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JJ/113

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

Item 1	Expected Responses	Score	Comments
(a)(i)	Total number of tomatoes; 9 x 8 = 72 tomatoes I_1M_1	S1 2	Conversion in SSbase ten
	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
	Heaps of 4 tomatoes; $72/4 = 18\ heaps$ I_1M_1	S1 2	For 17100/=
	Amount earned after selling; 18 x 1200 = Shs 21600/= I_1M_1	S1 S1 2	For 18 For 21600
(a) (ii)	Profits earned from 4 heaps of tomatoes = 21600 – 17100 I_1 = Shs 4500 M_1	S1 2 S1	For 24 4500
(b)	Let x represent cost ticket for child Let y represent cost of ticket for adult I_1 $3x + y = 17,000$ (i) I_1 $x + 2y = 14,000$ (ii) I_1	S1 S1 S1 3	For identifying two variables For expression in terms of x and y
	From equation (i), $x = 14,000 - 2y$ (iii) Subst (iii) into (i) $3(14,000 - 2y) + y = 17,000$ $42,000 - 6y + y = 17,000$ $-5y = -25,000$ $y = 5,000$ M_1 $x = 14,000-2(5,000)$ $x = 4,000$ M_1	S1 S1 S1 S1 S1 1 S1 1	For substitution– 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) F_1 $64x + 16y \leq 400$.....(ii) F_1 $x \geq 2$.....(iii) F_1 $y \leq 6$.....(iv) F_1 $40{,}000y + 90{,}000x \geq 360{,}000$.....(v) F_1	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 $4y + 9x > 36$ 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; Points in feasible region; =(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 M_1	Graph - 8 S1 S1 S1S1 S1 S1 S1 S1 1	Identification of points in the feasible region.
b)	(2, 5) $M_1 M_1 A_0, A_1$ Number of students = 64x + 16y = (64 x 2) + (16 x5) M_1 = 208students M_1	4 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. A frequency table showing weights. P_1 Fully P_1	S1	For classes
		S1	For x values
		S1	For f values
		S1	For fx
		S1	For c.f
		S1	For Σfx
			For Σf

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 P_1	94.5 P_1	13 P_1	1228.5 P_1	28
100 – 109	104.5	18	1881	46
110 – 119	114.5	4	458	50
		50 P_1	4715 P_1	

(a)	Mean $= \frac{\Sigma fx}{\Sigma f} = \frac{4715}{50}$ A_1 $= 94.3$g A_1	S1 S1	Substitution in formula
	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	46
110-114	112	4	448	50
		$\sum f = 50$	$\sum fx = 4700$	

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

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

S1

S1

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

S1

S1

Total Cost = 50 x 800 = 40,000/= A_1A_1

	SGroup A cabbages sales; 20x1350 A1 =ugx27, 000 A1 Group B cabbages sales 30 x 1650 A1 = ugx 49,500 A1 Total sales 27,000 + 49500 =ugx 76,500 A1 A1 Profits = 76,500 - 40,000 A1 ugx 36,500 A1 since profits are Sless than 38,000, goal was not achieved: Ap, Ap1 *See graph at the back page.*	s1 s1 s1 s1 s1 s1 **Total score=20**	

Item 4	Expected Responses matrices showing commodities in week 1 and 2 P1	Score	Comments
a)	Week 1 purchases = $\begin{pmatrix}2 & 3 & 2\\0 & 4 & 3\end{pmatrix}$ P1 2x3 P1 Week 2 purchases = $\begin{pmatrix}3 & 4 & 2\\1 & 5 & 2\end{pmatrix}$ P1 2x3 P1 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 2x3 E3	S1 1 S1 2 S1 2 S1 S1 S1 2	Data analysis Correct 2x 3 matrix Data analysis Correct 2 x 3 matrix For addition of correct matrices For sum 6kg 10kg 9kg
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 Amount paid = (6 10 10) $\begin{pmatrix}5500\\4000\\2400\end{pmatrix}$ P1 A1 A1 A1 3x1 P1 = (6x55000 + 10 x 4000 +10 x 2400) A1 =330,000 +64000+ 21600 38,400 =Ugx 118600 107,400 A1	S1 S1 S1 S1 S1 S1 3 S1 S1 S1 S1 S1 S1 8	For strategy used Correct expansion S3 each correct pdt. S1 for 330,000 s1 for 64000, s1 for 21 000 Sum =S 118600.

c)	Goal implies; expenses less than Ugx 100,000 Since total expenses is greater than 100,000 A_1 It means that desired goal was not achieved. A_1	S1 S1 Total score = 20	
		Total score=20	
Item 5	**Expected Responses**	**Score**	**Comment**
	Walls of $6 \times 6 = 36ft^2 \times 2$ A_1 $= 72ft^2$ M_1 Other wall (5x6) 2floor (6x5)=60 2×30 A_1 $= 60ft^2$ M_1 Total area to be tiled $72ft^2 + 60ft^2$ A_1 $=132ft^2$ M_1 $1ft = 0.305m$ $1ft^2 = (0.305)^2 = 0.093m^2$ $0.093 \times 132 = 12.3$ A_1 $12.2793\ m^2$ M_1 Approx ..= 13 sq meters M_1	S1 S1 S1 S1 S1 S1	For doubling Total area of 2 walls For 60 Sum total For meters = $13m^2$
i)	$1box = 1.5m^2$ A_1 No of boxes needed $(\frac{13}{1.5}) = 8.7$boxs $m_1 m_1$ $=9$boxes m_1 1box costs Ugx32,000 9boxes cost Ugx 32,000 x 9 = Ugx 288,000 m_1 Amount for labour $1m^2$ x Ugx 9000 $13m^2 = (13 \times 9000)$ m_1 Ugx 117,000 m_1	S1 S1 S1 S1 S1 S1 S1	For equating ratios For number of boxes For computation For amount For computation For amount For strategy For amount borrowed
(bi)	Total Amount needed (117 + 288,000) m_1 Amount to be borrowed Ugx 405,000/= m_1	S1 S1	For strategy For computation For amount paid back

	Amount pay back = $P(1 + \frac{r}{100})^t$ $= 405{,}000\ (1 + \frac{5}{100})$ m1 m1 = Ugx 432,800 m1	S1 S1 S1 Total score= 20	For strategy Substitution in formula amount
Item 6	**Expected Responses**	**Score**	**Comment**
(CONT)	W:B = 3:2, B:R=3:2		
(i)	W:B = 9:6, B:R=6:4	s1	for ratio identification
	W:B:R = 9:6:4 A1	s1	Deduction from above
	Quantities: W = $\frac{9}{19} \times 380 = 180$ litres m1	s1	for quantities of different colours
	B = $\frac{6}{19} \times 380 = 120$ litres m1	s1	
	$R = \frac{4}{19} \times 380 = 80 litres$ m1	s1	
(ii)	Amount needed for 380 litres A = (180 x 2200) + (120 x 2700) +(80x2850) A = Shs (396,000 + 324000 + 228000) m1 m1 m1 A = Shs 948,000 m1	s1	Strategy identified
	Amount needed to make 1 litre of mixture $= \frac{948000}{380}$ A1	s3 s1	S1 x3foreach correct pdt for addition
	= approx. ugx 2495 2494.74 m1	01	
	Profit = (3800 x 380) – 948,000 = 144000 – 948,000 = 496,000 m1	01 01	for addition C's
(iii)	% profit = $\frac{496000}{948,000} \times 100$ A1 = 52.3% m1	01 01	for multiplication for subtraction
b)	volume of frustum = $\frac{1}{3}\pi 15^2(\text{height}) - \frac{1}{3}\pi 6^2 \times 96$ A1	01	for division
	volume of cylinder = $\pi \times 30 \times 12$ A1 = 97200 cm^3 m1	01	Correct answer
	no of buckets = $\frac{97200}{\pi 30}$ = 103 buckets A1m1	01	
		Total score20	

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Candidate's Name ..... Wakissha 456/1 Maths

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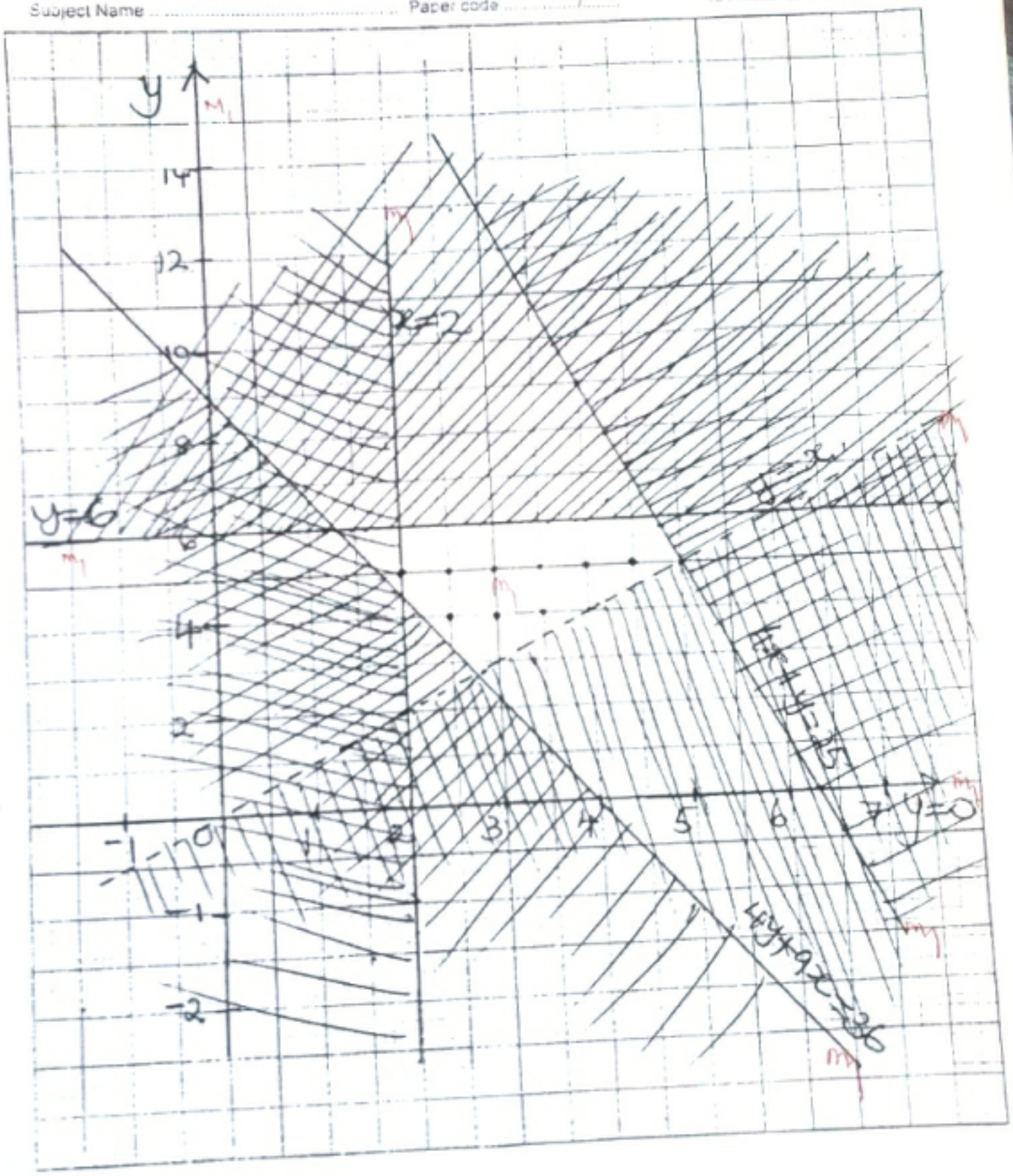

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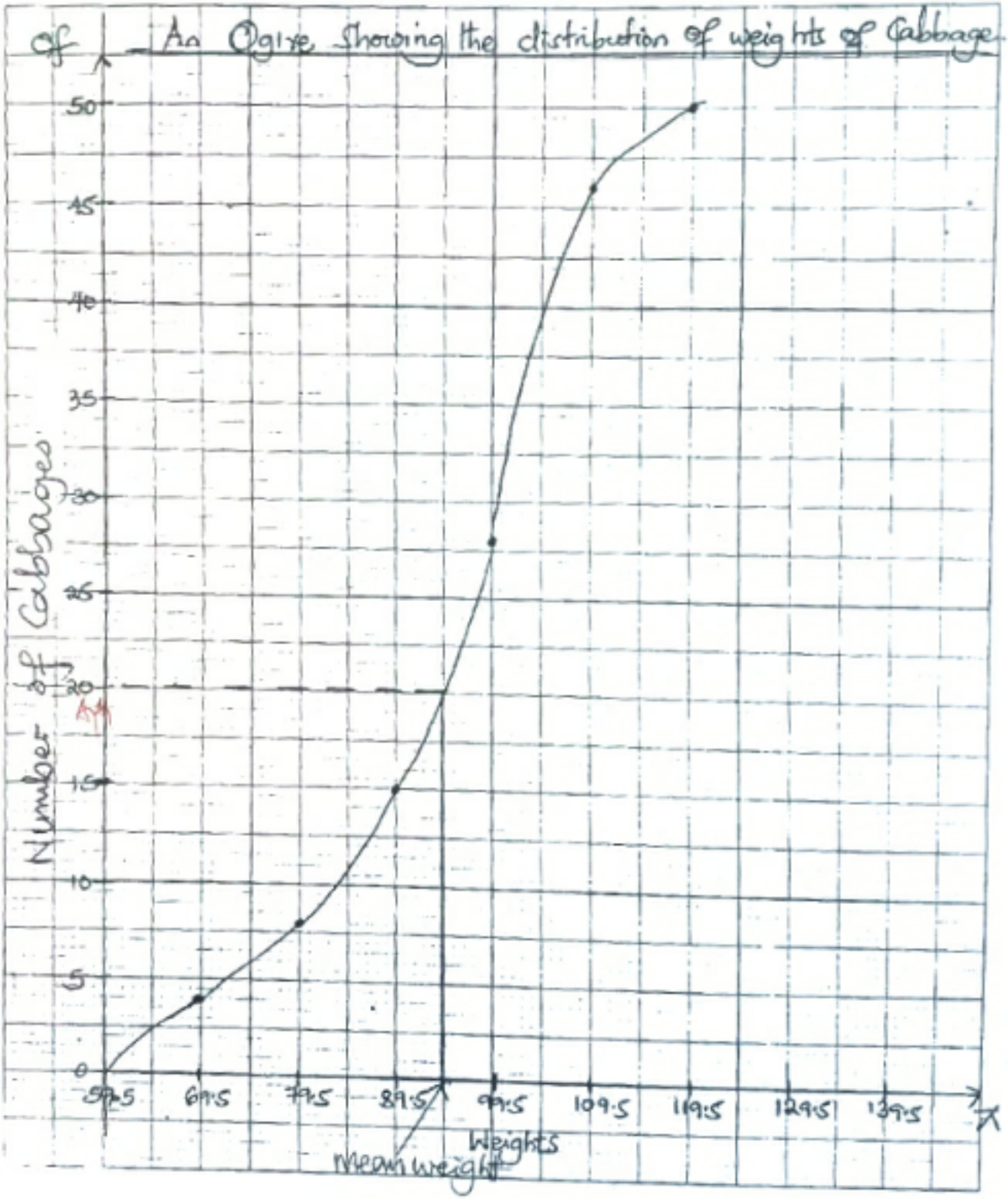

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