 60 \text{ m}$$

$$10m \quad 10m$$

$$k = 6$$

(02 marks)

(b) Calculate the area of the garden.

Actual Length	Width
$3km$	$= 2km$
$= 3 \times 6 \text{ m}$	$= 2 \times 6 \text{ m}$
$= 18 \text{ m}$	$= 12 \text{ m}$

$$\text{Area} = L \times W$$

$$= 18 \text{ m} \times 12 \text{ m}$$

$$= 216 \text{ m}^2$$

(03 marks)

$$\begin{array}{r} 18 \\ \times 12 \\ \hline 18 \\ 18 \\ \hline 216 \end{array}$$