WAKISSHA JOINT MOCK EXAMINATIONS
SCORE GUIDE
Uganda Certificate of Education
UCE August 2024
MATHEMATICS 456/1

AHSN

27th/AUG/2024

Item 1	Expected Responses	Score	Comments
(a)(i)	Total number of tomatoes; 9 x 8 = 72 tomatoes I_1M_1	~~I_1M_1~~ 2	Conversion in SSbase ten For 9X8 For 72
	Cost of buying tomatoes; 9 x 2000 = Shs 18000 I_1M_1	~~S1~~ 2	For the cost
	Actual expenditure on tomatoes; $\frac{95}{100}x18000 = 17100/=$ I_1M_1	~~S1~~ 2 ~~S1~~	For $^{95}/_{100}$ accept alternative For 17100/=
	Heaps of 4 tomatoes; $^{72}/_{4} = 18\ heaps$ I_1M_1	~~S1~~ 1	
	Amount earned after selling; 18 x 1200 = Shs 21600/= I_1M_1	~~S1~~ ~~S1~~ 2	For 18 X 1200 For 21600
(a) (ii)	Profits earned from 4 heaps of tomatoes = 21600 – 17100 I_1 = Shs 4500 M_1	~~S1~~ 2 ~~S1~~	~~For 24~~ For 21600-17100 For 4500
(b)	Let x represent cost ticket for child Let y represent cost of ticket for adult $3x + y = 17,000$ (i) I_1 $x + 2y = 14,000$ (ii) I_1	~~S1~~ ~~S1~~ ~~S1~~ 2	For identifying two variables For expression in terms of x and y
	From equation (i), $x = 14,000 - 2y$ (iii) Subst (iii) into (i) $3(14,000 - 2y) + y = 17,000$ I_1 $42,000 - 6y + y = 17,000$ $-5y = -25,000$ $y = 5,000$ M_1 $x = 14,000-2(5,000)$ $x = 4,000$ M_1	~~S1~~ ~~S1~~ ~~S1~~ ~~S1~~ ~~S1~~ 3 ~~S1~~	For ~~substitution~~ identification For value of y For value of x
	Amount for 5children and 2adults; 5(4,000) + 2(5,000) = Ugx30,000. $I_1I_1M_1$	~~S1~~ ~~S1~~ 3	~~For subtraction~~ substitution amount a family of 7
		Total score=20	

Item 2	Expected Responses	Score	Comments
(a)	Let the number of trips made by bus be x Let the number trips made by minibus be y	S1 S1	for identify variable x for identify variable y
	$y > x$.....(i) F1 $64x + 16y \leq 400$.....(ii) F1 $x \geq 2$.....(iii) F1 $y \leq 6$.....(iv) F1 $40{,}000y + 90{,}000x \geq 360{,}000$.....(v) F1	S1 S1 S1 S1 S1 5	S5, S1 for each correct inequality
	$y > x$ and $y = x$ x | 2 | 5 y | 2 | 5.	S1	For correct table values
	$64x + 16y \leq 400$ and $4x + y = 25$ x | 5 | 4 y | 5 | 9	S1	
	$40{,}000y + 90{,}000x \geq 360{,}000$ $4y + 9x = 36$ and $4y + 9x \geqslant 36$ x | 0 | 4 y | 9 | 0	S1	For correct table values
	Correct choice of scales each axis Plotting and shading correct regions on graph Minimizing transport costs; (M1 M1 R1 S1) Points in feasible region;	S1 S1 S1S1 S1 S1 S1	
	=(2,6), (2,5), (3,6), (4,6), (3,5) (4,5), (5,5), (3,4) On testing gives; (2,5) =(90,000x2)+(5 x 40,000)=380,000Ugx M1	S1	Identification of points in the feasible region.
b)	M1 M1 (2, 5) A1 A1 Number of students = 64x + 16y = (64 x 2) + (16 x5) M1 = 208students M1	5 S1 S1 2	Substitution of (2, 5)
		Total score 20	

Item 3	Expected Responses	Score	comments
(a)	Statistical method could be a frequency distribution table. P_1		

Length (cm)	x	f	fx	CF
60 – 69	64.5	4	258	4
70 – 79	74.5	4	298	8
80 – 89	84.5	7	591.5	15
90 – 99	94.5	13	1228.5	28
100 – 109	104.5	18	1881	46
110 – 119	114.5	4 P_1	458 P_1	50
P_1	P_1	P_1 $\sum f = 50$ P_1	$\sum fx = 4715$ P_1	

S1 For classes
S1 For x values
S1 For f values
S1 For fx
S1 For c.f
S1 For Σfx
S1 For Σf
8

Mean $= \frac{\Sigma fx}{\Sigma f} = \frac{4715}{50}$ A_1
$= 94.3$g A_1

ALTERNATIVE SOLUTION

Weight in gms	x	f	fx	cf
60-64	62	2	124	2
65-69	67	2	134	4
70-74	72	2	144	6
75-79	77	2	154	8
80-84	82	3	246	11
85-89	87	3	261	14
90-94	92	6	552	20
95-99	97	8	776	28
100-104	102	11	1122	39
105-109	107	7	740 P_1	46
110-114	112	4 P_1	448	50
P_1	P_1	$\sum f = 50$ P_1	$\sum fx = 4700$ P_1	

S1 Substitution in formula
S1
S1
S1
S1
S1
S1 Labelling and correct scale of axes.
S1 For plotting
S1 For smooth curve
LSocating P_{60}
8

Mean $= \sum \frac{fx}{f} = \frac{4700}{50}$ A_1
$= 94$gms A_1

S1
S1 2

Since mean = 94 cabbages weighing below the average weight are 20. And 30 cabbages above average weight. A_1 A_1

S1
S1

Use one either for the graph or Raw data.

	SGroup A cabbages sales; 20x1350 A1 =ugx27, 000 A1 Group B cabbages sales 30 x 1650 = ugx 49,500 Total sales 27,000 + 49500 =ugx 76,500 A1 A1 Cost price = 50 x 800 = 40,000 A1 A1 Profits = 76,500 - 40,000 A1 ugx 36,500 A1 since profits are less than 38,000, goal was not achieved; AP1 AP1 ***See graph at the back page.*** OR 76500 − 40,000 A1 A1 A1 Ugx 36500 A1	s1 s1 s1 s1 s1 s1 8 **Total score=20**	For addition For answer

Item 4	Expected Responses	Score	Comments
Title	Matrices showing the consumables in P1		
a)	Week 1 purchases = $\begin{pmatrix}2 & 3 & 2\\0 & 4 & 3\end{pmatrix}$ P1 2x3 P1	S1 S1 3	Data analysis Correct 2x 3 matrix
	Week 2 purchases = $\begin{pmatrix}3 & 4 & 2\\1 & 5 & 2\end{pmatrix}$ P1 2x3 P1	S1 S1 2	Data analysis Correct 2 x 3 matrix
	Total purchase $\begin{pmatrix}2 & 3 & 2\\0 & 4 & 3\end{pmatrix} + \begin{pmatrix}3 & 4 & 2\\1 & 5 & 2\end{pmatrix}$ A1 $= \begin{pmatrix}5 & 7 & 4\\1 & 9 & 5\end{pmatrix}$ A1	S1 2 S1	For addition of correct matrices For sum
b)	Total picked for sugar; 5 + 1=6kg A1 Total picked for posho; 7 + 9 =16kg A1 Total picked for beans; 4 + 5 = 9kg A1	S1 S1 S1 S1 3 S1 S1	
	Amount paid = (6 10 16) $\begin{pmatrix}5500\\4000\\2400\end{pmatrix}$ P1 A1 A1 A1 A1 3x1 P1 = (6x5500 + 10 x 4000 + 16 x 2400) =330,000 + 360000+ 384000 A1 =Ugx 118600 = Ugx 107,400 A1	S1 S1 S1 S1 S1 08	For strategy used Correct expansion S3 each correct pdt. S1 for 330,000 s1 for 360000, s1 for 384000 Sum =S 118600. 107,400

c)	Goal implies; expenses less than Ugx 100,000 Since total expenses is greater than 100,000 A1 It means that desired goal was not achieved. A1 Total score = 20	~~S1~~ ~~S1~~ 2	For Greater than For 'WAS NOT'
		Total score=20	
Item 5	**Expected Responses**	**Score**	**Comment**
i)	Walls of 6 x 6 = $36ft^2$ x 2 A1 = $72ft^2$ M1 Other wall (5x6) 2floor (6x5)=60 2 x 30 A1 = $60ft^2$ A1 Total area to be tiled $72ft^2 + 60ft^2$ A1 = $132ft^2$ M1 1ft= 0.305m $1ft^2 = (0.305)^2 = 0.093m^2$ $^{0.093}$ x 132 = 12.3 A1M1 ~~Approx .. = 13 sq meters~~ 1box = $1.5m^2$ No of boxes needed $(\frac{12.3}{1.5})$ = 8.2boxs A1M1M1 =9boxes M1 1box costs Ugx32,000 9boxes cost Ugx 32,000 x 9 = Ugx 288,000 A1M1 Amount for labour $1m^2$ x Ugx 9000 $13m^2$ = (13 x 9000) M1 Ugx ~~117,000~~	~~S1~~ ~~S1~~ 2 ~~S1~~ 2 ~~S1~~ ~~S1~~ 3 ~~S1~~ ~~S1~~ ~~S1~~ ~~S1~~ ~~S1~~ ~~S1~~ 04 ~~S1~~ ~~S1~~ 04	For doubling Total area of 2 walls For 60 Sum total For meters = ~~13m²~~ for the 12.3m² For equating ratios For number of boxes For computation For amount For computation For amount For strategy For amount borrowed
(bi)	Ugx 110700 M1 110700 Total Amount needed (~~117~~ + 288,000) M1 398,700 Amount to be borrowed Ugx ~~405,000/=~~ M1	~~S1~~ ~~S1~~ 02	For strategy For computation For amount paid back

	Amount pay back = $P(1+\frac{r}{100})^t$ $= 398700\ (1+\frac{5}{100})^{1.5}$ M1 M1 $= Ugx\ 432,800$ M1 $= 428973.2$	S1 S1 S1 03 Total score= 20	For strategy Substitution in formula amount

Item 6	Expected Responses	Score	Comment
(CONT) (i)	W:B = 3:2, B:R=3:2 W:B = 9:6, B:R=6:4 W:B:R = 9:6:4 A1 Quantities; W= $\frac{9}{19}\times 380 = 180$ litres A1 B = $\frac{6}{19}\times 380 = 120$ litres M1 $R = \frac{4}{19}\times 380 = 80 litres$ M1	s1 s1 s1 04 s1 s1	for ratio identification Deduction from above for quantities of different colours
(ii)	Amount needed for 380 litres A = (180 x 2200) + (120 x 2700) +(80x2850) A = Shs (396,000 + 324000 + 228000) M1 A = Shs 948,000 M1 Amount needed to make 1 litre of mixture $= \frac{948000}{380}$ A1 = approx.. ugx 2495	s1 s3 s1 01 04	Strategy identified S1 x3foreach correct pdt for addition
	Profit = (3800 x 380) – 948,000 = 144000 – 948,000 = 496,000 M1	01 01 01 05	for addition C's
(iii)	% profit = $\frac{496000}{948,000}\times 100$ A1 = 52.3% M1	01 01	for multiplication for subtraction
(b)	Vol of frustum $= \frac{1}{3}\pi\times 15^2\times(96+48) - \frac{1}{3}\pi\times 10^2\times 96$ A1 M1 $= 7600\pi\ cm^3$ M1 vol of cylinder $= \pi\times 90^2\times 120$ A1 $= 972000\pi\ cm^3$ M1	01 01 07	for division Correct answer
		Total score20	

Accept
P = 3800 − 2494.74
P = 1305.26
%ep = $\frac{1305.26}{2494.74}\times 100$
= 52.32%

$\frac{h}{15} = \frac{10}{15}$
h = 96 cm

No of buckets = $\frac{972000\pi}{7600\pi}$ A1 = 127.894
≈ 128 buckets M1

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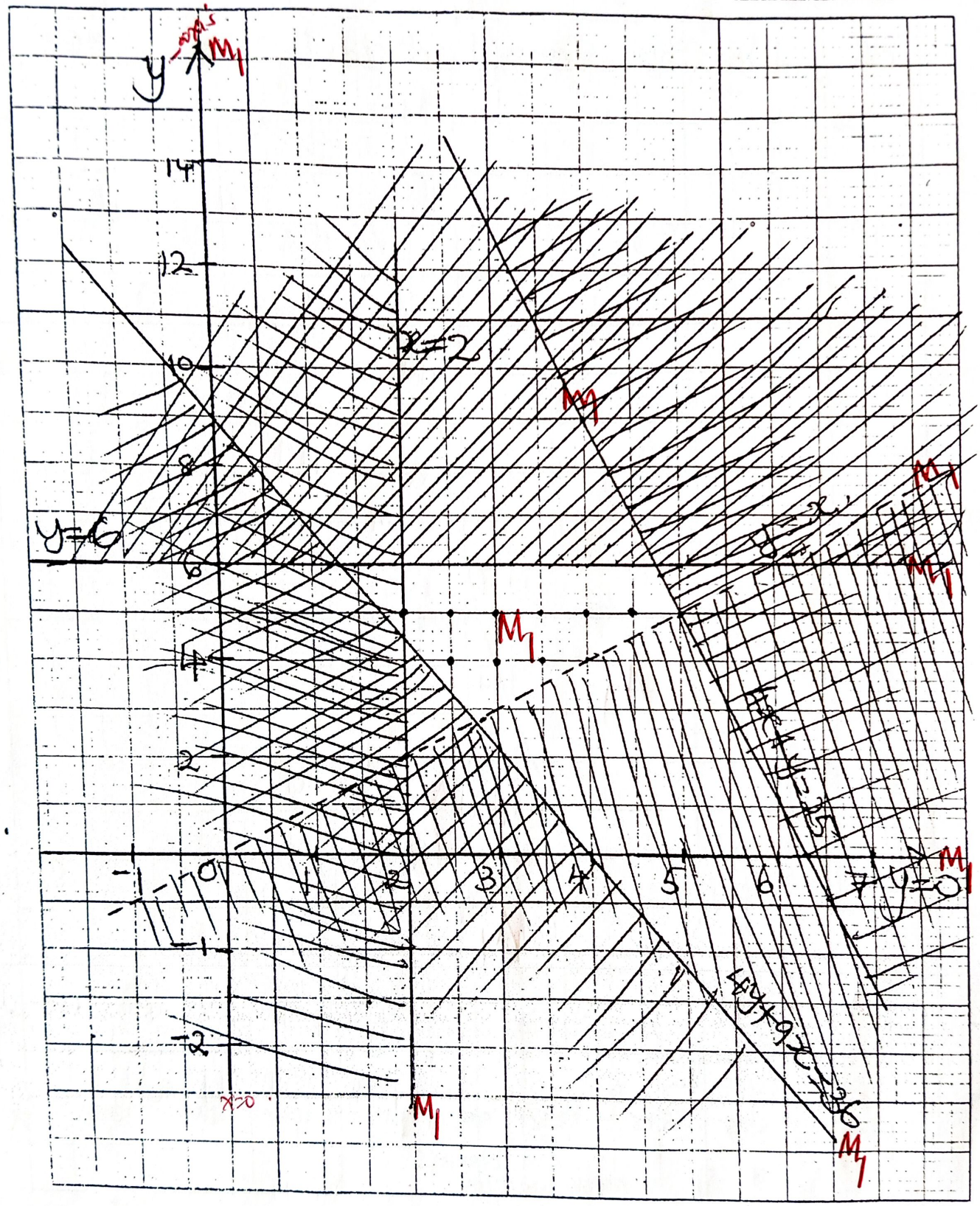
(To be fastened together with other answers to ...)

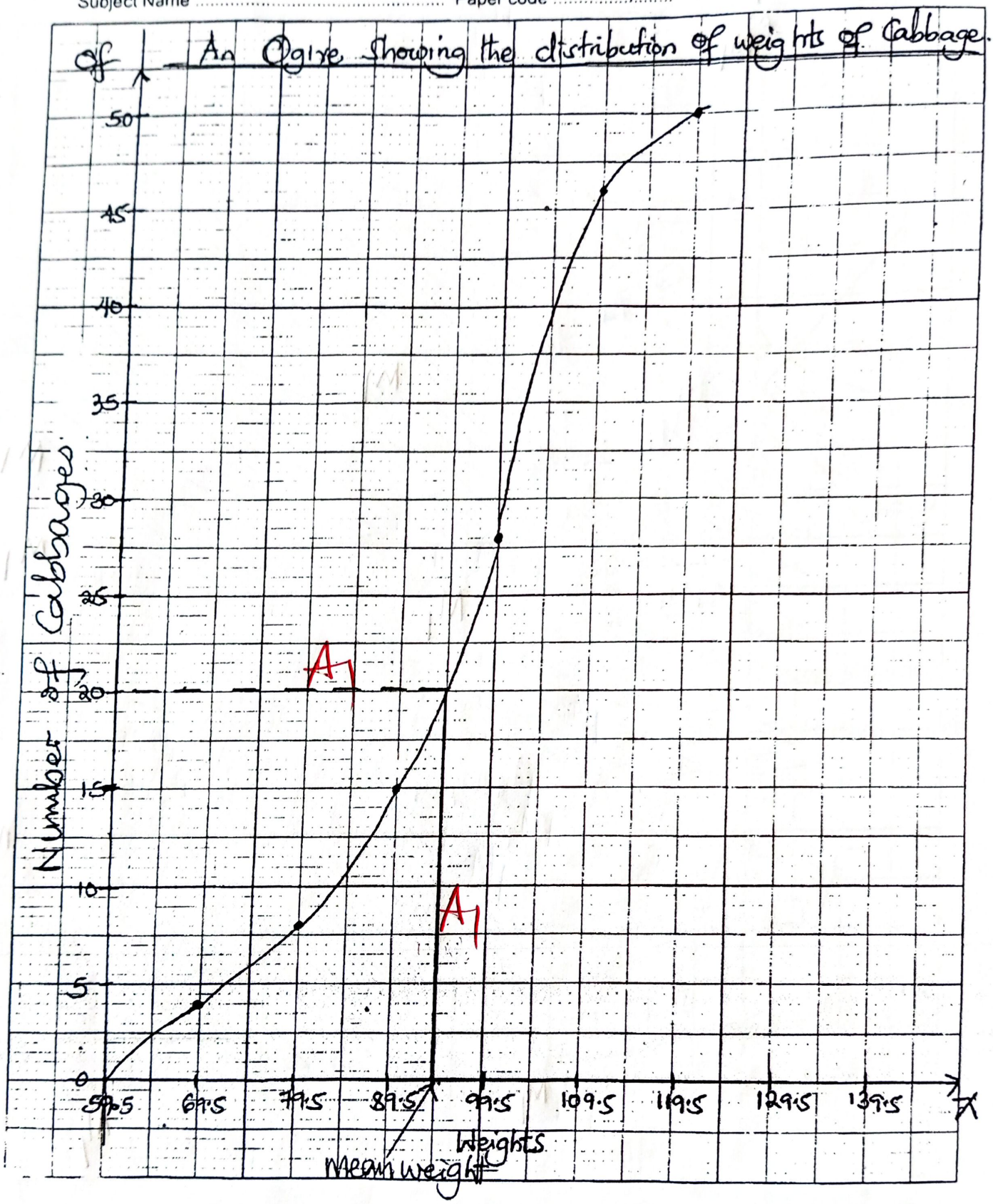
Candidate's Name ..... Wakissha 4456 / Maths

Signature ..... Hem: 2 ..... Random No. ...

Subject Name ..... Paper code ...../..... Personal Number



An Ogive showing the distribution of weights of Cabbage.



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