

91. Alex



MILESTONE EXAMINATIONS BOARD

PRE-PLE (Item 1 of 4)

2024

MATHEMATICS

Time Allowed: 2 hours 30 minutes

Random No.						Personal No.		

Candidate's Name:

Candidate's Signature:

District ID No.

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Read the following instructions carefully:

- Do not write your **school** or **district name** anywhere on this paper.
- This paper has **two** sections: **A** and **B**.
Section **A** has **20** questions and section **B** has **12** questions. The paper has **15 printed pages** altogether.
- Answer all questions. All answers to both sections **A** and **B** must be written in the spaces provided.
- All** answers **must** be written using a **blue** or **black** ball point pen or ink. Any answer or work written in pencil other than drawings will **not** be marked.
- No calculators are allowed in the examination room.
- Unnecessary **changes** in your work and handwriting that cannot be read easily may lead to **loss of marks**.
- 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: 4×7 .

$$\begin{aligned} 4 \times 7 &= 7 + 7 + 7 + 7 \\ &= 14 + 14 \\ &= 28 \end{aligned}$$

2. Set $P = \{\text{Kintu}, \text{Okoboi}, \text{Nambi}, \text{Musitwa}\}$ and $Q = \{\text{Okoboi}, \text{Musitwa}, \text{Kantono}, \text{Nakawala}\}$. Find $P \cap Q$.

$$P \cap Q = \{\text{Okoboi}, \text{Musitwa}\}$$

3. Find the number whose standard form is 6.15×10^{-2} .

$$\frac{615}{100} \times \frac{1}{10 \times 10}$$

$$\frac{615}{100} \times \frac{1}{100} = \frac{615}{10,000}$$

$$0.0615$$

4. At birth, Mariam weighed 4.24kg. How many grams did Mariam weigh?

$$1\text{kg} \rightarrow 1000\text{g}$$

$$4.24\text{kg} \rightarrow \frac{424}{100} \times 1000\text{g}$$

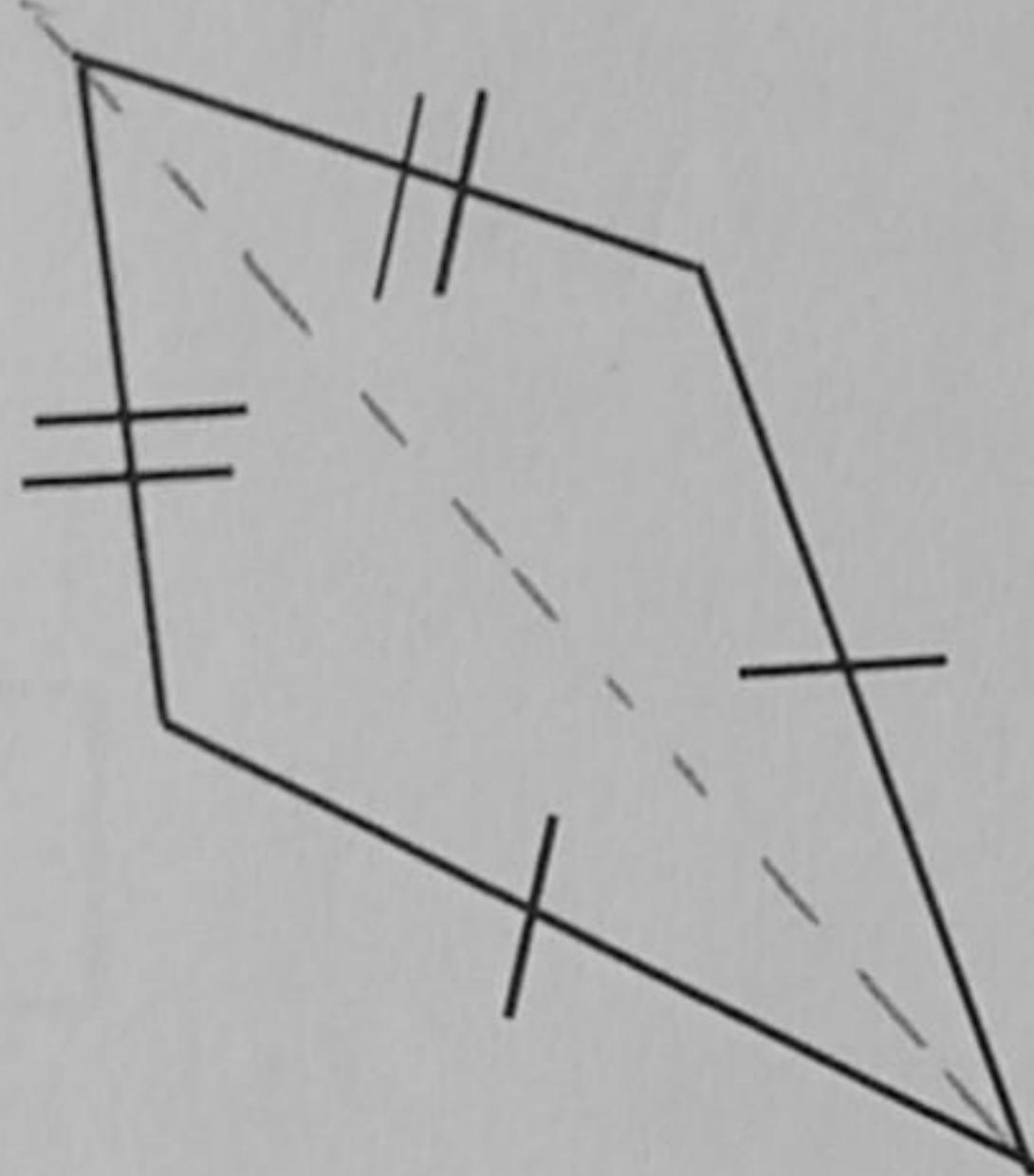
$$\rightarrow 4240\text{g}$$

5. Change 25_{ten} to binary base.

B	N	R
2	25	11
2	12	1
2	6	0
2	3	0
2	1	1
	0	1

11001_{two}

6. How many lines of folding symmetry has the figure below?



1 Line

7. A girl fetched 60 litres of water in the morning and 72 litres in the evening. Find the capacity of the biggest container the boy used in both instances.

$$\begin{array}{r}
 72 \text{ Litres} \\
 + 60 \text{ Litres} \\
 \hline
 132 \text{ Litres}
 \end{array}$$

8. Calculate the square root of 0.25.

$$\begin{aligned}
 \sqrt{0.25} &= \sqrt{\frac{25}{100}} \\
 &= \sqrt{\frac{5^2}{2^2 \times 5^2}}
 \end{aligned}$$

$$\frac{5}{10} = 0.5 \quad 3$$

$$\begin{array}{r}
 2 \overline{) 100} \\
 \underline{2 50} \\
 5 \overline{) 25} \\
 \underline{5 5} \\
 1
 \end{array}$$

$$\begin{array}{r}
 5 \overline{) 25} \\
 \underline{5 5} \\
 1
 \end{array}$$

Turn Over

9. Given that 627k is a four digit number which is divisible by 9, find the digit represented by k.

$$M_9 = \{9, 18, 27, \dots\}$$

$$6 + 2 + 7 + k = 18$$

$$15 + k = 18$$

$$15 - 15 + k = 18 - 15$$

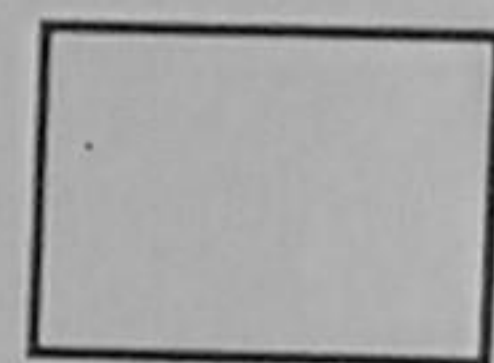
$$k = 3.$$

10. Write LXIII in words.

$$LX \quad III$$

$$60 + 3$$

$$63 \rightarrow \text{Sixty-three}$$



11. Moses started his journey at 11:36am and reached his destination at 12:10pm. How long was the journey?

$$\Delta \text{uration} = E.T - S.T$$

H	M	
11 12	36 10	
- 11	36	
0	34	

$$\begin{array}{r} 70 \\ - 36 \\ \hline 34 \end{array}$$

34 minutes.

12. Find the value of $(3^3 + 8^0) \times 7^1$.

$$(3 \times 3 \times 3 + 1) \times 7$$

$$(27 + 1) \times 7$$

$$28 \times 7$$

$$\underline{\underline{196}}$$

$$\begin{array}{r} 28 \\ \times 7 \\ \hline 196 \end{array}$$

13. 8 builders take 10 days to complete a house. How many builders are needed to complete the house in only 5 days?

Days	builders
10	8
1	$8 \times 10 = 80$
5	$\frac{80}{5} = 16$
5	16

16 builders

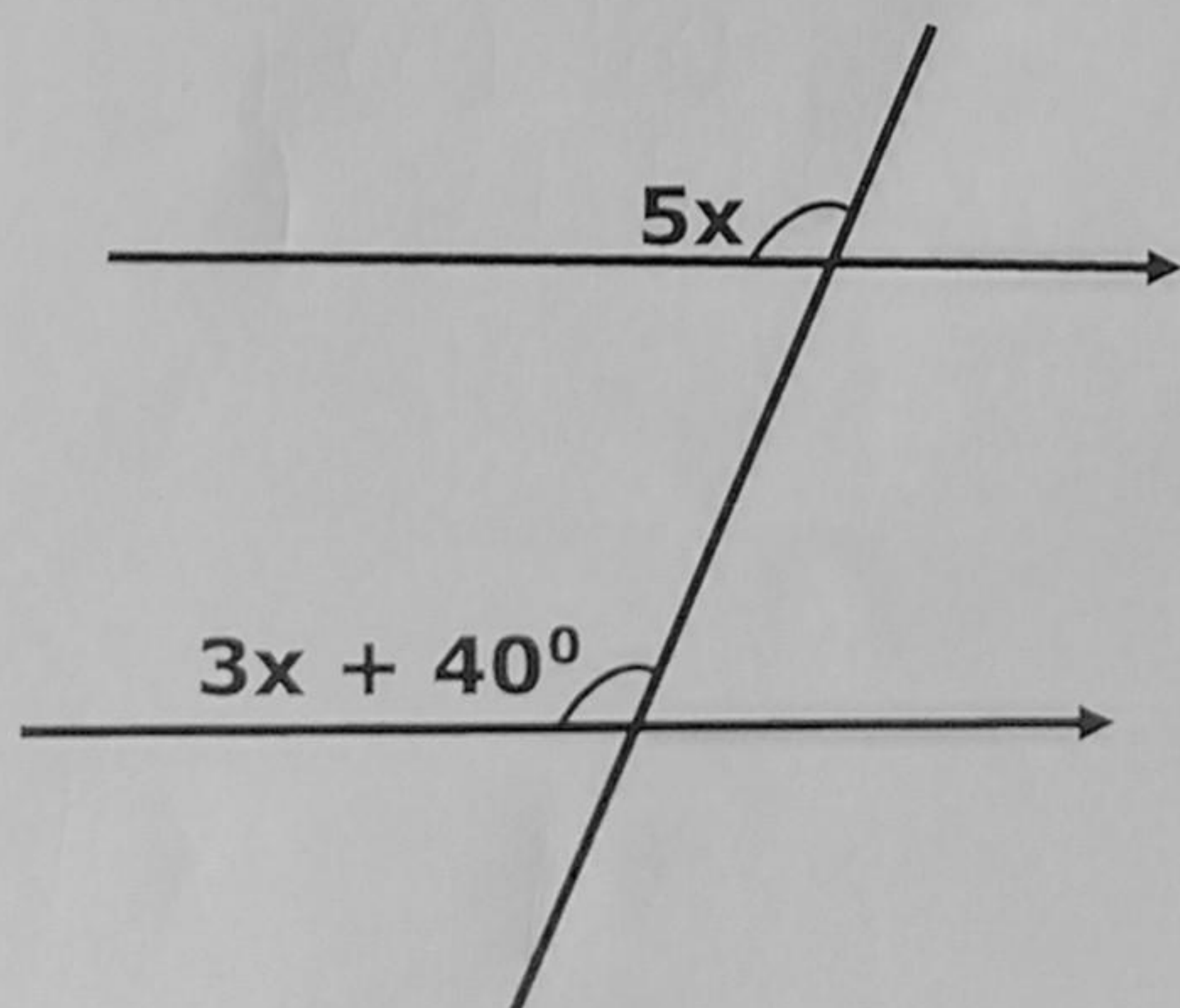
14. The average mass of 6 students was 63kg. When one student left the group, the average mass of the remaining student became 64. What was the mass of the sixth student?

Total mass of 6 students $\rightarrow 63 \text{ kg} \times 6$
 $\rightarrow 378 \text{ kg}$

Total mass of 5 students $\rightarrow 5 \times 64 \text{ kg}$
 $\rightarrow 320 \text{ kg}$

Mass of the 6th student $\rightarrow 378 \text{ kg}$
 $\underline{- 320 \text{ kg}}$
 58 kg

15. Find the value of x in degrees.



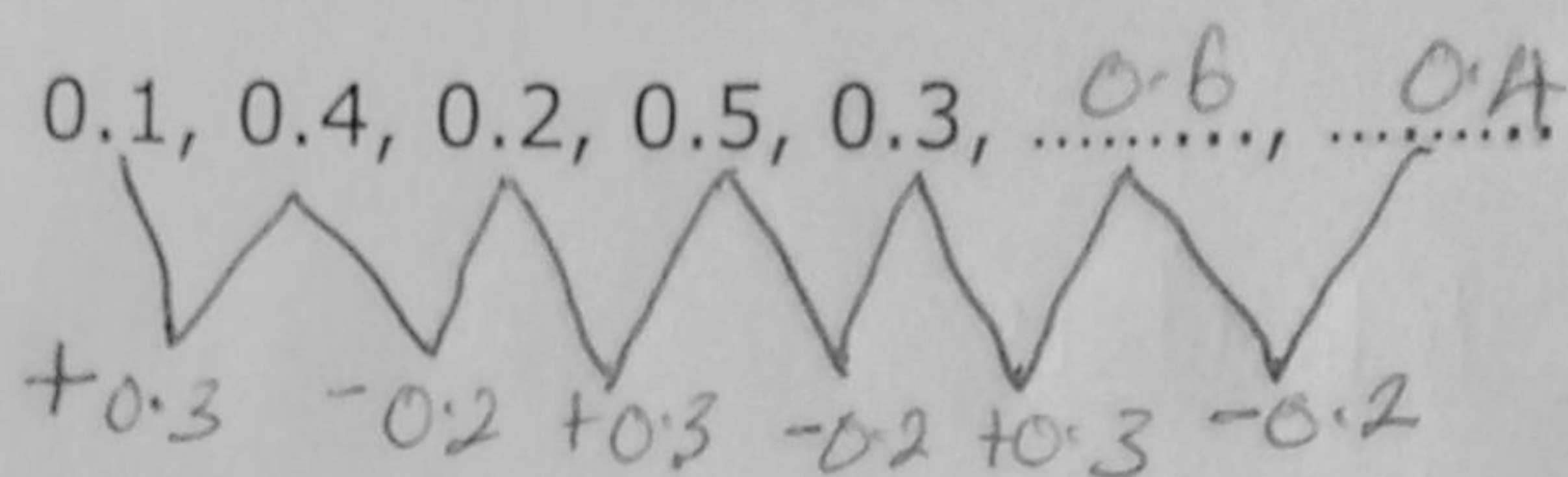
$5x = 3x + 40^\circ$ (corresponding angles)

$5x - 3x = 40^\circ$

$\frac{2x}{2} = \frac{40}{2}$

$x = 20^\circ$

16. Find the next two numbers in the sequence.



$$\begin{array}{r} 0.3 \\ +0.3 \\ \hline 0.6 \end{array}$$

$$\begin{array}{r} 0.6 \\ -0.2 \\ \hline 0.4 \end{array}$$

17. Given that $m = 6$, $n = 5$ and $p = 4$, find the value of $\frac{m(n-1)}{p}$.

$$\frac{m(n-1)}{p} = \frac{6(5-1)}{4}$$

$$\frac{6 \times 4}{4}$$

$$\underline{\underline{6}}$$

18. Using a ruler, a pencil and a pair of compasses only, construct a supplementary angle of 105° .

$$\text{Suppl of } 105^\circ = 180^\circ - 105^\circ$$

$$75^\circ$$

19. In a P.7 class, there are 33 boys and 21 girls. Find the probability of selecting a girl as a head prefect.

$$n(T.C) = \begin{array}{r} 33 \\ + 21 \\ \hline 54 \end{array}$$

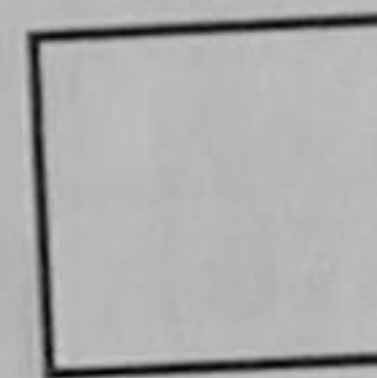
$$P = \frac{n(D.C)}{n(T.C)}$$

$$P = \frac{21}{54}$$

20. Workout:

Weeks	Days
5 ⁴	2 ⁷
- 2	5
2	4

$$\begin{array}{l} (7+2)-5 \\ 9-5=4 \end{array}$$



SECTION B: 60 MARKS

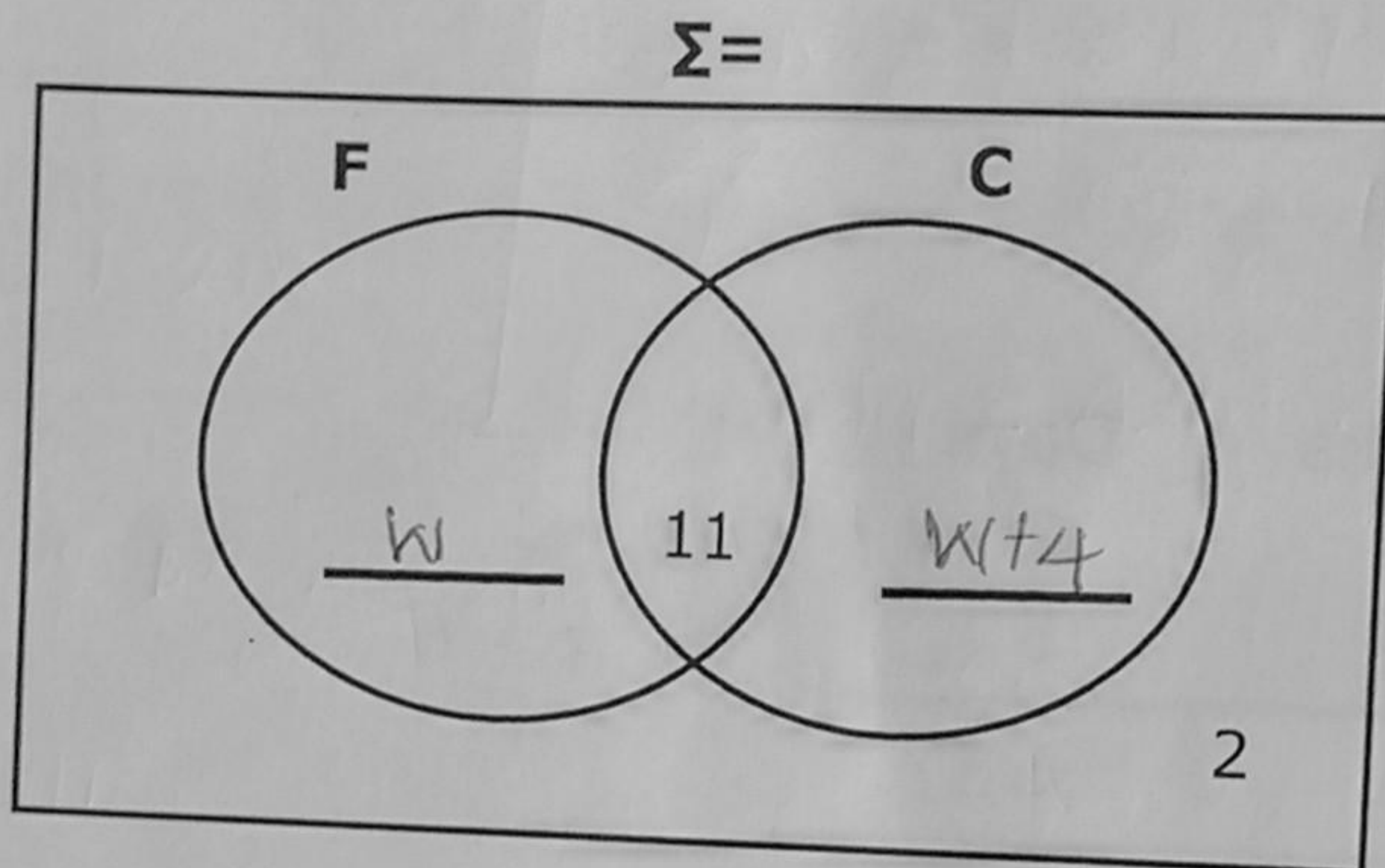
Answer **all** questions in this section.

Marks for each question are indicated in brackets.

21. During the 30th Joshi mother's birthday party, w guests ate Fish (F) only, $(w+4)$ ate Chicken (C) but not fish. 11 guests ate both types of sauce while 2 did not eat any of the sauce.

(a) Complete the Venn diagram below.

(02 marks)



- (b) If 22 guests ate only one type of sauce, find the value of w .

(02 marks)

$$w + w + 4 = 22$$

$$2w + 4 = 22$$

$$2w + 4 - 4 = 22 - 4$$

$$\frac{2w}{2} = \frac{18}{2}$$

$$w = 9$$

- (c) How many guests attended the party?

(01 mark)

$$n(E) = 22 + 11 + 2$$

$$n(E) = 35$$

22. (a) Find the quotient of the value of 9 and the value of 5 in 49056. (03 marks)

4 9 0 5 6

value of 9	value of 5	Quotient
9 thousands	5 tens	$\frac{9000}{50}$
9×1000	5×10	$\frac{9000}{50}$
9000	50	180

- (b) How many groups of 100 are in the value of 7 in 87130? (02 marks)

8 7 1 3 0

value of 7

7 thousands

7×1000

7,000

Groups $\rightarrow \frac{7,000}{100}$

70 groups

23. (a) Work out:

$$\frac{1.8 \times 3.9}{0.9 \times 1.3}$$

$$\left(\frac{18}{10} \times \frac{39}{10} \right) \div \left(\frac{9}{10} \times \frac{13}{10} \right)$$

$$\frac{18^2}{10} \times \frac{39^3}{10} \times \frac{10}{9} \times \frac{10}{13}$$

- (b) Simplify: $\frac{3}{4} - \frac{1}{2} + \frac{1}{3}$ (03 marks)

$$\frac{3}{4} + \frac{1}{3} - \frac{1}{2} = \frac{9+4-6}{12}$$

$$\frac{13-6}{12}$$

$$\frac{7}{12} \quad 9$$

Turn Over

24. Mr. Magezi fixed twenty two poles round his circular fish pond in Mugavu village.

(a) Find the diameter of the pond if the interval between the poles was 6 metres. (Use $\pi = 22$) (03 marks)

$$C = \text{poles} \times \text{interval}$$

$$C = 22 \times 6\text{m}$$

$$C = 132\text{m}$$

$$\pi D = C$$

$$\frac{22D}{7} = 132\text{m}$$

$$\begin{array}{r} 22D = 132\text{m} \times 7 \\ \hline 22 \quad 1 \\ \hline D = 42\text{m} \end{array}$$

$$\text{Diameter} = 42\text{m}$$

(b) Calculate the area of the pond.

$$\text{Radius} = \frac{42\text{m}}{2} = 21\text{m}$$

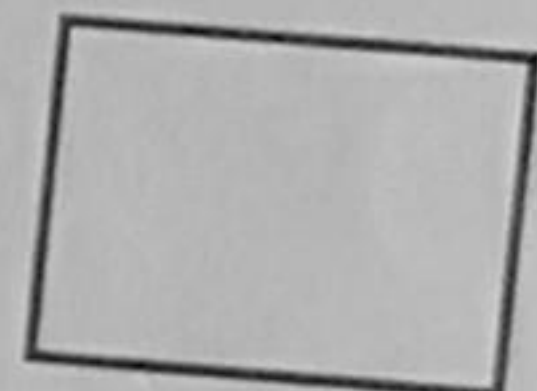
$$A = \pi r^2$$

$$A = \frac{22}{7} \times 21\text{m} \times 21\text{m}$$

$$A = 1386\text{m}^2$$

$$\begin{array}{r} 66 \\ \times 21 \\ \hline 66 \\ 132 \\ \hline 1386 \end{array}$$

(02 marks)



25. A father is six times as old as his son. In 6 years' time, he will be four times as old as his son. How old is each of them?

Let w rep son's age

	Son	Father
Now	w	$6w$
In '6' yrs	$w+6$	$6w+6$

$$4(w+6) = 6w+6$$

$$4w+24 = 6w+6$$

$$24-6 = 6w-4w$$

$$\frac{18}{2} = \frac{2w}{2}$$

$$9 = w$$

The son is 9 years old (04 marks)

$$\text{Father} = 6 \times w$$

$$6 \times 9$$

$$54\text{ years}$$

26. The table below shows Mugabi's monthly expenditure.

Item	Rent	Clothing	Food	Fees
Percentage	30%	35%	x	20%

(a) Find the value of x.

(02 marks)

$$X = 100\% - (30\% + 35\% + 20\%)$$

$$X = 100\% - 85\%$$

$$X = 15\%$$

(b) Construct an accurate pie-chart to show Mugabi's monthly expenditure (Use radius of 4cm).

(03 marks)

Rent

$$\frac{30}{100} \times 360^\circ$$

$$108^\circ$$

Clothing

$$\frac{35}{100} \times 360^\circ$$

$$126^\circ$$

Food

$$\frac{15}{100} \times 360^\circ$$

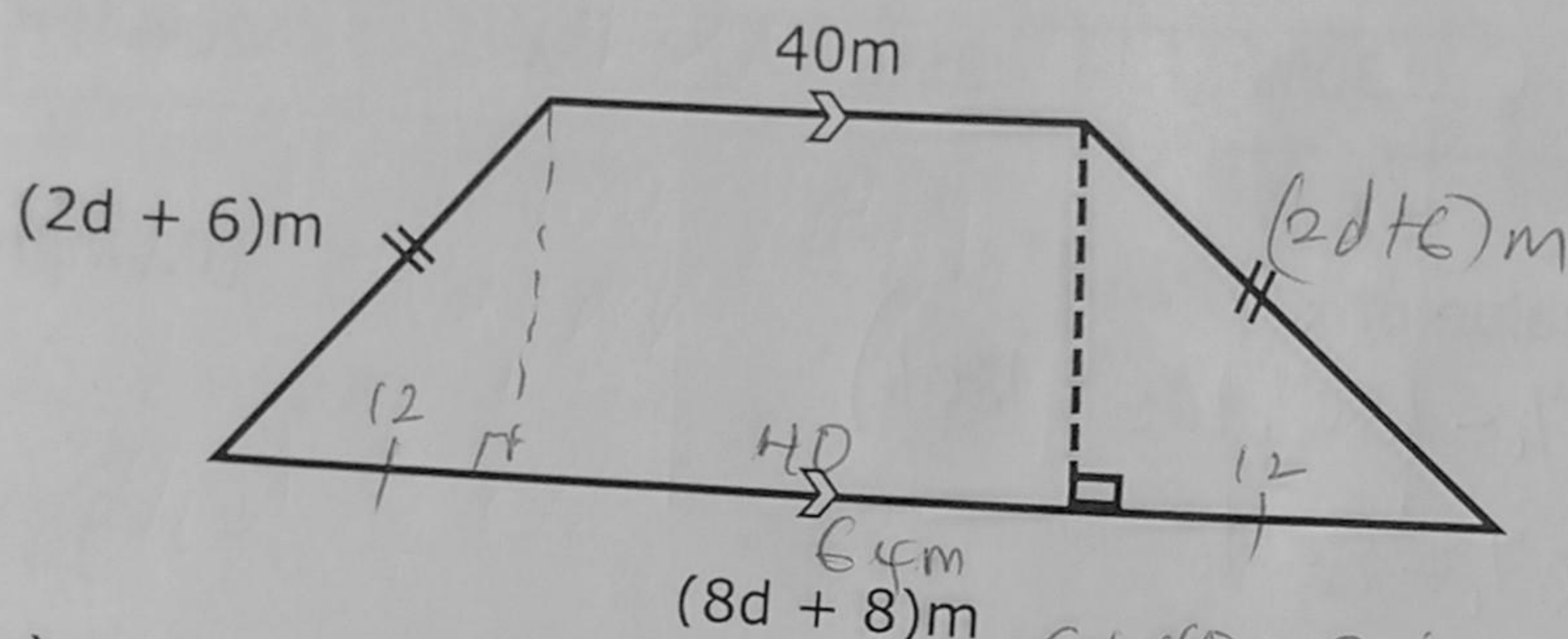
$$54^\circ$$

Fees

$$\frac{20}{100} \times 360^\circ$$

$$72^\circ$$

27. The shape below is a plot of land for Mr. Wambuzi. Study it and use it to answer questions that follow.



- (a) If the perimeter of the distance round the plot is 144meters, find the value of d . (02 marks)

$$2(2d + 6)m + 40m + (8d + 8)m = 144m$$

$$4d + 12 + 40 + 8d + 8 = 144$$

$$4d + 8d + 12 + 40 + 8 = 144$$

$$12d + 60 = 144$$

$$12d + 60 - 60 = 144 - 60$$

$$\frac{12d}{12} = \frac{84}{12}$$

$$d = 7$$

- (b) Workout the area of the plot. (03 marks)

$$S = (2 \times 7 + 6)m$$

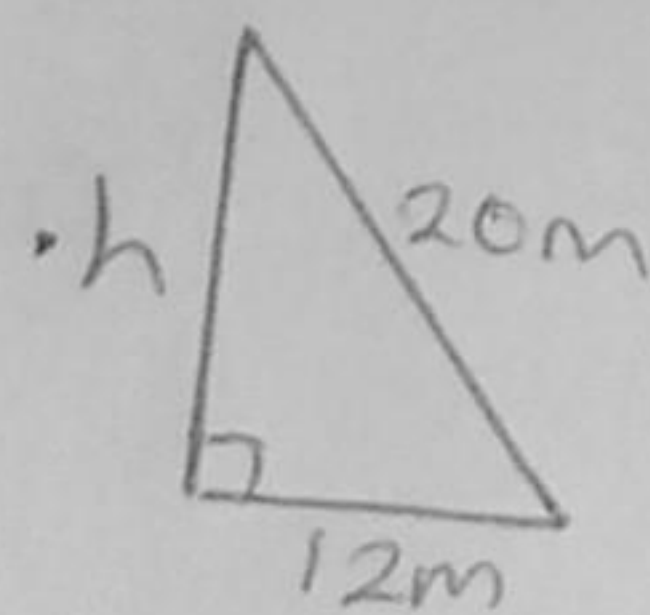
$$S = (14 + 6)m$$

$$S = 20m$$

$$b = (8 \times 7 + 8)m$$

$$b = (56 + 8)m$$

$$b = 64m$$



$$12^2 + h^2 = 20^2$$

$$144 + h^2 = 400$$

$$144 - 144 + h^2 = 400 - 144$$

$$\sqrt{h^2} = \sqrt{256}$$

$$h = 16m$$

$$A = \frac{1}{2} \times h(a + b)$$

$$A = \frac{1}{2} \times 16m(40m + 64m)$$

$$A = 8m \times 104m$$

$$A = 832m^2$$

$$\begin{array}{r} 104 \\ \times 8 \\ \hline 832 \end{array}$$

28. Muubi sold a radio set to Bota for sh 60,000 making a profit of 20%. Bota then sold the same radio set to Tenge making a loss of 15%.
 (a) How much did Muubi buy the radio set? (03 marks)

$$\text{Buying price} = \text{sh. } 60,000 \div (100\% + 20\%)$$

$$\text{B.p} = \text{sh } 60,000 \div \frac{120}{100}$$

$$\text{B.p} = \text{sh } 60,000 \times \frac{5}{6}$$

$$\text{B.p} = \text{sh. } 50,000$$

- (b) Calculate the loss made by Bota. (02 marks)

$$\text{S.p} = (100\% - 15\%) \times \text{sh. } 60,000$$

$$\text{S.p} = 85\% \times \text{sh. } 60,000$$

$$\text{S.p} = \frac{85}{100} \times \text{sh. } 60,000$$

$$\text{S.p} = \text{sh } 51,000$$

$$\begin{array}{r} \text{Loss} = \text{B.p} - \text{S.p} \\ \text{sh. } 60,000 \\ - \text{sh. } 51,000 \\ \hline \text{sh. } 9,000 \end{array}$$

29. Otim bought the following items in the table below from Mrs. Nakako's shop in Nakawa.

- (a) Complete the table above. (04 marks)

Item	Quantity	Unit cost	Total cost
Cooking oil	<u>1/4</u> litres	sh 8,800	sh 2,200
Sugar	<u>4</u> kg	sh 4,800	sh <u>19,200</u>
Salt	1 1/2 kg	sh <u>2,400</u>	sh 3,600
Total Expenditure			sh 25,000

$$\begin{array}{r} \text{Cooking oil} \\ \text{sh. } 2,200 \\ \text{sh. } 8,800 \\ \hline \text{sh. } 11,000 \\ \text{1 Litre} \\ \hline \text{sh. } 3,600 \\ + \text{sh. } 2,200 \\ \hline \text{sh. } 5,800 \\ \text{Sugar} \\ \text{sh. } 28,000 \\ - \text{sh. } 5,800 \\ \hline \text{sh. } 19,200 \end{array}$$

$$\begin{array}{r} \text{sh. } 19,200 \text{ kg} \\ \text{sh. } 4,800 \\ \hline \text{sh. } 24,000 \\ \text{4 kg} \\ \hline \text{Salt} \\ \text{sh. } 3600 \div \frac{3}{2} \\ \text{sh. } 2600 \times \frac{2}{3} \\ \hline \text{sh. } 2,400 \end{array}$$

Turn Over

(b) If he paid sh 23,000, calculate the percentage discount.

$$\begin{array}{r} \text{Discount} \rightarrow \text{sh. } 25,000 \\ - \text{sh. } 23,000 \\ \hline \text{sh. } 2,000 \end{array}$$

(02 marks)

$$\% d = \left(\frac{2000}{25000} \times 100 \right) \%$$

$$\% d = 8\%$$

30. A school tank is $\frac{3}{4}$ full of water. When 30 litres are removed by the cook it becomes $\frac{2}{3}$.

(a) How many litres does the tank hold when it is completely full?

$$\text{Fraction removed} \rightarrow \frac{3}{4} - \frac{2}{3} = \frac{9-8}{12} = \frac{1}{12}$$

(03 marks)

$$\text{Capacity} = \left(30 \div \frac{1}{12} \right) \text{ Litres}$$

$$C = \left(30 \times \frac{12}{1} \right) \text{ Litres}$$

$$C = 360 \text{ litres}$$

(b) If 10 litres costs sh 200, how much will the tank cost when it's completely full?

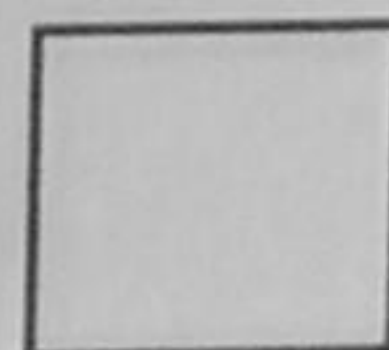
(02 marks)

$$10 \text{ Litres cost sh. } 200$$

$$1 \text{ Litre costs sh. } 20$$

$$360 \text{ Litres cost sh. } 20 \times 360$$

$$\text{sh. } 7,200$$



31. A fruit vendor bought some oranges from a village fruit farmer. When she grouped them in heaps of 8, 5 oranges remained, when she put them in heaps of 7, only one orange remained and when she grouped them in heaps of 6, 5 oranges were left. How many oranges did the vendor buy from the farmer? (04 Marks)

$$(\text{Finite } 8) = 5, 13, 21, \textcircled{29}, 37, 45, 53, 61, 69, \dots$$

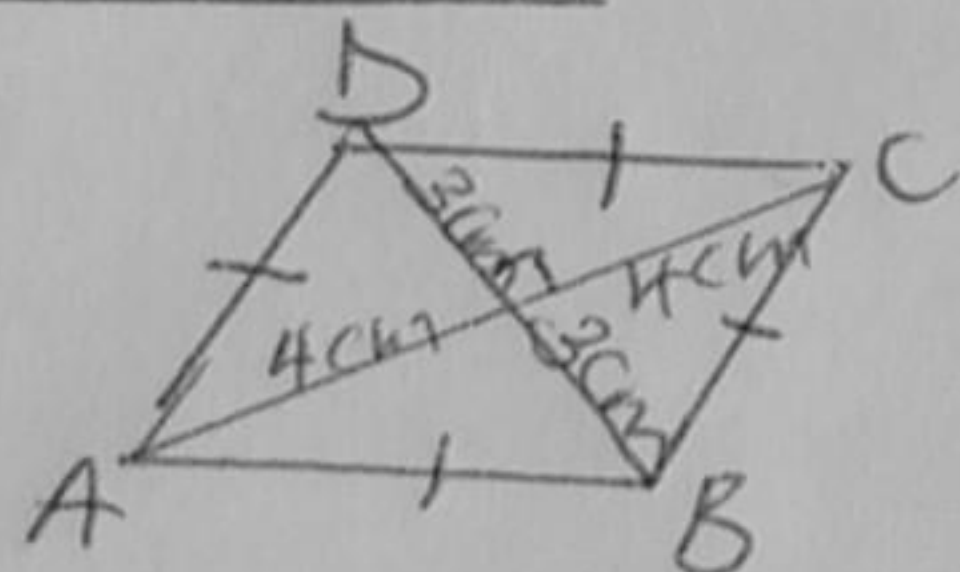
$$(\text{Finite } 7) = 1, 8, 15, 22, \textcircled{29}, 36, 43, 50, \dots$$

$$(\text{Finite } 6) = 5, 11, \textcircled{17}, \textcircled{23}, \textcircled{29}, 35, \dots$$

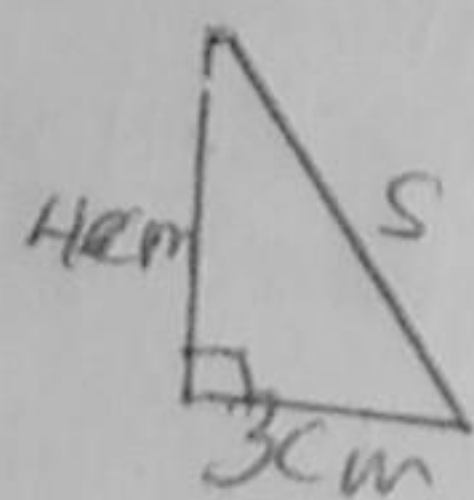
29 oranges

32. (a) Using a pair of compasses, ruler and a pencil only, construct a rhombus ABCD such that AC=8cm and BD=6cm. (04 marks)

Sketch



- (b) Find the perimeter of the above figure. (01 mark)



$$4^2 + 3^2 = S^2$$

$$16 + 9 = S^2$$

$$\sqrt{25} = \sqrt{S^2}$$

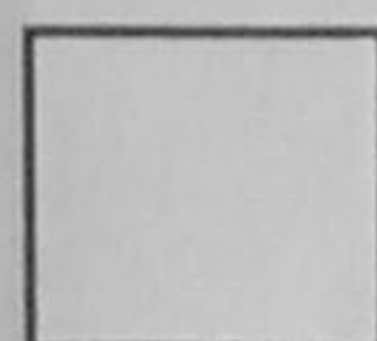
$$5\text{cm} = S$$

$$P = 4S$$

$$P = 4 \times 5\text{cm}$$

$$P = 20\text{cm}$$

15



END