ITEM 1.

Let x and y represent ~~the number~~ of textbooks and an exercise book respectively

$$25x + 35y = 135000 \quad \text{---} \quad (I)$$
$$21x + 38y = (135000 - 13000)$$
$$21x + 38y = 122000 \quad \text{---} \quad (II)$$

Solving equations (I) and (II)

$$21x + 35y = 122000$$
$$25x + 35y = 135000$$
~~$x = 135$~~

From eqn (I)

$$x = \frac{135000 - 35y}{25}$$

Sub for x in equation (II).

$$21\left(\frac{135000 - 35y}{25}\right) + 38y = 122000$$

multiply throughout by 25.

$$21 \times 25\left(\frac{135000 - 35y}{25}\right) + 38y \times 25 = 122000 \times 25$$

$$21(135000 - 35y) + 38y \times 25 = 122000 \times 25$$
$$2835000 - 735y + 950y = 3050000$$
$$215y = 3050000 - 2835000$$
$$\frac{215}{215}y = \frac{215000}{215}$$
$$y = 1000$$

$$x = \frac{135000 - 35(1000)}{25}$$

$$= \frac{135000 - 35000}{25}$$

$$= 4000/=$$

Cost of Each text book is UGX 4000
Cost of Each exercise book is UGX 1000.

ITEM 1

(b)

Cost of the text book in Soroti bookshop $= 4000 - \left(\frac{5}{100} \times 4000\right)$

$= 4000 - 200$

$= 3800/=$

Cost of each exercise book in soroti cheap book shop $= 1000 + \frac{5}{100} \times 1000$

$= 1050/=$

Expenditure of ~~Mengo~~ ss in Soroti cheap book shop.

$= (25 \times 3800) + 35(1050)$

$= 95000 + 36750$

$= 131750.$

Difference in the amount spent

$= 135000 - 131750$

$= 3250/=$

ITEM 2

(b)

$$\begin{pmatrix} 3 & 5 & 10 & 3 \\ 1 & 0 & 4 & 2 \\ 4 & 3 & 6 & 1 \\ 5 & 1 & 0 & 0 \end{pmatrix} \times \begin{pmatrix} 45000 \\ 30000 \\ 15000 \\ 50000 \end{pmatrix}$$

$$\begin{pmatrix} 3\times45000 + 5\times30000 + 10\times15000 + 3\times50000 \\ 1\times45000 + 0\times30000 + 4\times15000 + 2\times50000 \\ 4\times45000 + 3\times30000 + 6\times15000 + 1\times50000 \\ 5\times45000 + 1\times30000 + 0\times15000 + 0\times50000 \end{pmatrix}$$

$$\begin{pmatrix} 135000 + 150,000 + 150000 + 150000 \\ 45000 + 0 + 60000 + 100000 \\ 180000 + 90000 + 90000 + 50000 \\ 225000 + 30000 + 0 + 0 \end{pmatrix}$$

$$\begin{pmatrix} 585000 \\ 205000 \\ 410000 \\ 255000 \end{pmatrix}$$

He spent as follows

Nakassero market.	585000
Gayaza market	205000
Jinja market	410000
Masaka Market	255000

ITEM 2.

(a) Matrix for produce.

	Beans	Maize	Potato	millet
N	3	5	10	3
G	1	0	4	2
J	4	3	6	1
N	5	1	0	0

Matrix for buying price.

Bean	45000
Maize	30000
Potato	15000
Millet	50000

Matrix for selling price.

Bean	50000
Maize	35000
Potato	18000
Millet	55000

ITEM 2

C.

$$\begin{pmatrix} 3 & 5 & 10 & 3 \\ 1 & 0 & 4 & 2 \\ 4 & 3 & 6 & 1 \\ 5 & 1 & 0 & 0 \end{pmatrix} \times \begin{pmatrix} 50000 \\ 35000 \\ 18000 \\ 55000 \end{pmatrix}$$

$$\begin{pmatrix} 3\times50000 + 5\times35000 + 10\times18000 + 3\times55000 \\ 1\times50000 + 0\times35000 + 4\times18000 + 2\times55000 \\ 4\times50000 + 3\times35000 + 6\times18000 + 1\times55000 \\ 5\times50000 + 1\times35000 + 0\times18000 + 0\times55000 \end{pmatrix}$$

$$\begin{pmatrix} 150000 + 175000 + 180000 + 165000 \\ 50000 + 0 + 72000 + 110000 \\ 200000 + 105000 + 108000 + 55000 \\ 250000 + 35000 + 0 + 0 \end{pmatrix}$$

$$\begin{pmatrix} 670000 \\ 232000 \\ 468000 \\ 285000 \end{pmatrix}$$

Profit made in each market.

$$= \begin{pmatrix} 670000 \\ 232000 \\ 468000 \\ 285000 \end{pmatrix} - \begin{pmatrix} 585000 \\ 205000 \\ 410000 \\ 255000 \end{pmatrix}$$

$$= \begin{pmatrix} 85000 \\ 27000 \\ 58000 \\ 30000 \end{pmatrix}$$

He made a profit

ITEM 3. a)

Class	tally	f	x	fx	Class boundries
40-44	IIII	4	42	168	39.5 - 44.5
45-49	HH II	7	47	329	44.5 - 49.5
50-54	HHIII	8	52	416	49.5 - 54.5
55-59	HH I	6	57	342	54.5 - 59.5
60-64	HH II	7	62	434	59.5 - 64.5
65-69	III	3	67	201	64.5 - 69.5
70-74	HH	5	72	360	69.5 - 74.5
		$\Sigma f = 40$		$\Sigma fx = 2250$	

(b)

$$\text{Mean} = \frac{\Sigma fx}{\Sigma f}$$

$$= \frac{2250}{40}$$

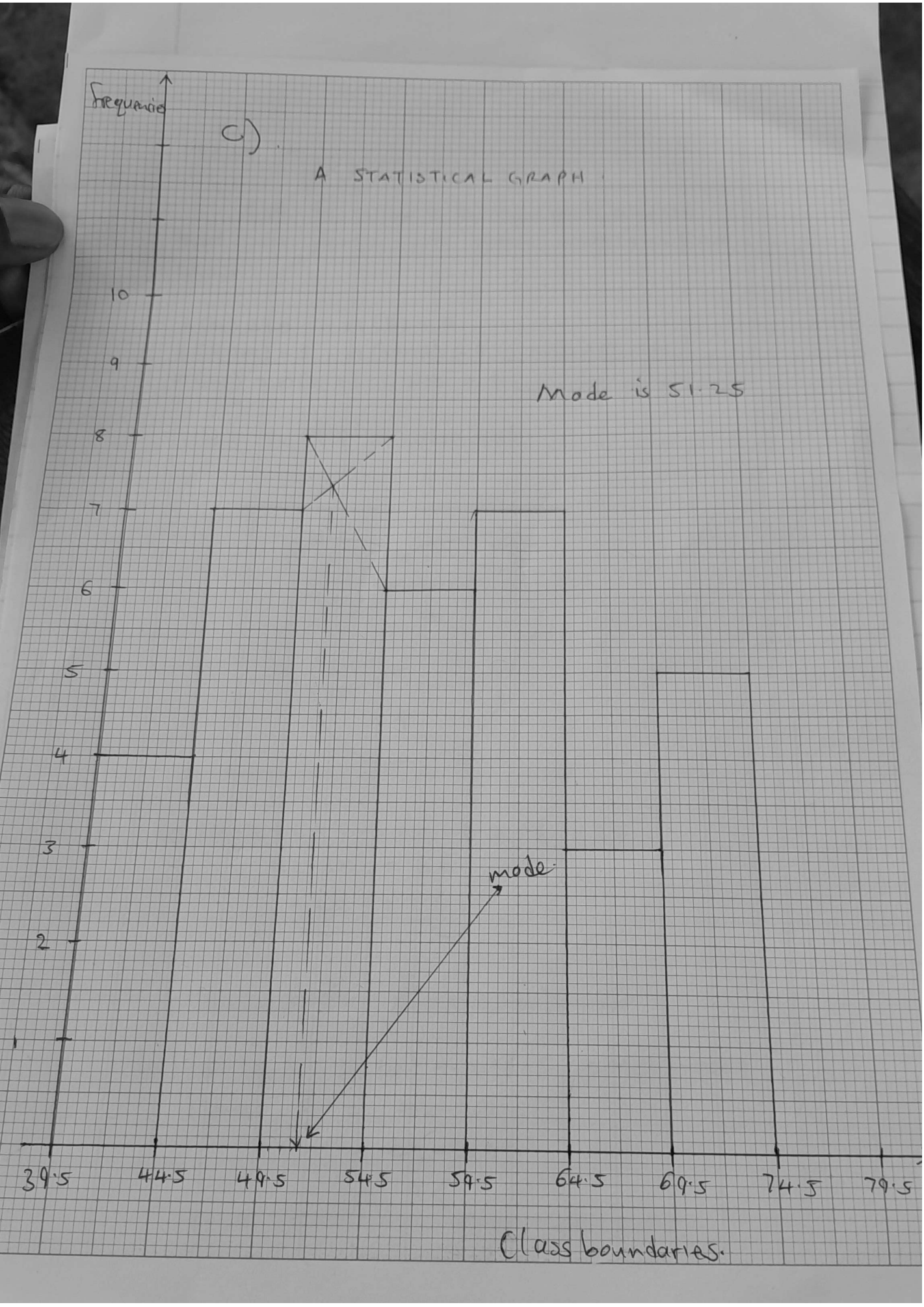
$$= 56.25$$

$$\text{Mode} = L_1 + \left(\frac{d_1}{d_1 + d_2}\right) I.$$

$$= 49.5 + \left(\frac{1}{1+2}\right) \times 5.$$

$$= 49.5 + \frac{5}{3}.$$

$$= 51.1667.$$



ITEM 4.

(a)

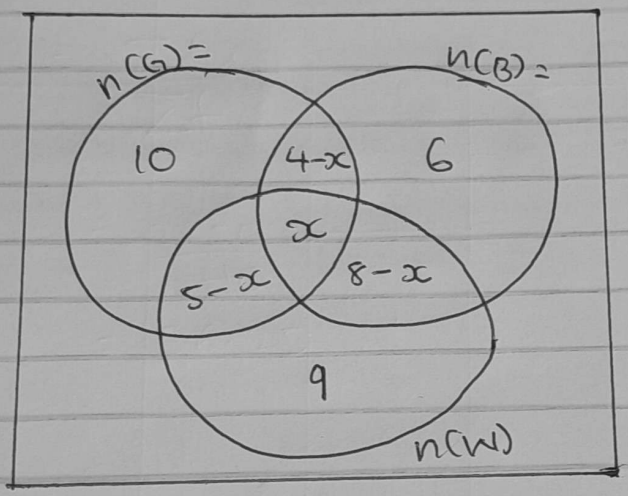
Let G, W and B represent a house that was painted with green, white and black colour.

$n(G) = 10$, $n(B) = 6$

$n(G \cap W) = 5$, $n(W \cap B) = 8$, $n(G \cap B) = 4$

$n(W) = n(B) + 3 = 6 + 3 = 9.$

let x be $n(W \cap G \cap B)$



$10 + 4 - x + 6 + 5 - x + x + 8 - x + 9 = 36$

$42 - 2x = 36.$

$\frac{-2x}{-2} = \frac{-6}{-2}.$

$x = 3.$

b) (At least one) $= 10 + 4 - x + 6 + 5 - x + x + 8 - x + 9$

$= 42 - 2x.$

$= 42 - 2(3).$

$= 36$

C

Pf

Probability that a house is painted black or white $= \frac{8-x}{36}$

$= \frac{8-3}{36}$

$= \frac{5}{36}$.

b

$$\frac{1200}{x} + 10$$

$$\frac{1400}{x-5}$$

c

~~$1400x - 5 = 1200x$~~

$1400x - 1200(x-5) \times (x-5) = 10.$

$200x + 6000 = 10x^2 - 50x$

$20x + 600 = x^2 - 5x.$

$x^2 + 15x - 40x - 600 = 0.$

$x(x+15) - 40(x+15) = 0$

$(x-40)(x+15) = 0.$

$x = 40.$

$40 - 5 = 35.$

d

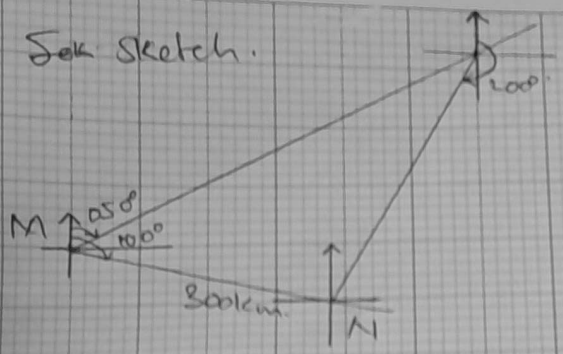
Each contributed $= \frac{1400}{35}$

$= 40$

$= \text{Kshs } 40.$

ITEM 6.

Sok sketch.



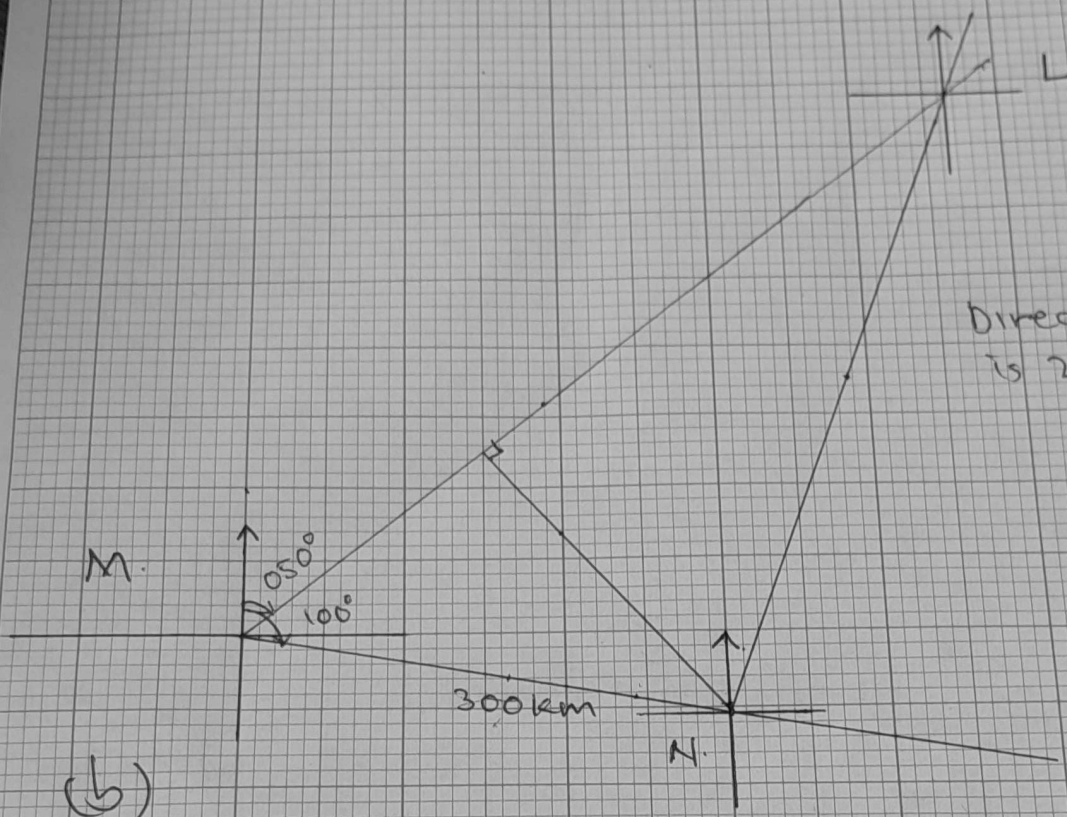
Scale.

1cm Sokm → 1 cm.

300km → $\frac{300}{50}$

= 6cm.

a)



Direction of M from L is 200°

(b)

Distance travelled by destroyer A = 4·7 × 50

= 235 Km.

C) Distance travelled by destroyer B = 9·5 × 50

= 475 Km.