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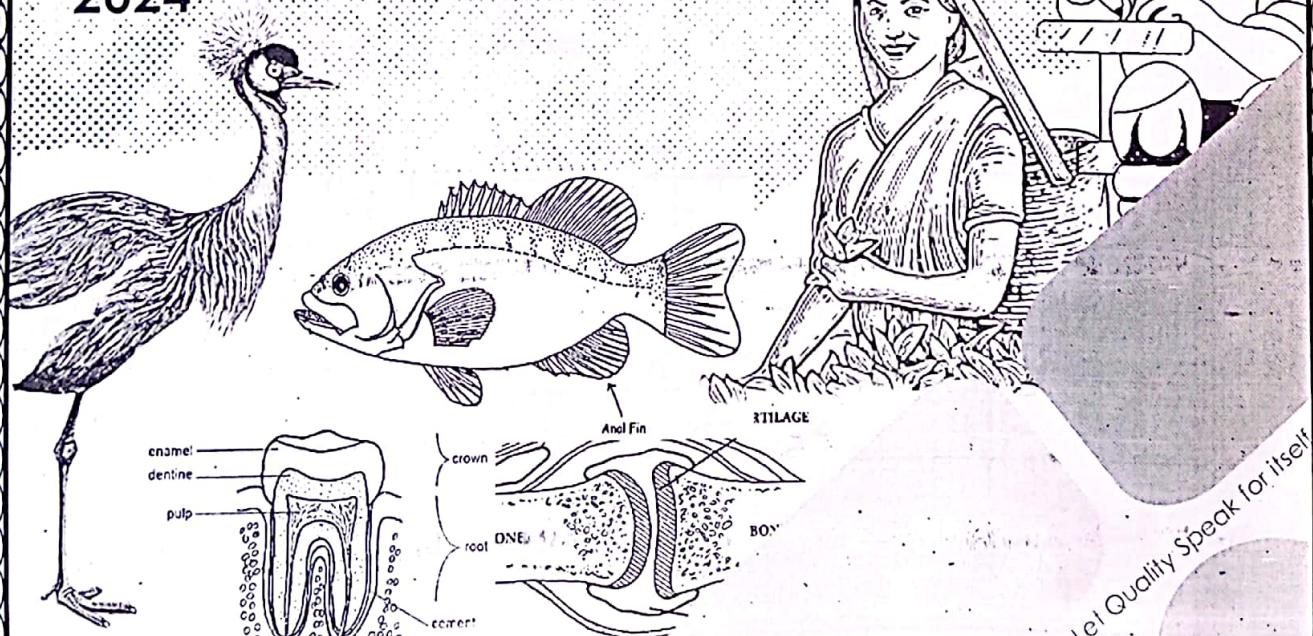
EXAMINATIONS BOARD

MATHEMATICS

Official Marking Guide

P.5 QUALITY CHECK FOUR

2024



SECTION A: 40 MARKS

Answer **all** questions in this Section

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

1. Workout:
$$\begin{array}{r} 364 \\ +234 \\ \hline 598 \end{array}$$

$$\begin{aligned} 4+4 &= 8 \\ 6+3 &= 9 \\ 3+2 &= 5 \end{aligned}$$

2. Write CCLV in Hindu-Arabic numeral.

C	C	L	V
200	200	50	5

$$200 + 200 + 50 + 5 = 455$$

$$255$$

3. Use repeated addition to workout 6×5 .

6 groups of 5

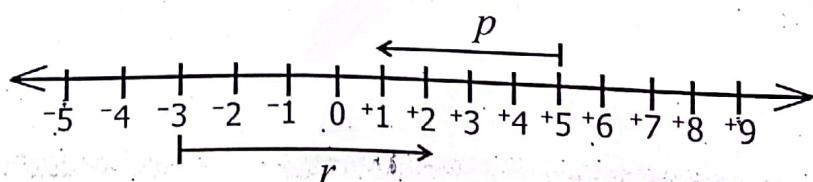
$$\begin{aligned} (5+5) + (5+5) + (5+5) \\ (10+10+10) \\ 30 \end{aligned}$$

4. Express 321_{five} to a decimal base.

$$\begin{aligned} (3 \times 5^2) + (2 \times 5^1) + (1 \times 5^0) \\ (3 \times 5 \times 5) + (2 \times 5) + (1 \times 1) \\ (3 \times 25) + 10 + 1 \\ 75 + 10 + 1 \end{aligned}$$

$$86_{\text{ten}}$$

5. Write the integers represented by the arrows on the numberline below.



i) $p = \dots \dots \dots$

ii) $r = \dots \dots \dots$

6. Find the least number of sweets that can be given to 9 or 15 boys without any remaining sweet.

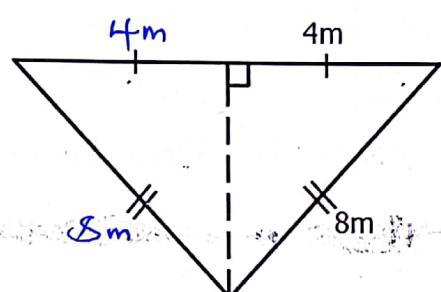
LCM of 9 and 15

$$M_9 = \{9, 18, 27, 36, 45, 54, \dots\}$$

$$M_{15} = \{15, 30, 45, 60, \dots\}$$

$$\underline{\underline{LCM = 45}}$$

7. In the figure below, workout the distance around it in centimetres.



$$\begin{aligned} \text{Perimeter} &= \text{Sum of all sides.} \\ &= 8m + 8m + 8m \\ &= \underline{\underline{24m}} \end{aligned}$$

8. Workout the square root of 100.

$$\sqrt[2]{100} = \begin{array}{c} 100 \\ \{ \begin{array}{c} 2 \\ 50 \\ \{ \begin{array}{c} 2 \\ 25 \\ \{ \begin{array}{c} 5 \\ 5 \\ 1 \end{array} \end{array} \end{array} \end{array}$$

$$\begin{aligned} \sqrt[2]{100} &= \sqrt[2]{2^2 \times 5^2} \\ &= 2 \times 5 \\ &= \underline{\underline{10}} \end{aligned}$$

9. The second academic term, 2024 will last for 91 days. How many weeks will the term last?

$$7 \text{ days} \rightarrow 1 \text{ week}$$

$$91 \text{ days} \rightarrow \frac{91}{7}$$

$$\underline{\underline{91 \text{ days} \rightarrow 13 \text{ weeks}}}$$

10. Calculate the range of the integers below;

$$+5, -3, 6, 0, -9 \text{ and } 4$$

$$\begin{aligned} R &= H - L \\ &= 6 - (-9) \\ &= 6 - (-9) \end{aligned} \quad \parallel \quad \begin{aligned} &= 6 + 9 \\ &= \underline{\underline{15}} \\ &= 3 \end{aligned}$$

Turn Over

11. Solve for w: $\frac{2w}{5} = 4$

$$\begin{array}{rcl} 2w & \times & \$ \\ \hline \$ & & = 4 \times 5 \\ \cancel{2w} & & = \cancel{20} \\ \hline w & = & 10 \end{array}$$

12. A teacher distributed the cards below for pupils to form 3-digit numbers during a Mathematics lesson.

7 0 5

Write down the smallest and largest numbers the teacher expected pupils to write;

- (i) Smallest number: 507
 (ii) Largest number: 750

13. Work out the value of 3 in the number 6325.

TH	H	T	O
6	3	2	5

3 × 100

300

14. If Set J = {All prime numbers less than 10}. Find n(J)

J = {2, 3, 5, 7}

n(J) = 4

15. Work out the square of 15.

$$\begin{aligned} 15^2 &= 15 \times 15 \\ &= 225 \end{aligned}$$

16. A factory employs 40 workers where each worker gets a daily pay of Sh. 8,000. How much money does the company spend on all the workers for 6 days?

$$1 \text{ worker} \rightarrow \text{sh. } 8000$$

$$40 \text{ workers} \rightarrow \text{sh. } 8000 \times 40$$

$$40 \text{ workers} \rightarrow \text{sh. } 320,000$$

$$1 \text{ day} \rightarrow \text{sh. } 320,000$$

$$6 \text{ days} \rightarrow \text{sh. } 320,000 \times 6$$

$$6 \text{ days} \rightarrow \text{sh. } 192,000$$

17. A woman withdrew fifty thousand shillings from a bank. She received the money in form of five hundred shillings coins. How many coins did she get?

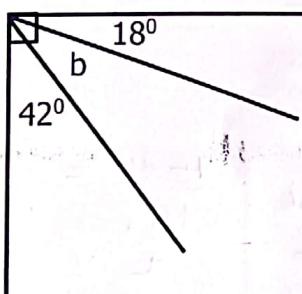
$$\text{sh. } 500 \rightarrow 1 \text{ coin}$$

$$\text{sh. } 50,000 \rightarrow \frac{\text{sh. } 50,000}{\text{sh. } 500}$$

$$= 100$$

$$\text{sh. } 50,000 \rightarrow 100 \text{ coins of sh. } 500$$

18. In the figure below, find the value of b in degrees.



$$42^\circ + 18^\circ + b = 90^\circ$$

$$60^\circ + b = 90^\circ$$

$$60^\circ - 60^\circ + b = 90^\circ - 60^\circ$$

$$b = 30^\circ$$

19. Workout: $\frac{2}{5} + \frac{1}{4}$

$$\text{Lcm} = 20$$

$$\left(\frac{2 \times 4}{5, 1} \right) + \left(\frac{1 \times 5}{4, 1} \right)$$

$$20$$

$$\underline{(2 \times 4) + (1 \times 5)}$$

$$20$$

$$\underline{\underline{\frac{8+5}{20}}}$$

$$= \frac{13}{20}$$

20. An English lesson started at 2:00p.m. and ended at 4:00p.m.
How long did the lesson last?

$$D = E.T - S.T$$

$$= 4:00$$

$$- 2:00$$

$$\underline{2:00}$$

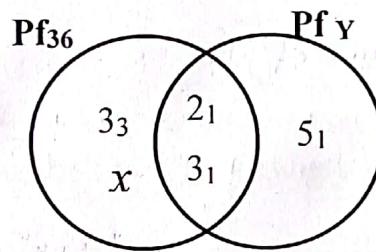
The lesson lasted 2 hrs

SECTION B: 60 MARKS

Answer **all** questions in this section

Marks for each question are indicated in brackets.

21. The Venn diagram below shows prime factors of 36 and Y.
Study it carefully and use it to answer the questions that follow.



- a) Find the values of x and y . (02 Marks each)

(i) $\begin{aligned} x & \\ \{2, 3, 3, x\} &= Pf_{36} \\ (2 \times 3)(3 \times x) &= 36 \\ 6 \times 3x &= 36 \end{aligned}$

$\frac{+18x}{+18}$	$= \frac{36}{18}$
x	$= 2$

(ii) Y

- b) Work out the Lowest Common Multiple (LCM) of 36 and Y.

$$LCM = \text{Product of } (V) \quad (02 \text{ Marks})$$

$$= (2 \times 2) \times (2 \times 3) \times 5$$

$$= 4 \times 6 \times 5$$

$$= 4 \times 30$$

$$LCM = 120 \quad 6$$

20. An English lesson started at 2:00p.m. and ended at 4:00p.m.
How long did the lesson last?

$$D = E.T - S.T$$

$$\begin{array}{r} = 4:00 \\ - 2:00 \\ \hline 2:00 \end{array}$$

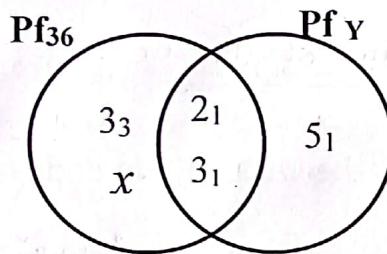
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SECTION B: 60 MARKS

Answer **all** questions in this section

Marks for each question are indicated in brackets.

21. The Venn diagram below shows prime factors of 36 and Y.
Study it carefully and use it to answer the questions that follow.



- a) Find the values of x and y . (02 Marks each)

(i) $\{2^1, 3^1, 3^3, x^y\} = Pf_{36}$

$$(2 \times 3) \times (2 \times 3) = 36$$

$$6 \times 3x = 36$$

$$\frac{18x}{18} = \frac{36}{18}$$

$$x = 2$$

(ii) Y

- b) Work out the Lowest Common Multiple (LCM) of 36 and Y.

$$LCM = \text{Product of } (V) \quad (02 \text{ Marks})$$

$$\begin{aligned} &= (2 \times 2) \times (2 \times 3) \times 5 \\ &= 4 \times 6 \times 5 \\ &= 4 \times 30 \\ LCM &= 120 \end{aligned}$$

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22. The prices below were found on a Menu card at Kulya Restaurant. Use it to answer the questions that follow.

FOOD MENU	
1.	Matooke + MeatSh.8,000
2.	Chips + ChickenSh.12,000
3.	Kalo + Pested meatSh.10,000
4.	Glass of Mango JuiceSh.5,000
5.	A bottle of SodaSh.2,000

- a) What is the most expensive foodstuff on the menu? (01 Mark)

Chips + chicken.

- b) A man and his wife went and requested for food. The man was served with Kalo and Pested meat yet the woman was served with chips and chicken. How much money ^{did} the two spend if each took mango juice? (03 Marks)

<u>Man</u>	<u>Woman</u>	<u>Total</u>
sh. 10,000	sh. 12,000	sh. 17,000
+ sh. 5,000	+ sh. 5,000	+ sh. 10,000
sh. 15,000	sh. 17,000	sh. 32,000

- c) How many bottles of soda can be bought with Sh.32,000?

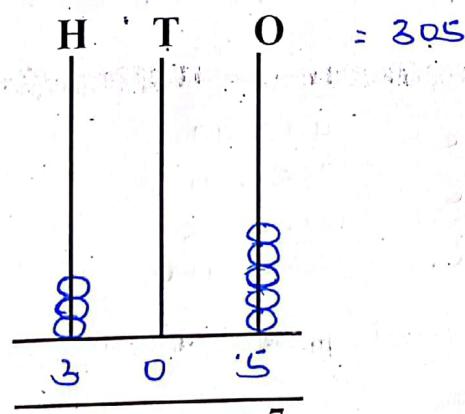
(01 Mark)

$$\text{sh. } 2000 \rightarrow 1 \text{ bottle}$$

$$\text{sh. } 32,000 \rightarrow \frac{16}{\text{sh. } 2000}$$

$$\underline{\text{sh. } 32,000 \rightarrow 16 \text{ bottles}}$$

23. a) Show three hundred five on the abacus below. (02 Marks)



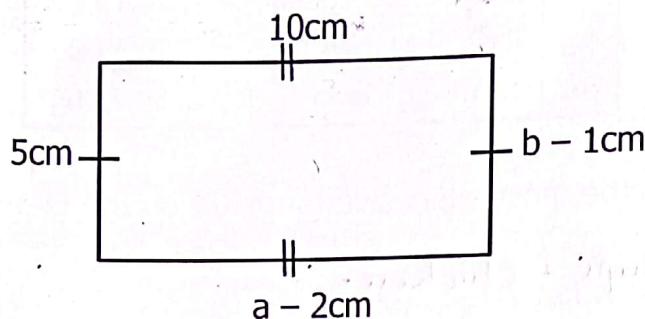
Turn Over

b) Use values to write the expanded form of 6018. (02 Marks)

TH	H	T	O
6	0	1	8

$$(6 \times 1000) + (1 \times 10) + (8 \times 1)$$
$$\underline{6000 + 10 + 8}$$

24. Study the figure below and use it to answer the questions that follow.



a) Find the value of a and b .

(i) a (02 Marks)

$$a - 2\text{cm} = 10\text{cm}$$

$$a - 2\text{cm} + 2\text{cm} = 10\text{cm} + 2\text{cm}$$

$$\underline{a = 12\text{cm}}$$

(ii) b (02 Marks)

$$b - 1\text{cm} = 5\text{cm}$$

$$b - 1\text{cm} + 1\text{cm} = 5\text{cm} + 1\text{cm}$$

$$\underline{b = 6\text{cm}}$$

b) Work out the area of the figure above. (02 Marks)

$$\begin{aligned}\text{Area} &= L \times W \\ &= 10\text{cm} \times 5\text{cm} \\ &= 50\text{cm}^2\end{aligned}$$

25. a) Find the sum of 14_{five} and 33_{five}. (02 Marks)

$$\begin{array}{r} 14_{\text{five}} \\ + 33_{\text{five}} \\ \hline 102_{\text{five}} \end{array}$$

$$\begin{aligned}4+3 &= 7 \\ 7 \div 5 &= 1 \text{ r } 2 \\ 1+1+3 &= 5 \\ 5 \div 5 &= 1 \text{ r } 0\end{aligned}$$

- b) What is the product of 30 and 0.3? (02 marks)

$$\begin{array}{r} 30 \times 0.3 \\ 30 \times 3 \\ \hline 90, \\ 3 \times 3 \\ \hline = 9 \end{array}$$

26. During school, pupils rest for 30 minutes at breakfast time and rest for 1 hour at lunchtime. Calculate the resting time of the pupils for five days in minutes. (04 Marks)

$$1\text{hr} = 60\text{ minutes}$$

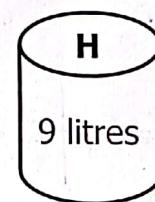
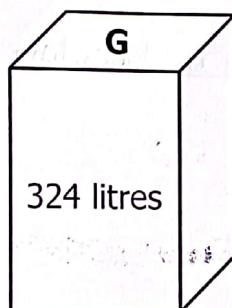
$$1\text{ day} \rightarrow (60 + 30)\text{ minutes}$$

$$1\text{ day} \rightarrow 90\text{ minutes}$$

$$5\text{ days} \rightarrow 90 \times 5$$

$$5\text{ days} \rightarrow 450\text{ minutes}$$

27. The cuboidal tank G below contains 324 litres of water and the Container H holds 9 litres.



- a) Convert the capacity of container H in millilitres. (02 Marks)

$$1\text{l} \rightarrow 1000\text{ ml}$$

$$9\text{l} \rightarrow 1000 \times 9$$

$$9\text{l} \rightarrow 9000\text{ ml}$$

- b) How many containers of size H can be drawn from the water in tank G? (02 Marks)

$$\text{Number of containers} = \frac{324}{9}$$

$$= 36$$

28. In a school of 540 pupils, $\frac{2}{3}$ of them are in boarding section and the rest are day scholars.

a) What fraction of the pupils are day scholars? (02 Marks)

$$1 - \frac{2}{3}$$

$$\frac{3}{3} - \frac{2}{3}$$

$$\underline{\frac{3-2}{3}}$$

$$\underline{\frac{1}{3}}$$

b) How many pupils in the school are in the boarding section?

$$\frac{2}{3} \text{ of } 540 = \underline{360 \text{ pupils}} \quad (02 \text{ Marks})$$

$$\frac{2}{3} \times 540$$

$$\frac{2}{3} \times 180$$

$$2 \times 180$$

c) How many more boarding pupils are in the school than day scholars? (01 Mark)

Pupils in Day

$$\frac{4}{4} \times 180$$

$$- 360$$

$$\underline{180}$$

More pupils in boarding

$$\frac{2}{3} \times 180$$

$$- 180$$

$$\underline{180}$$

29. Nanono has two children, a daughter and a son. The son is half her

age and the daughter is $\frac{1}{3}$ her age. If Nanono is 36 years old;

a) Find the total age of the son and the daughter. (03 Marks)

Son

$$\frac{1}{2} \text{ of } 36$$

$$\frac{1}{2} \times 36$$

$$\frac{1}{2} \times 18$$

$$18$$

$$18 \text{ years}$$

Daughter

$$\frac{1}{3} \text{ of } 36$$

$$\frac{1}{3} \times 36$$

$$\frac{1}{3} \times 12$$

$$12$$

$$= 12 \text{ years}$$

Total age

$$18$$

$$+ 12$$

$$\underline{30 \text{ years}}$$

b) How old will the daughter be 6 years to come? (02 Marks)

$$= 12 + 6$$

$$= \underline{18 \text{ years}}$$

30. The graph below shows the number of mangoes sold by Musilamu in a week. Study and use it to answer the questions that follow.

Days of the week	Mangoes sold
Monday	2 mangoes
Tuesday	3 mangoes
Wednesday	1 mango
Thursday	4 mangoes
Friday	2 mangoes

Scale:  Stands for 16 mangoes.

- a) Workout the total number of mangoes Musilamu sells for the whole week. OR (03 Marks)

$$= 12 \times 16$$

$$= \underline{192 \text{ mangoes}}$$

Monday

$$2 \times 16$$

$$= \underline{32 \text{ mangoes}}$$

Tuesday

$$3 \times 16$$

$$= \underline{48 \text{ mangoes}}$$

Wednesday

Wednesday

$$16 \text{ mangoes}$$

Thursday

$$16 \times 4$$

$$= \underline{64 \text{ mangoes}}$$

Friday

$$2 \times 16$$

$$= \underline{32 \text{ mangoes}}$$

Total

$$32$$

$$48$$

$$16$$

$$64$$

$$+ 32$$

$$192 \text{ mangoes}$$

- b) If he sells each two mangoes at Sh. 1,600, how much does he get from the Thursday sale? (02 Marks)

Thursday \rightarrow 64 mangoes $|$ 64 mangoes \rightarrow sh. $1,600 \times 64$

2 mangoes \rightarrow sh. 1600

1 mango \rightarrow sh. 1600

1 mango \rightarrow sh. 800

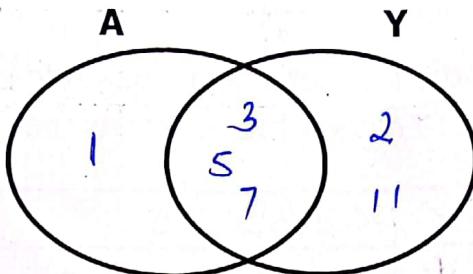
$$\underline{\text{sh. } 51,200}$$

31. Given that Set A = {odd numbers less than 9}

Set Y = {Prime numbers less than 11}

a) Represent the above information on the Venn diagram below.

(02 Marks)



$$A = \{1, 3, 5, 7\}$$
$$Y = \{2, 3, 5, 7, 11\}$$

b) Find;

(04 Marks)

(i) $n(A \cup Y)$

$$A \cup Y = \{1, 2, 3, 5, 7, 11\}$$

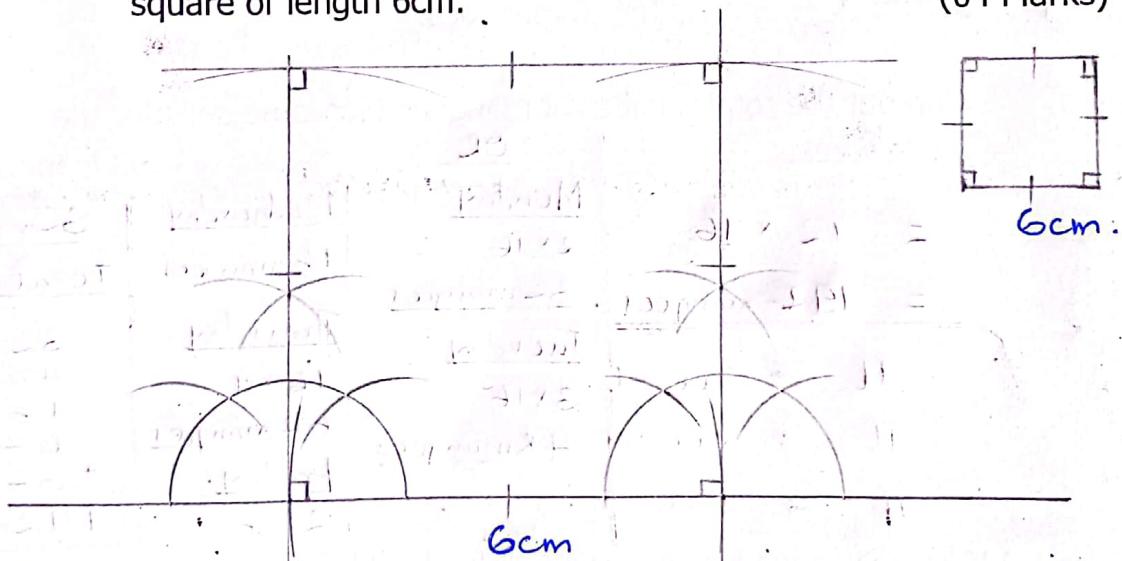
$$n(A \cup Y) = 6$$

(ii) $n(A - Y)$

$$(A - Y) = \{1\}$$

$$n(A - Y) = 1$$

32. a) Using a pair of compasses, a pencil and ruler only, construct square of length 6cm. (04 Marks)



b) Find the perimeter of the square.

(02 Marks)

$$P = 4s$$
$$= 4 \times 6\text{cm.}$$
$$= 24\text{cm.}$$